NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Aerospace Engineering - Introduction to Aerospace Propulsion

Subject Co-ordinator - Prof. Bhaskar Roy, Prof. A M Pradeep

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Intro & Historical development of flights
Lecture 2 - Early development of aircraft propulsive devices
Lecture 3 - Development of Jet propulsion for aircraft
Lecture 4 - Introduction to thermodynamics, Scope and method, Basic concepts
Lecture 5 - Quasi-static processes, zeroth law of thermodynamics and temperature, concept of energy and its various forms
Lecture 6 - Specific heats at constant pressure and volume Work and heat transfers
Lecture 7 - Tutorial
Lecture 8 - First law of thermodynamics for closed systems
Lecture 9 - First law of thermodynamics for open systems/flow processes
Lecture 10 - Second law of thermodynamics, heat engines, refrigerators and heat pumps, Kelvin-Planck and Clausius statement
Lecture 11 - Reversible and irreversible processes, concept of entropy
Lecture 12 - Increase of entropy principle, third law of thermodynamics, absolute entropy, perpetual motion machines
Lecture 13 - Tutorial
Lecture 14 - Carnot cycle, Carnot principle, thermodynamic temperature scale
Lecture 15 - Exergy, availability and second law efficiency
Lecture 16 - Tutorial
Lecture 17 - Gas and vapour power cycles, Otto cycle, Diesel cycle, Dual cycle
Lecture 18 - Rankine cycle, Brayton cycle, Stirling and Ericsson cycles
Lecture 19 - Thermodynamic property relations, Jacobean and Legendre transformations, Maxwell’s equations
Lecture 20 - Tutorial
Lecture 21 - Properties of gas and vapour mixtures
Lecture 22(A) - One-dimensional compressible flows, isentropic flows
Lecture 22(B) - Flows with friction and heat transfer, normal and oblique shocks
Lecture 23 - Piston-prop engines
Lecture 24 - IC Engines for aircraft application
Lecture 25 - Performance parameters of IC engines
Lecture 26 - Supercharging of aircraft IC engines
Lecture 27 - Tutorial
Lecture 28 - Propeller fundamentals

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Lecture 29 - Propeller aerodynamic theories - I
Lecture 30 - Propeller aerodynamic theories - II
Lecture 31 - Tutorial
Lecture 32 - Ideal cycles for Jet engines
Lecture 33 - Ideal cycles for variants of jet engines
Lecture 34 - Tutorial
Lecture 35 - Fundamentals of Ramjets and Pulsejets
Lecture 36 - Fundamentals of Rocket engines
Lecture 37 - Fundamentals of Missile engines
Lecture 38 - Various space vehicles and their engines
Lecture 39 - Closure of the lecture series
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Aerospace Engineering - Jet Aircraft Propulsion

Subject Co-ordinator - Prof. A M Pradeep, Prof. Bhaskar Roy

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction & Development of Jet Aircraft Propulsion
Lecture 2 - How the Aircraft Jet Engines make Thrust
Lecture 3 - Jet Engine Basic Performance Parameters
Lecture 4 - Turbojet, Reheat Turbojet and Multi-spool Engines
Lecture 5 - Turbofan, Turbo-prop and Turboshaft engines
Lecture 6 - Ideal and Real Brayton cycles
Lecture 7 - Jet Engine Cycles for Aircraft propulsion
Lecture 8 - Cycle components and component performances
Lecture 9 - Tute-1
Lecture 10 - Analysis of engine real cycles
Lecture 11 - Tute-2
Lecture 12 - Thermodynamics of Compressors
Lecture 13 - Thermodynamics of Turbines
Lecture 14 - Axial Compressors
Lecture 15 - Cascade analysis; Loss and Blade performance estimation
Lecture 16 - Free Vortex theory; Single-Multi-stage characteristics
Lecture 17 - Tutes-3
Lecture 18 - Elements of centrifugal compressor
Lecture 19 - Centrifugal Compressor characteristics
Lecture 20 - Axial flow turbines; Turbine Blade 2-D (cascade) analysis
Lecture 21 - Multi-staging
Lecture 22 - Radial Turbine Aerodynamics & Thermodynamics; Losses
Lecture 23 - Tutes-4
Lecture 24 - Types of combustion chambers
Lecture 25 - Pr. Loss, Combustion efficiency; Combustion intensity
Lecture 26 - Practical combustion system ; Stability, Fuel injection
Lecture 27 - Intakes for Powerplant
Lecture 28 - Subsonic, Transonic, Supersonic Intake Designs
Lecture 29 - Nozzle

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Lecture 30 - C-D nozzle and their uses
Lecture 31 - Tute-5
Lecture 32 - Engine Off Design Operations
Lecture 33 - Aircraft Engine component matching
Lecture 34 - Engine component matching and Sizing
Lecture 35 - Installed Performance of Engine
Lecture 36 - Tute-6
Lecture 37 - Use of Ramjets and Pulsejets in Aircraft propulsion
Lecture 38 - Thermodynamic Cycle & Performance Parameters
Lecture 39 - Flow in Diffusers, Combustors and Nozzles
Lecture 40 - Performance and Design of Ramjet & Scramjet Engines
Lecture 41 - Tute-7
Lecture 42 - Future of Aircraft Propulsion
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Aerospace Engineering - Turbomachinery Aerodynamics

Subject Co-ordinator - Prof. Bhaskar Roy, Prof. A M Pradeep
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Turbo machines Syllabus, References and Schedules
Lecture 2 - Axial Flow Compressors and Fans
Lecture 3 - A two dimensional analytical model
Lecture 4 - 2D losses in Axial flow Compressor Stage
Lecture 5 - Tutorial 1
Lecture 6 - 3D Flows in Blade Passages, Secondary Flows, Tip leakage Flow, Scrubbling
Lecture 7 - Three Dimensional Flow Analysis
Lecture 8 - Classical Blade Design Laws
Lecture 9 - Three Dimensional Flow Analysis in Axial Flow Compressor
Lecture 10 - Tutorial 2
Lecture 11 - Axial Compressor Characteristics
Lecture 12 - Instability in Axial Compressors
Lecture 13 - Inlet Distortion and Rotating Stall, Control of Instability
Lecture 14 - Transonic Compressors and Shock Structure Models, Transonic Compressor Characteristics
Lecture 15 - Axial Flow Compressor Design, Inter Spool Duct
Lecture 16 - Design of Compressor Blades, Aerofoil Design (Subsonic, Transonic, Supersonic Profiles )
Lecture 17 - Design of Compressor Blade
Lecture 18 - Noise Problem in Axial Compressors and Fans
Lecture 19 - Axial Flow Turbines
Lecture 20 - Axial Flow Turbines
Lecture 21 - Axial Flow Turbines
Lecture 22 - Axial Flow Turbines
Lecture 23 - Tutorial 3
Lecture 24 - Multi staging and Multi spooling of Turbine
Lecture 25 - 3D Flow in Turbine
Lecture 26 - Tutorial 4
Lecture 27 - Turbine Blade Cooling à Fundamentals of Heat Transfer, Blade Cooling Requirements
Lecture 28 - Turbine Blade Cooling Technologies
Lecture 29 - Turbine Blade Design

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Lecture 30 - Turbine Blade Design
Lecture 31 - Centrifugal Compressors
Lecture 32 - Centrifugal Compressors
Lecture 33 - Tutorial 5
Lecture 34 - Design of Centrifugal Compressors
Lecture 35 - Radial Turbines
Lecture 36 - Tutorial 6
Lecture 37 - Radial Turbine Characteristics and Design of Radial Turbines
Lecture 38 - CFD for Turbomachinery
Lecture 39 - CFD for Turbomachinery
Lecture 40 - CFD for Turbomachinery
NPTEL Video Course - Aerospace Engineering - NOC: Introduction to Aerospace Engineering

Subject Co-ordinator - Prof. Rajkumar Pant

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Layout and Brief Introduction of Course Instructor
Lecture 2 - Introduction to International Standard Atmosphere (ISA)
Lecture 3 - Pressure, Temperature, Density and Viscosity Variation with Altitude in ISA
Lecture 4 - Other Standard Atmospheres
Lecture 5 - Aircraft Component Nomenclature - Wing and its Components
Lecture 6 - Aircraft Component Nomenclature - Fuselage and its Components
Lecture 7 - Aircraft Component Nomenclature - Tail Plane and its Components
Lecture 8 - Tutorial 1 - Aircraft Component Nomenclature
Lecture 9 - Essentials of Incompressible Flow - Part I
Lecture 10 - Essentials of Incompressible Flow - Part II
Lecture 11 - Bernoulli's Equation and Coanda Effect
Lecture 12 - Mach Number
Lecture 13 - Tutorial 2 - Incompressible Flow and Flow Visualization
Lecture 14 - Viscous Flow and Reynolds Number
Lecture 15 - Introduction to Boundary Layer
Lecture 16 - Pressure Measurement
Lecture 17 - Air Speed Measurement - Pitot Static Tube
Lecture 18 - Air Speed Corrections
Lecture 19 - Altitude and ROC/ROD Measurement
Lecture 20 - Measurements in Compressible Flows
Lecture 21 - Non Pneumatic Instruments
Lecture 22 - Introduction to Aerofoils and Aerofoil Nomenclature
Lecture 23 - Aerofoils - A Visit to the Past
Lecture 24 - Thick Aerofoils
Lecture 25 - Low Reynolds Number Aerofoils
Lecture 26 - Lift Generation by Wings - Part I
Lecture 27 - Lift Generation by Wings - Part II
Lecture 28 - Coefficient of Lift and Coefficient of Pressure
Lecture 29 - Tutorial on Aerofoils

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Lecture 30 - Critical Mach Number
Lecture 31 - Wave Drag
Lecture 32 - Swept Wings
Lecture 33 - Introduction to Drag and Types of Drag
Lecture 34 - Factors Affecting Induced Drag
Lecture 35 - Skin Friction Drag
Lecture 36 - Tutorial on Critical Mach Number and Wave Drag
Lecture 37 - Introduction to Propulsion
Lecture 38 - Gas Turbine Engine Types - Part I
Lecture 39 - Gas Turbine Engine Types - Part II
Lecture 40 - Introduction to Electric Propulsion and Ion Propulsion
Lecture 41 - Steady Level Flight
Lecture 42 - Power Required for the Steady Level Flight
Lecture 43 - Steady Level Flight - A Pilot's View
Lecture 44 - Tutorial on Steady Level Flight
Lecture 45 - Gliding Flight
Lecture 46 - Climbing Flight and Ceiling
Lecture 47 - Introduction to Turning Flight
Lecture 48 - Turning Flight Equations
Lecture 49 - Instantaneous and Sustained Turn
Lecture 50 - Tutorial on Climbing Flight and Turning Flight
Lecture 51 - Introduction to Static Stability
Lecture 52 - Aerodynamic Center and Effect of Center of Gravity
Lecture 53 - Effect of Center of Gravity - A Practical Demonstration
Lecture 54 - Introduction to V-n Diagram
Lecture 55 - V-n Diagram as per FAR 23 Regulations
Lecture 56 - Effect of Gusts on V-n Diagram
Lecture 57 - Tutorial on Stability and Control
Lecture 58 - Range
Lecture 59 - Specific Fuel Consumption and Generalized Range Equation
Lecture 60 - Endurance
Lecture 61 - Take-off Performance of Flight - Part I
Lecture 62 - Take-off Performance of Flight - Part II
Lecture 63 - Landing Performance of Flight
Lecture 64 - Tutorial on Range Payload Diagram
Lecture 65 - Tutorial on Range and Endurance
Lecture 66 - Flapping Wing Aerodynamics - Part I
Lecture 67 - Flapping Wing Aerodynamics - Part II

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NPTEL Video Course - Aerospace Engineering - Foundation of Scientific Computing

Subject Co-ordinator – Prof. Tapan K. Sengupta
Co-ordinating Institute – IIT - Kanpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1
Lecture 2
Lecture 3
Lecture 4
Lecture 5
Lecture 6
Lecture 7
Lecture 8
Lecture 9
Lecture 10
Lecture 11
Lecture 12
Lecture 13
Lecture 14
Lecture 15
Lecture 16
Lecture 17
Lecture 18
Lecture 19
Lecture 20
Lecture 21
Lecture 22
Lecture 23
Lecture 24 (Same as Lecture 23)
Lecture 25
Lecture 26
Lecture 27
Lecture 28
Lecture 29

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NPTEL Video Course - Aerospace Engineering - Instability and Transition of Fluid Flows

Subject Co-ordinator - Prof. Tapan K. Sengupta

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Instability and Transition of Fluid Flows
Lecture 2 - Instability and Transition of Fluid Flows
Lecture 3 - Instability and Transition of Fluid Flows
Lecture 4 - Instability and Transition of Fluid Flows
Lecture 5 - Instability and Transition of Fluid Flows
Lecture 6 - Instability and Transition of Fluid Flows
Lecture 7 - Instability and Transition of Fluid Flows
Lecture 8 - Instability and Transition of Fluid Flows
Lecture 9 - Instability and Transition of Fluid Flows
Lecture 10 - Instability and Transition of Fluid Flows
Lecture 11 - Instability and Transition of Fluid Flows
Lecture 12 - Instability and Transition of Fluid Flows
Lecture 13 - Instability and Transition of Fluid Flows
Lecture 14 - Instability and Transition of Fluid Flows
Lecture 15 - Instability and Transition of Fluid Flows
Lecture 16 - Instability and Transition of Fluid Flows
Lecture 17 - Instability and Transition of Fluid Flows
Lecture 18 - Instability and Transition of Fluid Flows
Lecture 19 - Instability and Transition of Fluid Flows
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Lecture 22 - Instability and Transition of Fluid Flows
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Lecture 24 - Instability and Transition of Fluid Flows
Lecture 25 - Instability and Transition of Fluid Flows
Lecture 26 - Instability and Transition of Fluid Flows
Lecture 27 - Instability and Transition of Fluid Flows
Lecture 28 - Instability and Transition of Fluid Flows
Lecture 29 - Instability and Transition of Fluid Flows

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NPTEL Video Course - Aerospace Engineering - Introduction to Propulsion

Subject Co-ordinator - Dr. D.P. Mishra

Co-ordinating Institute - IIT - Kanpur

Lecture 1 - Fundamentals of Aerospace Propulsion
Lecture 2 - Fundamentals of Aerospace Propulsion
Lecture 3 - Fundamentals of Aerospace Propulsion
Lecture 4 - Fundamentals of Aerospace Propulsion
Lecture 5 - Fundamentals of Aerospace Propulsion
Lecture 6 - Fundamentals of Aerospace Propulsion
Lecture 7 - Fundamentals of Aerospace Propulsion
Lecture 8 - Fundamentals of Aerospace Propulsion
Lecture 9 - Fundamentals of Aerospace Propulsion
Lecture 10 - Fundamentals of Aerospace Propulsion
Lecture 11 - Fundamentals of Aerospace Propulsion
Lecture 12 - Fundamentals of Aerospace Propulsion
Lecture 13 - Fundamentals of Aerospace Propulsion
Lecture 14 - Fundamentals of Aerospace Propulsion
Lecture 15 - Fundamentals of Aerospace Propulsion
Lecture 16 - Fundamentals of Aerospace Propulsion
Lecture 17 - Fundamentals of Aerospace Propulsion
Lecture 18 - Fundamentals of Aerospace Propulsion
Lecture 19 - Fundamentals of Aerospace Propulsion
Lecture 20 - Fundamentals of Aerospace Propulsion
Lecture 21 - Fundamentals of Aerospace Propulsion
Lecture 22 - Fundamentals of Aerospace Propulsion
Lecture 23 - Fundamentals of Aerospace Propulsion
Lecture 24 - Fundamentals of Aerospace Propulsion
Lecture 25 - Fundamentals of Aerospace Propulsion
Lecture 26 - Fundamentals of Aerospace Propulsion
Lecture 27 - Fundamentals of Aerospace Propulsion
Lecture 28 - Fundamentals of Aerospace Propulsion
Lecture 29 - Fundamentals of Aerospace Propulsion

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Lecture 30 - Fundamentals of Aerospace Propulsion
Lecture 31 - Fundamentals of Aerospace Propulsion
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Lecture 33 - Fundamentals of Aerospace Propulsion
Lecture 34 - Fundamentals of Aerospace Propulsion
Lecture 35 - Fundamentals of Aerospace Propulsion
Lecture 36 - Fundamentals of Aerospace Propulsion
Lecture 37 - Fundamentals of Aerospace Propulsion
Lecture 38 - Fundamentals of Aerospace Propulsion
Lecture 39 - Fundamentals of Aerospace Propulsion
Lecture 40 - Fundamentals of Aerospace Propulsion

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NPTEL Video Course - Aerospace Engineering - Jet and Rocket Propulsion

Subject Co-ordinator - Dr. A. Kushari

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Jet and Rocket Propulsion
Lecture 2 - Jet and Rocket Propulsion
Lecture 3 - Jet and Rocket Propulsion
Lecture 4 - Jet and Rocket Propulsion
Lecture 5 - Jet and Rocket Propulsion
Lecture 6 - Jet and Rocket Propulsion
Lecture 7 - Jet and Rocket Propulsion
Lecture 8 - Jet and Rocket Propulsion
Lecture 9 - Jet and Rocket Propulsion
Lecture 10 - Jet and Rocket Propulsion
Lecture 11 - Jet and Rocket Propulsion
Lecture 12 - Jet and Rocket Propulsion
Lecture 13 - Jet and Rocket Propulsion
Lecture 14 - Jet and Rocket Propulsion
Lecture 15 - Jet and Rocket Propulsion
Lecture 16 - Jet and Rocket Propulsion
Lecture 17 - Jet and Rocket Propulsion
Lecture 18 - Jet and Rocket Propulsion
Lecture 19 - Jet and Rocket Propulsion
Lecture 20 - Jet and Rocket Propulsion
Lecture 21 - Jet and Rocket Propulsion
Lecture 22 - Jet and Rocket Propulsion
Lecture 23 - Jet and Rocket Propulsion
Lecture 24 - Jet and Rocket Propulsion
Lecture 25 - Jet and Rocket Propulsion
Lecture 26 - Jet and Rocket Propulsion
Lecture 27 - Jet and Rocket Propulsion
Lecture 28 - Jet and Rocket Propulsion
Lecture 29 - Jet and Rocket Propulsion

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Lecture 30 - Jet and Rocket Propulsion
Lecture 31 - Jet and Rocket Propulsion
Lecture 32 - Jet and Rocket Propulsion
Lecture 33 - Jet and Rocket Propulsion
Lecture 34 - Jet and Rocket Propulsion
Lecture 35 - Jet and Rocket Propulsion
Lecture 36 - Jet and Rocket Propulsion
Lecture 37 - Jet and Rocket Propulsion
Lecture 38 - Jet and Rocket Propulsion
Lecture 39 - Jet and Rocket Propulsion
Lecture 40 - Jet and Rocket Propulsion
Lecture 30 - Take off Performance
Lecture 31 - Revision...
Lecture 32 - Landing Performance
Lecture 33 - Landing Performance
Lecture 34 - Challenges in Takeoff and Landing
Lecture 35 - Introduction to Static Stability
Lecture 36 - Positioning of Center of Pressure for Static Stability
Lecture 37 - Revision....
Lecture 38 - Stability and Control
Lecture 39 - Stability and Control
Lecture 40 - Longitudinal Control
Lecture 41 - Contribution of Wing and Tail
Lecture 42 - Stability
Lecture 43 - Control
Lecture 44 - Control
Lecture 45 - Control
Lecture 46 - Design Basics
Lecture 47 - Design Basics
Lecture 48 - Revision.
Lecture 30 - Aircraft Handling Qualities (Continued...)
Lecture 31 - Reversible Control
Lecture 32 - Numericals
Lecture 33 - Numericals
Lecture 34 - Handling Qualities
Lecture 35 - Determination of Neutral Point and Maneuvering Point by Flight Experiment
Lecture 36 - Point Mass Equation of Motion
Lecture 37 - Forces and Moments
Lecture 38 - Aircraft Equations of Motion
Lecture 39 - Six Degrees of Freedom of an Aircraft
Lecture 40 - 6 DoF
Lecture 41 - Vector in a Rotating Frame
Lecture 42 - Euler Angles
Lecture 43 - Small Perturbation Theory
Lecture 44 - Small Perturbation Theory (Continued...)
Lecture 45 - Perturbed Equations of Motion
Lecture 46 - Perturbed Force
Lecture 47 - Perturbed Force
Lecture 48 - Perturbed Pitching Moment
Lecture 49 - Longitudinal Dimensional Stability Derivatives
Lecture 50 - Dynamic Stability
Lecture 51 - Longitudinal Modes
Lecture 52 - Short Period and Phugoid Approximations
Lecture 53 - Pure Pitching Motion
Lecture 54 - Stability Augmentation System (SAS)
Lecture 55 - Lateral-Directional Motion
Lecture 56 - Tutorial - 1
Lecture 57 - Tutorial - 2
Lecture 58 - Tutorial - 3
Lecture 59 - Tutorial - 4
Lecture 60 - History of Aviation
NPTEL Video Course - Aerospace Engineering - NOC: Engineering Thermodynamics

Subject Co-ordinator - Dr. D.P. Mishra
Co-ordinating Institute - IIT - Kanpur

| Lecture 1 - Thermodynamics and its Applications | MP3 Audio Lectures - Available / Unavailable |
| Lecture 2 - System and its Surroundings        |                                           |
| Lecture 3 - Property of System                 |                                           |
| Lecture 4 - Energy and its Various Forms       |                                           |
| Lecture 5 - Concepts of Equilibrium and its State |                                     |
| Lecture 6 - Energy and its Interactions        |                                           |
| Lecture 7 - Heat Interactions                  |                                           |
| Lecture 8 - Thermodynamic Properties of Fluids - 1 |                                   |
| Lecture 9 - Thermodynamic Properties of Fluids - 2 |                               |
| Lecture 10 - Thermodynamic Properties of Fluids - 3 |                             |
| Lecture 11 - Thermodynamic Properties of Fluids - 4 |                            |
| Lecture 12 - Thermodynamic Properties of Fluids - 5 |                           |
| Lecture 13 - First Law of Thermodynamics for Cyclic Process |                       |
| Lecture 14 - First Law of Thermodynamics for Non-cyclic Process - 1 |                       |
| Lecture 15 - First Law of Thermodynamics for Non-cyclic Process - 2 |                       |
| Lecture 16 - Control Mass and Control Volume   |                                           |
| Lecture 17 - First Law of Thermodynamics for Steady Flow Processes |                     |
| Lecture 18 - First Law of Thermodynamics for Unsteady Flow Processes |                    |
| Lecture 19 - First Law of Thermodynamics to Reacting Systems |                      |
| Lecture 20 - Second Law of Thermodynamics       |                                           |
| Lecture 21 - Second Law of Thermodynamics       |                                           |
| Lecture 22 - Second Law of Thermodynamics       |                                           |
| Lecture 23 - Second Law of Thermodynamics       |                                           |
| Lecture 24 - Applications of Second Law of Thermodynamics |                  |
| Lecture 25 - Applications of Second Law of Thermodynamics |                |
| Lecture 26 - Exergy                            |                                           |
| Lecture 27 - Gas Turbine Cycle                 |                                           |
| Lecture 28 - Vapor Power Cycle - 1             |                                           |
| Lecture 29 - Vapor Power Cycle - 2             |                                           |

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Lecture 1 - Introduction to Dynamic Stability
Lecture 2 - Spring-Mass-Damper System
Lecture 3 - Spring-Mass-Damper System
Lecture 4 - Laplace Transform
Lecture 5 - Pitch Dynamics
Lecture 6 - Numericals
Lecture 7 - Aircraft Rigid Body Equation of Motion
Lecture 8 - Six Degree of Freedom Equation of Motion
Lecture 9 - Vector in Rotating Frame
Lecture 10 - Forces and Moments on Aircraft
Lecture 11 - Euler Angles
Lecture 12 - Trajectory of the Aircraft
Lecture 13 - Small Perturbation Theory
Lecture 14 - Perturbed Aerodynamic Forces and Moments
Lecture 15 - U-derivatives
Lecture 16 - Alpha - derivatives
Lecture 17 - Alpha Dot Derivatives
Lecture 18 - q and delta Derivatives
Lecture 19 - Dimensional Stability Derivatives
Lecture 20 - Longitudinal Characteristic Equation
Lecture 21 - Routh's Criteria and Longitudinal Dynamic Stability
Lecture 22 - Longitudinal Modes
Lecture 23 - Short period Mode Approximation
Lecture 24 - Long Period Mode (Phugoid) Approximation
Lecture 25 - Lateral Directional Stability Derivatives
Lecture 26 - Lateral Directional Stability Derivatives (Continued...)
Lecture 27 - Perturbed Equation of Motion for Lateral Dynamics
Lecture 28 - Modes of Lateral Directional Dynamics
Lecture 29 - Spiral and Dutch Roll modes Approximation
Lecture 30 - Routh-Hurwitz Stability Criterion
Lecture 31 - Introduction to Stability Augmentation
Lecture 32 - Pure Yawing and Pure Rolling Motion
Lecture 33 - SAS for Longitudinal Dynamics
Lecture 34 - SAS for Lateral Dynamics
Lecture 35 - Flight Handling Qualities
Lecture 36 - Numericals
Lecture 37 - Revision
Lecture 38 - Mode Shape
Lecture 39 - Mode Shape
Lecture 40 - Numericals
Lecture 41 - Stability Augmentation System
Lecture 42 - Numericals
Lecture 43 - Numericals
Lecture 1 - Introduction to Ancient Indian Civilization
Lecture 2 - Ancient Indian Civilization's Gift to the World
Lecture 3 - Why do we need to look at Ancient Indian Science and Technology?
Lecture 4 - Glimpses of Ancient Indian Science and Technology
Lecture 5 - Brief Review of Ancient Indian Scriptures
Lecture 6 - Basic Principles of carrying out science and technology
Lecture 7 - Arrays of Physics, chemistry and Indoor games
Lecture 8 - Marvels of Ancient Indian Technology
Lecture 9 - Introduction to Indian Agriculture
Lecture 10 - Problems arising due to modern agricultural practices
Lecture 11 - Pesticides and soil degradation
Lecture 12 - Agriculture - A Primary Productive Activity
Lecture 13 - An Agricultural Tools - A Plough
Lecture 14 - Soil and seeds
Lecture 15 - Sowing Methods
Lecture 16 - Indigenous cattle and manuring
Lecture 17 - Ancient Indian Textile Technology
Lecture 18 - Handlooms and Charkha
Lecture 19 - Different types of Handlooms
Lecture 20 - Ancient Rural Indian Housing
Lecture 21 - Thatched Roof House
Lecture 22 - Rural Walls and Roof materials
Lecture 23 - Indus Valley and Harappan Civilization
Lecture 24 - First and Second of Indian Civilization
Lecture 25 - Town topologies and Brick and Tile making process
Lecture 26 - Availability of Water and Freshwater
Lecture 27 - Ancient Indian Wells
Lecture 28 - Temple Water tanks and Dams
Lecture 29 - Tank Irrigation system and Rainwater Harvesting
Lecture 30 - Waterbodies - Lakes and Canals
Lecture 31 - Sluices and Embankments
Lecture 32 - World of Materials
Lecture 33 - Metals - Gold Silver Lead
Lecture 34 - History of Copper
Lecture 35 - Iron during Vedic period
Lecture 36 - Iron smelting process in ancient India
Lecture 37 - Iron and Steel crafts in ancient India
Lecture 38 - Extraction and smelting of Zinc in Ancient India
Lecture 39 - Metal Casting in Ancient India
Lecture 40 - Glass Technology in Ancient India
Lecture 1 - Weighment and Calculation of CG (Theory)
Lecture 2 - Cruise Experiment (Theory)
Lecture 3 - Weighment Experiment and cockpit panel description
Lecture 4 - Drag Polar Experiment
Lecture 5 - CG and Climb Experiment
Lecture 6 - Calibration of Control Surface
Lecture 7 - Calibration of Control Surfaces (Experiment)
Lecture 8 - Introduction to Flight Data Recorder
Lecture 9 - Sensors - Part I
Lecture 10 - Sensors - Part II
Lecture 11 - Data Acquisition using MEMS devices
Lecture 12 - Estimation of Stick-Fixed Neutral Point
Lecture 13 - Estimation of Stick-Free Neutral Point and Stick-Free Maneuvering Point
Lecture 14 - Static
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Lecture 16 - Steady Coordinated Turn
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### NPTEL Video Course - Aerospace Engineering - NOC:Aircraft Design

**Subject Co-ordinator** - Dr. A.K. Ghosh  
**Co-ordinating Institute** - IIT - Kanpur  
**Sub-Titles** - Available / Unavailable  
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NPTEL Video Course - Aerospace Engineering - NOC:Fundamentals Of Combustion-I

Subject Co-ordinator - Dr. D.P. Mishra
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Aerospace Engineering - NOC:Aircraft Maintenance

Subject Co-ordinator - Dr. A.K. Ghosh
Co-ordinating Institute - IIT - Kanpur
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Subject Co-ordinator - Dr. D.P. Mishra

Co-ordinating Institute - IIT - Kanpur

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Subject Co-ordinator - Prof. Saderla Subrahmanyam
Co-ordinating Institute - IIT - Kanpur

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Lecture 2 - Measurement of Flight Velocity and Standard Atmosphere
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NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Finite Volume Methods-I

Subject Co-ordinator - Prof. Ashoke De

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Aerospace Engineering - NOC: Advance Aircraft Maintenance

Subject Co-ordinator - Dr. A.K. Ghosh, Mr. V. Mathur

Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Aerospace Engineering - High Speed Aero Dynamics

Subject Co-ordinator - Dr. K.P. Sinhamahapatra

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Aerospace Engineering - Space Flight Mechanics

Subject Co-ordinator - Dr. Manoranjan Sinha

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles – Available / Unavailable  |  MP3 Audio Lectures – Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Aerospace Engineering - NOC: Satellite Attitude Dynamics and Control

Subject Co-ordinator - Dr. Manoranjan Sinha
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Kinematics of Rotation
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NPTEL Video Course - Aerospace Engineering - Acoustic Instabilities in Aerospace Propulsion

Subject Co-ordinator - Prof. R.I. Sujith
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Thermoacoustic Instabilities
Lecture 2 - Part I
Lecture 3 - Wave Equation and its Solution in Time Domain
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Lecture 5 - Standing Waves - 1
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Lecture 7 - Power Flow and Acoustic Admittance
Lecture 8 - Impedance Tube Technique
Lecture 9 - Admittance and Standing Waves
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Lecture 11 - Attenuation
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Lecture 16 - Interaction between Sound and Combustion
Lecture 17 - Reference Books Derivation of Rayleigh Criteria
Lecture 18 - Effect of Heat release on the Acoustic Field
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Lecture 21 - Active Control of Thermoacoustic Instability
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Lecture 27 - Non-normality, Transient Growth and Triggering Instability - 2
Lecture 28 - Non-normality, Transient Growth and Triggering Instability - 3
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NPTEL Video Course - Aerospace Engineering - Combustion

Subject Co-ordinator - Prof. S.R. Chakravarthy
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Chemical Reactions, Heats of Reaction and Formation
Lecture 3 - Sensible Enthalpy and Adiabatic Flame Temperature
Lecture 4 - Dissociation of Products, Role of Pressure
Lecture 5 - Numerical Calculation of Adiabatic Flame Temperature, Chemical Kinetics 1
Lecture 6 - Chemical Kinetics 2
Lecture 7 - Equilibrium Reactions, Global Kinetics, Order of Reaction
Lecture 8 - Reduced Chemistry, Steady State Approximation
Lecture 9 - Steady State Approximation, Partial Equilibrium Approximation
Lecture 10 - Partial Equilibrium Approximation, Chemical Explosions
Lecture 11 - Combining Chemical and Thermal Processes 1
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NPTEL Video Course - Aerospace Engineering - Flight Dynamics II (Stability)

Subject Co-ordinator - Dr. Nandan Kumar Sinha
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Earth Atmosphere, Aircraft components, Aircraft nomenclature
Lecture 2 - Basic aerodynamics
Lecture 3 - Equilibrium and stability
Lecture 4 - Static vs dynamic stability
Lecture 5 - Criterion for stability, Wing contribution
Lecture 6 - Horizontal tail contribution
Lecture 7 - Wing plus tail contribution
Lecture 8 - Static margin and CG limits
Lecture 9 - Fuselage contribution
Lecture 10 - Powerplant contribution
Lecture 11 - Power effects on neutral point
Lecture 12 - Elevator
Lecture 13 - Stick free stability, Most fwd CG location
Lecture 14 - Longitudinal stick force per 'g', Ground effect
Lecture 15 - Control requirement, Pull-up maneuver, Maneuver point
Lecture 16 - Elevator per 'g', Maneuver point
Lecture 17 - Example problems
Lecture 18 - Lateral-Directional Stability Derivatives, Fuselage/Vertical fin contribution
Lecture 19 - Roll stability, Wing sweep effect, Rudder
Lecture 20 - Dihedral effect, Various contributions
Lecture 21 - Power effects, Roll control, Aileron
Lecture 22 - Example problems
Lecture 23 - Derivation of Translational Motion Equations
Lecture 24 - Derivation of Angular Motion Equations
Lecture 25 - Description of various forces and moments
Lecture 26 - Nonlinearities and Associated Aircraft Behavior
Lecture 27 - Small perturbation method, Linearization of equations
Lecture 28 - Aerodynamic force and Moment Derivatives
Lecture 29 - Contribution of Aircraft components to Aerodynamic Derivatives

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Lecture 30 - Linear Model and Aircraft Dynamics Modes
Lecture 31 - Short Period, Phugoid (Lanchester's formulation)
Lecture 32 - Short period mode approximation
Lecture 33 - Flying and Handling Qualities, Cooper Harper Scale
Lecture 34 - Pure rolling motion, Pure yawing motion, Spiral approximation
Lecture 35 - Spiral, Roll, Dutch roll Mode approximations
Lecture 36 - Lateral directional Flying Qualities, Routh's Stability criterion
Lecture 37 - Stability in Steady Roll Maneuver
Lecture 38 - Wind Effect on Aircraft Pure Plunging Motion
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Lecture 40 - Stability control/Augmentation
Lecture 41 - Autopilots, Automatic Landing System
NPTEL Video Lectures - Aerospace Engineering - Gas Dynamics

Subject Co-ordinator - Dr. T.M. Muruganandam
Co-ordinating Institute - IIT - Madras
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NPTEL Video Course - Aerospace Engineering - Introduction to CFD

Subject Co-ordinator - Prof. M. Ramakrishna

Co-ordinating Institute - IIT - Madras

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Lecture 1 - Introduction, Why and how we need computers
Lecture 2 - Representing Arrays and functions on computers
Lecture 3 - Representing functions - Box functions
Lecture 4 - Representing functions - Polynomials and Hat functions
Lecture 5 - Hat functions, Quadratic and Cubic representations
Lecture 6 - Demo - Hat functions, Aliasing
Lecture 7 - Representing Derivatives - finite differences
Lecture 8 - Finite differences, Laplace equation
Lecture 9 - Laplace equation - Jacobi iterations
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Lecture 16 - Linear wave equation - Closed form and numerical solution, stability analysis
Lecture 17 - Generating a stable scheme and Boundary conditions
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Lecture 20 - Artificial dissipation, upwinding, generating schemes
Lecture 21 - Demo - Modified equation, Wave equation
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Lecture 26 - Derive Eigenvectors, Writing Programs
Lecture 27 - Applying Boundary conditions
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NPTEL Video Course - Aerospace Engineering - Advanced Control System Design for Aerospace Vehicles

Subject Co-ordinator - Dr. Radhakant Padhi
Co-ordinating Institute - IISc - Bangalore

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Lecture 2 - Classical Control Overview - I
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Lecture 5 - Classical Control Overview - IV
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Lecture 8 - Overview of Flight Dynamics - II
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Lecture 19 - Stability of Linear Time Invariant Systems
Lecture 20 - Controllability and Observability of linear Time Invariant Systems
Lecture 21 - Pole Placement Control Design
Lecture 22 - Pole Placement Observer Design
Lecture 23 - Static Optimization
Lecture 24 - Calculus of Variations
Lecture 25 - Optimal Control Formulation using Calculus of Variations
Lecture 26 - Classical Numerical Methods for Optimal Control
Lecture 27 - Linear Quadratic Regulator (LQR) Design - 1
Lecture 28 - Linear Quadratic Regulator (LQR) Design - 2
Lecture 29 - Linear Control Design Techniques in Aircraft Control - I

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NPTEL Video Course - Aerospace Engineering - Optimal Control, Guidance and Estimation

Subject Co-ordinator - Dr. Radhakant Padhi

Co-ordinating Institute - IISc - Bangalore

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Lecture 2 - Overview of SS Approach and Matrix Theory
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Lecture 23 - Model Predictive Static Programming (MPSP) and Optimal Guidance of Aerospace Vehicles
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Lecture 28 - Kalman Filter Design - I
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NPTEL Video Course - Aerospace Engineering - NOC:Combustion in Air Breathing Aero Engines

Subject Co-ordinator - Prof. Swetaprovo Chaudhuri

Co-ordinating Institute - IISc - Bangalore

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Lecture 16 - Governing Equations - IV
Lecture 17 - Governing Equations - V
Lecture 18 - Laminar Non-Premixed Flames - I
Lecture 19 - Laminar Non-Premixed Flames - II
Lecture 20 - Laminar Non-Premixed Flames - III
Lecture 21 - Laminar Non-Premixed Flames - IV
Lecture 22 - Laminar Premixed Flames - I
Lecture 23 - Laminar Premixed Flames - II
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Lecture 25 - Laminar Premixed Flames - IV
Lecture 26 - Laminar Premixed Flames - V
Lecture 27 - Laminar Premixed Flames - VI
Lecture 28 - Laminar Premixed Flames - VII
Lecture 29 - Limit Phenomena - I

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Lecture 30 - Limit Phenomena - II
Lecture 31 - Introduction to turbulent flows
Lecture 32 - Non-reacting turbulent flows - I
Lecture 33 - Non-reacting turbulent flows - II
Lecture 34 - Reacting turbulent flows - III
Lecture 35 - Reacting turbulent flows - IV
Lecture 36 - Reacting turbulent flows - V
Lecture 37 - Reacting turbulent flows - VI
Lecture 38 - Reacting turbulent flows - VII
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Lecture 40 - Turbulent Non-Premixed Flames - II
Lecture 41 - Turbulent Non-Premixed Flames - III
Lecture 42 - Turbulent Premixed Flames - I
Lecture 43 - Turbulent Premixed Flames - II
Lecture 44 - Turbulent Premixed Flames - III
Lecture 45 - Turbulent Premixed Flames - IV
Lecture 46 - Turbulent Premixed Flames - V
Lecture 47 - Turbulent Premixed Flames - VI
Lecture 48 - Aero Gas Turbine Combustors - I
Lecture 49 - Aero Gas Turbine Combustors - II
Lecture 50 - Aero Gas Turbine Combustors - III
Lecture 51 - Aero Gas Turbine Combustors - IV
Lecture 52 - Aero Gas Turbine Combustors - V
Lecture 53 - Flame Stabilization and Blow off - I
Lecture 54 - Flame Stabilization and Blow off - II
Lecture 55 - Flame Stabilization and Blow off - III
Lecture 56 - Flame Stabilization and Blow off - IV
Lecture 57 - Flame Stabilization and Blow off - V
Lecture 58 - Combustion in Scramjets - I
Lecture 59 - Combustion in Scramjets - II
Lecture 60 - Combustion in Scramjets - III
Lecture 61 - Combustion in Scramjets - IV
Lecture 62 - Review

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NPTEL Video Course - Agriculture - NOC: Thermal Processing of Foods

Subject Co-ordinator - Prof. R. Anandalakshmi

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Food Microbiology
Lecture 2 - Blanching, Pasteurization, Ultra-pasteurization, Hot fill and UHT
Lecture 3 - Thermal processing equipment
Lecture 4 - Milk pasteurization
Lecture 5 - Canning operations
Lecture 6 - Temperature distribution and heat penetration
Lecture 7 - Kinetics of reactions
Lecture 8 - F value and process requirements
Lecture 9 - Quality considerations and process optimization
Lecture 10 - Shelf life studies
Lecture 11 - Validation of heat processes
Lecture 12 - Fundamentals of aseptic processing
Lecture 13 - Aseptic equipment design
Lecture 14 - Aseptic process design
Lecture 15 - Microwave and radio frequency heating
Lecture 16 - Ohmic heating
Lecture 17 - Overview of non-thermal processing technologies
Lecture 18 - Advanced separation processes
Lecture 19 - High pressure dialysis, ultrafiltration and reverse osmosis
Lecture 20 - Nanofiltration, electrodialysis and membrane separation
Lecture 21 - Various types of heat exchangers for food process engineering
Lecture 22 - Various types of driers for food process engineering
Lecture 23 - Importance and applications of extrusion technology in food processing
Lecture 24 - Changes of properties and functional components of extruded foods
Lecture 25 - Food biosensors
Lecture 26 - Types of functional foods
Lecture 27 - Packaging considerations
Lecture 28 - Biocomposite/bionanocomposite materials for food packaging applications
Lecture 29 - Sanitary components and requirements
Lecture 30 - Regulatory considerations
Lecture 31 - Special Lecture
NPTEL Video Course - Agriculture - NOC: Basic Crop Production Practices (BCPP)

Subject Co-ordinator - Prof. J. R. Yadav, Dr. Vinod Kumar, Dr. Sharwan Kumar Shukla

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Irrigation and irrigation needs
Lecture 3 - Source of Irrigation
Lecture 4 - Importance of crops and classification
Lecture 5 - Crop rotation principle
Lecture 6 - Importance of vegetable and classification
Lecture 7 - Paddy crop production
Lecture 8 - Sorghum crop production
Lecture 9 - Pearl millet crop production
Lecture 10 - Maize crop production
Lecture 11 - Pigeon pea crop production
Lecture 12 - Green gram crop production
Lecture 13 - Black gram crop production
Lecture 14 - Cowpea crop production
Lecture 15 - Groundnut crop production
Lecture 16 - Sesame crop production
Lecture 17 - Soybean crop production
Lecture 18 - Sunflower crop production
Lecture 19 - Mango crop production
Lecture 20 - Guava crop production
Lecture 21 - Banana crop production
Lecture 22 - Papaya crop production
Lecture 23 - Tomato crop production
Lecture 24 - Brinjal crop production
Lecture 25 - Chili crop production
Lecture 26 - Okra crop production

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NPTEL Video Course - Agriculture - NOC:GIS in Ag-Essentials and Applications (GIS)

Subject Co-ordinator - Dr. Venkataraman Balaji, Dr. R. Nagarajan

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Our Agriculture Practices and Lessons
Lecture 3 - Climate and Scale of Change
Lecture 4 - Course Corrections
Lecture 5 - Modified Agriculture - Precision Agriculture
Lecture 6 - Modified Agriculture Practice - Climate Smart Agriculture
Lecture 7 - Maps and Information in Practice
Lecture 8 - Geographical Information System (GIS)
Lecture 9 - Types of input
Lecture 10 - Analysis - Map overlay
Lecture 11 - Buffering and Perspective View
Lecture 12 - GIS Type and Available GIS Softwares
Lecture 13 - Village Cadastral Map and Property Card
Lecture 14 - Cadastral Maps and Contents
Lecture 15 - Creation of Cadastral Information Base
Lecture 16 - Land Information System
Lecture 17 - Creation of Village Boundary Based Basin Analysis
Lecture 18 - Village Information System
Lecture 19 - Needs and Weather Forecast
Lecture 20 - Cloud Types and Rain Bearing Clouds
Lecture 21 - Weather Satellites and Cloud Pattern Reading
Lecture 22 - Rainfall and Supplementary Irrigation
Lecture 23 - Synergistic Use
Lecture 24 - Surface Rainfall - Run off Assessment and Model
Lecture 25 - Soil and Water Assessment Tools (SWAT) Model
Lecture 26 - Groundwater Availability
Lecture 27 - Groundwater Potential Mapping
Lecture 28 - Water Storage and Water Availability and Release
Lecture 29 - Growth of Crop Area in Command Area and Impact Climate Change

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Lecture 30 - Impact of Climate on Agriculture
Lecture 31 - Crop Water Requirement and Distribution Loss
Lecture 32 - Village Agriculture and Other Water Demand and Supply Source
Lecture 33 - Water Security Assessment
Lecture 34 - Land Degradation
Lecture 35 - Water Logging
Lecture 36 - Water Balance Under Different Rainfall
Lecture 37 - Drought and Characteristics
Lecture 38 - Drought Vulnerability and Risk Assessment
Lecture 39 - Monitoring and Warning
Lecture 40 - Drought Monitoring
Lecture 41 - Drought Risk and Vulnerability Assessment
Lecture 42 - GIS in Sustainable Agriculture
Lecture 43 - Assessment of Existing Water Storage Structures and Rehabilitation
Lecture 44 - Sustainable Development and Agriculture
Lecture 45 - Climate Change and Drought
Lecture 46 - GIS and Drought Management
Lecture 1 - Introduction
Lecture 2 - Insect, abundance and diversity
Lecture 3 - Insect classification based on economic importance
Lecture 4 - Pest, causes for outbreaks and categories
Lecture 5 - Pest, causes for outbreaks and categories (Continued...)
Lecture 6 - Pest surveillance and methods of sampling
Lecture 7 - Principles of Pest Management and History
Lecture 8 - IPM, Definition and Concepts
Lecture 9 - Ecological Methods of Pest Management - Legal and Cultural
Lecture 10 - Ecological Methods of Pest Management - Cultural (Continued...)
Lecture 11 - Ecological Methods of Pest Management - Cultural (Continued...)
Lecture 12 - Ecological Methods of Pest Management - Physical
Lecture 13 - Ecological Methods of Pest Management - Mechanical
Lecture 14 - Host Plant Resistance
Lecture 15 - Host Plant Resistance (Continued...)
Lecture 16 - Biological Control - Predators
Lecture 17 - Biological Control - Parasitoids
Lecture 18 - Biological Control - Microbes
Lecture 19 - Biological Control - Microbes
Lecture 20 - Pest management by modifying insect behaviour
Lecture 21 - Use of sex pheromones in pest management
Lecture 22 - Use of attractants and repellants in pest management
Lecture 23 - Pest management through radiation technology - Principles
Lecture 24 - Sterile Insect Technique - case studies
Lecture 25 - Pest management through botanicals
Lecture 26 - Pest management through botanicals (Continued...)
Lecture 27 - Chemical Control - History and classification
Lecture 28 - Mode of Action of different insecticide groups
Lecture 29 - Chemical Control - Considerations for Chemicals Integration
Lecture 30 - Insecticide Resistance and Management
Lecture 31 - Insecticide as component of IPM
Lecture 32 - Biotechnological Approaches in IPM
Lecture 33 - Agro-ecosystem Analysis
Lecture 34 - IPM in Paddy
Lecture 35 - IPM in Paddy (Continued...)
Lecture 36 - IPM in Pigeon pea
Lecture 37 - IPM in Pigeon pea (Continued...)
Lecture 38 - IPM in Groundnut
Lecture 39 - IPM in Mustard and Soyabean
Lecture 40 - IPM in Cotton
Lecture 41 - IPM in Cotton (Continued...)
Lecture 42 - IPM in Sugarcane
Lecture 43 - IPM in Sugarcane (Continued...)
Lecture 44 - IPM in Tomato
Lecture 45 - IPM in Cabbage
Lecture 46 - IPM in Mango
Lecture 47 - IPM in Grapes
NPTEL Video Course - Agriculture - NOC:Nutrition, Therapeutics and Health (NM)

Subject Co-ordinator - Dr. V. Vijaya Lakshmi (Instructor Incharge)

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Relationship between Food, Nutrition and Health 1
Lecture 3 - Relationship between Food, Nutrition and Health 2
Lecture 4 - Digestion, absorption and utilization of Nutrients 1
Lecture 5 - Digestion, absorption and utilization of Nutrients 2
Lecture 6 - Recommended dietary allowances
Lecture 7 - Carbohydrate
Lecture 8 - Fiber
Lecture 9 - Protein
Lecture 10 - Protein - health significance
Lecture 11 - Fat
Lecture 12 - Energy 1
Lecture 13 - Energy 2
Lecture 14 - Energy 3
Lecture 15 - Fat Soluble Vitamins 1
Lecture 16 - Fat Soluble Vitamins 2
Lecture 17 - Fat Soluble Vitamins 3
Lecture 18 - Water Soluble Vitamins 1
Lecture 19 - Water Soluble Vitamins 2
Lecture 20 - Water soluble Vitamins 3
Lecture 21 - Water soluble Vitamins 4
Lecture 22 - Major minerals 1
Lecture 23 - Major minerals 2
Lecture 24 - Trace minerals 1
Lecture 25 - Trace minerals 2
Lecture 26 - Water
Lecture 27 - Nutritional Disorders
Lecture 28 - Balanced diet and food groups
Lecture 29 - Food guide for selecting adequate diet, practical aspects of food selection

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Lecture 30 - Meal planning
Lecture 31 - Other aspects affecting food selection
Lecture 32 - Food sanitation and hygiene
Lecture 33 - Water Purification
Lecture 34 - Therapeutic adaptation of normal diet
Lecture 35 - Principles of therapeutic diet
Lecture 36 - Diet during fevers
Lecture 37 - Diet in lung disease
Lecture 38 - Diet in GI disorders Â— constipation
Lecture 39 - Diet during diarrhoea
Lecture 40 - Diet in disorders of liver
Lecture 41 - Diseases of gall bladder
Lecture 42 - Diet in Diabetes
Lecture 43 - Diseases of Heart and blood vessels
Lecture 44 - Diet for myocardial infarction
Lecture 45 - Diet in kidney disorders
Lecture 46 - Diet in renal failure
Lecture 47 - Diet in cancer
Lecture 48 - Diet in metabolic disorders
Lecture 49 - Diet in stress, burns and surgery
NPTEL Video Course - Agriculture - NOC: Weather Forecast in Agriculture and Agro-advisory (WF)

Subject Co-ordinator - Dr. R. Nagarajan, Co Faculty, Dr.T.N.Balasubramanian (Rtd.), Instructor Incharge

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Basic aspects of Atmosphere, Climate, Weather
Lecture 3 - Basic aspects of Rainfall and their application in crop production
Lecture 4 - Basic aspects of Temperature and their application in crop production
Lecture 5 - Basic aspects of Relative humidity, Cloud cover and their application in crop production
Lecture 6 - Basic aspects of wind, wind direction and their application in crop production
Lecture 7 - Three weather codes and crop production
Lecture 8 - Crop production risks and their management
Lecture 9 - Weather sensitive crops, stages and farm operations
Lecture 10 - Crop-weather interactions and definition
Lecture 11 - Crop-Weather Interactions
Lecture 12 - Crop-Weather Interactions
Lecture 13 - Crop-Weather Interactions
Lecture 14 - Crop-Weather Interactions
Lecture 15 - Crop-Weather Interactions
Lecture 16 - Genesis of weather forecast in India and Abroad
Lecture 17 - Types of weather forecast and details
Lecture 18 - Types of weather forecast and details (Continued...)
Lecture 19 - Simple methods of verification of weather forecast with real event
Lecture 20 - Traditional knowledges on weather forecast and their validity
Lecture 21 - Weather thumb rules and their validity
Lecture 22 - Development and component of agro advisory for weather forecast
Lecture 23 - Development and component of agro advisory for weather forecast (Continued...)
Lecture 24 - Model agro advisories for selected five days weather forecast
Lecture 25 - Mass communication mode of agro advisories and their effectiveness
Lecture 26 - Discussion on weather forecast and agro advisory from different website
Lecture 27 - Role of climate manager on farm management decision based on weather forecast at village level and assignment
Lecture 28 - Development of selected weather window for issuing agro advisory - case study from Tamil Nadu
Lecture 29 - Model of agro advisory for 54 selected weather window of Tamil Nadu for rice

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NPTEL Video Course - Agriculture - NOC:ICT Basics

Subject Co-ordinator - Prof. T.V. Prabhakar

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Highlights Week 0 and 1
Lecture 3 - What is ICT?
Lecture 4 - Architecture of a Computer
Lecture 5 - Architecture of a Phone
Lecture 6 - What is the Internet?
Lecture 7 - What is WWW?
Lecture 8 - Highlights Week 2
Lecture 9 - Phones, Smart Phones, Phablets, Tablets
Lecture 10 - Introduction to Android
Lecture 11 - Network Architectures - Part-1 (Introduction to Computer Networks)
Lecture 12 - Network Architectures - Part-2 (Overview of Network Architecture)
Lecture 13 - Network Architectures - Part-3 (Architecture of Internet)
Lecture 14 - Mobile Wireless Communications - Introduction (Module-1)
Lecture 15 - Mobile Wireless Communication (Module-2)
Lecture 16 - Highlights Week 3
Lecture 17 - Adaptive and Responsive Websites
Lecture 18 - Data management
Lecture 19 - Knowledge Representation
Lecture 20 - Knowledge Representation Techniques
Lecture 21 - Expert Systems
Lecture 22 - Highlights Week - 4
Lecture 23 - Speech Recognition
Lecture 24 - Speech Synthesis
Lecture 25 - Identity Management - Part 1
Lecture 26 - Identity Management - Part 2
Lecture 27 - Location Recognition - Part 1
Lecture 28 - Location Recognition - Part 2
Lecture 29 - Parameter Sensing

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Lecture 30 - Highlights Week-5
Lecture 31 - Social Networking - Part 1
Lecture 32 - Social Networking - Part 2
Lecture 33 - Blogs
Lecture 34 - Facebook
Lecture 35 - Twitter
Lecture 36 - 3G WCDMA (Module- 3)
Lecture 37 - 4G Mobile Wireless WiMAX (Module-4)
Lecture 38 - Advanced Wireless Technologies (Module-5)
Lecture 39 - LTE, WLAN, Bluetooth and Future
Lecture 40 - Highlights Week-6
Lecture 41 - Introduction to Cloud Computing
Lecture 42 - Introduction to Cloud Services
Lecture 43 - Cloud Service Providers
Lecture 44 - GIS Application in Agriculture - Part 1
Lecture 45 - GIS Application in Agriculture - Part 2
Lecture 1
Lecture 2
Lecture 3
Lecture 4
Lecture 5
Lecture 6
Lecture 7
Lecture 8
Lecture 9
Lecture 10
Lecture 11 - Application of Navier Stoke’s equation for finding out viscosity - Part 2
Lecture 12 - Application of Navier Stoke’s equation for finding out viscosity - Part 3
Lecture 13 - Flow through pipes
Lecture 14 - Hagen-poiseuille equation from Navier stokes equation
Lecture 15 - Fanning friction factor
Lecture 16 - Moody’s chart
Lecture 17 - Laminar and turbulent flow in a pipe
Lecture 18 - Flow through flat and parallel plates
Lecture 19 - Flow of film or film flow
Lecture 20 - Problems and solution of falling film
Lecture 21 - Flow through annulus - Part 1
Lecture 22 - Flow through annulus - Part 2
Lecture 23 - Stoke’s law
Lecture 24 - Flow through flat plates or slits
Lecture 25 - Problems and solution for flow through flat plates or slits
Lecture 26 - Compressible fluid flow
Lecture 27 - Flow through nozzle - I
Lecture 28 - Flow through nozzle - II
Lecture 29 - Flow through nozzle - problems and solutions
Lecture 30 - Nozzle flow - problems and solutions
Lecture 31 - Sonic velocity
Lecture 32 - Sonic velocity - Mach number
Lecture 33 - Variable fluid flow
Lecture 34 - Variable fluid flow - problems and solutions
Lecture 35 - Variable fluid flow - problems and solutions (Continued...)
Lecture 36 - Pneumatic conveying
Lecture 37 - Problem on Pneumatic conveying - Part 1
Lecture 38 - Problem on Pneumatic conveying - Part 2
Lecture 39 - Non Newtonian fluid flow - Part 1
Lecture 40 - Non Newtonian fluid flow - Part 2
Lecture 41 - Velocity profile for Non Newtonian fluid
Lecture 42 - Average velocity for Non Newtonian fluid
Lecture 43 - Problems and solution of Non Newtonian fluid - Part 1
Lecture 44 - Problems and solution of Non Newtonian fluid - Part 2
Lecture 45 - Flow of Non Newtonian fluid through slit
Lecture 46 - Generalized coefficient of Reynolds number
Lecture 47 - Flow through packed beds
Lecture 48 - Ergun's equation - derivation - Part 1
Lecture 49 - Ergun's equation - derivation - Part 2
Lecture 50 - Solving problems on Ergun's equation
Lecture 51 - Solving problems on Ergun's equation
Lecture 52 - Fluidization
Lecture 53 - Fluidized bed flow
Lecture 54 - Problem of Fluidized bed condition - Part 1
Lecture 55 - Problem of Fluidized bed condition - Part 2
Lecture 56 - Problem and solution
Lecture 57 - Problem and solution
Lecture 58 - Problem and solution
Lecture 59 - Problem and solution
Lecture 60 - Problem and solution with comprehension of course
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Agriculture - NOC: Farm Machinery

Subject Co-ordinator - Prof. VK Tewari

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Importance of Farm Machines in the Contest of Enhance Production, Multiple Cropping, Labour Scarcity etc.
Lecture 2 - Ploughing and first opening of the soil, the design and component details
Lecture 3 - Tractor, implement and soil force consideration for tillage implement design
Lecture 4 - Tractor, implement and soil force consideration for tillage implement design
Lecture 5 - Mechanics of rotary tillers
Lecture 6 - Design of a tractor PTO operated rotary tiller
Lecture 7 - Tractor implement hitching systems
Lecture 8 - Mechanics of tractor implement hitch system and traction prediction models
Lecture 9 - Laboratory class on traction and tire testing
Lecture 10 - Combination tillage implements for efficient land preparation
Lecture 11 - LASER guided land leveller
Lecture 12 - Introduction of seeding operation
Lecture 13 - Types of seed metering devices and their operation
Lecture 14 - Types of fertilizer metering, furrow opening and soil covering devices
Lecture 15 - Equipment for seeding and planting
Lecture 16 - Equipment for precision planting
Lecture 17 - Equipment for Paddy Transplanting
Lecture 18 - Microcontroller based uniform seed rate application system
Lecture 19 - GPS based automatic Variable rate fertilizer applicator
Lecture 20 - Embedded GPS integrated Variable Rate Fertilizer Applicator
Lecture 21 - Design of a seeding equipment - PART 1
Lecture 22 - Design of a seeding equipment - PART 2
Lecture 23 - Design of a seeding equipment - PART 3
Lecture 24 - Design a tractor drawn seed drill for a 40 hp tractor - I
Lecture 25 - Design a tractor drawn seed drill for a 40 hp tractor - II
Lecture 26 - Testing of tractor operated seeding equipment
Lecture 27
Lecture 28
Lecture 29

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Lecture 30
Lecture 31
Lecture 32 - Farm machines for interculture operation
Lecture 33 - Performance of weeding blades of a push-pull weeder
Lecture 34 - Advanced level machinery for inter and intra row weeding
Lecture 35 - Tractor mounted contact type microcontroller based improved variable rate herbicide applicator
Lecture 36 - Design of manually operated weeding equipment
Lecture 37 - Plant protection equipment/machinery
Lecture 38 - Selection and design of plant protection equipment/machinery
Lecture 39 - Manually operated knapsack-cum-boom sprayer
Lecture 40 - Performance evaluation of sprayer
Lecture 41 - Testing and certification of spraying equipment
Lecture 42 - Problems based on the design and selection of spraying equipment - I
Lecture 43 - Problems based on the design and selection of spraying equipment - II
Lecture 44 - Advanced level spraying equipment
Lecture 45 - Advanced level spraying equipment
Lecture 46 - Harvesting equipment
Lecture 47 - Machines for harvesting cereal crops, root and fruit crops
Lecture 48 - Combine Harvester
Lecture 49 - Advanced technology approach for cotton harvesting
Lecture 50 - Hreshing operation and equipment
Lecture 51 - Design of threshing equipment
Lecture 52 - Performance evaluation and testing of thresher
Lecture 53 - Conservation Agriculture
Lecture 54 - Materials for construction of farm machinery
Lecture 55 - Machinery for Land Drainage, Land Reclamation and Estate Maintenance Part - I
Lecture 56 - Machinery for Land Drainage, Land Reclamation and Estate Maintenance Part - II
Lecture 57 - Machinery for Land Drainage, Land Reclamation and Estate Maintenance Part - III
Lecture 58 - Machinery Selection and Management - Part 1
Lecture 59 - Machinery Selection and Management - Part 2
Lecture 60 - Epilogue
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Agriculture - NOC: Irrigation and Drainage

Subject Co-ordinator - Prof. Damodhara Rao Mailapallli

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1
Lecture 2
Lecture 3
Lecture 4
Lecture 5
Lecture 6 - Field water balance
Lecture 7 - Evapotranspiration
Lecture 8 - Crop water requirement
Lecture 9 - Irrigation Scheduling
Lecture 10 - Introduction
Lecture 11 - Irrigation Water Conveyance
Lecture 12 - Irrigation channel design
Lecture 13 - Measurement of Irrigation Water
Lecture 14 - Measurement of Irrigation Water
Lecture 15 - Tutorial
Lecture 16
Lecture 17
Lecture 18
Lecture 19
Lecture 20
Lecture 21
Lecture 22
Lecture 23
Lecture 24
Lecture 25
Lecture 26 - Irrigation Wells
Lecture 27 - Aquifer Properties
Lecture 28 - Well Hydraulics - 1
Lecture 29 - Well Hydraulics - 2

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Lecture 30 - Tutorial
Lecture 31 - Introduction
Lecture 32 - Centrifugal Pump
Lecture 33 - Centrifugal Pumps
Lecture 34 - Pump Characteristic Curves
Lecture 35 - Tutorial
Lecture 36 - Management of salt affected soils
Lecture 37 - Management of salt affected soils
Lecture 38 - Agricultural Drainage
Lecture 39 - Agricultural Drainage
Lecture 40 - Tutorial
Lecture 41
Lecture 42
Lecture 43
Lecture 44
Lecture 45
Lecture 46 - Subsurface Drainage Design - 1
Lecture 47 - Subsurface Drainage Design - 2
Lecture 48 - Subsurface Drainage Design - 3
Lecture 49 - Subsurface Drainage Design - 4
Lecture 50 - Tutorial
Lecture 51 - Surface drainage system design - 1
Lecture 52 - Surface drainage system design - 2
Lecture 53 - Non-conventional drainage
Lecture 54 - Economics of drainage project
Lecture 55 - Tutorial
Lecture 56 - Case study of drainage system
Lecture 57 - Drainage Model
Lecture 58 - Irrigation Efficiency
Lecture 59 - Irrigation Economics
Lecture 60 - Irrigation model
Lecture 30 - Drying Technology
Lecture 31 - Freezing and Freeze Drying
Lecture 32 - Freezing and Freeze Drying
Lecture 33 - Freezing and Freeze Drying
Lecture 34 - Freezing and Freeze Drying
Lecture 35 - Freezing and Freeze Drying
Lecture 36 - Size Reduction
Lecture 37 - Size Reduction (Continued...)
Lecture 38 - Size Reduction (Continued...)
Lecture 39 - Size Reduction (Continued...)
Lecture 40 - Size Reduction (Continued...)
Lecture 41 - Mechanical Separation Techniques
Lecture 42 - Mechanical Separation Techniques
Lecture 43 - Mechanical Separation Techniques
Lecture 44 - Mechanical Separation Techniques
Lecture 45 - Mechanical Separation Techniques
Lecture 46 - Mixing and agitation
Lecture 47 - Mixing and agitation (Continued...)
Lecture 48 - Mixing and agitation (Continued...)
Lecture 49 - Mixing and agitation (Continued...)
Lecture 50 - Mixing and agitation (Continued...)
Lecture 51 - Leaching and Extraction
Lecture 52 - Leaching and Extraction (Continued...)
Lecture 53 - Leaching and Extraction (Continued...)
Lecture 54 - Leaching and Extraction (Continued...)
Lecture 55 - Leaching and Extraction (Continued...)
Lecture 56 - Non Thermal Processing
Lecture 57 - Non Thermal Processing (Continued...)
Lecture 58 - Non Thermal Processing (Continued...)
Lecture 59 - Non Thermal Processing (Continued...)
Lecture 60 - Non Thermal Processing (Continued...)
NPTEL Video Course - Agriculture - NOC: Soil and Water Conservation Engineering

Subject Co-ordinator - Prof. Rajendra Singh

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Soil erosion causes and types
Lecture 3 - Factors affecting soil erosion and effects of soil erosion
Lecture 4 - Soil erosion - Mechanics
Lecture 5 - Water erosion control measures
Lecture 6 - Soil loss estimation
Lecture 7 - Erosivity and Erodibility
Lecture 8 - Modification in Universal soil loss equation - Part I
Lecture 9 - Modification in Universal soil loss equation - Part II
Lecture 10 - Soil loss measurement
Lecture 11 - Bunds - Introduction
Lecture 12 - Contour Bunds
Lecture 13 - Problems on Contour Bunds
Lecture 14 - Graded Bunds
Lecture 15 - Problems on Graded Bunds
Lecture 16 - Terrace - Introduction
Lecture 17 - Bench Terraces
Lecture 18 - Problems on Bench Terraces
Lecture 19 - Broad-base Terraces
Lecture 20 - Problems on Broad-base Terraces
Lecture 21 - Grassed Waterways
Lecture 22 - Problems on Grassed Waterways
Lecture 23 - Parabolic Grassed Waterways
Lecture 24 - GATE Questions on Various Topics Covered
Lecture 25 - Introduction-Gully Control Measures
Lecture 26 - Gully Control Measures (Permanent Structures)
Lecture 27 - Design Considerations- Permanent Gully Control Structures
Lecture 28 - Basics of Open Channel Hydraulics - 1
Lecture 29 - Basics of Open Channel Hydraulics - 2

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Lecture 30 - Hydraulic Design of Drop Spillway
Lecture 31 - Hydraulic Design of drop Spillway in different Flow Conditions
Lecture 32 - Hydraulic Design Components
Lecture 33 - Structural Design of Drop Spillway - 1
Lecture 34 - Structural Design of Drop Spillway - 2
Lecture 35 - Structural Design of Drop Spillway - 3
Lecture 36 - Structural Design of Drop Spillway - 4
Lecture 37 - GATE Question
Lecture 38 - Drop Inlet Spillway
Lecture 39 - Drop Inlet Spillway (Continued...)
Lecture 40 - Introduction-Drop Inlet Spillway
Lecture 41 - Drop Inlet Spillway Design - I
Lecture 42 - Numerical Problems
Lecture 43 - Ogee Spillway
Lecture 44 - Chute Spillway
Lecture 45 - Chute Spillway Design - I
Lecture 46 - Chute Spillway Design - II
Lecture 47 - Energy Dissipation
Lecture 48 - Wind Erosion and Control Basics
Lecture 49 - Design of Wind Breaks
Lecture 50 - Design of Shelterbelts
Lecture 51 - Formation of Sand Dunes
Lecture 52 - Stabilization of Sand Dunes
Lecture 53 - Land Capability Classes
Lecture 54 - Improving Land Capability
Lecture 55 - Sediment and Its Transportation
Lecture 56 - Sediment Sampling

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www.digimat.in
NPTEL Video Course - Agriculture - NOC:Dairy and Food Process and Products Technology

Subject Co-ordinator - Prof. Tridib Kumar Goswami

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Preamble of the Subject
Lecture 2 - What is Food and Nutrients
Lecture 3 - Nutritional Value of the Nutrients
Lecture 4 - Best Way of Storage of Food Materials
Lecture 5 - Preservation Techniques
Lecture 6 - Temperature Quotient and Its Impact
Lecture 7 - Food Additives
Lecture 8 - Quality of Food
Lecture 9 - Quality of Food (Continued...)
Lecture 10 - Emerging Technology
Lecture 11 - Emerging Technology (Continued...)
Lecture 12 - Food Laws - Why?
Lecture 13 - Food Laws of India
Lecture 14 - Standards in India
Lecture 15 - Hygiene and Other Controls in India
Lecture 16 - Physico-Chemical Properties of Milk
Lecture 17 - Milk - What is it
Lecture 18 - Milk - How it looks?
Lecture 19 - Milk - Constituents
Lecture 20 - Constituents of Milk
Lecture 21 - Milk Fat
Lecture 22 - Milk Fat (Continued...)
Lecture 23 - Milk Fat (Continued...)
Lecture 24 - Milk Fat (Continued...)
Lecture 25 - Protein
Lecture 26 - Protein (Continued...)
Lecture 27 - Amino Acids
Lecture 28 - Amino Acids (Continued...)
Lecture 29 - Milk Protein

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www.digimat.in
NPTEL Video Course - Agriculture - NOC: Organic Farming for Sustainable Agricultural Production

Subject Co-ordinator - Prof. Dilip Kumar Swain

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Organic Farming
Lecture 2 - Organic Farming
Lecture 3 - Organic Farming and its Components
Lecture 4 - Organic Farming Concepts and Principles
Lecture 5 - Organic Farming Concepts and Principles (Continued...)
Lecture 6 - SWOT Analysis of Organic Farming
Lecture 7 - Sustainable Agriculture
Lecture 8 - Key Indicators of Sustainable Agriculture
Lecture 9 - Organic Farming and Climate Change
Lecture 10 - Organic Farming and Climate Change (Continued...)
Lecture 11 - Principles of Compost Production
Lecture 12 - Vermicompost Production Technology
Lecture 13 - Vermicompost Production Technology (Continued...)
Lecture 14 - Vermicompost Production Technology (Continued...)
Lecture 15 - Enriched Vermicompost Production Technology
Lecture 16 - Vermicompost Quality and Marketing
Lecture 17 - Introduction to Pest and Disease Management
Lecture 18 - Pest and Disease Management in Organic Farming
Lecture 19 - Level C Pest and Disease Management
Lecture 20 - Level C Pest and Disease Management (Continued...)
Lecture 21 - Introduction to Organic Crop Management
Lecture 22 - Introduction to Organic Crop Management (Continued...)
Lecture 23 - Organic Vegetable Crop Management
Lecture 24 - Organic Vegetable Crop Management (Cereals)
Lecture 25 - Organic Vegetable Crop Management (Cereals) (Continued...)
Lecture 26 - Organic Field Crop Management (Pulse and Oilseed Crop)
Lecture 27 - Organic Plantation Crop Management
Lecture 28 - Organic Meat Production
Lecture 29 - Introduction on transition to organic crop production

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Lecture 30 - Crop planning and rotation design in organic system
Lecture 31 - Crop planning and rotation design in organic system (Continued...)
Lecture 32 - Integrated Farming System and Urban Agriculture
Lecture 33 - Quality of Organic Food
Lecture 34 - Natural Sources of Antioxidants for Health Defense
Lecture 35 - Antioxidant Capacity of fruits and vegetables
Lecture 36 - Organic Food and Human Health
Lecture 37 - Organic Standard
Lecture 38 - Organic Certification Process
Lecture 39 - Operational Structure of Organic Certification
Lecture 40 - Marketing of Organic Products
Lecture 30 - Extraction of Oil - Part 1
Lecture 31 - Extraction of Oil - Part 2
Lecture 32 - Refining of Oil - Part 1
Lecture 33 - Refining of Oil - Part 2
Lecture 34 - Modified Fats
Lecture 35 - Rancidity
Lecture 36 - Natural Antioxidants
Lecture 37 - Microencapsulation - Part 1
Lecture 38 - Microencapsulation - Part 2
Lecture 39 - Food nanotechnology
Lecture 40 - Respiration and Ripening
Lecture 41 - Modified Atmospheric Storage (MAP)
Lecture 42 - Active Packaging Technology
Lecture 43 - Edible coating technology
Lecture 44 - Multiproduct CA/MA Storage Unit
Lecture 45 - Grain Storage
Lecture 46 - Ozonation of Food Grains
Lecture 47 - Hyper Spectral Imaging for Quality Analysis of Food Grains
Lecture 48 - Non-Destructive Methods for Analysis of Grain Quality
Lecture 49 - Detection of Spoilage in Grains using Biosensors
Lecture 50 - Food Fortification
Lecture 51 - Iron Fortified Rice (IFR)
Lecture 52 - Nutri Dal and Fortified Noodles
Lecture 53 - High Energy RTE Food Paste - Part 1
Lecture 54 - High Energy RTE Food Paste - Part 2
Lecture 55 - Functional Foods and Nutraceuticals
Lecture 56 - Algae Based Health Foods
Lecture 57 - Gluten Free Bread and Pasta
Lecture 58 - Food Powder and Premixes
Lecture 59 - GMP/GHP in Food Industry
Lecture 60 - FCTL R&D and Course Summary

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Lecture 1 - Basic Overview of Soil
Lecture 2 - Weathering and Soil Formation
Lecture 3 - Weathering and Soil Formation (Continued...)
Lecture 4 - Weathering and Soil Formation (Continued...)
Lecture 5 - Weathering and Soil Formation (Continued...)
Lecture 6 - Oil Taxonomy and Classification
Lecture 7 - Soil Taxonomy and Classification (Continued...)
Lecture 8 - Soil Taxonomy and Classification (Continued...)
Lecture 9 - Soil Orders, Soil Colour and Texture
Lecture 10 - Soil Texture and Structure
Lecture 11 - Soil Tillage and Soil Density
Lecture 12 - Soil Porosity and Consistency
Lecture 13 - Soil Consistency and Soil Water
Lecture 14 - Soil Water
Lecture 15 - Tutorial
Lecture 16 - Soil Water Movement
Lecture 17 - Qualitative Description of Soil Wetness
Lecture 18 - Soil Air
Lecture 19 - Soil Temperature
Lecture 20 - Tutorial
Lecture 21 - Silicate Clays
Lecture 22 - Silicate Clays (Continued...)
Lecture 23 - Sources of Charges in Soil
Lecture 24 - Cation Exchange Capacity (CEC)
Lecture 25 - Sorption of Pesticides
Lecture 26 - Diffuse Double Layer
Lecture 27 - Adsorption Isotherms
Lecture 28 - Soil Acidity
Lecture 29 - Soil Salinity and Alkalining

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Lecture 30 - Submerged Soils
Lecture 31 - Essential Plant Nutrients
Lecture 32 - Soil N
Lecture 33 - Biological N Fixation
Lecture 34 - Soil P and K
Lecture 35 - Fertilizers
Lecture 36 - Soil Testing - I
Lecture 37 - Soil Testing - II
Lecture 38 - Soil Organic Matter
Lecture 39 - Soil Organisms
Lecture 40 - Compost
Lecture 41 - Land Degradation and Soil Erosion
Lecture 42 - Universal Soil Loss Equation
Lecture 43 - Conservation Tillage
Lecture 44 - Wind Erosion and Tillage Erosion
Lecture 45 - Organic Pollutants in Soil
Lecture 46 - Remediation of Organic Pollutant
Lecture 47 - Toxic Inorganic Substances in Soil
Lecture 48 - Removal of Toxic Inorganic Substances
Lecture 49 - Soil Survey
Lecture 50 - Remote Sensing in Soil Survey
Lecture 51 - GIS and GPS
Lecture 52 - Geostatistics
Lecture 53 - Basics of VisNIR - DRS
Lecture 54 - VisNIR-DRS Applications for Soil
Lecture 55 - PXRF Soil Applications
Lecture 56 - Basic Overview of DSM
Lecture 57 - Modeling Continuous Variables
Lecture 58 - Modeling Continuous Variables (Continued...)
Lecture 59 - Modeling Categorical Variables
Lecture 60 - Pedotransfer Functions and Uncertainty of DSM
NPTEL Video Course - Agriculture - NOC: Thermal Operations in Food Process Engineering: Theory and Applications

Subject Co-ordinator - Prof. Tridib Kumar Goswami
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Fundamentals of Food Processing and Preservation
Lecture 2 - Fundamentals of Food Processing and Preservation (Continued...)
Lecture 3 - Preservation Techniques
Lecture 4 - Fundamentals of Food Processing and Preservation (Continued...)
Lecture 5 - Fundamentals of Food Processing and Preservation (Continued...)
Lecture 6 - Fundamentals of Food Processing and Preservation why and how do food spoil
Lecture 7 - One Dimensional Conduction Heat Transfer in Cartesian Coordinate
Lecture 8 - One Dimensional Conduction Heat Transfer in Cartesian Coordinate (Continued...)
Lecture 9 - One Dimensional Steady State Heat Conduction
Lecture 10 - One Dimensional Steady State Heat Conduction (Continued...)
Lecture 11 - One Dimensional Heat Transfer Through Cylinders
Lecture 12 - One Dimensional Heat Transfer Through Cylinders (Continued...)
Lecture 13 - One Dimensional Heat Transfer Through Cylinders (Continued...)
Lecture 14 - One Dimensional Heat Transfer
Lecture 15 - Thermal Resistance
Lecture 16 - Thermal contact Resistance and Finned Surface
Lecture 17 - Finned Surface
Lecture 18 - Finned Surface (Continued...)
Lecture 19 - Finned Surface (Continued...)
Lecture 20 - Heat Transfer in Finned Surfaces
Lecture 21 - Transient Heat Transfer
Lecture 22 - Transient Heat Transfer (Continued...)
Lecture 23 - Transient Heat Transfer (Continued...)
Lecture 24 - Transient Heat Transfer (Continued...)
Lecture 25 - Heister Chart
Lecture 26 - Heister Chart (Continued...)
Lecture 27 - Heat Transfer by Convection
Lecture 28 - Heat Transfer by Convection (Continued...)
Lecture 29 - Heat Transfer by Convection (Continued...)

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Lecture 30 - Heat Transfer by Convection (Continued...)
Lecture 31 - Heat Transfer by Convection (Continued...)
Lecture 32 - Heat Transfer by Convection (Continued...)
Lecture 33 - Heat Transfer by Convection (Continued...)
Lecture 34 - Heat Transfer by Radiation
Lecture 35 - Heat Transfer by Radiation (Continued...)
Lecture 36 - Heat Transfer by Convection (Continued...)
Lecture 37 - Heat Transfer by Radiation (Continued...)
Lecture 38 - Heat Transfer by Radiation (Continued...)
Lecture 39 - Boiling and Condensation
Lecture 40 - Boiling (Continued...)
Lecture 41 - Condensation
Lecture 42 - Condensation (Continued...)
Lecture 43 - Heat Exchangers
Lecture 44 - Heat Exchangers (Continued...)
Lecture 45 - Heat Exchangers (Continued...)
Lecture 46 - Heat Exchangers (Continued...)
Lecture 47 - Log mean Temperature Difference
Lecture 48 - Heat Exchangers (Continued...)
Lecture 49 - Heat Exchangers (Continued...)
Lecture 50 - Heat Exchangers (Continued...)
Lecture 51 - Heat Exchangers (Continued...)
Lecture 52 - Heat Exchangers (Continued...)
Lecture 53 - Heat Exchangers (Continued...)
Lecture 54 - Thermal Death Reaction Kineties
Lecture 55 - Preservation by High Temperature Processing
Lecture 56 - Preservation by High Temperature Processing (Continued...)
Lecture 57 - Distillation
Lecture 58 - Distillation (Continued...)
Lecture 59 - Distillation (Continued...)
Lecture 60 - Drying and Multiple Effect Evaporator
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Architecture - NOC: Landscape Architecture and Site Planning - Basic Fundamentals

Subject Co-ordinator - Prof. Uttam Kumar Bannerjee
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview
Lecture 2 - Introduction to Landscape
Lecture 3 - Categories and Materials in Landscape
Lecture 4 - Objective and Professional Scope of Landscape Design
Lecture 5 - Objective and Professional Scope of Landscape Design (Continued...)
Lecture 6 - Introduction to History of Landscape Design
Lecture 7 - Introduction to History of Landscape Design (Continued...)
Lecture 8 - Introduction to History of Landscape Design (Continued...)
Lecture 9 - Introduction to History of Landscape Design (Continued...)
Lecture 10 - Introduction to History of Landscape Design (Continued...)
Lecture 11 - Introduction to History of Landscape Design (Continued...)
Lecture 12 - Introduction to History of Landscape Design (Continued...)
Lecture 13
Lecture 14
Lecture 15
Lecture 16 - Behavioral Principle
Lecture 17 - Behavioral Principle (Continued...)
Lecture 18 - Behavioral Principle (Continued...)
Lecture 19 - Behavioral Principle (Continued...)
Lecture 20 - Behavioral Principle (Continued...)
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Lecture 26
Lecture 27
Lecture 28
Lecture 29

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Lecture 30
Lecture 31 - Landform Design
Lecture 32 - Landform Design (Continued...)
Lecture 33 - Landform Design (Continued...)
Lecture 34 - Landform Design (Continued...)
Lecture 35 - Landform Design (Continued...)
Lecture 36 - Planting Design
Lecture 37 - Planting Design (Continued...)
Lecture 38 - Planting Design (Continued...)
Lecture 39 - Planting Design (Continued...)
Lecture 40 - Planting Design (Continued...)
Lecture 30 - Conservation of Historic Structures
Lecture 31 - Conservation of Historic Structures
Lecture 32 - Historic Cities and Heritage Areas
Lecture 33 - Historic Cities and Heritage Areas (Continued...)
Lecture 34 - Historic Cities and Heritage Areas (Continued...)
Lecture 35 - Historic Cities and Heritage Areas (Continued...)
Lecture 36 - Historic Cities and Heritage Zones - India
Lecture 37 - Historic Areas and Heritage Zones - India (Continued...)
Lecture 38 - New Buildings in Historic Settings
Lecture 39 - Heritage Impact Assessment in Historic Settings
Lecture 40 - Adaptive Reuse
Lecture 41 - Legislative and Organizational Policies for India
Lecture 42 - Heritage Regulations and Role of Voluntary Organisations
Lecture 43 - Heritage Conservation - Issues and Potentials

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NPTEL Video Course - Architecture - NOC: Architectural Acoustics

Subject Co-ordinator - Prof. Sumana Gupta, Prof. Sankha Pratim Bhattacharya

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Historical Overview
Lecture 2 - Introduction to Acoustical Physics
Lecture 3 - Frequency and Octave
Lecture 4 - Sound Pressure and Intensity Levels
Lecture 5 - Near and Far Field Propagation and Loudness
Lecture 6 - Room Acoustics - I
Lecture 7 - Room Acoustics - II
Lecture 8 - Indoor Acoustics, Reflection and Absorption
Lecture 9 - Concept of Reverberation
Lecture 10 - Application of Reverberation Time
Lecture 11 - Introduction to Acoustical Absorbers
Lecture 12 - Panel Absorbers and Resonators
Lecture 13 - Absorption in spaces of different volumes
Lecture 14 - Acoustical Absorbers
Lecture 15 - Reverberation time and Intelligibility
Lecture 16 - Acoustical Criteria and Space Design
Lecture 17 - Acoustical Criteria and Space Design (Continued...)
Lecture 18 - Acoustical Criteria and Space Design (Continued...)
Lecture 19 - Acoustical Criteria and Space Design (Continued...)
Lecture 20 - Acoustical Criteria and Space Design (Continued...)
Lecture 21 - Introduction to Auditorium Design
Lecture 22 - Introduction to Auditorium Design (Continued...)
Lecture 23 - Introduction to Auditorium Design (Continued...)
Lecture 24 - Introduction to Auditorium Design Balcony and ceiling design
Lecture 25 - Introduction to Auditorium Design
Lecture 26 - Electro Acoustics - I
Lecture 27 - Electro Acoustics - II
Lecture 28 - Meteorological conditions and propagation of sound
Lecture 29 - Topography and sound propagation Historical contexts

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Lecture 30 - Open air Theatre considerations
Lecture 31 - Air Borne Sound Transmission
Lecture 32 - Air Borne Sound Transmission (Continued...)
Lecture 33 - Air Borne Sound Transmission (Continued...)
Lecture 34 - Structure Borne Sound Transmission
Lecture 35 - Structure Borne Sound Transmission (Continued...)
Lecture 36 - Environmental Acoustics - I
Lecture 37 - Environmental Acoustics - II
Lecture 38 - Urban Noise Control
Lecture 39 - Urban Noise Control
Lecture 40 - Urban Noise Control
NPTEL Video Course - Architecture - NOC: Introduction to History of Architecture in India

Subject Co-ordinator - Prof. Pushkar Sohoni
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Early Architecture
Lecture 2 - Buddhist and Early Temple Architecture
Lecture 3 - Sacrificial Altars and Divine Shelters
Lecture 4 - The Great Temple
Lecture 5 - Week-1 Review
Lecture 6 - Delhi Sultanate
Lecture 7 - Regional Sultanas
Lecture 8 - Temple and Mosque
Lecture 9 - Daulatabad Fort
Lecture 10 - Week-2 Review
Lecture 11 - Mughal Architecture - Part 1
Lecture 12 - Mughal Architecture - Part 2
Lecture 13 - Imbrication of Sultanate and Maratha Architecture
Lecture 14 - Maratha Temple
Lecture 15 - Week-3 Review
Lecture 16 - Princely States of India
Lecture 17 - Colonial Architecture In India
Lecture 18 - International, Art Deco, Modern
Lecture 19 - Architecture Today Commerce and Creativity
Lecture 20 - Week-4 Review

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Architecture - NOC:Housing Policy and Planning

Subject Co-ordinator - Prof. Uttam Kumar Roy
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Housing
Lecture 2 - Housing Classifications
Lecture 3 - Housing Situation
Lecture 4 - Policy and Public intervention - 1
Lecture 5 - Policy and Public intervention - 2
Lecture 6 - Urban Reform
Lecture 7 - Housing Policy
Lecture 8 - Legal and Institutional Framework for Housing
Lecture 9 - Land for Housing - 1
Lecture 10 - Land for Housing - 2
Lecture 11 - Affordability and Housing Finance
Lecture 12 - Technology Systems in Housing Delivery - 1
Lecture 13 - Technology Systems in Housing Delivery - 2
Lecture 14 - Housing for All Mission (PMAY) and Technology Sub-mission
Lecture 15 - Summing up of Part-1 (Policy) and Introduction to Housing Planning
Lecture 16 - Urban and Regional Planning - 1
Lecture 17 - Urban and Regional Planning - 2
Lecture 18 - Development Controls
Lecture 19 - Housing Infrastructure and Services-1
Lecture 20 - Housing Infrastructure and Services-2
Lecture 21 - Housing Infrastructure and Services-3
Lecture 22 - Housing Strategy for City-1
Lecture 23 - Housing Strategy for City-2
Lecture 24 - Housing Strategy for City-3
Lecture 25 - Planning for Plotted Housing
Lecture 26 - Planning for Group Housing
Lecture 27 - Community Development in Housing
Lecture 28 - Cooperative Housing
Lecture 29 - Institutional and rental housing

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Lecture 30 - Working Person’s hostel and Serviced Apartments
Lecture 31 - Informal Housing Typologies
Lecture 32 - Approaches in Improving Slums and Squatters
Lecture 33 - Urban Village and Unauthorized Construction
Lecture 34 - Pavement Dwellers and Night Shelters
Lecture 35 - Old Age Home
Lecture 36 - Disaster Resistant Housing
Lecture 37 - Housing and Real Estate Development
Lecture 38 - Housing Management
Lecture 39 - Housing
Lecture 40 - Course Summary and Conclusion
NPTEL Video Course - Architecture - NOC: Visual Communication Design for Digital Media

Subject Co-ordinator - Prof. Saptarshi Kolay
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Visual Communication Design for Digital Media
Lecture 2 - Elements of Design - Part 1
Lecture 3 - Elements of Design - Part 2
Lecture 4 - Principles of Design - Part 1
Lecture 5 - Principles of Design - Part 2
Lecture 6 - Types of digital media technology - an overview of the field
Lecture 7 - Typography - 1
Lecture 8 - Typography - 2
Lecture 9 - Semiotics - 1
Lecture 10 - Semiotics - 2
Lecture 11 - Visual perception
Lecture 12 - Contemporary Visual Language - 1
Lecture 13 - Contemporary Visual Language - 2
Lecture 14 - Technology Advancements in Digital Media
Lecture 15 - Visual Design Methodology - 1_Generic Design
Lecture 16 - Visual Design Methodology - 2_Generic Design
Lecture 17 - Visual Design Methodology - 3_Animation
Lecture 18 - Visual Design Methodology - 4_web design
Lecture 19 - Visual Design Methodology - 5_graphic-design
Lecture 20 - Case Studies of Visual Design on Digital Paradigm

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Lecture 30 - How To/Not To Relocate Slums?
Lecture 31 - Stone- as a Vernacular Building material
Lecture 32 - Timber as Vernacular Building material
Lecture 33 - Timber Construction (A journey from Advanced to Vernacular)
Lecture 34 - How To Study Vernacular Architecture?
Lecture 35 - Architecture with out Architects
Lecture 36 - Social Change in India (Sanskritisation)
Lecture 37 - Social Change in India (Westernization)
Lecture 38 - Social Change in India (Modernization- Globalization)
Lecture 39 - Pluralism in Built Environment Education
Lecture 40 - Summary and Conclusion
NPTEL Video Course - Architecture - NOC: Contemporary Architecture and Design

Subject Co-ordinator - Prof. Saptarshi Kolay
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - World Architecture and Design History
Lecture 3 - Industrial Revolution and Beginning of Modern Era
Lecture 4 - Post Industrial Revolution
Lecture 5 - Post Industrial Revolution
Lecture 6 - Post Industrial Revolution
Lecture 7 - Post Industrial Revolution
Lecture 8 - Evolution and Timeline of Modern Architecture and Design
Lecture 9 - Phases of Modern Architecture - Bauhaus
Lecture 10 - Phases of Modern Architecture - De Stijl
Lecture 11 - Phases of Modern Architecture - Chicago School
Lecture 12 - Phases of Modern Architecture - Chicago and Prairie School
Lecture 13 - Phases of Modern Architecture - Prairie School
Lecture 14 - Phases of Modern Architecture - Organic - Part 1
Lecture 15 - Phases of Modern Architecture - Organic - Part 2
Lecture 16 - Phases of Modern Architecture - Art Deco - Part 1
Lecture 17 - Phases of Modern Architecture - Art Deco - Part 2
Lecture 18 - Phases of Modern Architecture - Internationalism - Part 1
Lecture 19 - Phases of Modern Architecture - Internationalism - Part 2
Lecture 20 - Phases of Modern Architecture - Expressionism
Lecture 21 - Phases of Modern Architecture - Monolithic Style
Lecture 22 - Phases of Modern Architecture - Tensile and Steel Structures - Part 1
Lecture 23 - Phases of Modern Architecture - Tensile and Steel Structures - Part 2
Lecture 24 - Phases of Modern Architecture - Brutalism
Lecture 25 - Phases of Modern Architecture - Metabolism
Lecture 26 - Phases of Modern Architecture - Brutalism and Metabolism in India
Lecture 27 - Phases of Modern Art - Part 1
Lecture 28 - Phases of Modern Art - Part 2
Lecture 29 - Phases of Post Modern Architecture - Part I

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<td>Phases of Post Modern Architecture - Critical Regionalism</td>
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<td>Phases of Post Modern Architecture - Memphis Milano</td>
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<td>Phases of Post Modern Architecture - Deconstructivism - Part I</td>
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<td>Phases of Post Modern Architecture - Pop Art</td>
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<td>Evolution of Typography in Contemporary Era</td>
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<td>Phases of Post Modern Architecture - Industrial Design</td>
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Lecture 30 - Summary and Discourse - VI
Lecture 31 - Continuity and Revival
Lecture 32 - Continuity and Revival
Lecture 33 - Continuity and Revival
Lecture 34 - Continuity and Revival
Lecture 35 - Summary and Discourse - VII
Lecture 36 - Interventions
Lecture 37 - Interventions
Lecture 38 - Interventions
Lecture 39 - Interventions
Lecture 40 - Summary and Discourse - VIII
Lecture 30 - Public Private Partnership (PPP) in Urban Governance
Lecture 31 - Housing Strategy for Cities
Lecture 32 - Housing & Urban Poverty
Lecture 33 - Real Estate Regulation and Development
Lecture 34 - Urban Land Management
Lecture 35 - Urban Risk and Disaster Management
Lecture 36 - Managing Urban Environment - 1
Lecture 37 - Managing Urban Environment - 2 (Mandates for Blue and Green Infrastructures)
Lecture 38 - Traffic and Transportation Management - 1
Lecture 39 - Traffic and Transportation Management - 2
Lecture 40 - Designing Urban Public Spaces
Lecture 41 - Centrally Sponsored Programmes and Schemes
Lecture 42 - AMRUT
Lecture 43 - Smart City
Lecture 44 - Swachh Bharat Mission and HRIDAY
Lecture 45 - PMAY and NULM
Lecture 46 - Fundamentals of Project Planning
Lecture 47 - Formulation of Projects
Lecture 48 - Project Monitoring and Management
Lecture 49 - Essentials of Infrastructure and Engineering Design
Lecture 50 - Managing Trans-municipal and Large Projects
Lecture 51 - Enhancing City Image
Lecture 52 - Essential Competencies of City Managers
Lecture 53 - Problem Solving and Decision Making
Lecture 54 - Effective Negotiation
Lecture 55 - Communication Skills
Lecture 56 - Time Management
Lecture 57 - Stress Management
Lecture 58 - Best Practices in Urban Management
Lecture 59 - Reflective Learning and Excellence
Lecture 60 - Course Summary, Doubt Clearing and Further Reading
NPTEL Video Course - Architecture - NOC: User Interface Design

Subject Co-ordinator - Prof. Saptarshi Kolay
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - User Interface Designer
Lecture 3 - Design methods - I
Lecture 4 - Design Methods - II
Lecture 5 - Human Factor in Interaction Design
Lecture 6 - User Research - I
Lecture 7 - User Research - II
Lecture 8 - Low Fidelity Design - I
Lecture 9 - Low Fidelity Design - II
Lecture 10 - High Fidelity Design
Lecture 11 - Visual Cognition
Lecture 12 - Contemporary Visual Language in Design - I
Lecture 13 - Contemporary Visual Language in Design - II
Lecture 14 - Usage of Typography in User Interface Design - I
Lecture 15 - Usage of Typography in User Interface Design - II
Lecture 16 - Design Semiotics and Visual Perception
Lecture 17 - Visual Communication Design
Lecture 18 - User Testing - I
Lecture 19 - User Testing - II
Lecture 20 - Contemporary Interface Design Technology
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Architecture - NOC: Disaster Recovery and Build Back Better

Subject Co-ordinator - Prof. Subhojyothi Samaddar
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Disaster risk
Lecture 2 - Disaster Recovery and Build Back Better
Lecture 3 - Risk Perception and Disaster Risk Preparedness - Part 2
Lecture 4 - Build Back Better - People's Perspectives
Lecture 5 - Architecture at Risk
Lecture 6 - Culture, climate change adaptation and disaster risk reduction
Lecture 7 - Ayutthaya at Risk
Lecture 8 - Disaster vulnerability
Lecture 9 - Cultural Heritage
Lecture 10 - Rock shelters at risk
Lecture 11 - The Built Environment Professions in Disaster Risk Reduction and Response
Lecture 12 - Gadri discussions
Lecture 13 - Community Participation in Disaster Risk Governance
Lecture 14 - Community Participation in Disaster Risk Governance
Lecture 15 - Frameworks
Lecture 16 - Disaster Preparedness from Cognitive and Heuristic Perspectives
Lecture 17 - Information for Disaster Preparedness
Lecture 18 - The Role of Social Networks in Disaster Preparedness
Lecture 19 - Diffusion of Disaster Preparedness Technology
Lecture 20 - Cities and Climate Change
Lecture 21 - Temporary Shelter Construction in India
Lecture 22 - Temporary shelter construction in Kenya
Lecture 23 - Build back better in Nepal recovery
Lecture 24 - Lessons from Peru
Lecture 25 - Progressive Housing in El Salvador
Lecture 26 - Decentralizing (re)construction in Colombia
Lecture 27 - Tsunami reconstruction in Tamilnadu - Part 1 (Approach)
Lecture 28 - Tsunami reconstruction in Tamilnadu - Part 2 (Findings)
Lecture 29 - Culture and (disaster)risk

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Lecture 30 - Cultural theory of risk
Lecture 31 - Guidance to DRR
Lecture 32 - Self-help housing in Turkey
Lecture 33 - The Production of refugee place in time
Lecture 34 - Assessments
Lecture 35 - Designing culturally responsive built environment in disaster context
Lecture 36 - Disaster Risk Communication
Lecture 37 - CAM and CBDRM
Lecture 38 - How to teach disaster recovery and built back better in-built environment education
Lecture 39 - Source, Message and Receiver in Disaster Risk Communication
Lecture 40 - Summary and Conclusion
NPTEL Video Course - Atmospheric Science - Introduction to Atmospheric Science

Subject Co-ordinator - Prof. C. Balaji

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Atmosphere-A brief survey (Pressure, Temperature and Chemical composition)
Lecture 3 - Atmosphere-A brief survey (Continued...) (Vertical structure of the atmosphere)
Lecture 4 - Vertical structure of atmosphere (Continued...) and The Earth system - Oceans
Lecture 5 - The Earth system - Oceans (Continued...) and Marine biosphere
Lecture 6 - The Earth system - Hydrological cycle
Lecture 7 - The Earth system - Hydrological cycle (Continued...) and Carbon cycle
Lecture 8 - The Earth system - Carbon cycle (Continued...), and Carbon in the oceans Earth's crust
Lecture 9 - The Earth system - Carbon in the oceans Earth's crust
Lecture 10 - Atmospheric Thermodynamics- Introduction
Lecture 11 - The hydrostatic equation
Lecture 12 - Hypsometric equation and pressure at sea level
Lecture 13 - Basic Thermodynamics
Lecture 14 - Concept of air parcel and dry adiabatic lapse rate
Lecture 15 - Potential temperature
Lecture 16 - Skew-T ln-P chart
Lecture 17 - Problems using Skew-T ln-P chart
Lecture 18 - Problems using Skew-T ln-P chart (Continued...)
Lecture 19 - Problems using Skew-T ln-P chart (Continued...)
Lecture 20 - Lifting Condensation Level (LCL)
Lecture 21 - Lifting Condensation Level (LCL) (Continued...)
Lecture 22 - Saturated Adiabatic and Psuedo-adiabatic processes
Lecture 23 - Equivalent potential temperature and wet bulb potential temperature
Lecture 24 - Normand's rule - Chinook winds
Lecture 25 - Problems on Chinook wind and static stability
Lecture 26 - Static stability-Brunt-Visala frequency
Lecture 27 - Conditional and convective instability
Lecture 28 - Static stability - Problems using radiosonde data and skew T ln P chart
Lecture 29 - The second law of thermodynamics â□□ Clausius Clapeyron relation

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Lecture 30 - Clausius Clapeyron relation (Continued...)
Lecture 31 - Atmospheric radiation a Radiation laws
Lecture 32 - Planck's distribution and Inverse square law
Lecture 33 - Physics of scattering, emission and absorption
Lecture 34 - Physics of scattering, emission and absorption (Continued...)
Lecture 35 - Radiative Transfer Equation a Derivation
Lecture 36 - Radiative Transfer Equation (Continued...)
Lecture 37 - Radiative heating profiles of the atmosphere
Lecture 38 - Climate Dynamics a Introduction
Lecture 39 - Climate sensitivity and feedback
Lecture 40 - Climate change
Lecture 41 - Atmospheric dynamics
NPTEL Video Course - Atmospheric Science - Radiation Heat Transfer

Subject Co-ordinator - Prof. J. Srinivasan
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Blackbody radiation
Lecture 3 - Properties of real surfaces
Lecture 4 - Spectral and directional variations
Lecture 5 - Shape factor
Lecture 6 - Triangular enclosure
Lecture 7 - Evaluation of shape factors
Lecture 8 - Radiation in enclosures
Lecture 9 - Electrical analogy
Lecture 10 - Applications
Lecture 11 - Non-gray enclosures
Lecture 12 - Enclosure with Specular surfaces
Lecture 13 - Integral method for enclosures
Lecture 14 - Introduction to gas radiation
Lecture 15 - Plane parallel model
Lecture 16 - Diffusion approximation
Lecture 17 - Radiative equilibrium
Lecture 18 - Optically thick limit
Lecture 19 - Radiation spectroscopy
Lecture 20 - Isothermal gas emissivity
Lecture 21 - Band models
Lecture 22 - Total Emissivity method
Lecture 23 - Isothermal gas enclosures
Lecture 24 - Well-stirred furnace model
Lecture 25 - Gas radiation in complex enclosures
Lecture 26 - Interaction between radiation and other modes of heat transfer
Lecture 27 - Radiation heat transfer during flow over flat plate
Lecture 28 - Radiation and Climate
Lecture 29 - Radiative-convective equilibrium

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Lecture 30 - Radiative equilibrium with scattering
Lecture 31 - Radiation measurement
Lecture 32 - Radiation with internal heat source
Lecture 33 - Particle scattering
Lecture 34 - Scattering in the atmosphere
Lecture 35 - Non-isotropic scattering
Lecture 36 - Approximate methods in scattering
Lecture 37 - Approximate methods in scattering
Lecture 38 - Monte Carlo method
NPTEL Video Course - Atmospheric Science - The monsoon and its variability

Subject Co-ordinator - Prof. Sulochana Gadgil
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Preamble and Introduction to the Indian Monsoon
Lecture 2 - Nature of the variability of the Indian Monsoon
Lecture 3 - Monsoon variability through the eye in the sky, seasonal variation of the surface wind and pressure
Lecture 4 - Background about the atmosphere and rotating systems
Lecture 5 - Rainfall and clouds over the tropics
Lecture 6 - Organization of clouds over mesoscale, synoptic scale and planetary scales
Lecture 7 - The Indian monsoon
Lecture 8 - Monsoons and the seasonal variation of tropical circulation and rainfall
Lecture 9 - Evolution of the ideas about the basic system responsible for the Indian monsoon - Part 1
Lecture 10 - Evolution of the ideas about the basic system responsible for the Indian monsoon - Part 2
Lecture 11 - Tropical Convergence Zones and the Indian monsoon - Part 1
Lecture 12 - Tropical Convergence Zones and the Indian monsoon - Part 2
Lecture 13 - Variability of organized convection over the tropical oceans
Lecture 14 - Heat lows and the TCZ
Lecture 15 - Monsoonal regions of the world
Lecture 16 - Seasonal transitions - Part 1
Lecture 17 - Seasonal transitions - Part 2
Lecture 18 - Seasonal transitions - Part 3
Lecture 19 - Climatic clusters of the Indian region
Lecture 20 - Active-weak spells and breaks in the monsoon - Part 1
Lecture 21 - Active-weak spells and breaks in the monsoon - Part 2
Lecture 22 - Intrasessional variation and intraseasonal oscillations
Lecture 23 - The tropical oceans
Lecture 24 - El Nino Southern Oscillation (ENSO) - Part 1
Lecture 25 - El Nino Southern Oscillation (ENSO) - Part 2
Lecture 26 - El Nino Southern Oscillation (ENSO) - Part 3
Lecture 27 - El Nino Southern Oscillation (ENSO) - Part 4
Lecture 28 - El Nino Southern Oscillation (ENSO) - Part 5
Lecture 29 - El Nino Southern Oscillation (ENSO) - Part 6

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Lecture 30 - Indian Ocean and the monsoon - Part 1
Lecture 31 - Indian Ocean and the monsoon - Part 2
Lecture 32 - Indian Ocean Dipole - Part 1
Lecture 33 - Indian Ocean Dipole - Part 2
Lecture 34 - Interannual variation of the Indian summer Monsoon rainfall
Lecture 35 - Monsoon Variability and Agriculture - Part 1
Lecture 36 - Monsoon Variability and Agriculture - Part 2
Lecture 37 - Monsoon Variability and Agriculture - Part 3
Lecture 38 - Monsoon Variability and Agriculture - Part 4
Lecture 39 - Indian Summer Monsoon, GDP and Agriculture
Lecture 40 - Monsoon Prediction - Part 1
Lecture 41 - Monsoon Prediction - Part 2
Lecture 42 - Concluding Remarks
Lecture 1 - Preliminary Concepts
Lecture 2 - Vector Analysis
Lecture 3 - Analysis of Forces
Lecture 4 - Analysis of Equilibrium
Lecture 5 - Structural Mechanics - Part-1
Lecture 6 - Structural Mechanics - Part-2
Lecture 7 - Friction and its Applications - Part-1
Lecture 8 - Friction and its Applications - Part-2
Lecture 9 - Friction and its Applications - Part-3
Lecture 10 - Properties of Surfaces - Part-1
Lecture 11 - Properties of Surfaces - Part-2
Lecture 12 - Properties of Surfaces - Part-3
Lecture 13 - Moments and Products of Inertia
Lecture 14 - Methods of Virtual Work and Potential Energy - Part-1
Lecture 16 - Stability of Equilibrium
NPTEL Video Course - Basic Courses (Semester 1 and 2) - Management Science I

Subject Co-ordinator - Prof. Anuradha Sharma

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Motivation
Lecture 3 - Management
Lecture 4 - Work Ethics
Lecture 5 - Comparison Between Theories
Lecture 6 - Job Enrichment
Lecture 7 - Team Building and Participation
Lecture 8 - Other Leadership Styles
Lecture 9 - Empowerment
Lecture 10 - Barriers to Communication
Lecture 11 - Issues in Leadership
Lecture 12 - Participation Management and Team Working Part - 1
Lecture 13 - Participation Management and Team Working Part - 2
Lecture 14 - Participation Management and Team Working Part - 3
Lecture 15 - Participative Management and Team Working Part - 5
Lecture 16 - Organizations
Lecture 17 - Some Management Concepts - Part - 1
Lecture 18 - Some Management Concepts - Part - 2
Lecture 19 - Some Management Concepts - Part - 3
Lecture 20 - Diversity at Work Place and Management Issues
Lecture 21 - Industrial Relations and Conflict Management - Part - 1
Lecture 22 - Industrial Relations and Conflict Management - Part - 2
Lecture 23 - Selection and Training of Employees
Lecture 24 - Performance Management - Part - 1
Lecture 25 - Performance Management - Part - 2
Lecture 26 - Performance Management - Part - 3
Lecture 27 - Management Research
Lecture 28 - Corporate Social Responsibilities
Lecture 29 - Women, Work and Organizations

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Lecture 30 - Women, Work and Organizations
Lecture 31 - Selection, Recruitment and Training
Lecture 32 - Management of Change in Organization
Lecture 33 - Organizational Development
Lecture 34 - Values, Ethics and Corporate Social Responsibilities - Part - 1
Lecture 35 - Values, Ethics and Corporate Social Responsibilities - Part - 2
Lecture 36 - Management
Lecture 37 - Management
Lecture 38 - Management
Lecture 39 - Conclusions
Lecture 30 - Strengthening Mechanisms Creep
Lecture 31 - Fracture
Lecture 32 - Conductors and Resistors
Lecture 33 - Conductors and Resistors
Lecture 34 - Superconductors
Lecture 35 - Superconductors
Lecture 36 - Semiconductors
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Basic Courses (Semester 1 and 2) - Numerical Methods and Computation

Subject Co-ordinator - Prof. S.R.K. Iyengar
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Errors in Computation and Numerical Instability
Lecture 2 - Solution of Nonlinear Algebraic Equations - Part 1
Lecture 3 - Solution of Nonlinear Algebraic Equations - Part 2
Lecture 4 - Solution of Nonlinear Algebraic Equations - Part 3
Lecture 5 - Solution of Nonlinear Algebraic Equations - Part 4
Lecture 6 - Solution of Nonlinear Algebraic Equations - Part 5
Lecture 7 - Solution of Nonlinear Algebraic Equations - Part 6
Lecture 8 - Solution of Nonlinear Algebraic Equations - Part 7
Lecture 9 - Solution of Nonlinear Algebraic Equations - Part 8
Lecture 10 - Solution of Nonlinear Algebraic Equations - Part 9
Lecture 11 - Solution of a System of Linear Algebraic Equations - Part 1
Lecture 12 - Solution of a System of Linear Algebraic Equations - Part 2
Lecture 13 - Solution of a System of Linear Algebraic Equations - Part 3
Lecture 14 - Solution of a System of Linear Algebraic Equations - Part 4
Lecture 15 - Solution of a System of Linear Algebraic Equations - Part 5
Lecture 16 - Solution of a System of Linear Algebraic Equations - Part 6
Lecture 17 - Solution of a System of Linear Algebraic Equations - Part 7
Lecture 18 - Solution of a System of Linear Algebraic Equations - Part 8
Lecture 19 - Solution of a System of Linear Algebraic Equations - Part 9
Lecture 20 - Solution of a System of Linear Algebraic Equations - Part 10
Lecture 21 - Solution of a System of Linear Algebraic Equations - Part 11
Lecture 22 - Solution of a System of Linear Algebraic Equations - Part 12
Lecture 23 - Solution of a System of Linear Algebraic Equations - Part 13
Lecture 24 - Solution of a System of Linear Algebraic Equations - Part 14
Lecture 25 - Interpolation and Approximation - Part 1
Lecture 26 - Interpolation and Approximation - Part 2
Lecture 27 - Interpolation and Approximation - Part 3
Lecture 28 - Interpolation and Approximation - Part 4
Lecture 29 - Interpolation and Approximation - Part 5

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NPTEL Video Course - Basic Courses (Semester 1 and 2) - Engineering Mechanics

Subject Co-ordinator - Prof. Manoj K Harbola

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Engineering Mechanics
Lecture 2 - Equilibrium - I
Lecture 3 - Equilibrium - II
Lecture 4 - Equilibrium - III
Lecture 5 - Plan Trusses - I
Lecture 6 - Plan Trusses - II
Lecture 7 - Friction
Lecture 8 - Properties of Surfaces - I
Lecture 9 - Properties of Surfaces - II
Lecture 10 - Properties of Surfaces - III
Lecture 11 - Method of Virtual Work
Lecture 12 - Motion of Particles Planar Polar Coordinates
Lecture 13 - Motion With Constraints
Lecture 14 - Motion of Particle With Friction
Lecture 15 - Motion of Particles With Drag
Lecture 16 - Momentum
Lecture 17 - Work and Energy - I
Lecture 18 - Work and Energy - II
Lecture 19 - Work and Energy - III
Lecture 20 - Work and Energy - IV
Lecture 21 - Rotational Motion - I
Lecture 22 - Rotational Motion - II
Lecture 23 - Rotational Motion - III
Lecture 24 - Rotational Motion - IV
Lecture 25 - Rotational Motion - V
Lecture 26 - Rotational Motion - VI
Lecture 27 - Simple Harmonic Motion - I
Lecture 28 - Simple Harmonic Motion - II
Lecture 29 - Simple Harmonic Motion - III
Lecture 30 - Motion in Uniformly Accelerating Frames
Lecture 31 - Motion In Rotating Frame
NPTEL Video Course - Basic Courses (Semester 1 and 2) - Engineering Physics II

Subject Co-ordinator - Prof. V. Ravishankar, Prof. S. Raychaudhuri

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Module - 1 lecture - 1
Module - 1 lecture - 2
Module - 1 lecture - 3
Module - 1 lecture - 4
Module - 2 lecture - 1
Module - 2 lecture - 2
Module - 2 lecture - 3
Module - 2 lecture - 4
Module - 2 lecture - 5
Module - 3 lecture - 1
Module - 3 lecture - 2
Module - 3 lecture - 3
Module - 3 lecture - 4
Module - 3 lecture - 5 (Lecture Missing)
Module - 3 lecture - 6
Module - 3 lecture - 7
Module - 3 lecture - 8
Module - 4 lecture - 1
Module - 4 lecture - 2
Module - 4 lecture - 3
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Module - 4 lecture - 5
Module - 4 lecture - 6
Module - 4 lecture - 7
Module - 4 lecture - 8
Module - 4 lecture - 9
Module - 4 lecture - 10
Module - 4 lecture - 11
Module - 4 lecture - 12
NPTEL Video Course - Basic Courses (Semester 1 and 2) - Mathematics I

Subject Co-ordinator - Prof. Swagato K. Ray, Prof. Shobha Madan, Dr. P. Shunmugaraj

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Real Number
Lecture 2 - Sequences I
Lecture 3 - Sequences II
Lecture 4 - Sequences III
Lecture 5 - Continuous Function
Lecture 6 - Properties of Continuous Function
Lecture 7 - Uniform Continuity
Lecture 8 - Differentiable Functions
Lecture 9 - Mean Value Theorem
Lecture 10 - Maxima - Minima
Lecture 11 - Taylor's Theorem
Lecture 12 - Curve Sketching
Lecture 13 - Infinite Series I
Lecture 14 - Infinite Series II
Lecture 15 - Tests of Convergence
Lecture 16 - Power Series
Lecture 17 - Riemann Integral
Lecture 18 - Riemann Integrable Functions
Lecture 19 - Applications of Riemann Integral
Lecture 20 - Length of a curve
Lecture 21 - Line Integrals
Lecture 22 - Functions of Several Variables
Lecture 23 - Differentiation
Lecture 24 - Derivatives
Lecture 25 - Mean Value Theorem
Lecture 26 - Maxima Minima
Lecture 27 - Method of Lagrange Multipliers
Lecture 28 - Multiple Integrals
Lecture 29 - Surface Integrals

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Lecture 30  -  Green's Theorem
Lecture 31  -  Stokes Theorem
Lecture 32  -  Gauss Divergence Theorem
Lecture 1 - Nature and Scope of HRM
Lecture 2 - Analysing and Designing Job - I
Lecture 3 - Analysing and Designing Job - II
Lecture 4 - Human Resource Planning - I
Lecture 5 - Human Resource Planning - II
Lecture 6 - Recruitment and Selection
Lecture 7 - Performance Evaluation and Appraisal - I
Lecture 8 - Performance Evaluation and Appraisal (Continued...)
Lecture 9 - Training and Development
Lecture 10 - Employee Welfare
Lecture 11 - Safety, Health, Environment
Lecture 12 - Industrial Relations
Lecture 13 - Total Quality Management
Lecture 14 - Organization Culture
Lecture 15 - Change Management - Part - I
Lecture 16 - Change Management - Part - II
Lecture 17 - Wage and Salary Administration
Lecture 18 - Career Planning - Part - I
Lecture 19 - Career Planning - Part - II
Lecture 20 - Contemporary Issues in HRM - I
Lecture 21 - Contemporary Issues in HRM - II
Lecture 22 - Contemporary Issues in HRM - III
NPTEL Video Course - Basic Courses (Semester 1 and 2) - Leadership

Subject Co-ordinator - Prof. Kalyan Chakravarti
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Leadership
Lecture 2 - Leadership Roles
Lecture 3 - Leadership Styles
Lecture 4 - Leadership Behaviour
Lecture 5 - Leadership Styles
Lecture 6 - Case
Lecture 7 - Leadership Skills
Lecture 8 - Competencies and Skills of Leaders
Lecture 9 - Case
Lecture 10 - Case
Lecture 11 - Case
Lecture 12 - Case
Lecture 13 - Case
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NPTEL Video Course - Basic Courses (Semester 1 and 2) - Management Information System

Subject Co-ordinator - Prof. Biswajit Mahanty

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - I
Lecture 2 - Introduction - II
Lecture 3 - Introduction - III
Lecture 4 - Concept of Information - I
Lecture 5 - Concept of Information - II
Lecture 6 - Decision Making Process
Lecture 7 - Impact of IS on Management - I
Lecture 8 - Impact of IS on Management - II
Lecture 9 - Hardware Software Overview - I
Lecture 10 - Hardware Software Overview - II
Lecture 11 - Knowledge Management
Lecture 12 - Learning Organization
Lecture 13 - Decision Analysis - I
Lecture 14 - Decision Analysis - II
Lecture 15 - Decision Analysis - III
Lecture 16 - Data Flow Diagrams - I
Lecture 17 - Data Flow Diagrams - II
Lecture 18 - Data Flow Diagrams - III
Lecture 19 - Data Flow Diagrams - IV
Lecture 20 - System Design - I
Lecture 21 - System Design - II
Lecture 22 - DBMS - I
Lecture 23 - DBMS - II
Lecture 24 - DBMS - III
Lecture 25 - DBMS - IV
Lecture 26 - DBMS - V
Lecture 27 - OOAD - I
Lecture 28 - OOAD - II
Lecture 29 - OOAD - III

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NPTEL Video Course - Basic Courses (Semester 1 and 2) - Physics I - Oscillations and Waves

Subject Co-ordinator - Prof. S. Bharadwaj
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Simple Harmonic Oscillators
Lecture 2 - Damped Oscillator - I
Lecture 3 - Damped Oscillator - II
Lecture 4 - Oscillator With External Forcing - I
Lecture 5 - Oscillator With External Forcing
Lecture 6 - Resonance
Lecture 7 - Coupled Oscillations
Lecture 8 - Sinusoidal Plane Waves - I
Lecture 9 - Electromagnetic waves - I
Lecture 10 - Electromagnetic Waves - II
Lecture 11 - The Vector Nature of Electromagnetic Waves
Lecture 12 - The Electromagnetic Spectrum
Lecture 13 - The Electromagnetic Spectrum - II
Lecture 14 - Interference - I
Lecture 15 - Interference - II
Lecture 16 - Interference - III
Lecture 17 - Interference - IV
Lecture 18 - Coherence
Lecture 19 - Coherence
Lecture 20 - Diffraction - I
Lecture 21 - Diffraction - II
Lecture 22 - Diffraction - III
Lecture 23 - Diffraction - IV
Lecture 24 - X-Ray Diffraction
Lecture 25 - Beats
Lecture 26 - The Wave Equation
Lecture 27 - Solving the Wave Equation
Lecture 28 - Waves
Lecture 29 - Standing Waves

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Lecture 30 - Standing Waves
Lecture 31 - Polarization
Lecture 32 - Compton Effect
Lecture 33 - Wave - Particle Duality
Lecture 34 - Wave - Particle Duality
Lecture 35 - Probability Amplitude
Lecture 36 - Probability
Lecture 37 - Schrodinger Wave Equation
Lecture 38 - Measurements
Lecture 39 - Particle in a Potential
Lecture 40 - Potential Well
Lecture 41 - Potential Well
Lecture 42 - Potential Well
Lecture 43 - Quantum Tunneling
Lecture 44 - Quantum Tunneling
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Basic Courses (Semester 1 and 2) - Strategic Management

Subject Co-ordinator - Prof. Kalyan Chakravarti

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Strategy
Lecture 2 - Strategy
Lecture 3 - Case Study - Group Presentation on Case - I (Baddi`s Solvent)
Lecture 4 - Case Study - Group Presentation on Case - II
Lecture 5 - Case Study - Group Presentation on Case - III
Lecture 6 - Case Study - Group Presentation on Case - IV Form
Lecture 7 - Strategy
Lecture 8 - Strategy
Lecture 9 - Case Study
Lecture 10 - Case Study
Lecture 11 - Group Presentation - II
NPTEL Video Course - Basic Courses (Semester 1 and 2) - Classical Physics

Subject Co-ordinator - Prof. V. Balakrishnan
Co-ordinating Institute - IIT - Madras

Lecture 1 - Introduction
Lecture 2 - Newtonian mechanics
Lecture 3 - Dynamics in phase space
Lecture 4 - Linear dynamical systems
Lecture 5 - Autonomous dynamical systems (Part 1)
Lecture 6 - Autonomous dynamical systems (Part 2)
Lecture 7 - Lagrangian formalism
Lecture 8 - Summary of classical electromagnetism
Lecture 9 - Charged particle in an electromagnetic field
Lecture 10 - Hamiltonian dynamics (Part 1)
Lecture 11 - Hamiltonian dynamics (Part 2)
Lecture 12 - Hamiltonian dynamics (Part 3)
Lecture 13 - Dynamical symmetry (Part 1)
Lecture 14 - Dynamical symmetry (Part 2)
Lecture 15 - Randomness in phase space; chaos
Lecture 16 - Discrete-time dynamics
Lecture 17 - Discrete-time dynamics
Lecture 18 - Problems and solutions (Part 1)
Lecture 19 - Problems and solutions (Part 2)
Lecture 20 - Classical statistical mechanics
Lecture 21 - Some probability distributions; isolated system
Lecture 22 - The microcanonical ensemble
Lecture 23 - Thermodynamics
Lecture 24 - The canonical ensemble
Lecture 25 - Connection between statistical mechanics and thermodynamics
Lecture 26 - Probability distributions
Lecture 27 - Probability distributions (concl.). Phase transitions (Part 1)
Lecture 28 - Phase transitions (Part 2)
Lecture 29 - Phase transitions (Part 3)

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Lecture 30 - Phase transitions (Part 4); misc. topics
Lecture 31 - Problems and solutions (Part 3)
Lecture 32 - Continuous groups in physics (Part 1)
Lecture 33 - Continuous groups in physics (Part 2)
Lecture 34 - Continuous groups in physics (Part 3)
Lecture 35 - Noether's Theorem. Special Relativity (Part 1)
Lecture 36 - Special Relativity (Part 2)
Lecture 37 - Special Relativity (Part 3)
Lecture 38 - Special Relativity (Part 4)
NPTEL Video Course - Basic Courses (Semester 1 and 2) - Engineering Chemistry I

Subject Co-ordinator - Prof. K. Mangala Sunder

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Chemistry & Quantum Chemical Mechanics
Lecture 2 - Particle in a box (one and two dimensions)
Lecture 3 - Particle in a box (One and Two Dimensions) Continued
Lecture 4 - Harmonic Oscillator and Molecular Vibration
Lecture 5 - Harmonic Oscillator (Continued)
Lecture 6 - Hydrogen Atom - Radial Solution
Lecture 7 - Hydrogen Atom Part III Angular Solutions
Lecture 8 - Hydrogen Atom - Angular Solutions (Continued)
Lecture 9 - Hydrogen Atom - Angular Solutions (Continued)
Lecture 10 - Oppenheimer Approximation and Superposition

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NPTEL Video Course - Basic Courses (Semester 1 and 2) - Numerical Methods and Programing

Subject Co-ordinator - Prof. P.B. Sunil Kumar
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Programing Basics
Lecture 2 - Introduction to Pointers
Lecture 3 - Pointers And Arrays
Lecture 4 - External Functions and Argument Passing
Lecture 5 - Representation of Numbers
Lecture 6 - Numerical Error
Lecture 7 - Error Propagation and Stability
Lecture 8 - Polynomial Interpolation-1
Lecture 9 - Polynomial Interpolation-2
Lecture 10 - Error In Interpolation Polynomial
Lecture 11 - Polynomial Interpolation
Lecture 12 - Cubic Spline Interpolation
Lecture 13 - Data Fitting
Lecture 14 - Data Fitting
Lecture 15 - Data Fitting
Lecture 16 - Matrix Elimination and Solution
Lecture 17 - Solution To Linear Equations
Lecture 18 - Matrix Elimination
Lecture 19 - Eigen Values of A Matrix
Lecture 20 - Eigen Values And Eigen Vectors
Lecture 21 - Solving NonLinear Equations
Lecture 22 - Solving NonLinear Equations Newton Raphson Method
Lecture 23 - Methods For Solving NonLinear Equations
Lecture 24 - System of NonLinear Equations
Lecture 25 - Numerical Derivations
Lecture 26 - High order Derivatives From Difference Formula
Lecture 27 - Numerical Integration - Basic Rules
Lecture 28 - Comparison of Different Basic Rules
Lecture 29 - Gaussian Rules

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Lecture 30 - Comparison of Gaussian Rules
Lecture 31 - Solving Ordinary Differential Equations
Lecture 32 - Solving ordinary differential equations
Lecture 33 - Adaptive step size Runge Kutta scheme
Lecture 34 - Partial Differential Equations
Lecture 35 - Explicit and Implicit Methods
Lecture 36 - The Crank – Nicholson Scheme For Two Spatial
Lecture 37 - Fourier Transforms
Lecture 38 - Fast Fourier Transforms
NPTEL Video Course - Basic Courses (Semester 1 and 2) - Quantum Physics

Subject Co-ordinator - Prof. V. Balakrishnan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Quantum Physics; Heisenberg's uncertainty principle
Lecture 2 - Introduction to linear vector spaces
Lecture 3 - Characteristics of linear vector spaces
Lecture 4 - Functions in a linear vector space
Lecture 5 - Linear operations in a linear vector space and their eigenvalues
Lecture 6 - Classical Vs Quantum Mechanics
Lecture 7 - Quantum Physics
Lecture 8 - Quantum Physics
Lecture 9 - Quantum Physics
Lecture 10 - Quantum Physics
Lecture 11 - Quantum Physics
Lecture 12 - Quantum Physics
Lecture 13 - Quantum Physics
Lecture 14 - Quantum Physics
Lecture 15 - Quantum Physics
Lecture 16 - Quantum Physics
Lecture 17 - Quantum Physics
Lecture 18 - Quantum Physics
Lecture 19 - Quantum Physics
Lecture 20 - Quantum Physics
Lecture 21 - Quantum Physics
Lecture 22 - Quantum Physics
Lecture 23 - Quantum Physics
Lecture 24 - Quantum Physics
Lecture 25 - Quantum Physics
Lecture 26 - Quantum Physics
Lecture 27 - Quantum Physics
Lecture 28 - Quantum Physics
Lecture 29 - Quantum Physics

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Lecture 30 - Quantum Physics
Lecture 31 - Quantum Physics

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NPTEL Video Course - Basic Courses (Semester 1 and 2) - Engineering Physics I

Subject Co-ordinator - Prof. Rajdeep Chatterjee, Prof. B.K. Patra, Prof. M.K. Srivastava, Prof. G.D. Verma

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Malus law & Superposition of ways
Lecture 3 - Double Refraction
Lecture 4 - Interference of polarized light
Lecture 5 - Optical Activity
Lecture 6 - Introduction
Lecture 7 - Stationary Waves & Reflection, Refraction and Diffraction
Lecture 8 - Ultrasonics
Lecture 9 - Acoustics of Buildings - Part I
Lecture 10 - Acoustics of Buildings - Part II
Lecture 11 - Interference of light Part-1
Lecture 12 - Interference of light Part-2
Lecture 13 - Interference of light Part-3
Lecture 14 - Interference by Division of Wave front
Lecture 15 - Interference by Division of Amplitude
Lecture 16 - Coherence and Application of Interference
Lecture 17 - Diffraction Part-1
Lecture 18 - Diffraction Part-2
Lecture 19 - Diffraction Part-3
Lecture 20 - Diffraction by a circular aperture
Lecture 21 - Kinetic theory of gases - Part-1
Lecture 22 - Kinetic theory of gases - Part-2
Lecture 23 - Maxwellian distribution law of velocity - Part-1
Lecture 24 - Maxwellian distribution law of velocity - Part-2
Lecture 25 - Maxwellian distribution law of velocity - Part-3
Lecture 26 - Vanderwaal's equation of states - Part-1
Lecture 27 - Vanderwaal's equation of states - Part-2
Lecture 28 - Vanderwaal's equation of states - Part-3
Lecture 29 - Fluid Mechanics - Part-1
Lecture 30 - Fluid Mechanics - Part-2
Lecture 31 - Introduction of special relativity
Lecture 32 - Consequences of special relativity-1
Lecture 33 - Consequences of special relativity-2
Lecture 34 - Consequences of special relativity-3
Lecture 35 - Consequences of special relativity-4
Lecture 36 - Consequences of special relativity-5
Lecture 37 - Introduction
Lecture 38 - Image formation by lenses
Lecture 39 - Lens aberrations - Part I
Lecture 40 - Lens aberrations - Part II
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Basic Courses (Semester 1 and 2) - Mathematics II

Subject Co-ordinator - Dr. Sunita Gakkhar, Prof. H.G. Sharma, Dr. Tanuja Srivastava

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Complex Integration
Lecture 2 - Contour Integration
Lecture 3 - Cauchy's Integral Theorem
Lecture 4 - Cauchy's Integral Formula
Lecture 5 - Application of Cauchy Integral Formula
Lecture 6 - Zeros, Singularities and Poles
Lecture 7 - Residue Integration Method
Lecture 8 - Residue Theorem
Lecture 9 - Evaluation of Real Integrals
Lecture 10 - Evaluation of Real Improper Integrals-1
Lecture 11 - Evaluation of Real Improper Integrals-2
Lecture 12 - Evaluation of Real Improper Integrals-3
Lecture 13 - Evaluation of Real Improper Integrals-4
Lecture 14 - Evaluation of Real Integrals - Revision
Lecture 15 - Matrix Algebra Part - 1
Lecture 16 - Matrix Algebra Part - 2
Lecture 17 - Determinants Part - 1
Lecture 18 - Determinants Part - 2
Lecture 19 - Solution of System Equation
Lecture 20 - Linear Algebra Part - 1
Lecture 21 - Linear Algebra part - 2
Lecture 22 - Linear Algebra Part - 3
Lecture 23 - Linear Algebra Part - 4
Lecture 24 - Inner Product
Lecture 25 - Linear Transformation Part - 1
Lecture 26 - Linear Transformation Part - 2
Lecture 27 - Eigenvalues Eigenvectors Part - 1
Lecture 28 - Eigenvalues Eigenvectors Part - 2
Lecture 29 - Quadratic Forms

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Lecture 30 - Diagonalization Part - 1
Lecture 31 - Diagonalization Part - 2
Lecture 32 - Solution of System of Linear Equation
Lecture 33 - Functions of Complex Variables Part - 1
Lecture 34 - Functions of Complex Variables Part - 2
Lecture 35 - Taylor Series
Lecture 36 - Laurent Series
Lecture 37 - Rank of a Matrix
Lecture 38 - Complex Numbers Their Geometrical Representation
Lecture 1 - Solution of ODE of First Order and First Degree
Lecture 2 - Linear Differential Equations of the First Order
Lecture 3 - Approximate Solution of An Initial Value
Lecture 4 - Series Solution of Homogeneous Linear I
Lecture 5 - Series Solution of Homogeneous Linear II
Lecture 6 - Bessel Functions and Their Properties
Lecture 7 - Bessel Functions And Their Properties (Continued..)
Lecture 8 - Laplace Transformation
Lecture 9 - Laplace Transformation (Continued..)
Lecture 10 - Applications Of Laplace Transformation
Lecture 11 - Applications Of Laplace Transformation (Continued..)
Lecture 12 - One Dimensional Wave Equation
Lecture 13 - One Dimensional Heat Equation
Lecture 14 - Introduction to Differential Equation
Lecture 15 - First Order Differential Equations and Their Geometric Interpretation
Lecture 16 - Differential Equations of First Order Higher Degree
Lecture 17 - Linear Differential Equation of Second Order-Part - 1
Lecture 18 - Linear Differential equation of Second Order-Part - 2
Lecture 19 - Euler-Cauchy Theorem
Lecture 20 - Higher Order Linear Differential Equations
Lecture 21 - Higher Order Non homogeneous Linear Equations
Lecture 22 - Boundary Value Problems
Lecture 23 - Strum Liouville boundary Value Problem
Lecture 24 - Fourier Series-Part - 1
Lecture 25 - Fourier Series-Part - 2
Lecture 26 - Convergence of the Fourier Series
Lecture 27 - Fourier Integrals
Lecture 28 - Fourier Transforms
Lecture 29 - Partial Differential Equation
Lecture 30 - First Order Partial Differential Equation
Lecture 31 - Second Order Partial Differential Equations - I
Lecture 32 - Second Order Partial Differential Equations - II
Lecture 33 - Solution of One Dimensional Wave Equation
Lecture 34 - Solution of HomogeneousNon Homogeneous Equations
Lecture 35 - Fourier Integral Transform Method for Heat Equation
Lecture 36 - Three Dimensional Laplace Equation
Lecture 37 - Solution of Drichlet Problem
Lecture 38 - Numerical Method for Laplace Poisson equation
Lecture 39 - ADI Method for Laplace and Poisson Equation
NPTEL Video Course - Basic Courses (Semester 1 and 2) - Concept of Management and Evolution of Management Thought

Subject Co-ordinator - Prof. K.B. Akhilesh
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - Concept of Management
Lecture 2 - Lecture 2
Lecture 3 - Management By Objectives
Lecture 4 - Organizing & Organization
Lecture 5 - Organizing - II
Lecture 6 - Coordinating
Lecture 7 - Communication - I
Lecture 8 - Communication - II
Lecture 9 - Leadership
Lecture 10 - Controlling
Lecture 11 - Motivation and Organization Culture
Lecture 12 - Japanese Management
Lecture 13 - Comparison of Japanese and American Management
Lecture 14 - Managerial Functions in International Business
Lecture 15 - Marketing Functions
Lecture 16 - Management and Society
Lecture 17 - Social Responsibility and Ethics - II
Lecture 18 - Functions of Personnel Management
Lecture 19 - Manpower Planning
Lecture 20 - Selection - I
Lecture 21 - Selection - II
Lecture 22 - Performance Appraisal - I
Lecture 23 - Performance Appraisal - II
Lecture 24 - Training and Development - I
Lecture 25 - Training and Development - II
Lecture 26 - Job Design and Payment Systems - I
Lecture 27 - Job Design and Compensation Systems
Lecture 28 - Organizational Development - I
Lecture 29 - Organizational Development - II

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Lecture 30 - Organization Theory - I
Lecture 31 - Organization Theory - II
Lecture 32 - Group Dynamics - I
Lecture 33 - Group Dynamics - II
Lecture 34 - Group Dynamics - III
Lecture 35 - Conflict Management - I
Lecture 36 - Conflict Management - II
Lecture 37 - Managing Creativity and Innovation
Lecture 38 - Creativity and Managing Innovation Process - II
Lecture 39 - Stress Management - I
Lecture 40 - Stress Management - II
NPTEL Video Course - Biotechnology - Biomathematics

Subject Co-ordinator - Dr. Ranjith Padinhateeri

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Graphs and functions - I
Lecture 3 - Graphs and functions - II
Lecture 4 - Functions and derivatives
Lecture 5 - Calculation of derivatives
Lecture 6 - Differentiation and its application in Biology - I
Lecture 7 - Differentiation and its application in Biology - II
Lecture 8 - Differentiation and its application in Biology - III
Lecture 9 - Differentiation and its application in Biology - IV
Lecture 10 - Integration - I
Lecture 11 - Integration - II
Lecture 12 - Differential equations - I
Lecture 13 - Differential equations - II
Lecture 14 - Vectors - I
Lecture 15 - Vectors - II
Lecture 16 - Vectors - III
Lecture 17 - Nernst equation
Lecture 18 - Diffusion - I
Lecture 19 - Diffusion - II
Lecture 20 - Diffusion - III
Lecture 21 - Statistics
Lecture 22 - Statistics
Lecture 23 - Understanding Normal distribution
Lecture 24 - Fitting a function to experimental data
Lecture 25 - Size of a flexible protein
Lecture 26 - Uniform and Poisson distributions; Knudson's analysis
Lecture 27 - Fourier Series - I
Lecture 28 - Fourier Series - II
Lecture 29 - Fourier transform

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Lecture 30 - Master equation
Lecture 31 - Evolution
Lecture 32 - Tutorial - I
Lecture 33 - Tutorial - II
Lecture 34 - Temperature, Energy and Entropy
Lecture 35 - Partition function, Free energy
Lecture 36 - Bending fluctuations of DNA and spring-like proteins
Lecture 37 - Force-extension and looping of DNA
Lecture 38 - Thermodynamics of protein organization along DNA
Lecture 39 - Learning mathematics with the help of a computer
Lecture 30
Lecture 31
Lecture 32
Lecture 33
Lecture 34
Lecture 35
Lecture 36
Lecture 37
Lecture 38
Lecture 39
Lecture 40
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Biotechnology - NOC: Proteins and Gel-Based Proteomics

Subject Co-ordinator - Prof. Sanjeeva Srivastava
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 0 - Proteins and Gel-Based Proteomics; Course Introduction
Lecture 1 - Introduction to amino acids
Lecture 2 - Introduction to proteins
Lecture 3 - Protein folding & misfolding
Lecture 4 - Protein purification techniques
Lecture 5 - Introduction to proteomics
Lecture 6 - Systems biology and proteomics
Lecture 7 - Sample preparation and pre-analytical factors
Lecture 8 - Sample preparation
Lecture 9 - Sample preparation
Lecture 10 - One-dimensional electrophoresis
Lecture 11 - 2-DE
Lecture 12 - 2-DE
Lecture 13 - 2-DE
Lecture 14 - 2-DE
Lecture 15 - 2-DE
Lecture 16 - 2D-DIGE
Lecture 17 - 2D-DIGE
Lecture 18 - 2D-DIGE
Lecture 19 - Protein identification using MALDI-TOF/TOF
Lecture 20 - Proteomics experiment data analysis & challenges
NPTEL Video Course - Biotechnology - NOC: Mass spectrometry based proteomics

Subject Co-ordinator - Prof. Sanjeeva Srivastava
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 0 - Introductory lecture
Lecture 1 - Introduction to proteomics
Lecture 2 - Proteomics and sample preparation
Lecture 3 - Bacterial protein extraction
Lecture 4 - In-gel digestion
Lecture 5 - Fundamentals of mass spectrometry
Lecture 6 - Chromatography technologies
Lecture 7 - Liquid chromatography
Lecture 8 - Mass spectrometry
Lecture 9 - Mass spectrometry
Lecture 10 - MALDI sample preparation and analysis
Lecture 11 - Introduction to quantitative proteomics
Lecture 12 - Hybrid mass spectrometry configurations
Lecture 13 - SILAC
Lecture 14 - iTRAQ
Lecture 15 - TMT
Lecture 16 - Quantitative proteomics data analysis
Lecture 17 - Proteomics and Systems biology I
Lecture 18 - Proteomics & Systems biology II
Lecture 19 - Proteomics applications
Lecture 20 - Advances and challenges in proteomics

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NPTEL Video Course - Biotechnology - NOC:Interactomics: Protein Arrays and Label-free Biosensors

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Interactomics
Lecture 2 - An overview of label-free technologies
Lecture 3 - An overview of surface plasmon resonance (SPR)
Lecture 4 - An overview of surface plasmon resonance imaging (SPRi)
Lecture 5 - Basics of SPR
Lecture 6 - Basics of SPR
Lecture 7 - Protein immobilization for protein-protein interaction studies
Lecture 8 - Protein-protein interaction study
Lecture 9 - Protein-protein interaction study
Lecture 10 - Protein-small molecule interaction study
Lecture 11 - Protein-small molecule interaction study
Lecture 12 - SPR
Lecture 13 - SPR
Lecture 14 - An overview of ellipsometry and interferometry techniques
Lecture 15 - An introduction to BioLayer Interferometry (BLI) and its applications in protein research
Lecture 16 - Kinetic analysis of protein-protein interaction using BLI
Lecture 17 - Label-free quantification of proteins using BLI
Lecture 18 - Diffraction-based biosensors - I
Lecture 19 - Diffraction-based biosensors - II
Lecture 20 - Nanotechniques in proteomics - I
Lecture 21 - Nanotechniques in proteomics - II
Lecture 22 - High throughput platforms of interactomics
Lecture 23 - Conventional label based detection techniques for Protein microarrays
Lecture 24 - Novel detection techniques for Protein microarrays
Lecture 25 - Recombinational cloning and its application for Protein microarrays
Lecture 26 - An introduction to Cell-free protein synthesis
Lecture 27 - Cell-free synthesis based protein microarrays
Lecture 28 - Cell-free synthesis based protein microarrays
Lecture 29 - Digging deeper into NAPPA

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Lecture 30 - Digging deeper into NAPPA
Lecture 31 - Application of cell free expression protein microarrays in biomarker discovery
Lecture 32 - Application of cell free expression protein microarrays in immunological studies
Lecture 33 - Basics of microarray image scanning
Lecture 34 - Software for Image scanning and data processing
Lecture 35 - Microarray Data Analysis - Part I
Lecture 36 - Microarray Data Analysis - Part II
Lecture 37 - Application of protein microarray in biomarker discovery - I
Lecture 38 - Application of protein microarray in biomarker discovery - II
Lecture 39 - Systems biology and networks
Lecture 40 - Challenges in proteomics
NPTEL Video Course - Biotechnology - NOC: Introduction to Proteomics

Subject Co-ordinator - Prof. Sanjeeva Srivastava
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to amino acids
Lecture 2 - Introduction to proteins
Lecture 3 - Protein folding and misfolding
Lecture 4 - Introduction to proteomics
Lecture 5 - Lab session - Protein-protein interaction using label-free biosensors
Lecture 6 - Sample preparation and pre-analytical factors
Lecture 7 - Sample preparation
Lecture 8 - Sample preparation
Lecture 9 - One-dimensional electrophoresis
Lecture 10 - Introduction to 2-DE
Lecture 11 - 2-DE
Lecture 12 - 2-DE
Lecture 13 - 2-DE Applications
Lecture 14 - 2-DE Applications (Continued...) and Challenges
Lecture 15 - Lab session - Protein/peptide pre-fractionation using OFFGEL FRACTIONATOR and data analysis
Lecture 16 - 2D-DIGE
Lecture 17 - 2D-DIGE
Lecture 18 - 2D-DIGE
Lecture 19 - Systems biology and proteomics - I
Lecture 20 - Systems biology and proteomics - II
Lecture 21 - Fundamentals of mass spectrometry
Lecture 22 - Chromatography technologies
Lecture 23 - Liquid chromatography
Lecture 24 - Mass spectrometry
Lecture 25 - Mass spectrometry
Lecture 26 - MALDI sample preparation and analysis
Lecture 27 - Hybrid mass spectrometry configurations
Lecture 28 - Lab session - Demonstration of Q-TOF MS technology
Lecture 29 - In-gel and in-solution digestion

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Lecture 30 - Lab session - Sample preparation
Lecture 31 - Introduction to quantitative proteomics
Lecture 32 - SILAC
Lecture 33 - iTRAQ
Lecture 34 - TMT
Lecture 35 - Quantitative proteomics data analysis
Lecture 36 - Proteomics applications
Lecture 37 - Challenges in proteomics
Lecture 38 - OMICS and translational research
Lecture 39 - Lab session - Targeted proteomics using triple quadrupole mass spectrometry
Lecture 40 - Lab session - Targeted proteomics
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NPTEL Video Course - Biotechnology - NOC:Introduction to Biostatistics

Subject Co-ordinator - Prof. Shamik Sen
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the course
Lecture 2 - Data representation and plotting
Lecture 3 - Arithmetic mean
Lecture 4 - Geometric mean
Lecture 5 - Measure of Variability, Standard deviation
Lecture 6 - SME, Z-Score, Box plot
Lecture 7 - Moments, Skewness
Lecture 8 - Kurtosis, R programming
Lecture 9 - R programming
Lecture 10 - Correlation
Lecture 11 - Correlation and Regression - Part-I
Lecture 12 - Correlation and Regression - Part-II
Lecture 13 - Interpolation and extrapolation
Lecture 14 - Nonlinear data fitting
Lecture 15 - Concept of Probability
Lecture 16 - Counting principle, Permutations, and Combinations
Lecture 17 - Conditional probability
Lecture 18 - Conditional probability and Random variables
Lecture 19 - Random variables, Probability mass function, and Probability density function
Lecture 20 - Expectation, Variance and Covariance - Part-I
Lecture 21 - Expectation, Variance and Covariance - Part-II
Lecture 22 - Binomial random variables and Moment generating function
Lecture 23 - Probability distribution
Lecture 24 - Uniform distribution Part-II and Normal distribution Part-I
Lecture 25 - Normal distribution Part-II and Exponential distribution
Lecture 26 - Sampling distributions and Central limit theorem - Part-I
Lecture 27 - Sampling distributions and Central limit theorem - Part-II
Lecture 28 - Central limit theorem - Part-III and Sampling distributions of sample mean
Lecture 29 - Central limit theorem - Part-IV and Confidence intervals

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Lecture 30 - Confidence intervals Part- II
Lecture 31 - Test of Hypothesis - 1
Lecture 32 - Test of Hypothesis - 2 (1 tailed and 2 tailed Test of Hypothesis, p-value)
Lecture 33 - Test of Hypothesis - 3 (1 tailed and 2 tailed Test of Hypothesis, p-value)
Lecture 34 - Test of Hypothesis - 4 (Type -1 and Type -2 error)
Lecture 35 - T-test
Lecture 36 - 1 tailed and 2 tailed T-distribution, Chi-square test
Lecture 37 - ANOVA - 1
Lecture 38 - ANOVA - 2
Lecture 39 - ANOVA - 3
Lecture 40 - ANOVA for linear regression, Block Design
Lecture 30 - Mechanobiology of Diseases
Lecture 31 - Mechanobiology of Diseases
Lecture 32 - Nuclear Mechanotransduction
Lecture 33 - Nuclear Mechanotransduction
Lecture 34 - Nuclear Mechanotransduction
Lecture 35 - Mechanical Forces and DNA damage
Lecture 36 - Techniques in Mechanobiology
Lecture 37 - Techniques in Mechanobiology
Lecture 38 - Techniques in Mechanobiology
Lecture 39 - Techniques in Mechanobiology
Lecture 40 - Techniques in Mechanobiology
Lecture 1 - Introduction
Lecture 2 - Graphs and Functions
Lecture 3 - Equations as Graphs
Lecture 4 - Graphs
Lecture 5 - Graphs
Lecture 6 - Images as 2D/3D Functions
Lecture 7 - Functions and its Derivatives
Lecture 8 - Computing Derivatives of Curves
Lecture 9 - Rules for Calculating Derivatives
Lecture 10 - Understanding Derivatives
Lecture 11 - Curvature and Second Derivative
Lecture 12 - Plotting Curves
Lecture 13 - Numerical Calculation of Derivatives
Lecture 14 - Function, Derivatives and Series Expansion
Lecture 15 - L'Hopital's Rule and Partial Derivatives
Lecture 16 - Integration
Lecture 17 - Integration
Lecture 18 - Integration
Lecture 19 - Integration
Lecture 20 - Integration
Lecture 21 - Exponential Growth and Decay
Lecture 22 - Scalars and Vectors
Lecture 23 - Vectors
Lecture 24 - Cell Symmetry
Lecture 25 - Gradient, Forces and Flows
Lecture 26 - Gradient, Forces and Flows
Lecture 27 - Understanding Diffusion
Lecture 28 - Diffusion Constant and Einstein Relation 1905
Lecture 29 - Diffusion Equation
Lecture 30 - Diffusion vs. Active Transport
Lecture 31 - Nernst Equation
Lecture 32 - Fourier Series
Lecture 33 - Fourier Series
Lecture 34 - Fourier Transform
Lecture 35 - Introduction to Statistics
Lecture 36 - Mean, Standard deviation and Distribution
Lecture 37 - Frequency Distribution and Probability Distribution
Lecture 38 - Binomial Distribution
Lecture 39 - Normal Distribution
Lecture 40 - Hypothesis Testing and Mathematical Modeling
NPTEL Video Course - Biotechnology - NOC:Bioengineering: An Interface with Biology and Medicine

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Why biology for engineers - Part I
Lecture 2 - Why biology for engineers - Part II
Lecture 3 - Life processes and Cell
Lecture 4 - Cell and its properties
Lecture 5 - Clinician’s Perspective - I
Lecture 6 - Nucleic Acid and Central Dogma
Lecture 7 - DNA Tools
Lecture 8 - DNA Tools
Lecture 9 - DNA Tools and Biotechnology - I
Lecture 10 - DNA Tools and Biotechnology - II
Lecture 11 - DNA Tools and Biotechnology - III
Lecture 12 - DNA Tools and Biotechnology - IV
Lecture 13 - DNA Tools and Biotechnology - V
Lecture 14 - DNA Tools and Biotechnology - VI
Lecture 15 - Clinician’s Perspective - II
Lecture 16 - Genetics - I
Lecture 17 - Genetics - II
Lecture 18 - Genetics - III
Lecture 19 - Genetics - IV
Lecture 20 - Clinician’s Perspective - III
Lecture 21 - Chromosomal basis of inheritance
Lecture 22 - Linkage, chromosomal disorders
Lecture 23 - Classical Genetics Experiments
Lecture 24 - Bacteria and Viruses
Lecture 25 - Clinician’s Perspective - IV
Lecture 26 - Cell cycle disregulation and Cancer
Lecture 27 - Developmental Biology
Lecture 28 - Principles and application of Animal Cloning
Lecture 29 - Evolution

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www.digimat.in
Lecture 30 - Clinician's Perspective - V
Lecture 31 - Amino acids and proteins
Lecture 32 - Proteins and Proteomics
Lecture 33 - Techniques to Study Protein and Proteome - I
Lecture 34 - Techniques to Study Protein and Proteome - II
Lecture 35 - Bioinformatics - I
Lecture 36 - Techniques to Study Protein and Proteome - III
Lecture 37 - Protein Interactions and Microarrays
Lecture 38 - Protein interactions and Systems biology
Lecture 39 - Bioinformatics - II
Lecture 40 - Ethics in Research and Publications
Lecture 30 - Surface Plasmon Resonance- Principles and Assays - II
Lecture 31 - Use of SPR in unravelling domain motif interactions of proteasomal assembly chaperones
Lecture 32 - Next-Generation Sequencing Technology- Ion Torrent®
Lecture 33 - NGS Technology- Bioinformatics and data analysis - I
Lecture 34 - NGS Technology- Bioinformatics and data analysis - II
Lecture 35 - Next-Generation Sequencing Technology-MiSeq System
Lecture 36 - NGS target enrichment workflow for exomes, targeted panels and beyond
Lecture 37 - The Human Pathology Atlas
Lecture 38 - The Human Pathology Atlas
Lecture 39 - Conclusions and Overview - I (Statistical analysis - I)
Lecture 40 - Conclusions and overview - II (Statistical analysis - II)
NPTEL Video Course - Biotechnology - NOC: Introduction to Proteogenomics

Subject Co-ordinator - Prof. Sanjeeva Srivastava
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Proteogenomics overview - I
Lecture 2 - Proteogenomics overview - II
Lecture 3 - Introduction to Genomics - Part I
Lecture 4 - Introduction to Genomics - Part II
Lecture 5 - Introduction to Genomics - Part III
Lecture 6 - Perspectives in Proteogenomics - I
Lecture 7 - Advancement in Cancer Genomics
Lecture 8 - Introduction to Genomics - Part IV
Lecture 9 - Introduction to Genomics - cBioPortal
Lecture 10 - Genotype, Gene expression and Phenotype - I
Lecture 11 - Genotype, Gene expression and Phenotype - II
Lecture 12 - An overview of NGS technology
Lecture 13 - NGS - Sequencing by synthesis - I
Lecture 14 - NGS - Sequencing by synthesis - II
Lecture 15 - Introduction to Proteomics
Lecture 16 - Proteomics
Lecture 17 - Applications of Proteomics
Lecture 18 - Introduction to MS-based Proteomics - I
Lecture 19 - Introduction to MS-based Proteomics - II
Lecture 20 - Applications of NGS - IonTorrent
Lecture 21 - Genomic Analysis using Droplet PCR - I
Lecture 22 - Introduction to MS-based Proteomics - I (Hands-on session)
Lecture 23 - Introduction to MS-based Proteomics - II (Hands-on session)
Lecture 24 - Data analysis
Lecture 25 - Data analysis
Lecture 26 - Data analysis
Lecture 27 - Genomic Analysis using Droplet PCR - II
Lecture 28 - Topics in Proteogenomics
Lecture 29 - Machine learning and Clustering

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Lecture 69 - Network Analysis - I
Lecture 70 - Network Analysis - II
Lecture 71 - Mutations and Signaling - I
Lecture 72 - Mutations and Signaling - II
Lecture 73 - Pathway Enrichment - I
Lecture 74 - Perspectives in Proteogenomics - IV
Lecture 75 - Pathway Enrichment - II
Lecture 76 - Sequence - GSEA
Lecture 77 - Linked Omics - I
Lecture 78 - Linked Omics - II
Lecture 79 - Proteogenomics - Opportunities and Challenges
Lecture 80 - Perspectives in Proteogenomics - V
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Biotechnology - Enzyme Science and Engineering

Subject Co-ordinator - Prof. Subhash Chand

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Scope to Enzyme Science and Engineering
Lecture 2 - Characteristic Features of Enzymes
Lecture 3 - Enzymes as Biocatalysts
Lecture 4 - Enzymatic Catalysis
Lecture 5 - Specificity of Enzyme Action
Lecture 6 - Kinetics of Enzyme Catalyzed Reactions
Lecture 7 - Kinetics of Enzyme Catalyzed Reactions
Lecture 8 - Deviation from Hyperbolic Enzyme Kinetics
Lecture 9 - Role of Effector Molecules in Enzyme Kinetics
Lecture 10 - Reversible Inhibition
Lecture 11 - Effect of PH and Temperature on Enzyme
Lecture 12 - Kinetics of Bi substrate Enzyme
Lecture 13 - Kinetics of Bi substrate Enzyme
Lecture 14 - Immobilized Enzymes - I
Lecture 15 - Immobilized Enzymes - II
Lecture 16 - Immobilized Enzymes - III
Lecture 17 - Immobilization of Enzymes by Entrapment
Lecture 18 - Effect of Immobilization
Lecture 19 - Reactors for Enzyme Catalyzed Reactions
Lecture 20 - Idealized Enzyme Reactor Performance
Lecture 21 - Idealized Enzyme Reactor Performance
Lecture 22 - Kinetic Parameters for IME Systems
Lecture 23 - Steady State Analysis of Mass Transfer
Lecture 24 - Steady State Analysis of Mass Transfer
Lecture 25 - Non Ideal Flow in Continuous Immobilized Enzyme
Lecture 26 - Applications of Immobilized Enzymes in Process
Lecture 27 - Analytical Applications
Lecture 28 - Enzyme Technology Challenges

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NPTEL Video Course - Biotechnology - NOC:Introduction to Dynamical Models in Biology

Subject Co-ordinator - Prof. Biplab Bose
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Mathematical modeling in Biology
Lecture 2 - How to Start Modeling
Lecture 3 - Modeling the spread of infectious disease
Lecture 4 - Modeling population growth
Lecture 5 - Numerical solution of ODE-1
Lecture 6 - Numerical solution of ODE-2
Lecture 7 - Simulating ODE-based models
Lecture 8 - Simulating ODE-based models
Lecture 9 - Steady state and stability analysis
Lecture 10 - Steady state and stability analysis
Lecture 11 - Phase Plane Analysis - I
Lecture 12 - Phase Plane Analysis - II
Lecture 13 - Concepts of Bifurcation
Lecture 14 - Concepts of Bifurcation
Lecture 15 - Modeling Molecular Processes in Cell
Lecture 16 - Modeling Molecular Processes in Cell
Lecture 17 - Modeling Molecular Processes in Cell
Lecture 18 - Modeling Molecular Processes in Cell
Lecture 19 - Modeling Cell Signaling
Lecture 20 - Modeling Cell Signaling
Lecture 21 - Modeling Cell Signaling
Lecture 22 - Modeling Transcriptional Circuits-1
Lecture 23 - Modeling Transcriptional Circuits-2
Lecture 24 - Online Resources for Mathematical Modeling in Biology

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NPTEL Video Course - Biotechnology - NOC: Genetic Engineering: Theory and Application

Subject Co-ordinator - Dr. Vishal Trivedi
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Cellular Structure - Part I
Lecture 2 - Cellular Structure - Part II
Lecture 3 - Cellular Structure - Part III
Lecture 4 - Metabolic Reactions in Biological System
Lecture 5 - Growth Media For Different Expression System
Lecture 6 - Microbial Growth Kinetics
Lecture 7 - Isolation of a Gene Fragment - Part I
Lecture 8 - Isolation of a Gene Fragment - Part II
Lecture 9 - Isolation of a Gene Fragment - Part III
Lecture 10 - Polymerase Chain Reaction
Lecture 11 - Molecular Tools for Cloning
Lecture 12 - Cloning Vectors - I
Lecture 13 - Cloning Vectors - II
Lecture 14 - DNA Delivery In Host - Part I
Lecture 15 - DNA Delivery In Host - Part II
Lecture 16 - Screening of Recombinant Clones
Lecture 17 - Protein Production in Host - Part 1
Lecture 18 - Protein Production in Host - Part 2
Lecture 19 - Protein Production in Host - Part 3
Lecture 20 - Product Recovery from Host Cells
Lecture 21 - Basics of Chromatography - Part 1
Lecture 22 - Basics of Chromatography - Part 2
Lecture 23 - Ion-exchange Chromatography
Lecture 24 - Hydrophobic Interaction Chromatography
Lecture 25 - Gel Filtration chromatography - Part 1
Lecture 26 - Gel Filtration chromatography - Part 2
Lecture 27 - Affinity Chromatography - Part 1
Lecture 28 - Affinity Chromatography - Part 2
Lecture 29 - Affinity Chromatography - Part 3

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Lecture 30 - Animal Physiology
Lecture 31 - Animal Physiology
Lecture 32 - Animal Physiology
Lecture 33 - Animal Physiology
Lecture 34 - Animal Physiology
Lecture 35 - Animal Physiology
Lecture 36 - Animal Physiology
Lecture 37 - Animal Physiology
Lecture 38 - Animal Physiology
Lecture 39 - Animal Physiology
Lecture 40 - Animal Physiology
Lecture 30 - Bio electricity
Lecture 31 - Bio electricity
Lecture 32 - Bio electricity
Lecture 33 - Bio electricity
Lecture 34 - Bio electricity
Lecture 35 - Bio electricity
Lecture 36 - Bio electricity
Lecture 37 - Bio electricity
Lecture 38 - Bio electricity
Lecture 39 - Bio electricity
Lecture 40 - Bio electricity
Lecture 1 - Fundamentals of central dogma, Part 1
Lecture 2 - Fundamentals of central dogma, Part 2
Lecture 3 - Fundamentals of central dogma, Part 3
Lecture 4 - Chromosome Structure and Function
Lecture 5 - Pedigree Analysis
Lecture 6 - Complications in Mendelian Pedigree Patterns
Lecture 7 - DNA Cloning and Hybridization Techniques - Part 1
Lecture 8 - DNA Cloning and Hybridization Techniques - Part 2
Lecture 9 - Practice Session 1
Lecture 10 - Practice Session 2
Lecture 11 - Mutations and instability of human DNA (Part 1)
Lecture 12 - Mutations and instability of human DNA (Part 2)
Lecture 13 - Animal Models for Human Diseases
Lecture 14 - Positional cloning of genes for monogenic disorders
Lecture 15 - Human Genome Project and HapMap project
NPTEL Video Course - Biotechnology - NOC:Functional Genomics

Subject Co-ordinator - S. Ganesh
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Functional Genomics
Lecture 2 - The Genomics Era
Lecture 3 - Epigenetics
Lecture 4 - Forward Genetics vs Reverse Genetics
Lecture 5 - Genome Editing Approaches - Part 1
Lecture 6 - Genome Editing Approaches - Part 2
Lecture 7 - Transcriptomics - Part 1
Lecture 8 - Transcriptomics - Part 2
Lecture 9 - Genome Sequence Databases
Lecture 10 - DNA Sequencing Methods - Part 1
Lecture 11 - DNA Sequencing Methods - Part 2
Lecture 12 - Applications of Next-Generation Sequencing (NGS)
Lecture 13 - Tutorial - Session 1
Lecture 14 - Tutorial - Session 2
Lecture 15 - Genomic Insight into Evolution
Lecture 16 - Genome sequence
Lecture 17 - Outcome of Comparative Genomics
Lecture 18 - Laboratory - Session 1
Lecture 19 - Laboratory - Session 2
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Biotechnology - NOC:Bioenergy

Subject Co-ordinator - Prof. Mainak Das
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Oil Economy of the World
Lecture 3 - Unit of Energy and Introduction of Bioenergy
Lecture 4 - How Biomass Formed on the Earth
Lecture 5 - Road Map of Bioenergy
Lecture 6 - Basic Biomass Technology (Resources and Production)
Lecture 7 - Basics of Mechanism of Light Reaction
Lecture 8 - Exploration of Photosynthesis Process
Lecture 9 - In Photosynthesis Oxygen Comes from Water Molecule
Lecture 10 - Hill Reaction
Lecture 11 - Electron Transport Process in Light Reaction
Lecture 12 - How Carbon dioxide converted in Carbohydrate
Lecture 13 - From Carbon dioxide to two Molecules of 3 - Phospho Glycerate by RUBISCO
Lecture 14 - RUBISCO enzyme
Lecture 15 - Photo respiration and Calvin Cycle
Lecture 16 - Efficiency Calculation of Photosynthesis Process
Lecture 17 - C3 and C4 Plant Structure and Photosynthesis Process
Lecture 18 - Biomass production System and their Categorization
Lecture 19 - Important Parameters for Selecting Biomass Crops
Lecture 20 - Factors Determining the Conversion Process - I
Lecture 21 - Factors Determining the Conversion Process - II
Lecture 22 - Factors Determining the Conversion Process - III
Lecture 23 - Conversion Technology
Lecture 24 - Conversion Process- (Combustion Process)
Lecture 25 - Pyrolysis Process
Lecture 26 - Classification of Pyrolysis
Lecture 27 - Bio Oil - (Solution for Thermal Instability and Corrosivity)
Lecture 28 - Spark Ignition Engine
Lecture 29 - Compression Ignition Engine

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Lecture 30 - Carbonization - Graphene like material
Lecture 31 - Introduction of Gasification
Lecture 32 - Thermo Chemical Process of Gasification
Lecture 33 - Feed Stock Treatment of Gasification
Lecture 34 - Feed Stock Property
Lecture 35 - Gasification Types - Up Drift Gasifier
Lecture 36 - Down drift and Cross Flow Gasifier
Lecture 37 - Operation and Performance of Fixed Bed Gasifier
Lecture 38 - Fluidized Bed Gasification
Lecture 39 - Operation and Performance of Fluidized Bed Gasifier
Lecture 40 - Biological Root of Gasification and Summary of Course
Lecture 1 - An Introduction to Anatomy and Physiology
Lecture 2 - Organization of living system
Lecture 3 - Homeostasis and system integration
Lecture 4 - Positive feedback loop in homeostasis
Lecture 5 - Chemical basis of organization of the body
Lecture 6 - Integumentary System - I
Lecture 7 - Integumentary system - II
Lecture 8 - Integumentary System - III
Lecture 9 - Bone and Cartilage - I
Lecture 10 - Bone and Cartilage - II
Lecture 11 - Introduction of muscle
Lecture 12 - Skeletal muscle formation
Lecture 13 - Anatomy of skeletal muscle
Lecture 14 - Contraction in muscle
Lecture 15 - Function of actin and myosin
Lecture 16 - Length tension relationship of skeletal muscle
Lecture 17 - Excitation contraction coupling with nervous system
Lecture 18 - Stretch reflex phenomena
Lecture 19 - Nervous system anatomy and signaling
Lecture 20 - Structure and circuit of neurons
Lecture 21 - Origin of biological cell
Lecture 22 - Excitability in cell
Lecture 23 - Ion transportation in the cell
Lecture 24 - Signal propagation in neurons
Lecture 25 - Neurotransmitter and action potential
Lecture 26 - Spatial temporal summation of signal in mesh neurons
Lecture 27 - Anatomy of Hippo-campus
Lecture 28 - Epilepsy and memory
Lecture 29 - Long term potentiation
Lecture 30 - Long term depression
Lecture 31 - Alzheimers disease
Lecture 32 - Parkinsons disease
Lecture 33 - Amyotrophic lateral sclerosis
Lecture 34 - Spinal cord injury
Lecture 35 - Glial cells
Lecture 36 - Stretch reflex circuit - I
Lecture 37 - Stretch reflex arc circuit - II
Lecture 38 - Neuro muscular junction
Lecture 39 - Hearing system
Lecture 40 - Olfaction system
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Biotechnology - NOC: Cell Culture Technologies

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction of Cell Culture Technology
Lecture 2 - Philosophy and complexity in cell culture
Lecture 3 - To grow the cell outside the body
Lecture 4 - Cell cycle concept
Lecture 5 - Dividing cells
Lecture 6 - Biology of cell culture
Lecture 7 - Layout(s) and design(s) of cell culture facility
Lecture 8 - Precautions during designing the lab layout - I
Lecture 9 - Precautions during designing the lab layout - II
Lecture 10 - Precautions during designing the lab layout - III
Lecture 11 - State of the art facility in cell culture lab - I
Lecture 12 - State of the art facility in cell culture lab - II
Lecture 13 - Specialized facility in cell culture lab
Lecture 14 - Interaction of cell and glass/polycarbonate surface - I
Lecture 15 - Interaction of cell and glass/polycarbonate surface - II
Lecture 16 - Poly D lysine deposition
Lecture 17 - Surface chemical analysis
Lecture 18 - Cell growth process
Lecture 19 - Cell surface interface
Lecture 20 - Cell culture substrate patterning
Lecture 21 - Introduction of define system
Lecture 22 - Mechanical dissociation of hippocampal tissue
Lecture 23 - Rules for mechanical dissociation of tissue
Lecture 24 - Drum molecule testing
Lecture 25 - Adult hippocampal neuron dissociation
Lecture 26 - Cell separation and In vitro myelination cell culture mode - I
Lecture 27 - Cell separation and In vitro myelination cell culture mode - II
Lecture 28 - Cell separation and In vitro myelination cell culture mode - III
Lecture 29 - Cell Separation and In vitro myelination cell culture mode - IV

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Lecture 30 - Cell separation and in vitro myelination cell culture mode - V
Lecture 31 - Fluorescent assisted cell sorting
Lecture 32 - Condition for regenerated cells
Lecture 33 - Introduction of skeletal muscle cell culture
Lecture 34 - Skeletal muscle cell culture
Lecture 35 - Cardiac muscle cell culture
Lecture 36 - Advance cell culture modules - I
Lecture 37 - Advance cell culture modules - II
Lecture 38 - Advance cell culture modules - III
Lecture 39 - Advance cell culture modules - IV
Lecture 40 - Advance cell culture modules - V
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Biotechnology - NOC:Forest Biometry

Subject Co-ordinator - Prof. Mainak Das, Dr. Ankur Awadhiya

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Recap of formulae
Lecture 3 - Recap of trigonometry
Lecture 4 - Measurement of central tendency and dispersion
Lecture 5 - Graphical presentation of data
Lecture 6 - Shape of a tree
Lecture 7 - Metzgers theory
Lecture 8 - Form factor and form quotients
Lecture 9 - Taper equations
Lecture 10 - Making the cuts
Lecture 11 - Cross-section of a tree
Lecture 12 - Where to measure the diameter
Lecture 13 - Callipers - Usages and Issues
Lecture 14 - Tape
Lecture 15 - Measurement of bark and growth rings
Lecture 16 - Tree height
Lecture 17 - Method of similar triangles
Lecture 18 - Distance measurements
Lecture 19 - Angular measurement
Lecture 20 - LIDAR
Lecture 21 - Canopy attributes - Part I
Lecture 22 - Canopy attributes - Part II
Lecture 23 - Canopy attributes - Part III
Lecture 24 - Canopy cover and closure
Lecture 25 - Photogrammetry
Lecture 26 - Basal area of a tree and stand
Lecture 27 - Stand basal area, crop diameter and crop age
Lecture 28 - Point sampling - I
Lecture 29 - Point sampling - II

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NPTEL Video Course - Biotechnology - NOC: Introduction to Professional and Scientific Communication

Subject Co-ordinator - Mr. S. Ganesh
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the topic
Lecture 2 - Where do research ideas come from?
Lecture 3 - Inductive vs Deductive Reasoning
Lecture 4 - Scientific Hypothesis
Lecture 5 - Scientific Hypothesis (Continued...)
Lecture 6 - Testing the Hypothesis
Lecture 7 - Introduction to Scientific Writing
Lecture 8 - Writing an Abstract
Lecture 9 - Title for a Research Paper
Lecture 10 - Title and Keywords
Lecture 11 - Mileposts for the Article Writing
Lecture 12 - Writing the Methods Section
Lecture 13 - Writing the Results Section
Lecture 14 - Writing Results Section (Continued...)
Lecture 15 - How to Prepare Figures
Lecture 16 - How to Prepare Schematics
Lecture 17 - How to write Introduction and Discussion Sections
Lecture 18 - Finalizing the Manuscript and Ethics in Research
Lecture 19 - Writing a Research Proposal and Preparing for a Presentation
Lecture 20 - Tutorial Session

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NPTEL Video Course - Biotechnology - NOC:Bioelectrochemistry

Subject Co-ordinator - Prof. Mainak Das
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic Concepts - I
Lecture 2 - Basic Concepts - II
Lecture 3 - Key Terms
Lecture 4 - Galvanic Cells - I
Lecture 5 - Galvanic Cells - II
Lecture 6 - Salt Bridge
Lecture 7 - Standard Potentials - I
Lecture 8 - Standard Potentials - II
Lecture 9 - Standard Potentials - III
Lecture 10 - Nernst Equation
Lecture 11 - Relationship between Standard electrode potential (E°) and Equilibrium constant (K)
Lecture 12 - Cell as chemical probe and Biochemist's formal potential
Lecture 13 - Concept of Concentration Cell - I
Lecture 14 - Concept of Concentration Cell - II
Lecture 15 - Bio-electrochemistry of excitable cells (nerve cells)
Lecture 16 - Types of electrodes
Lecture 17 - Critical care profile and metal electrode
Lecture 18 - pH measurement
Lecture 19 - Redox indicators amperometry
Lecture 20 - Redox proteins, Metalloproteins and Cyclic Voltammetry
NPTEL Video Course - Biotechnology - NOC: Bioenergetics of Life Processes

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Bioenergetics of Life Processes
Lecture 2 - Bioenergetics
Lecture 3 - Iron-Sulfur world
Lecture 4 - Evolution of complex cellular membranes
Lecture 5 - Charge transfer across membrane
Lecture 6 - Biological order and energy - I
Lecture 7 - Biological order and energy - II
Lecture 8 - Biological order and energy - III
Lecture 9 - Summary of thermodynamical parameters - I
Lecture 10 - Summary of thermodynamical parameters - II
Lecture 11 - Photosynthesis - I
Lecture 12 - Photosynthesis - II
Lecture 13 - Photosynthesis - III
Lecture 14 - Photosynthesis - IV
Lecture 15 - Photosynthesis - V
Lecture 16 - Photosynthesis - VI
Lecture 17 - Photosynthesis - VII
Lecture 18 - Photosynthesis - VIII
Lecture 19 - ATP Synthesis
Lecture 20 - Mitochondria and Chemiosmotic hypothesis
NPTEL Video Course - Biotechnology - NOC:WildLife Conservation

Subject Co-ordinator - Dr. Ankur Awadhiya

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Preliminaries
Lecture 2 - A closer look at Biodiversity
Lecture 3 - Economics Valuation of Biodiversity
Lecture 4 - Threats to Biodiversity
Lecture 5 - Preliminaries
Lecture 6 - Basics of Sampling
Lecture 7 - Distance Sampling - I
Lecture 8 - Distance Sampling - II
Lecture 9 - Radio-telemetry
Lecture 10 - Behavioural monitoring
Lecture 11 - What is a habitat
Lecture 12 - Habitat degradation, loss, fragmentation and displacement
Lecture 13 - Reserve selection and design
Lecture 14 - Habitat management and improvement
Lecture 15 - Some terminologies
Lecture 16 - Some common wildlife diseases
Lecture 17 - Principles of disease management
Lecture 18 - Preliminaries
Lecture 19 - Mechanical capture
Lecture 20 - Chemical capture
Lecture 21 - Capture myopathy
Lecture 22 - Care of immobilised animal
Lecture 23 - Legal aspects of capture and restraint
Lecture 24 - Other topics in capture and restraint
Lecture 25 - Preliminaries and introduction to genetics
Lecture 26 - Population genetics
Lecture 27 - Chromosomal and genetic disorders, inbreeding
Lecture 28 - Population viability analysis
Lecture 29 - Reintroductions and outbreeding

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Lecture 30 - Fundamentals
Lecture 31 - Zoos and their management
Lecture 32 - Botanical gardens
Lecture 33 - Other aspects
Lecture 34 - Impacts of climate change
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NPTEL Video Course - Biotechnology - NOC: Nanotechnology in Agriculture

Subject Co-ordinator - Prof. Mainak Das
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Biotechnology - NOC:Wild Life Ecology

Subject Co-ordinator - Dr. Ankur Awadhiya, Prof. Mainak Das
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - BioChemistry I

Subject Co-ordinator - Prof. S. Dasgupta

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Biotechnology - NOC: Industrial Biotechnology

Subject Co-ordinator - Prof. Debabrata Das
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Biotechnology - NOC:Biomicrofluidics

Subject Co-ordinator - Prof. Tapas Kumar Maiti, Prof. Suman Chakraborty

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 7 - Modulating surface tension
Lecture 8 - Lab on a CD
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Lecture 11 - Microfluidic cell culture - Part I
Lecture 12 - Microfluidic cell culture - Part II
Lecture 13 - On-chip cellular assay techniques - Part I
Lecture 14 - On-chip cellular assay techniques - Part II
Lecture 15 - Microfluidics for understanding biology
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Lecture 18 - Microfluidic technology for monoclonal antibody production
Lecture 19 - Microfluidics for Healthcare
Lecture 20 - Microfluidics for Healthcare
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NPTEL Video Course - Biotechnology - Downstream Processing

Subject Co-ordinator - Prof. Mukesh Doble

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 5 - Problems in Mass Balance, Flow sheet
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NPTEL Video Course - Biotechnology - Thermodynamics

Subject Co-ordinator - Prof. G.K. Suraishkumar

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 3 - Equations for a Closed system Chemical Potential Concept Gibbs-Duhem Equation
Lecture 4 - Maxwell’s relations
Lecture 5 - Inter-Relationships between Thermodynamic Variables
Lecture 6 - Some Useful Mathematical Manipulations
Lecture 7 - Thermodynamic Relations for a Closed System with 1 mole of a pure Substances
Lecture 8 - Maximum Work, Lost Work Review of Closed Systems
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NPTEL Video Course - Biotechnology - NOC: Principles of Downstream techniques in Bioprocess

Subject Co-ordinator – Prof. Mukesh Doble
Co-ordinating Institute – IIT - Madras
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Lecture 4 - Cell Breakage
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Lecture 11 - Membranes
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NPTEL Video Course - Biotechnology - NOC: Biostatistics and Design of Experiments

Subject Co-ordinator - Prof. Mukesh Doble

Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Biotechnology - NOC:Bioreactors

Subject Co-ordinator - Prof. G.K. Suraishkumar
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Biotechnology - NOC:BioInformatics - Algorithms and Applications

Subject Co-ordinator - Prof. M. Michael Gromiha
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 67 - Overview - I
Lecture 68 - Overview - II
Lecture 69 - Demo
NPTEL Video Course - Biotechnology - NOC: Demystifying the Brain

Subject Co-ordinator - Dr. V Srinivasa Chakravarthy

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - The Whole and Its Parts
Lecture 2 - Understanding Brain's Shape - Segment 1 - Brain size and intelligence
Lecture 3 - Understanding Brain's Shape - Segment 2 - Save Wire Principle
Lecture 4 - Understanding Brain's Shape - Segment 3 - Brain Evolution
Lecture 5 - Neurons and Neural Signaling
Lecture 6 - Neural Signalling
Lecture 7 - Networks that Learn - Segment 1
Lecture 8 - Multilayer Perceptrons Applications in Psychology and Neuroscience
Lecture 9 - Organization of the Central Nervous System - Segment 1 - Cortex
Lecture 10 - Organization of the Central Nervous System - Segment 2 - Subcortical Structures
Lecture 11 - Maps in the Brain - Segment 1
Lecture 12 - Maps in the Brain - Segment 2
Lecture 13 - Emotions in the Brain - Segment 1
Lecture 14 - Emotions in the Brain - Segment 2
Lecture 15 - Memories and Holograms - Segment 1
Lecture 16 - Memories and Holograms - Segment 2
Lecture 17 - Consciousness - Segment 1
Lecture 18 - Consciousness - Segment 2
NPTEL Video Course - Biotechnology - NOC:Computational Systems Biology

Subject Co-ordinator - Prof. Karthik Raman
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Introduction to Modelling
Lecture 3 - Introduction to Modelling
Lecture 4 - Fundamentals of Mathematical Modelling
Lecture 5 - Fundamentals of Mathematical Modelling
Lecture 6 - Fundamentals of Mathematical Modelling
Lecture 7 - Some Example Models
Lecture 8 - Representation of Biological Networks
Lecture 9 - Lab
Lecture 10 - Lab
Lecture 11 - Lab
Lecture 12 - Lab
Lecture 13 - Introduction to Networks
Lecture 14 - Introduction to Networks
Lecture 15 - Introduction to Network Biology
Lecture 16 - Introduction to Network Biology
Lecture 17 - Introduction to Network Biology
Lecture 18 - Network Biology
Lecture 19 - Network Models
Lecture 20 - Network Models
Lecture 21 - Biological Networks
Lecture 22 - Network Perturbations
Lecture 23 - Community Detection
Lecture 24 - Network Motifs
Lecture 25 - Lab
Lecture 26 - Lab
Lecture 27 - Lab
Lecture 28 - Network Biology
Lecture 29 - Lab

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| Lecture 30 | Lab |
| Lecture 31 | Reconstruction of Gene Regulatory Networks |
| Lecture 32 | Reconstruction of Protein Networks |
| Lecture 33 | Reconstruction of Signalling Networks |
| Lecture 34 | Reconstruction of Signalling Networks |
| Lecture 35 | Introduction to Dynamic Modelling |
| Lecture 36 | Introduction to Dynamic Modelling |
| Lecture 37 | Introduction to Dynamic Modelling |
| Lecture 38 | Lab |
| Lecture 39 | Lab |
| Lecture 40 | Parameter Estimation |
| Lecture 41 | Parameter Estimation |
| Lecture 42 | Parameter Estimation |
| Lecture 43 | Methods for Parameter Estimation |
| Lecture 44 | Direct Search Methods |
| Lecture 45 | Genetic Algorithms |
| Lecture 46 | Genetic Algorithms |
| Lecture 47 | Other Evolutionary Algorithms |
| Lecture 48 | PyGMO |
| Lecture 49 | Dynamic Modelling Recap |
| Lecture 50 | Lab |
| Lecture 51 | Guest Lecture |
| Lecture 52 | Guest Lecture |
| Lecture 53 | Guest Lecture |
| Lecture 54 | Guest Lecture |
| Lecture 55 | Guest Lecture |
| Lecture 56 | Constraint-based Modelling of Metabolic Networks |
| Lecture 57 | Flux Balance Analysis |
| Lecture 58 | Flux Balance Analysis |
| Lecture 59 | Flux Balance Analysis |
| Lecture 60 | Other Constraint-Based Approaches |
| Lecture 61 | Other Constraint-Based Approaches |
| Lecture 62 | Lab |
| Lecture 63 | Perturbations to Metabolic Networks |
| Lecture 64 | Lab |
| Lecture 65 | Understanding FBA |
| Lecture 66 | Understanding FBA |
| Lecture 67 | Perturbations to Metabolic Networks |
| Lecture 68 | Perturbations to Metabolic Networks |
Lecture 69 - Perturbations to Metabolic Networks
Lecture 70 - Constraint-based Modelling of Metabolic Networks
Lecture 71 - Lab
Lecture 72 - Integrating Regulatory Information into Constraint-Based Models
Lecture 73 - Elementary Modes
Lecture 74 - Elementary Modes
Lecture 75 - Constraint-based Modelling of Metabolic Networks
Lecture 76 - Constraint-based Modelling of Metabolic Networks
Lecture 77 - Constraint-based Modelling of Metabolic Networks
Lecture 78 - Lab
Lecture 79 - Constraint-based Modelling of Metabolic Networks
Lecture 80 - Constraint-based Modelling of Metabolic Networks
Lecture 81 - Constraint-based Modelling of Metabolic Networks
Lecture 82 - $^{13}$C-Metabolic Flux Analysis using Mass Spectrometry
Lecture 83 - $^{13}$C-Metabolic Flux Analysis using Mass Spectrometry
Lecture 84 - $^{13}$C-Metabolic Flux Analysis using Mass Spectrometry
Lecture 85 - Lab
Lecture 86 - Modelling Gene Regulatory Networks
Lecture 87 - Modelling Gene Regulatory Networks
Lecture 88 - Modelling Gene Regulatory Networks
Lecture 89 - Lab
Lecture 90 - Lab
Lecture 91 - Computational Modelling of Host-Pathogen Interactions
Lecture 92 - Computational Modelling of Host-Pathogen Interactions
Lecture 93 - Robustness in Biological Systems
Lecture 94 - Robustness in Biological Systems
Lecture 95 - Robustness in Biological Systems
Lecture 96 - Robustness in Biological Systems
Lecture 97 - Obustness and Evolvability
Lecture 98 - obustness and Evolvability
Lecture 99 - Introduction to Synthetic Biology
Lecture 100 - Advanced Topics
Lecture 101 - Advanced Topics
Lecture 102 - Advanced Topics
Lecture 103 - Course Recap

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Biotechnology - NOC: Material and Energy Balances

Subject Co-ordinator - Prof. Vignesh Muthuvijayan
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Fundamentals of Engineering Calculations
Lecture 2 - Process Parameters and Variables
Lecture 3 - Fundamentals of Material Balances
Lecture 4 - Material Balance Calculations for Single Units Without Reactions - Part 1
Lecture 5 - Material Balance Calculations for Single Units Without Reactions - Part 2
Lecture 6 - Material Balance Calculations for Single Units Without Reactions - Part 3
Lecture 7 - Material Balance Calculations for Single Units Without Reactions - Part 4
Lecture 8 - Material Balance Calculations for Multiple Units Without Reactions - Part 1
Lecture 9 - Material Balance Calculations for Multiple Units Without Reactions - Part 2
Lecture 10 - Fundamentals of Reactive Processes
Lecture 11 - Material Balance Calculations For Single Units With A Single Reaction
Lecture 12 - Material Balance Calculations for Single Units with A Single Reaction (Continued...)
Lecture 13 - Material Balance Calculations for Single Units with Multiple Reactions - Part 1
Lecture 14 - Material Balance Calculations for Single Units with Multiple Reactions - Part 2
Lecture 15 - Material Balance Calculations for Single Units with Multiple Reactions - Part 3
Lecture 16 - Material Balance Calculations for Multiple Units with Reactions - Part 1
Lecture 17 - Material Balance Calculations for Multiple Units with Reactions - Part 2
Lecture 18 - Material Balances on Reactive Processes - Tutorials
Lecture 19 - Combustion Reactions
Lecture 20 - Material Balances for Combustion Reactions
Lecture 21 - Biochemical Reactions
Lecture 22 - Biochemical Reactions
Lecture 23 - Recycle Without Reactions
Lecture 24 - Recycle with Reactions
Lecture 25 - Recycle
Lecture 26 - Bypass
Lecture 27 - Purge
Lecture 28 - Material Balance
Lecture 29 - Material Balance

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Lecture 69 - Unsteady State Energy Balances
NPTEL Video Course - Biotechnology - NOC: Computer Aided Drug Design

Subject Co-ordinator - Prof. Mukesh Doble
Co-ordinating Institute - IIT - Madras

Lecture 1 - Introduction
Lecture 2 - Drug Discovery - Issues
Lecture 3 - Target and Lead Identification
Lecture 4 - Drug And Data bases
Lecture 5 - Drug Properties
Lecture 6 - Drug - Properties / SMILES
Lecture 7 - Drug Solubility
Lecture 8 - Drug Solubility / permeability
Lecture 9 - ADME
Lecture 10 - Drug - ADME
Lecture 11 - Drug - ADME
Lecture 12 - Drug - BBB
Lecture 13 - Pgp efflux/Drug Likeness
Lecture 14 - Drug Likeness
Lecture 15 - Molecular Modelling
Lecture 16 - Molecular Mechanics / Force Field
Lecture 17 - Molecular Mechanics / Force Field
Lecture 18 - Molecular Mechanics / Force Field
Lecture 19 - Molecular Mechanics / Force Field
Lecture 20 - ODES and Numerical methods
Lecture 21 - ODES and Numerical methods
Lecture 22 - Conformational Search / MD
Lecture 23 - Quantum Mechanics
Lecture 24 - Quantum Mechanics
Lecture 25 - Quantitative Structure Activity Relationship (QSAR)
Lecture 26 - Quantitative Structure Activity Relationship (QSAR)
Lecture 27 - Quantitative Structure Activity Relationship (QSAR)
Lecture 28 - Quantitative Structure Activity Relationship (QSAR)
Lecture 29 - Quantitative Structure Activity Relationship (QSAR)

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Biotechnology - NOC: Plant Cell Bioprocessing

Subject Co-ordinator - Prof. Smita Srivastava
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to plant cell technology
Lecture 2 - History of plant cell and tissue culture
Lecture 3 - Anatomy of plant cells
Lecture 4 - Plant tissues and functions
Lecture 5 - Photosynthesis and Photorespiration
Lecture 6 - In-vitro culture initiation
Lecture 7 - Nutritional requirements of plant cells
Lecture 8 - Organogenesis and Regeneration
Lecture 9 - Somaclonal variation and Micropropagation
Lecture 10 - Somatic embryogenesis and Protoplast culture
Lecture 11 - Synthetic seeds, Cryopreservation and Freezing methods
Lecture 12 - Secondary metabolism in plant cells - Part 1
Lecture 13 - Secondary metabolism in plant cells - Part 2
Lecture 14 - Secondary metabolism in plant cells - Part 3
Lecture 15 - Secondary metabolism in plant cells - Part 4
Lecture 16 - Optimization strategies - Part 1
Lecture 17 - Optimization strategies - Part 2
Lecture 18 - Optimization strategies - Part 3
Lecture 19 - Optimization strategies - Part 4
Lecture 20 - Biotransformation in plant cultures
Lecture 21 - Immobilization of plant cells
Lecture 22 - Genetic transformations in plant cells - Part 1
Lecture 23 - Genetic transformations in plant cells - Part 2
Lecture 24 - Genetic transformations in plant cells - Part 3
Lecture 25 - Plant Cell Bioreactors - Part 1
Lecture 26 - Plant Cell Bioreactors - Part 2
Lecture 27 - Bioreactors for Hairy Root cultures
Lecture 28 - Case study - Part 1
Lecture 29 - Case study - Part 2

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NPTEL Video Course - Biotechnology - NOC:Tissue Engineering

Subject Co-ordinator - Prof.Vignesh Muthuvijayan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Tissue Engineering - Part 1
Lecture 2 - Introduction to Tissue Engineering - Part 2
Lecture 3 - Introduction to Tissue Engineering - Part 3
Lecture 4 - Scaffolds
Lecture 5 - Scaffolds
Lecture 6 - Scaffolds
Lecture 7 - Hydrogels - Part 1
Lecture 8 - Hydrogels - Part 2
Lecture 9 - Bioceramics
Lecture 10 - Scaffold fabrication strategies
Lecture 11 - Self Assembly
Lecture 12 - 3D Bioprinting
Lecture 13 - Material Characterization - Part 1
Lecture 14 - Material Characterization - Part 2
Lecture 15 - Material Characterization - Part 3
Lecture 16 - Cell Source
Lecture 17 - Cell Isolation - Part 1
Lecture 18 - Cell Isolation - Part 2
Lecture 19 - Tissue Dynamics
Lecture 20 - Cell Differentiation
Lecture 21 - Cell Adhesion
Lecture 22 - Cell Migration
Lecture 23 - Signaling and biomolecule delivery in Tissue Engineering
Lecture 24 - Bioreactors in Tissue Engineering
Lecture 25 - Challenges in Tissue Engineering
Lecture 26 - Host integration and immune responses - Part 1
Lecture 27 - Host integration and immune responses - Part 2
Lecture 28 - Bioethics of Tissue Engineering - Part 1
Lecture 29 - Bioethics of Tissue Engineering - Part 2
Lecture 30 - Skin Tissue Engineering - Part 1
Lecture 31 - Skin Tissue Engineering - Part 2
Lecture 32 - Bone Tissue Engineering - Part 1
Lecture 33 - Bone Tissue Engineering - Part 2
Lecture 34 - Bone Tissue Engineering - Part 3
Lecture 35 - Vascular Tissue Engineering
Lecture 36 - Corneal Tissue Engineering - Part 1
Lecture 37 - Corneal Tissue Engineering - Part 2
NPTEL Video Course - Biotechnology - Analytical Technologies in Biotechnology

Subject Co-ordinator - Dr. Ashwani K. Sharma
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic concepts in microscopy - 1
Lecture 2 - Basic concepts in microscopy - 2
Lecture 3 - Dark-field and phase contrast microscopy
Lecture 4 - Differential interference contrast and polarization
Lecture 5 - Fluorescence and confocal microscopy
Lecture 6 - Transmission electron microscopy
Lecture 7 - Transmission electron microscopy cont. and scanning electron microscopy
Lecture 8 - Basic concepts - 1
Lecture 9 - Basic concepts - 2
Lecture 10 - GM counting and Scintillation counting
Lecture 11 - Scintillation counting continued
Lecture 12 - Autoradiography and RIA
Lecture 13 - Safety aspects and applications
Lecture 14 - Introduction and Basic concepts in chromatography - 1
Lecture 15 - Basic concepts in chromatography - 2
Lecture 16 - Low-pressure liquid chromatography (LPLC) and high performance liquid chromatography (HPLC)
Lecture 17 - Ion-exchange chromatography
Lecture 18 - Gel-filtration chromatography
Lecture 19 - Affinity chromatography
Lecture 20 - Gas-liquid chromatography
Lecture 21 - Basic concepts in electrophoresis
Lecture 22 - Horizontal and vertical gel electrophoresis
Lecture 23 - Native gel electrophoresis and SDS-PAGE
Lecture 24 - Isoelectric focusing (IEF), 2-D gel electrophoresis and protein detection methods
Lecture 25 - Electrophoresis of nucleic acids
Lecture 26 - Immuno-electrophoresis and capillary electrophoresis
Lecture 27 - Introduction and Basic Concepts - 1
Lecture 28 - Basic concepts - 2
Lecture 29 - Types of centrifuges and analytical ultracentrifugation method

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Lecture 30 - Separation methods in preparative ultracentrifuges
Lecture 31 - Types of rotors
Lecture 32 - Types of rotors cont. and care of rotors
Lecture 33 - Introduction and basic concepts
Lecture 34 - UV-Visible spectroscopy
Lecture 35 - Infrared and fluorescence spectroscopy
Lecture 36 - Circular dichroism (CD) spectroscopy
Lecture 37 - Nuclear magnetic resonance (NMR) spectroscopy and X-ray crystallography
Lecture 38 - Atomic spectroscopy and mass spectrometry
Lecture 39 - Polymerase chain reaction (PCR)
Lecture 40 - DNA sequencing methods
Lecture 41 - Enzyme linked immunosorbent assay (ELISA)
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NPTEL Video Course - Biotechnology - NOC:Biomedical Nanotechnology

Subject Co-ordinator - Prof. P.Gopinath
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Nano
Lecture 2 - Nano-Biomimicry
Lecture 3 - Synthesis of nanomaterials by Physical and Chemical Methods
Lecture 4 - Synthesis of nanomaterials by Biological Methods
Lecture 5 - Characterisation of Nanomaterials
Lecture 6 - DNA Nanotechnology
Lecture 7 - Protein and Glyco Nanotechnology
Lecture 8 - Lipid Nanotechnology
Lecture 9 - Bio-Nanomachines
Lecture 10 - Carbon nanotubes and Its Bio-Applications
Lecture 11 - Nanomaterials for Cancer Diagnosis
Lecture 12 - Nanomaterials for Cancer therapy
Lecture 13 - Nanotechnology in Tissue Engineering
Lecture 14 - Nano artificial cells
Lecture 15 - Nanotechnology in Organ Printing
Lecture 16 - Nanotechnology in Point-of-Care Diagnostics
Lecture 17 - Nano-Pharmacology and Drug Targeting
Lecture 18 - Cellular uptake mechanisms of nanomaterials
Lecture 19 - In vitro Methods to study antibacterial and anticancer properties of nanomaterials
Lecture 20 - Nanotoxicology

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NPTEL Video Course - Biotechnology - NOC:Plant Developmental Biology

Subject Co-ordinator - Prof. Shri Ram Yadav

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Life Cycle of an Angiosperm
Lecture 2 - Characteristics of Plant Growth and Development - I
Lecture 3 - Characteristics of Plant Growth and Development - II
Lecture 4 - Molecular Genetics of Plant Development - I
Lecture 5 - Molecular Genetics of Plant Development - II
Lecture 6 - Molecular Genetics of Plant Development - III
Lecture 7 - Molecular Genetics of Plant Development - IV
Lecture 8 - Molecular Genetics of Plant Development (Continued...) - I
Lecture 9 - Molecular Genetics of Plant Development (Continued...) - II
Lecture 10 - Molecular Genetics of Plant Development (Continued...) - III
Lecture 11 - Root Development
Lecture 12 - Root Development (Continued...)
Lecture 13 - Root Development (Vascular Development)
Lecture 14 - Root Branching
Lecture 15 - Shoot Development
Lecture 16 - Shoot Development
Lecture 17 - Shoot Development
Lecture 18 - Shoot Development
Lecture 19 - Cell-Cell Communication During Plant Development
Lecture 20 - Techniques Used in Lab

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NPTEL Video Course - Biotechnology - NOC:Learning about Learning: A Course on Neurobiology of Learning and Memory

Subject Co-ordinator - Prof. Balaji Jayaprakash
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

| Lecture 1 | Introduction to Learning and Memory - I |
| Lecture 2 | Introduction to Learning and Memory - II |
| Lecture 3 | Associative Learning I |
| Lecture 4 | Associative learning II |
| Lecture 5 | Introduction to the Rescorla Wagner Model |
| Lecture 6 | Application of Rescorla Wagner Model - I |
| Lecture 7 | Application of Rescorla Wagner Model - II |
| Lecture 8 | Application of Rescorla Wagner Model - III |
| Lecture 9 | Application of Rescorla Wagner Model - IV |
| Lecture 10 | Limitations of Rescorla Wagner Model |
| Lecture 11 | Introduction of Reinforcement Learning - I |
| Lecture 12 | Introduction of Reinforcement Learning - II |
| Lecture 13 | Introduction of Reinforcement Learning - III |
| Lecture 14 | Sign Tracking vs Goal Oriented/Tracking; Linking complex behaviors to simple molecules |
| Lecture 15 | Sign Tracking vs Goal Oriented; Learning Linking complex behaviors to simple molecules - II |
| Lecture 16 | Memory in Molecular Terms - I |
| Lecture 17 | Memory in Molecular Terms - II |
| Lecture 18 | Memory in Molecular Terms - III |
| Lecture 19 | Memory in Molecular Terms - IV |
| Lecture 20 | Memory in Molecular Terms - V |

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Lecture 1 - Drug Delivery Introduction and Pharmacokinetics
Lecture 2 - Pharmacokinetics (Continued...)
Lecture 3 - Pro-drugs and Polymers Introduction
Lecture 4 - Polymers - Synthesis
Lecture 5 - Polymers - Properties
Lecture 6 - Biomedical Polymers
Lecture 7 - Biodegradable Polymers and Polymer Drug Conjugates - I
Lecture 8 - Polymer Drug Conjugates - II
Lecture 9 - Research Paper Discussion and Diffusion Controlled Systems
Lecture 10 - Controlled Release
Lecture 11 - Controlled Release
Lecture 12 - Controlled Release
Lecture 13 - Math Exercise
Lecture 14 - Hydrogels - I
Lecture 15 - Hydrogels - II
Lecture 16 - Hydrogels - III
Lecture 17 - Hydrogels - IV
Lecture 18 - Nano and Micro-particles - I
Lecture 19 - Nano and Micro-particles - II
Lecture 20 - Nano and Micro-particles - III
Lecture 21 - Nano and Micro-particles - IV
Lecture 22 - Nano and Micro-particles - V
Lecture 23 - Nano and Micro-particles - VI
Lecture 24 - Nano and Micro-particles - VII
Lecture 25 - Protein Adsorption - I
Lecture 26 - Protein Adsorption - II
Lecture 27 - Protein Adsorption - III
Lecture 28 - Tissue Engineering - I
Lecture 29 - Tissue Engineering - II

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Lecture 30 - Tissue Engineering - III
Lecture 31 - Drug Delivery in Tissue Engineering - I
Lecture 32 - Drug Delivery in Tissue Engineering - II
Lecture 33 - Implant Associated Infections - I
Lecture 34 - Implant Associated Infections - II
Lecture 35 - Route Specific Delivery
Lecture 36 - Route Specific Delivery
Lecture 37 - Route Specific Delivery
Lecture 38 - Route Specific Delivery
Lecture 39 - Route Specific Delivery
Lecture 40 - Route Specific Delivery
Lecture 41 - Route Specific Delivery
Lecture 42 - Research Paper Discussion
Lecture 43 - Route Specific Delivery
Lecture 44 - Intravenous Administration
Lecture 45 - Immune System - II
Lecture 46 - Complement System and Blood Clotting
Lecture 47 - Blood Clotting and Hemocompatibility of Materials; Adaptive Immune Response
Lecture 48 - Adaptive Immune Response and Vaccine
Lecture 49 - Vaccines
Lecture 50 - Vaccines and Immuno-isolated Cell Therapy
Lecture 51 - Immuno-isolated Cell Therapy
Lecture 52 - Immuno-isolated Cell and Gene Therapy
Lecture 53 - Gene Delivery
Lecture 54 - Gene Delivery
Lecture 55 - Genes as Vaccines
Lecture 56 - Vaccines
Lecture 57 - Cancer Vaccines
Lecture 58 - Cancer Vaccine
Lecture 59 - Responsive Delivery Systems - I
Lecture 60 - Responsive Delivery Systems - II
Lecture 61 - Targeted Drug Delivery System
Lecture 62 - Targeted Drug Delivery System
Lecture 63 - Nanotoxicology and Translation Pathways
NPTEL Video Course - Biotechnology - NOC: Fundamentals of Micro and Nanofabrication

Subject Co-ordinator - Prof. Shankar Selvaraja

Co-ordinating Institute - IISc - Bangalore

Lecture 1 - Introduction
Lecture 2 - Substrate
Lecture 3 - Substrate (Continued...)
Lecture 4 - Introduction to cleanroom
Lecture 5 - Contamination and surface cleaning
Lecture 6 - Advanced cleaning techniques
Lecture 7 - Defects
Lecture 8 - Diffusion
Lecture 9 - Diffusion - Advanced Concepts
Lecture 10 - Ion Implantation
Lecture 11 - Ion Implantation (Continued...)
Lecture 12 - Native Films
Lecture 13 - Native Films
Lecture 14 - Native Films
Lecture 15 - Methods and Some Definitions
Lecture 16 - Chemical Vapor Deposition
Lecture 17 - Chemical Vapor Deposition
Lecture 18 - Chemical Vapor Deposition
Lecture 19 - Chemical Vapor Deposition
Lecture 20 - Chemical Vapor Deposition
Lecture 21 - Atomic Layer Deposition
Lecture 22 - Atomic Layer Deposition (Continued...)
Lecture 23 - Physical Vapor Deposition
Lecture 24 - Physical Vapor Deposition
Lecture 25 - Physical Vapor Deposition
Lecture 26 - Mettalization
Lecture 27 - Mettalization
Lecture 28 - Pattern Transfer Bascis
Lecture 29 - Optical lithography basics
Lecture 30 - Optical lithography basics
Lecture 31 - Optical Lithography
Lecture 32 - Optical Lithography
Lecture 33 - Projection Lithography
Lecture 34 - Projection Lithography
Lecture 35 - Optical lithography
Lecture 36 - Optical Lithography
Lecture 37 - Lithography process technology glossary
Lecture 38 - Optical Lithography
Lecture 39 - Electron beam lithography
Lecture 40 - Electron beam lithography
Lecture 41 - Emerging lithography techniques
Lecture 42 - Etching Figures of Merit
Lecture 43 - Wet etching Basics
Lecture 44 - Wet Etching Recipes
Lecture 45 - Wet Etching Recipes
Lecture 46 - Dry etch
Lecture 47 - Dry etch
Lecture 48 - Dry etch
Lecture 49 - Dry etch
Lecture 50 - Dry etch
Lecture 51 - Chemical Mechanical Polishing (CMP)
Lecture 52 - Chemical Mechanical Polishing (CMP)
Lecture 53 - Design for Manufacturability - 1
Lecture 54 - Design for Manufacturability - 2
Lecture 55 - Design for Manufacturability
Lecture 56 - Process integration
Lecture 57 - PV integration
Lecture 58 - CMOS integration
Lecture 59 - Lab demo
Lecture 60 - Lab demo
Lecture 61 - CMOS process for photonics application
NPTEL Video Course - Chemical Engineering - Advanced Chemical Reaction Engineering (PG)

Subject Co-ordinator - Prof. H.S. Shankar

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Overview - I
Lecture 2 - Course Overview - II
Lecture 3 - Design Equations - I
Lecture 4 - Design Equations - Illustrative Examples
Lecture 5 - Design Equations - II
Lecture 6 - Illustrative Examples
Lecture 7 - Illustrative Examples
Lecture 8 - Multiple Reactions - II
Lecture 9 - Modelling Multiple Reactions in Soil Environment - III
Lecture 10 - Semi Continuous Reactor Operation
Lecture 11 - Catalyst Deactivation - I
Lecture 12 - Catalyst Deactivation - II
Lecture 13 - Illustrative Example
Lecture 14 - Energy Balance - I
Lecture 15 - Energy Balance - II
Lecture 16 - Reacting Fluids as Energy Carrier
Lecture 17 - Illustrative Example
Lecture 18 - Energy Balance - III
Lecture 19 - Energy Balance - IV
Lecture 20 - Energy Balance - V
Lecture 21 - Illustrative Example
Lecture 22 - Energy Balance - VI
Lecture 23 - Illustrative Example
Lecture 24 - Illustrative Example
Lecture 25 - Illustrative Example
Lecture 26 - Residence Time Distribution Methods
Lecture 27 - Residence Time Distribution Models
Lecture 28 - Shrinking core Gas-Solid reactions Model
Lecture 29 - Shrinking core Ash Diffusion Model & Combination of Resistances

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NPTEL Video Course - Chemical Engineering - Advanced Process Control

Subject Co-ordinator - Prof. Sachin C. Patwardhan

Co-ordinating Institute - IIT - Bombay

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Lecture 25 - Model Predictive Control (MPC)
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NPTEL Video Course - Chemical Engineering - Chemical Reaction Engineering II

Subject Co-ordinator - Prof. A.K. Suresh, Prof. Ganesh A. Viswanathan, Prof. Sanjay M. Mahajani

Co-ordinating Institute - IIT - Bombay

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NPTEL Video Course - Chemical Engineering - NOC:Introduction to Evolutionary Dynamics

Subject Co-ordinator - Prof. Supreet Saini

Co-ordinating Institute - IIT - Bombay

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Lecture 28 - Estimating Timescales of Evolution
Lecture 29 - Estimating the Speed of Microbial Evolution

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NPTEL Video Course - Chemical Engineering - NOC: Heat Transfer

Subject Co-ordinator - Prof. Ganesh A. Viswanathan
Co-ordinating Institute - IIT - Bombay

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Lecture 3 - Energy Balance
Lecture 4 - 1D Steady-state Conduction - Resistance Concept
Lecture 5 - Resistances in Composite Wall Case
Lecture 6 - Resistances in Radial Systems
Lecture 7 - Heat Generation - I Plane and Cylindrical Wall
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Lecture 17 - Heat and Mass Transport Coefficients
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NPTEL Video Course - Chemical Engineering - NOC: Chemical Reaction Engineering-II

Subject Co-ordinator - Prof. Ganesh Vishwanathan

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Chemical Engineering - NOC:Chemical Process Control

Subject Co-ordinator - Prof. Sujit Jogwar
Co-ordinating Institute - IIT - Bombay

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Lecture 2 - Functions of process control system  
Lecture 3 - Common control strategies  
Lecture 4 - Components of process control system  
Lecture 5 - Introduction to process dynamics  
Lecture 6 - First principle dynamic models  
Lecture 7 - Empirical and gray box models  
Lecture 8 - Degree of freedom analysis  
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Lecture 10 - Linearization of process dynamics  
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Lecture 12 - Response to sinusoidal input  
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Lecture 14 - Examples of second order dynamical systems  
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Lecture 18 - Approximation as FOPDT model  
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Lecture 27 - Stability of dynamical processes  
Lecture 28 - Laplace domain analysis - Part I  
Lecture 29 - Laplace domain analysis - Part II

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Lecture 31 - Frequency domain analysis
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Lecture 47 - Programmable logic control
Lecture 48 - Batch to batch control
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NPTEL Video Course - Chemical Engineering - Heterogeneous Catalysis and Catalytic Processes

Subject Co-ordinator - Dr. K.K. Pant

Co-ordinating Institute - IIT - Delhi

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Lecture 30 - Hydrolyses of Esters by Alkali Acid or Enzyme Photochemical Reactions in Monolayers Polymerization
Lecture 31 - Catalytic Effects Reactions in Emulsions Complex Formation
Lecture 32 - Complex Formation Penetration into Monolayers Thermodynamics of Penetration Adsorption from Vapour Phase
Lecture 33 - Introductory Concepts Resistances and their Magnitudes Evaporation and its Retardation
Lecture 34 - Evaporation and its Retardation Resistances and their Analysis Diffusional Resistance in Gas Phase
Lecture 35 - Resistances in Liquid Phase and Interface and Their Importance Some Effects and Applications, Theory
Lecture 36 - Surface Instability Theories of Mass Transfer Experiments on static and Dynamic Systems
Lecture 37 - Colloida, Aerosols, Emulsions Foams, Coagulation Smoluchowski's Theory
NPTEL Video Course - Chemical Engineering - Mass Transfer Operations I

Subject Co-ordinator - Dr. B. Mandal

Co-ordinating Institute - IIT - Guwahati

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Lecture 2 - Molecular Diffusion
Lecture 3 - Fick's Law of Diffusion
Lecture 4 - Steady state molecular diffusion in fluids - Part I
Lecture 5 - Steady state molecular diffusion in fluids - Part II
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Lecture 7 - Diffusion Coefficient
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Lecture 27 - Introduction to Distillation and Phas diagrams
Lecture 28 - Azeotropes and Enthalpy Concentration Diagrams
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NPTEL Video Course - Chemical Engineering - Process Design Decisions and Project Economics

Subject Co-ordinator - Dr. Vijay S. Moholkar

Co-ordinating Institute - IIT - Guwahati

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Lecture 3 - Hierarchical Approach to Process Design - Examples
Lecture 4 - Input Information and Design Aspects of Batch vs. Continuous Process
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Lecture 15 - Types of Reactors and Selection Criteria
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Lecture 18 - Guidelines for Design of Separation Systems
Lecture 19 - Design of Distillation Columns - Part I (Sequencing of Columns, Energy Integration / Thermal Coupling of the Columns)
Lecture 20 - Design of Distillation Columns - Part II (Plate and Packed Towers, Number of Plates, Diameter and Height of the Column)
Lecture 21 - Tutorial - Part I (Design of Absorption Column)
Lecture 22 - Tutorial - Part II (Design of Distillation Column)
Lecture 23 - Concepts and Basic Principles of Energy (or Heat) Integration - Part 1 (Composite Curves and ?Tmin)
Lecture 24 - Concepts and Basic Principles of Heat Integration - Part 2 (Problem Table Algorithm and Identification of Energy Targets)
Lecture 25 - Identification of Area and Cost Targets
Lecture 26 - Pinch Technology for Heat Exchanger Network Design
Lecture 27 - Tutorial - I (Composite Curves, Problem Table Algorithm and Enthalpy Intervals)
Lecture 28 - Tutorial - II (Heat Exchanger Network Synthesis Using Pinch Technology)
Lecture 29 - Selection of Process, Design of Flowsheet and Materials Balance

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Lecture 30 - Energy Balance, Process Alternatives and Design of the Absorber
Lecture 31 - Rules of Thumb & Their Limitations and Tutorial
Lecture 32 - General Concepts & Principles and Cost Allocation Procedure
Lecture 33 - Lumped Cost Diagram and Cost Allocation Diagram (Case Study of Hydro-dealkylation Process)
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NPTEL Video Course - Chemical Engineering - NOC: Fluidization Engineering

Subject Co-ordinator - Dr. S.K. Majumder
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Particle properties
Lecture 3 - Particle / Powder Classifications
Lecture 4 - Minimum Fluidization Velocity
Lecture 5 - Minimum Fluidization Velocity
Lecture 6 - Flow regime and its map
Lecture 7 - Flow regime and its map
Lecture 8 - Frictional pressure drop in fluidized bed-fluid-solid system
Lecture 9 - Frictional pressure drop in fluidized Bed-Gas-liquid-solid system
Lecture 10 - Analysis of Frictional Pressure Drop in Fluidized Bed By Different Models
Lecture 11 - Gas Distribution Through Distributor
Lecture 12 - Calculation of gas pumping power consumption in fluidized bed
Lecture 13 - Bubbling Fluidization Part 1
Lecture 14 - Bubbling Fluidization Part 2
Lecture 15 - Bubbling Fluidization Part 3
Lecture 16 - Bubbling Fluidization Part 4
Lecture 17 - Bubbling Fluidization Part 5
Lecture 18 - Bubbling Fluidization Part 6
Lecture 19 - Entrainment Characteristics (Part 1)
Lecture 20 - Entrainment Characteristics (Part 2)
Lecture 21 - Entrainment Characteristics (Part 2)
Lecture 22 - Entrainment Characteristics (Part 2)
Lecture 23 - Attrition in Fluidized Bed (Part 2)
Lecture 24 - Solid movement, mixing
Lecture 25 - Solid segregation
Lecture 26 - Solid mixing and segregation
Lecture 27 - Gas Dispersion and Interchange
Lecture 28 - Mass transfer in fluidized Bed-Gas-solid system
Lecture 29 - Mass transfer in fluidized Bed-Gas-liquid-solid system (Continued...)

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Lecture 30 - Heat transfer Characteristics
Lecture 31 - Fluidized bed reactor design and its performance
NPTEL Video Course - Chemical Engineering - NOC: An Introduction to Cardiovascular Fluid Mechanics

Subject Co-ordinator - Dr. Raghvendra Gupta
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - An Introduction
Lecture 2 - Fluid Mechanics
Lecture 3 - Solid Mechanics
Lecture 4 - Rheology of blood
Lecture 5 - Blood morphology
Lecture 6 - Blood flow in a channel
Lecture 7 - Viscometers and Rheometers
Lecture 8 - Viscoelasticity
Lecture 9 - Flow Bifurcation
Lecture 10 - Pulsatile Flow 1
Lecture 11 - Pulsatile Flow 2
Lecture 12 - Flow in Elastic Tubes

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NPTEL Video Course - Chemical Engineering - NOC:Multiphase Microfluidics

Subject Co-ordinator - Dr. Raghvendra Gupta
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - An Introduction
Lecture 2 - Interface and Surface Tension
Lecture 3 - Flow Regimes 1
Lecture 4 - Flow Regimes 2
Lecture 5 - Taylor Flow 1
Lecture 6 - Taylor Flow 2
Lecture 7 - Computational Techniques
Lecture 8 - Bubble and Droplet Generation
Lecture 9 - Interface and Surface tension 2
Lecture 10 - Void Fraction and Pressure Drop
Lecture 11 - Liquid-Liquid Flow
Lecture 12 - Ideal annular Flow
Lecture 13 - Taylor Flow
Lecture 14 - Taylor Flow
Lecture 15 - Taylor Flow
Lecture 16 - Taylor Flow
Lecture 17 - Flow boiling in microchannels
Lecture 18 - Flow boiling in microchannels (Continued...)
Lecture 19 - Flow Measurement Techniques
Lecture 20 - Particle image Velocimetry
Lecture 21 - Inertial Microfluidics
Lecture 22 - Microfluidic applications
Lecture 23 - Microfluidic applications (Continued...)
Lecture 24 - Concluding Remarks

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NPTEL Video Course - Chemical Engineering - NOC: Measurement Technique in Multiphase Flows

Subject Co-ordinator - Prof. Rajesh Kumar Upadhyay
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Multiphase flow Measurement Techniques
Lecture 2 - Invasive and Non-invasive Techniques
Lecture 3 - Hot Wire Anemometry
Lecture 4 - Optical Fiber Probe
Lecture 5 - Laser Doppler Anemometry (LDA)
Lecture 6 - LDA Post Processing and Particle Image Velocimetry (PIV)
Lecture 7 - PIV and Positron Emission Particle Tracking
Lecture 8 - Radioactive Particle Tracking - I
Lecture 9 - Radioactive Particle Tracking - II
Lecture 10 - Capacitance Probe, Optical Fiber Probe and ECT
Lecture 11 - Gamma-ray and X-ray Tomography, MRI
Lecture 12 - Summary
NPTEL Video Course - Chemical Engineering - NOC:Introduction to Polymer Physics (IIT-G)

Subject Co-ordinator - Prof. Amit Kumar

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Polymers
Lecture 2 - Ideal Chain Models
Lecture 3 - Ideal and Real Chains
Lecture 4 - Thermodynamics of Polymer Solutions - I
Lecture 5 - Thermodynamics of Polymer Solutions - II
Lecture 6 - Thermodynamics of Polymer Solutions - III
Lecture 7 - Phase Behaviour of Polymer Solutions and Blends
Lecture 8 - Phase Behaviour of Polymer Blends and Copolymers
Lecture 9 - Determination of Polymer Molar Mass
Lecture 10 - Determination of Polymer Molar Mass
Lecture 11 - Determination of Polymer Molar Mass
Lecture 12 - Determination of Polymer Molar Mass
Lecture 13 - Branching
Lecture 14 - Branching, Network Formation and Gelation
Lecture 15 - Gelation and Swelling of Network Polymers
Lecture 16 - Amorphous State of Polymers
Lecture 17 - Crystalline State of Polymers
Lecture 18 - Mechanical Properties of Polymers
Lecture 19 - Viscoelasticity
Lecture 20 - Viscoelasticity, Dynamic Mechanical Analysis and Rheology
Lecture 21 - Rubber Elasticity
Lecture 22 - Unentangled Polymer Dynamics
Lecture 23 - Entangled Polymer Dynamics
Lecture 24 - Review

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - NOC: Natural Gas Engineering

Subject Co-ordinator - Prof. Pankaj Tiwari
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Natural Gas - I
Lecture 2 - Introduction to Natural Gas - II
Lecture 3 - Introduction to Natural Gas - III
Lecture 4 - Wellbore Performance Relationship (WPR)
Lecture 5 - Choke Performance Relationship (CPR)
Lecture 6 - Nodal Analysis
Lecture 7 - Inflow Performance Relationship (IPR) - I
Lecture 8 - Inflow Performance Relationship (IPR) - II
Lecture 9 - Gas Well Testing
Lecture 10 - Wellbore Performance Relationship (WPR)
Lecture 11 - Choke Performance Relationship (CPR)
Lecture 12 - Nodal Analysis
Lecture 13 - Natural Gas Separation - I
Lecture 14 - Natural Gas Separation - II
Lecture 15 - Dehydration of Natural Gas
Lecture 16 - Sweeting of Natural Gas
Lecture 17 - Compressor Design
Lecture 18 - Measurement of Natural Gas
Lecture 19 - Transportation of Natural Gas - I
Lecture 20 - Transportation of Natural Gas - II
Lecture 21 - Unconventional production of Natural Gas
Lecture 22 - Review

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NPTEL Video Course - Chemical Engineering - NOC:Chemical Engineering Thermodynamics

Subject Co-ordinator - Prof. Sasidhar Gumma
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - First law for closed systems
Lecture 3 - First law for open systems
Lecture 4 - Simple processes
Lecture 5 - Processes involving liquids and ideal gases
Lecture 6 - Temperature dependency of Cp in an ideal gas
Lecture 7 - Efficiency of Heat engines and Statement of Second Law
Lecture 8 - Entropy
Lecture 9 - Lost Work
Lecture 10 - Maxwell's Relations
Lecture 11 - Thermodynamic Diagrams
Lecture 12 - Thermodynamic Tables, Residual Properties
Lecture 13 - Virial Equation of State
Lecture 14 - Residual property relations from EoS
Lecture 15 - Cubic Equation of State
Lecture 16 - Cubic Equation of State
Lecture 17 - Thermodynamic Tables
Lecture 18 - Correlations for Liquids
Lecture 19 - Process Involving Phase Changes
Lecture 20 - Chemical potential
Lecture 21 - Partial molar properties
Lecture 22 - Examples
Lecture 23 - Ideal Solutions
Lecture 24 - Excess Properties
Lecture 25 - Fugacity
Lecture 26 - Calculation of Fugacity using EoS - Part 1
Lecture 27 - Calculation of Fugacity using EoS - Part 2
Lecture 28 - Calculation of Fugacity in Mixtures using Cubic EoS
Lecture 29 - Fugacity in Liquids, Activity Coefficient

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Lecture 30 - Models for Excess Gibbs free energy - Part 1
Lecture 31 - Models for Excess Gibbs free energy - Part 2
Lecture 32 - Vapor Liquid Equilibrium - Part 1
Lecture 33 - Vapor Liquid Equilibrium - Part 2
Lecture 34 - Azeotropes
Lecture 35 - Gamma/Phi Formulation
Lecture 36 - LLE
Lecture 37 - VLLE
Lecture 38 - Enthalpy changes upon reaction
Lecture 39 - Reaction coordinate
Lecture 40 - Equilibrium constant
Lecture 41 - Examples
Lecture 42 - Conclusion

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NPTEL Video Course - Chemical Engineering - NOC: Mass Transfer Operations-I

Subject Co-ordinator - Dr. B. Mandal

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Overview of Mass Transfer Operation
Lecture 2 - Molecular and Eddy Diffusion, Diffusion Velocities and Fluxes
Lecture 3 - Fick's First and Second Law
Lecture 4 - Steady State Molecular Diffusion in fluids under stagnant and laminar flow conditions
Lecture 5 - Diffusion through variable cross-sectional area
Lecture 6 - Gas Phase Diffusion Coefficient measurement
Lecture 7 - Gas Phase Diffusion Coefficient prediction and liquid phase diffusion coefficient measurement and prediction
Lecture 8 - Multicomponent diffusion and diffusivity in solids
Lecture 9 - Mass transfer coefficient concept and classifications
Lecture 10 - Dimensionless groups and correlations for convective mass transfer coefficients
Lecture 11 - Mass transfer coefficient in laminar flow
Lecture 12 - Boundary Layer Theory and mass transfer coefficients in turbulent flow
Lecture 13 - Mass transfer theories
Lecture 14 - Interphase mass transfer
Lecture 15 - Interphase mass transfer and material balance for operating line
Lecture 16 - Number of ideal stages in counter current operation
Lecture 17 - Introduction, classification, Sparged and agitated vessels design
Lecture 18 - Gas dispersed
Lecture 19 - Sieve Tray
Lecture 20 - Liquid dispersed
Lecture 21 - Introduction to absorption, Equilibrium in gas-liquid system, and minimum liquid rate
Lecture 22 - Design of packed column absorber based on the Individual Mass Transfer Coefficient
Lecture 23 - Design of packed column absorber based on the Overall Mass Transfer Coefficient
Lecture 24 - Height Equivalent to a Theoretical Plate (HETP), Design of packed column absorber for dilute and concentrated gases
Lecture 25 - Absorption in plate column
Lecture 26 - Introduction to distillation, binary equilibrium diagrams and concept of relative volatility
Lecture 27 - Distillation in non-ideal systems and concept of enthalpy-concentration diagram
Lecture 28 - Flash distillation
Lecture 29 - Batch and steam distillation

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Lecture 30 - Continuous multistate fractionation
Lecture 31 - Number of trays by McCabe and Thiele for distillation
Lecture 32 - Pinch Points and minimum reflux
Lecture 33 - Reflux below its bubble point
Lecture 34 - Multiple feeds, multiple product withdrawal or side streams
Lecture 35 - Multistage batch distillation with reflux
Lecture 36 - The Ponchon-Savarit method
Lecture 37 - The Ponchon-Savarit method
Lecture 38 - Packed Distillation
Lecture 39 - Introduction to multicomponent distillation and multicomponent flash distillation
Lecture 40 - Minimum stages and minimum reflux in multicomponent distillation
Lecture 41 - Multicomponent batch distillation
NPTEL Video Course - Chemical Engineering - NOC: Transport Phenomena of Non-Newtonian Fluids

Subject Co-ordinator - Prof. N. Kishore

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Basic Concepts
Lecture 2 - Classification of Non-Newtonian Fluids
Lecture 3 - Mathematical Models for Non-Newtonian Fluids
Lecture 4 - Capillary Viscometers
Lecture 5 - Capillary Viscometers
Lecture 6 - Rotational Viscometers
Lecture 7 - Equations of Change for Isothermal Systems
Lecture 8 - Equation of Change for Non-Isothermal Systems
Lecture 9 - Time Independent Non-Newtonian Fluids Flow Through Pipes - 1
Lecture 10 - Time Independent Non-Newtonian Fluids Flow Through Pipes - 2
Lecture 11 - Transition from Laminar to Turbulent Flow in Pipes for GNF
Lecture 12 - Power-law and Bingham Plastic Fluids Flow Between Two Infinite Parallel Plates
Lecture 13 - Flow of Ellis Model and Bingham Plastic Fluids along Inclined and Vertical Plates
Lecture 14 - Power-law Fluids Flow in Concentric Annulus
Lecture 15 - Flow of Non-Newtonian Fluids through Beds of Particles
Lecture 16 - Dispersion in Beds of Particles
Lecture 17 - Liquid-Solid Fluidization by Power-law Liquids
Lecture 18 - Free Convection between Two Vertical Plates
Lecture 19 - Viscous Heat Generation in Coaxial Cylinders
Lecture 20 - (a) Viscous Heating in Slit Flow with Constant Wall Flux Boundary Condition (b) Temperature Distribution in Fluids Confined Between Two Cylinders
Lecture 21 - Heat Conduction from Sphere Without and With Reaction; and in Spherical Shell
Lecture 22 - Transpiration Cooling
Lecture 23 - Mass Transfer Phenomena of Non-Newtonian Fluids
Lecture 24 - Diffusion through A Stagnant Gas Film; Diffusion into A Falling Liquid Film
Lecture 25 - Diffusion through A Non-Isothermal Spherical Film
Lecture 26 - Simultaneous Heat and Mass Transfer with Multicomponent Diffusion
Lecture 27 - Diffusion Combined with Heterogeneous and Homogeneous Chemical Reactions
Lecture 28 - Combustion of a Carbon Particle

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Lecture 30 - Evaporation of Column of Liquid; Melting of Spherical Crystal
Lecture 31 - Freezing of Salt Water; Effect of Mass Transfer on Heat Transfer Coefficient
Lecture 32 - Evaporation of a Water Droplet
Lecture 33 - Boundary Layer Flows and Derivation of Integral Momentum and Energy Equations
Lecture 34 - Momentum Boundary Layer Thickness for Flow of Power-law Liquids
Lecture 35 - Thermal Boundary Layer Thickness for Flow of Power-law Liquids
Lecture 30 - Introduction to multiphase flow
Lecture 31 - Hydrodynamics in multiphase flow
Lecture 32 - Hydrodynamics in multiphase flow (Continued...)
Lecture 33 - Applications of multiphase flow
NPTEL Video Course - Chemical Engineering - NOC:Chemical Process Intensification

Subject Co-ordinator - Dr. S.K. Majumder

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - History, Philosophy and Concept
Lecture 2 - Principle Features
Lecture 3 - Strategies and domain based techniques
Lecture 4 - Intensification by fluid flow process
Lecture 5 - Mechanism of Intensification by mixing
Lecture 6 - Intensification in Reactive system
Lecture 7 - Problems leading to sustainable development
Lecture 8 - Concept, Issues and Challenges
Lecture 9 - Strategies in process design
Lecture 10 - Scales and stages of process intensification
Lecture 11 - Methods and Tools for Achieving sustainable design
Lecture 12 - Multi-level Computer aided tools
Lecture 13 - Introduction on Stochastic Optimization
Lecture 14 - Optimization Algorithms
Lecture 15 - Applications of Optimization Algorithms
Lecture 16 - Introduction and Mechanism of Cavitation-based PI
Lecture 17 - Cavitational Reactor Configurations and activity
Lecture 18 - Parametric effects on cavitation
Lecture 19 - Introduction of monolith reactor
Lecture 20 - Preparation of monolithic catalyst
Lecture 21 - Application of monolithic catalyst
Lecture 22 - Hydrodynamics, transport of monolithic reactor
Lecture 23 - Overview of interfacial area based processes
Lecture 24 - Ejector induced downflow system for PI
Lecture 25 - Hydrodynamics and transport in downflow system
Lecture 26 - Introduction and Principles
Lecture 27 - Types of Intensified Distillation Units
Lecture 28 - Design of membrane-assisted distillation
Lecture 29 - Introduction and Principles

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Lecture 30 - Supercritical extraction for process intensification
Lecture 31 - Introduction to membrane and its principles
Lecture 32 - Membrane engineering in process intensification
Lecture 33 - Introduction to microprocess technology
Lecture 34 - Process Intensification by Microreactors
Lecture 35 - Hydrodynamics and transport in microchannel based microreactor
Lecture 1 - Introduction and Overview on Reaction Engineering
Lecture 2 - Kinetics of Homogeneous Reactions
Lecture 3 - Kinetic Model and Temperature Dependency
Lecture 4 - Introduction and Stoichiometry for the Batch System
Lecture 5 - Stoichiometry for Constant Volume Flow and Variable Volume Batch Systems
Lecture 6 - Stoichiometry for Variable Volume Flow System
Lecture 7 - Analysis of Batch Reactor Kinetic Data
Lecture 8 - Integral Method of Analysis of Batch Reactor Data - Part 1
Lecture 9 - Integral Method of Analysis of Batch Reactor Data - Part 2
Lecture 10 - Differential Method of Analysis and Variable Volume Batch Reactor Data
Lecture 11 - Introduction and Ideal Batch Reactor Design
Lecture 12 - Ideal Mixed Flow Reactor Design
Lecture 13 - Ideal Plug Flow Reactor Design
Lecture 14 - Size Comparison of Single and Multiple Reactors
Lecture 15 - Size Comparison Multiple Reactors
Lecture 16 - Recycle and Autocatalytic Reactors
Lecture 17 - Design for Parallel Reactions
Lecture 18 - Design for Series Reactions
Lecture 19 - Design for Series-Parallel Reactions
Lecture 20 - Denbigh Reactions and Their Special Cases
Lecture 21 - Heats of Reaction and Equilibrium Conversion from Thermodynamics
Lecture 22 - General Graphical Reactor Design Procedure
Lecture 23 - Material and Energy Balances in Batch Reactor
Lecture 24 - Optimum Temperature Progression in Batch Reactor
Lecture 25 - Material and Energy Balances in Plug Flow and Mixed Flow Reactors
Lecture 26 - Ideal and Non-Ideal Mixed Flow Reactor Design and Multiple Steady States
Lecture 27 - Non-Ideal Reactors and Residence Time Distribution
Lecture 28 - RTD Measurement and Moments of RTD
Lecture 29 - RTD in Ideal Reactors
Lecture 30 - Reactor Modeling using the RTD
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - NOC: Mass Transfer Operations-II

Subject Co-ordinator - Dr. Chandan Das
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic concepts, Adiabatic saturation temperature
Lecture 2 - Design calculations of cooling tower
Lecture 3 - Design of cooling tower
Lecture 4 - Design of cooling tower
Lecture 5 - Air conditioning, Example problems on dehumidification
Lecture 6 - Mechanism of drying and drying equilibria, drying rate curve
Lecture 7 - Drying
Lecture 8 - Drying
Lecture 9 - Drying time calculation from drying rate curve
Lecture 10 - Introduction to liquid-liquid extraction, liquid-liquid equilibria
Lecture 11 - Effect of temperature on LLE and Design of single stage extraction
Lecture 12 - Design Calculation of Multistage Operation
Lecture 13 - Design calculation of multistage cross-current extraction
Lecture 14 - Design calculation of multistage counter-current extraction, Selection of extractors
Lecture 15 - Leaching
Lecture 16 - Leaching
Lecture 17 - Supercritical Fluid Extraction, equipment for leaching
Lecture 18 - Fundamentals of membrane separation processes
Lecture 19 - Manufacturing of membranes, advantages and limitations
Lecture 20 - Various models and applications
Lecture 21 - Various models and applications
Lecture 22 - Electric field enhanced membrane separation processes
Lecture 23 - Micellar-enhanced ultrafiltration
Lecture 24 - Adsorption
Lecture 25 - Stage wise and continuous adsorption
Lecture 26 - Fluidized bed and teeter bed
Lecture 27 - Unsteady state fixed bed adsorbers, ion exchange
Lecture 28 - Crystallization, types of crystal geometry
Lecture 29 - Solid-liquid phase equilibrium, Theory of crystallization

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Lecture 30 - Design of crystallizer, crystallization equipment
NPTEL Video Course - Chemical Engineering - NOC: Mechanical Unit Operations

Subject Co-ordinator - Prof. Nanda Kishore

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction of Particulate Solids
Lecture 2 - Particle Size
Lecture 3 - Particle Shape and Density
Lecture 4 - Screening
Lecture 5 - Size Analysis by Screening
Lecture 6 - Screening Equipment, Effectiveness and Capacity
Lecture 7 - Methods of Size Reduction
Lecture 8 - Equipment for Size Reduction - Crushers
Lecture 9 - Equipment for Size Reduction - Gridners
Lecture 10 - Equipment for Size Reduction - Ultrafine Grinders and Cutting Machines
Lecture 11 - Storage of Bulk Solids
Lecture 12 - Solids Flow Out and their Flow Patterns
Lecture 13 - Conveying of Bulk Solids
Lecture 14 - Size Enlargement Methods
Lecture 15 - Size Enlargement Equipment - 1
Lecture 16 - Size Enlargement Equipment - 2
Lecture 17 - Flow past Immerged Solid Objects
Lecture 18 - Motion of Particles through Fluids - 1
Lecture 19 - Motion of Particles through Fluids - 2
Lecture 20 - Motion of Particles through Fluids - 3
Lecture 21 - Flow through Beds of Solids - 1
Lecture 22 - Flow through Beds of Solids - 2
Lecture 23 - Flow through Fluidized Beds - 1
Lecture 24 - Flow through Fluidized Beds - 2
Lecture 25 - Filtration
Lecture 26 - Principles of Cake Filtration - 1
Lecture 27 - Principles of Cake Filtration - 2
Lecture 28 - Filtration Equipment
Lecture 29 - Cross Flow Filtration - 1
Lecture 30 - Cross Flow Filtration - 2
Lecture 31 - Gravity Sedimentation - Classifiers
Lecture 32 - Gravity Sedimentation - Design of Thickeners - 1
Lecture 33 - Gravity Sedimentation - Design of Thickeners - 2
Lecture 34 - Centrifugal Separations - 1
Lecture 35 - Centrifugal Separations - 2
Lecture 36 - Floatation - 1
Lecture 37 - Floatation - 2
NPTEL Video Course - Chemical Engineering - Fluid Mechanics

Subject Co-ordinator - Dr. V. Shankar

Co-ordinating Institute - IIT - Kanpur

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Lecture 30
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Lecture 40
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NPTEL Video Course - Chemical Engineering - Plantwide Control of Chemical Processes

Subject Co-ordinator - Dr. Nitin Kaistha

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the course
Lecture 2 - Process Dynamics and Negative Feedback
Lecture 3 - PID control
Lecture 4 - Common Industrial Control Loops and advanced loops
Lecture 5 - Advanced loops (Continued...) and multivariable systems
Lecture 6 - Systematic Tuning Using Frequency Domain Analysis
Lecture 7 - Frequency Domain Analysis
Lecture 8 - Multivariable Systems
Lecture 9 - RGA and dynamic decoupling
Lecture 10 - Model based control
Lecture 11 - Dynamic Matrix Control
Lecture 12 - Control of Distillation Columns
Lecture 13 - Temperature inferential distillation control
Lecture 14 - Considerations in temperature inferential control
Lecture 15 - Control of Complex Column Configurations
Lecture 16 - Control of Heat Integrated Columns
Lecture 17 - Homogenousextractive distillation
Lecture 18 - More on complex columns and reactive distillation
Lecture 19 - Control of reactors
Lecture 20 - PFR controls (Continued..) & CSTRs
Lecture 21 - CSTR heat management
Lecture 22 - Heat Exchangers and Miscellaneous Systems
Lecture 23 - Degrees of freedom analysis
Lecture 24 - Degrees of freedom (Continued...)
Lecture 25 - Illustration of considerations in control structure synthesis
Lecture 26 - Two column recycle process
Lecture 27 - Throughput manipulator selection
Lecture 28 - Plantwide control structure design
Lecture 29 - Systematizing plantwide control design

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Lecture 30 - The Luyben design procedure
Lecture 31 - Role of equipment capacity constraints
Lecture 32 - Recycle process case study
Lecture 33 - Recycle process case study (Continued...)
Lecture 34 - C4 isomerization process case study
Lecture 35 - C4 isomerization process case study (Continued...)
Lecture 36 - C4 isomerization process case study
Lecture 37 - Systematic economic plantwide control design procedure
Lecture 38 - Ethyl benzene process case study
Lecture 39 - C4 isomerization process revisited
Lecture 40 - Contrasting conventional and top-down approach
Lecture 41 - Cumene process plantwide control
NPTEL Video Course - Chemical Engineering - NOC: Thermodynamics Of Fluid Phase Equilibria

Subject Co-ordinator - Dr. Jayant K. Singh
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Review - 1
Lecture 2 - Review - Temperature and Pressure
Lecture 3 - Review - Energy Conservation
Lecture 4 - Properties - Part 1
Lecture 5 - Properties - Part 2
Lecture 6 - Mass-energy analysis of open system
Lecture 7 - Energy analysis of closed system
Lecture 8 - The Second Law of Thermodynamics
Lecture 9 - Entropy
Lecture 10 - Thermodynamic Calculus - 1
Lecture 11 - Thermodynamic Calculus - 2
Lecture 12 - Thermodynamic Calculus - 3
Lecture 13 - Thermodynamic Calculus - 4
Lecture 14 - Legendre Transformation and Free-energy
Lecture 15 - Criteria for phase equilibria
Lecture 16 - Maxwell Relation
Lecture 17 - Stability Criteria
Lecture 18 - Thermodynamics of phase equilibrium
Lecture 19 - Chemical potential and fugacity
Lecture 20 - General discussion on fugacity
Lecture 21 - Ideal Gas Mixture - Part 1
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Lecture 29 - Approaches to phase equilibria calculation

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Lecture 30 - Traditional Approaches to phase equilibria calculations
Lecture 31 - Algorithms for vapor-liquid equilibria
Lecture 32 - Probability and Multiplicity
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NPTEL Video Course - Chemical Engineering - NOC:Chemical Engineering Thermodynamics (2019)

Subject Co-ordinator - Dr. Jayant K. Singh

Co-ordinating Institute - IIT - Kanpur

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Lecture 2 - Measurability and controllability of energy
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Lecture 5 - Definition of intensive variables and driving forces for temperature and pressure flow
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Lecture 7 - Basic properties, phase diagram, and thermodynamic table
Lecture 8 - Work, and heat
Lecture 9 - First law of thermodynamics for closed system
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Lecture 11 - First law of thermodynamics for open system
Lecture 12 - First law of thermodynamics
Lecture 13 - The second law of the thermodynamics
Lecture 14 - Carnot cycle and thermodynamic temperature
Lecture 15 - The concept of entropy
Lecture 16 - Maximum work and entropy of ideal gas
Lecture 17 - Power cycles and examples
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Lecture 28 - Phase transitions
Lecture 29 - Clapeyron Equation and Vapour Pressure Correlations

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Lecture 31 - Equation of state (Continued...)
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NPTEL Video Course - Chemical Engineering - Biochemical Engineering

Subject Co-ordinator - Dr. Saikat Chakraborty, Dr. Rintu Banerjee

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Glimpses of Microbial World - Bacteria
Lecture 3 - Virus and Cell Organelles
Lecture 4 - Carbohydrate
Lecture 5 - Nucleic Acid
Lecture 6 - Lipids
Lecture 7 - Proteins
Lecture 8 - Biochemistry & Thermodynamics of Enzymes
Lecture 9 - Enzyme Kinetics
Lecture 10 - Regulation of Enzyme Activity
Lecture 11 - Regulation of Enzyme Activity
Lecture 12 - Effects of Substrate and Inhibition, pH and Temperature on Enzyme Activity
Lecture 13 - Immobilized Enzymes
Lecture 14 - Immobilized Enzymes (Continued...)
Lecture 15 - Interphase Mass Transfer and Reaction in Immobilized Enzymes
Lecture 16 - Interphase Mass Transfer and Reaction in Immobilized Enzymes (Continued...)
Lecture 17 - Effectiveness Factor in Immobilized Enzymes
Lecture 18 - Bioenergetics and Glycolysis
Lecture 19 - TCA Cycle
Lecture 20 - Electron Transport Chain & Oxidative Phosphorylation
Lecture 21 - Pentose Phosphate Pathways Glycogenesis & Glycogenolysis
Lecture 22 - Urea Cycle, Gluconeogenesis and Glyoxalate Cycle
Lecture 23 - Microbial Growth
Lecture 24 - Effect of Mass Transfer on Microbial & Fungal Growth
Lecture 25 - Effect of Multiple Substrates and Inhibition on Microbial Growth
Lecture 26 - Design of Bioreactors
Lecture 27 - Design of Chemostats
Lecture 28 - Stability of Bioreactors
Lecture 29 - Stability of Bioreactors (Continued...)

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Lecture 31 - Effects of Ligand Depletion and Multiple Receptors on Binding Kinetics
Lecture 32 - Effects of Ligand Depletion and Multiple Receptors on Binding Kinetics (Continued...)
Lecture 33 - Receptors-Mediated Endocytosis
Lecture 34 - Kinetics of Receptor-Mediated Endocytosis
Lecture 35 - General Model for Receptor-Mediated Endocytosis
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Lecture 36 - Critical Heat Flux, Film Boiling
Lecture 37 - Measurement Techniques for Two Phase flow Parameters
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Lecture 39 - Measurement Techniques for Two Phase flow Parameters - Void Fraction Measurement (Continued...)
Lecture 40 - Measurement Techniques for Two Phase flow Parameters - Estimation of Flow Patterns
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NPTEL Video Course - Chemical Engineering - Novel Separation Processes

Subject Co-ordinator - Prof. S. De
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Fundamentals of Separation Processes
Lecture 2 - Identification of Novel Separation Processes
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Lecture 29 - Surfactant Based Separation Processes

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Lecture 30 - Surfactant Based Separation Processes (Continued...)
Lecture 31 - Micellar Enhanced Ultrafiltration
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Lecture 33 - Liquid Membranes
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Lecture 37 - Chromatographic Separation Processes (Continued...)
Lecture 38 - Ion Exchange Processes
Lecture 39 - Electrophoretic Separation Methods
Lecture 40 - Electrophoretic Separation Methods (Continued...)
Lecture 41 - Supercritical Fluid Extraction
NPTEL Video Course - Chemical Engineering - Process Control and Instrumentation

Subject Co-ordinator - Dr. D. Sarkar, Dr. A.K. Jana
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Introduction to Process Control (Continued...)
Lecture 3 - Mathematical Modeling (Continued...1)
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Lecture 38 - Template Guided Dewetting
Lecture 39 - Elastic Contact Instability and Lithography
Lecture 40 - Gradient Surfaces
NPTEL Video Course - Chemical Engineering - Advanced Mathematical Techniques in Chemical Engineering

Subject Co-ordinator - Prof. S. De

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Introduction to vector space (Continued...)
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Lecture 7 - Contraction Mapping (Continued...)
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Lecture 29 - Solution of Elliptic and Hyperbolic PDE

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NPTEL Video Course - Chemical Engineering - NOC: Introduction to Process Modeling in Membrane Separation Processes

Subject Co-ordinator - Prof. S. De
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 20 - Modeling of Dialysis (Continued...)
NPTEL Video Course - Chemical Engineering - NOC: Soft Nano Technology

Subject Co-ordinator - Dr. R. Mukherjee

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Chemical Engineering - NOC: Adiabatic Two-Phase Flow and Flow Boiling in Microchannel

Subject Co-ordinator - Prof. Gargi Das
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Brief Introduction to Multiphase Flow (Continued...)
Lecture 3 - Two Phase Flow through Micro Channels
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Lecture 16 - Void Fraction Characteristic Mini and Micro Channel
Lecture 17 - Void Fraction and Pressure Drop in Reduced Dimensions - Experimental results
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Lecture 19 - Theoretical Analysis of Two Phase Flow in Reduced Dimensions
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Lecture 21 - Flow Pattern based Analysis in Micro Systems - Drift Flux Model
Lecture 22 - Flow Pattern based Modelling - Slug Flow Model
Lecture 23 - Flow Boiling in Microchannels
Lecture 24 - Tutorial - I
Lecture 25 - Tutorial - II
NPTEL Video Course - Chemical Engineering - NOC:Phase Equilibrium Thermodynamics

Subject Co-ordinator - Prof. Gargi Das
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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### NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - NOC:Chemical Process Instrumentation

Subject Co-ordinator - Prof. Debasis Sarkar

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - NOC: Optimization in Chemical Engineering

Subject Co-ordinator - Prof. Debasis Sarkar
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Subject Co-ordinator - Prof. Sunando Dasgupta

Co-ordinating Institute - IIT - Kharagpur

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Lecture 4 - Relevant Boundary Conditions in Conduction
Lecture 5 - One Dimensional Steady State Conduction
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Lecture 7 - Tutorial Problem on Critical Insulation Thickness
Lecture 8 - Heat Source Systems
Lecture 9 - Tutorial Problems of Heat Generating Systems
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NPTEL Video Course - Chemical Engineering - NOC: Flow through Porous Media

Subject Co-ordinator - Dr. Somnath Ganguly

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Introduction (Conceptual Flow Models)
Lecture 3 - Introduction (Applications)
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Lecture 5 - Mass Continuity (Cartesian Coordinates)
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Lecture 17 - Transport Mechanisms (Adsorption/Pore Condensation)
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NPTEL Video Course - Chemical Engineering - NOC: Fundamentals of Particle and Fluid Solid Processing

Subject Co-ordinator - Prof. Arnab Atta
Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Chemical Engineering - Chemical Engineering Thermodynamics

Subject Co-ordinator - Prof. M.S. Ananth
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Chemical Engineering - Computational Fluid Dynamics

Subject Co-ordinator - Prof. Sreenivas Jayanti

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Motivation for CFD and Introduction to the CFD approach
Lecture 2 - Illustration of the CFD approach through a worked out example
Lecture 3 - Eulerian approach, Conservation Equation, Derivation of Mass Conservation Equation and Statement of the momentum conservation equation
Lecture 4 - Forces acting on a control volume; Stress tensor; Derivation of the momentum conservation equation; Closure problem; Deformation of a fluid element in fluid flow
Lecture 5 - Kinematics of deformation in fluid flow; Stress vs strain rate relation; Derivation of the Navier-Stokes equations
Lecture 6 - Equations governing flow of incompressible flow; Initial and boundary conditions; Wellposedness of a problem
Lecture 7 - Equations for some simple cases; Generic scalar transport equation form of the governing equations
Lecture 8 - Spatial discretization of a simple flow domain; Taylor's series expansion and the order of accuracy of finite difference approximations; Central and one-sided difference approximations; Examples of high order accurate formulae for several derivatives
Lecture 9 - Finite difference approximation of pth order of accuracy for qth order derivative; Cross-derivatives; Examples of high order accurate formulae
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Lecture 13 - Statement of the stability problem; von Neumann stability analysis of the first order wave equation
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Lecture 15 - Interpretation of the stability condition; Stability analysis of the generic scalar equation and the concept of upwinding
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Lecture 33 - Derivation of the species conservation equation; dealing with chemical reactions
Lecture 34 - Turbulence; Characteristics of turbulent flow; Dealing with fluctuations and the concept of time averaging
Lecture 35 - Derivation of the Reynolds-averaged Navier-Stokes equations; identification of the closure problem
Lecture 36 - Reynolds stresses in turbulent flow; Time and length scales of turbulence; Energy cascade; Mixing length model
Lecture 37 - One-equation model for turbulent flow
Lecture 38 - Two-equation model for turbulent flow; Numerical calculation of turbulent reacting flows
Lecture 39 - Calculation of near-wall region in turbulent flow; wall function approach; near-wall turbulence
Lecture 40 - Need for special methods for dealing with irregular flow geometry; Outline of the Body-fitted grid approach
Lecture 41 - Transformation of the governing equations; Illustration for the Laplace equation; Appearance and significance of cross-derivative terms
Lecture 42 - Finite volume method for complicated flow domain; Illustration for the case of flow through a duct
Lecture 43 - Finite volume method for the general case
Lecture 44 - Generation of a structured grid for irregular flow domain; Algebraic methods; Elliptic grid generation
Lecture 45 - Unstructured grid generation; Domain nodalization; Advancing front method for triangulation
Lecture 46 - Delaunay triangulation method for unstructured grid generation
Lecture 47 - Co-located grid approach for irregular geometries; Pressure correction equation for a co-located grid
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NPTEL Video Course - Chemical Engineering - Computational Techniques

Subject Co-ordinator - Dr. Niket S. Kaisare
Co-ordinating Institute - IIT - Madras

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - Statistics for Experimentalists

Subject Co-ordinator - Dr. A. Kannan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Random Variables
Lecture 3 - Discrete Probability Distributions
Lecture 4 - Example Set - I
Lecture 5 - Continuous probability distributions
Lecture 6 - Normal probability distribution
Lecture 7 - Exploratory Data Analysis - Part A
Lecture 8 - Exploratory Data Analysis - Part B
Lecture 9 - Example Set - II
Lecture 10 - Example Set - III
Lecture 11 - Random samples
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Lecture 13 - Point Estimation
Lecture 14 - Sampling distributions and the Central Limit Theorem
Lecture 15 - Example Set - IV Part A
Lecture 16 - Estimation of Population Parameters Using Moments
Lecture 17 - Confidence Intervals (Part A)
Lecture 18 - Confidence Intervals (Part B)
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NPTEL Video Course - Chemical Engineering - Multiphase Flows - Analytical solutions and Stability Analysis

Subject Co-ordinator - Prof. S. Pushpavanam
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and overview of the course
Lecture 2 - Stratified flow in a micro channel
Lecture 3 - Stratified flow in a micro channel
Lecture 4 - Flow regimes in microchannels
Lecture 5 - Scaling Analysis
Lecture 6 - Scaling Analysis
Lecture 7 - Interfacial tension and its role in Multiphase flows
Lecture 8 - Eulerian and Lagrangian approaches
Lecture 9 - Reynolds Transport Theorem and the Equation of Continuity
Lecture 10 - Derivation of Navier-Stokes equation
Lecture 11 - Vector operations in general orthogonal coordinates
Lecture 12 - Normal and shear stresses on arbitrary surfaces
Lecture 13 - Normal and shear stresses on arbitrary surfaces
Lecture 14 - Stresses on deforming surfaces
Lecture 15 - Pulsatile flow
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Lecture 18 - Viscous heating
Lecture 19 - Domain perturbation methods
Lecture 20 - Flow between wavy walls
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Lecture 28 - Rayleigh Benard convection
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NPTEL Video Course - Chemical Engineering - NOC:Introduction to Time-Frequency Analysis and Wavelet Transforms

Subject Co-ordinator - Dr. Arun K.Tangirala
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - Chemical Engineering Principles of CVD Processes

Subject Co-ordinator - Dr. R. Nagarajan
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - CVD Reactor and Process Design Fundamentals
Lecture 3 - Overview of CVD Process Fundamentals
Lecture 4 - Basics of Chemical Equilibrium Calculations and Flow Dynamics
Lecture 5 - Introduction to CVD Films
Lecture 6 - Film Structure and Properties
Lecture 7 - Pressure Effects on CVD Processes
Lecture 8 - CVD of Metals
Lecture 9 - CVD of Coatings
Lecture 10 - CVD Film Property Measurements
Lecture 11 - CVD Film Property Measurements
Lecture 12 - CVD in Tungsten Filament Lamps
Lecture 13 - CVD in Tungsten Filament Lamps
Lecture 14 - CVD in Hot Corrosion
Lecture 15 - CVD Transport Phenomena
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Lecture 25 - CVD Overview
Lecture 26 - Review of CVD Basics
Lecture 27 - Review of CVD Basics
Lecture 28 - CVD Question Bank
Lecture 29 - Basics of Nano-Structured Material Synthesis

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NPTEL Video Course - Chemical Engineering - Chemical Reaction Engineering 1 (Homogeneous Reactors)
Subject Co-ordinator - Prof K. Krishnaiah
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Motivation and Introduction - Part I
Lecture 2 - Motivation and Introduction - Part II
Lecture 3 - What is Chemical Engineering - Part I
Lecture 4 - What is Chemical Engineering - Part II
Lecture 5 - What is Chemical Reaction Engineering - Part I
Lecture 6 - What is Chemical Reaction Engineering - Part II
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Lecture 8 - Homogeneous and Heterogeneous Reactions - Part II
Lecture 9 - Basics of Kinetics and Contacting
Lecture 10 - Design of Batch reactors - Part I
Lecture 11 - Design of Batch reactors - Part II
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Lecture 13 - Basics of Plug Flow Reactor - Part II
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Lecture 15 - Design of Plug Flow Reactors - Part II
Lecture 16 - Basics of Mixed Flow Reactors
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Lecture 24 - Gas Phase Homogeneous reactions
Lecture 25 - (Continued...) And later Reactor Design of PFR
Lecture 26 - Reactor Design for MFR and Combination of reactors
Lecture 27 - PFR and MFR in series.
Lecture 28 - Unsteady state MFR and PFR
Lecture 29 - Recycle Reactors

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Lecture 55 - Dispersion Model
Lecture 56 - Dispersion with reaction Model and Tanks in Series Model
Lecture 57 - Multi-parameter model (MFR with dead space and bypass)
Lecture 58 - Direct use of RTD to predict conversion (Macro and Micro-fluid as well as Macro & Micro-mixing Concepts) Part I
Lecture 59 - Direct use of RTD to predict conversion (Macro and Micro-fluid as well as Macro & Micro-mixing Concepts) Part II
Lecture 60 - Direct use of RTD to predict conversion (Macro and Micro-fluid as well as Macro & Micro-mixing Concepts) Part III

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Lecture 1 - Introduction to Kinetics (Gas solid non-catalytic reaction)
Lecture 2 - Intro to Kinetics (Continued...) for catalytic reactions in different reactors
Lecture 3 - Heterogeneous rate of reactions and different types of kinetic models for non-catalytic reactions
Lecture 4 - Basics of Kinetics of type A & B reactions (Shrinking core model & Porous particle homogeneous model)
Lecture 5 - Shrinking Core Model (Continued...)
Lecture 6 - Shrinking Core Model (Continued...)
Lecture 7 - (Continued...) & Proof of Pseudo steady state assumption
Lecture 8 - Shrinking core model (Continued...) for type D reactions
Lecture 9 - Shrinking core model (Continued...) for type D reactions (Continued...)
Lecture 10 - Reactors, Homogeneous reaction model, Design of non-catalytic gas solid reactors
Lecture 11 - Design of non-catalytic gas solid reactors (Continued...)
Lecture 12 - Design of non-catalytic gas solid reactors (Continued...)
Lecture 13 - Design equation for MF of solids, uniform gas composition, const. single particle size, Shrinking core model
Lecture 14 - Design equation for MF of solids, mixture of particles for different sizes but unchanging size, Shrinking core model
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Lecture 22 - Interface effectiveness factor & Generalized nonisothermal effectiveness factor for external mass transfer step
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Lecture 36 - Fluidized Bed Reactor Design - Part I
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Lecture 39 - Fluidized Bed Reactor Design - Part IV
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Lecture 41 - Continued... (Davidson Harrison model and Kunii Levenspiel model)
Lecture 42 - Continued... (Kunii Levenspiel Model)
Lecture 43 - Slurry Reactor Design
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NPTEL Video Course - Chemical Engineering - NOC:MATLAB Programming for Numerical Computation

Subject Co-ordinator - Dr. Niket S.Kaisare
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Introduction
Lecture 2 - Basics of Programming using MATLAB
Lecture 3 - Array Operations in MATLAB
Lecture 4 - Loops and Execution Control
Lecture 5 - Tutorial
Lecture 6 - MATLAB Files -- Scripts and Functions
Lecture 7 - Plotting and Output
Lecture 8 - How to submit MATLAB Assignment
Lecture 9 - Errors in Numerical Computation
Lecture 10 - Truncation Errors and Taylors Series
Lecture 11 - Round-Off Errors; and Iterative Methods
Lecture 12 - Step-wise Methods and Error Propagation
Lecture 13 - How to get MATLAB Online access (for all enrolled students of this course)
Lecture 14 - Differentiation in Single Variable
Lecture 15 - Higher Order Differentiation Formulae
Lecture 16 - Partial Differentials (Bonus)
Lecture 17 - Numerical Integration
Lecture 18 - Multiple Applications of Integration Formulae
Lecture 19 - In-Build MATLAB Integration Functions
Lecture 20 - Basics of Linear Algebra
Lecture 21 - Gauss Elimination and Back-Substitution
Lecture 22 - LU Decomposition and Partial Pivoting
Lecture 23 - Gauss Siedel Method
Lecture 24 - (Tutorial)
Lecture 25 - Tri-Diagonal Matrix Algorithm
Lecture 26 - Nonlinear Equations in Single Variable
Lecture 27 - Using MATLAB command fzero
Lecture 28 - Fixed Point Iteration in Single Variable
Lecture 29 - Newton-Raphson (single variable)

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Lecture 30 - Using MATLAB command fsolve (multi-variable)
Lecture 31 - Newton-Raphson (multi Variable)
Lecture 32 - Introduction
Lecture 33 - Linear Least Squares Regression
Lecture 34 - Nonlinear and Functional Regression
Lecture 35 - Interpolation Functions in MATLAB
Lecture 36 - Introduction and Euler's Method
Lecture 37 - Runge-Kutta (RK-2) method
Lecture 38 - MATLAB ode45 algorithm
Lecture 39 - Higher order Runge-Kutta Methods
Lecture 40 - Error Analysis
Lecture 41 - Multi-Variable ODE
Lecture 42 - Stiff Systems & Solution using ode15s
Lecture 43 - Method of Lines for transient PDEs
Lecture 44 - A Final Example
Lecture 45 - Tutorial
NPTEL Video Course - Chemical Engineering - NOC: Computational Fluid Dynamics

Subject Co-ordinator - Prof. Sreenivas Jayanti

Co-ordinating Institute - IIT - Madras

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Lecture 1 - Motivation
Lecture 2 - Flow in a rectangular duct
Lecture 3 - Flow in a rectangular duct
Lecture 4 - Tutorial 1
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Lecture 17 - Energy conservation equations
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NPTEL Video Course - Chemical Engineering - NOC: Introduction to Statistical Hypothesis Testing

Subject Co-ordinator - Dr. Arun K. Tangirala
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 3 - Probability and Statistics
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Lecture 9 - Type I and Type II errors
Lecture 10 - p value
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Lecture 12 - Hypothesis testing of variance and proportions
Lecture 13 - Confidence interval construction
Lecture 14 - Hypothesis testing using confidence interval
Lecture 15 - Hypothesis testing of correlation
Lecture 16 - Statistic for linear regression
Lecture 17 - Hypothesis testing in linear regression
Lecture 18 - Power of hypothesis test
Lecture 19 - Factors affecting hypothesis test

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - NOC: Applied Time-Series Analysis

Subject Co-ordinator - Dr. Arun K. Tangirala
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Chemical Engineering - NOC: Rheology of Complex Materials

Subject Co-ordinator - Dr. Abhijit P. Deshpande

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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### NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - NOC: Process Control - Design, Analysis and Assessment

Subject Co-ordinator - Prof. Ragunathan Rengasamy
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Chemical Engineering - NOC: Fluid and Particle Mechanics

Subject Co-ordinator - Prof. Basavaraju

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 30 - Aromatics product profile, Ethyl benzene & Styrene, Cumene and phenol, Bisphenol, Aniline
Lecture 31 - Introduction to polymer, Elastomer and Synthetic Fibre, Polymerisation
Lecture 32 - Polymers
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Lecture 37 - Acrylic Fibre, Modified Acrylic Fibre, Acrylonitrile, Acrolein, Propylene Finber, Polyurethane
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NPTEL Video Course - Chemical Engineering - Process Integration

Subject Co-ordinator - Dr. B. Mohanty
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable   |   MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Fundamental concepts related to heat integration - Part 1
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Lecture 4 - Data extraction
Lecture 5 - Hot composite curves
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Lecture 7 - Hot and cold composite curves and the pinch
Lecture 8 - Threshold problems
Lecture 9 - Energy targeting procedure
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Lecture 20 - Global & stream specific $\Delta t_{\text{min}}$ and its relevance
Lecture 21 - Topology Trap
Lecture 22 - Rules for Pinch Design Method (PDM) - Part 1
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Lecture 24 - Application of PDM for MER Hen Synthesis
Lecture 25 - Design for threshold problems
Lecture 26 - Design for single pinch problems
Lecture 27 - Design for multi pinch problems
Lecture 28 - HEN optimization
Lecture 29 - Remaining problem analysis

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Lecture 30 - Driving Force Plot
Lecture 31 - Low Temperature process Design - Part 1
Lecture 32 - Low Temperature process Design - Part 2
Lecture 33 - Integration of Gas turbine with process - Part 1
Lecture 34 - Integration of Gas turbine with process - Part 2
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Lecture 36 - Heat Integration of evaporators
Lecture 37 - Integration of heat pump
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NPTEL Video Course - Chemical Engineering - Mechanical Operations

Subject Co-ordinator - Prof. Shabina Khanam

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Characterization of a single particle - 1
Lecture 3 - Characterization of a single particle - 2
Lecture 4 - Characterization of collection of particles - 1
Lecture 5 - Characterization of collection of particles - 2
Lecture 6 - Fine grain size distribution
Lecture 7 - Effectiveness of screen - 1
Lecture 8 - Effectiveness of screen - 2
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Lecture 10 - Size reduction
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Lecture 17 - Particle dynamics - 2
Lecture 18 - Particle dynamics-Examples
Lecture 19 - Classification and Jigging - 1
Lecture 20 - Classification and Jigging - 2

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NPTEL Video Course - Chemical Engineering - NOC: Waste to Energy Conversion

Subject Co-ordinator - Prof. P. Mondal

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - 1
Lecture 2 - Introduction - 2
Lecture 3 - Characterization of wastes - 1
Lecture 4 - Characterization of wastes - 2
Lecture 5 - Characterization of wastes - 3
Lecture 6 - Tutorial on characterization of wastes
Lecture 7 - Energy production from wastes through incineration - 1
Lecture 8 - Energy production from wastes through incineration - 2
Lecture 9 - Tutorial on incineration
Lecture 10 - Energy production from wastes through gasification - 1
Lecture 11 - Energy production from wastes through gasification - 2
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Lecture 13 - Syngas utilization - 2
Lecture 14 - Energy production from wastes through pyrolysis - 1
Lecture 15 - Energy production from wastes through pyrolysis - 2
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Lecture 21 - Efficiency improvement of power plant - 2
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Lecture 24 - Gas clean up - 1
Lecture 25 - Gas clean up - 2
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Lecture 29 - Introduction to Microbial fuel cells

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Lecture 40 - Energy production form algal biomass - 2
NPTEL Video Course - Chemical Engineering - NOC:Unit Operations of Particulate Matter

Subject Co-ordinator - Prof. Shabina Khanam

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Sedimentation and Batch Sedimentation Test - 1
Lecture 3 - Sedimentation and Batch Sedimentation Test - 2
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Lecture 18 - Transportation of solids - 1
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NPTEL Video Course - Chemical Engineering - NOC: Introduction to Polymer Physics (IIT-R)

Subject Co-ordinator - Prof. Prateek Kumar Jha

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the course, Macromolecules and Life, Molecular flexibility
Lecture 2 - Classification of polymers, Types of polymerization, Average molecular weights and polydispersity
Lecture 3 - Motivation to study polymer physics
Lecture 4 - Random Walk Models of Single Chain I
Lecture 5 - Random Walk Models of Single Chain II
Lecture 6 - Random Walk Models of Single Chain III
Lecture 7 - Models of semiflexible chains (Kratky Porod Model) - Part I
Lecture 8 - Models of semiflexible chains (Kratky Porod Model) - Part II
Lecture 9 - Probability density of an ideal chain - Part I
Lecture 10 - Probability density of an ideal chain - Part II
Lecture 11 - Entropic Elasticity, Bead-Spring Model, Simulations of random walk models
Lecture 12 - Derivation of Diffusion equation, Einstein notation
Lecture 13 - Definition of Radius of gyration
Lecture 14 - Radius of gyration for an ideal chain, concept of ideality
Lecture 15 - Nonbonded interactions, hydrophobic and hydrophilic behaviour
Lecture 16 - Definition of excluded volume; good, bad, and theta solvent
Lecture 17 - Virial expansion, Flory theory for good solvent
Lecture 18 - Flory theory for bad solvent, self-similarity and fractal nature of polymers
Lecture 19 - Derivation of fractal dimension, concentration regimes and overlap concentration
Lecture 20 - Size, shape, and structure. Gyration tensor and measures of asphericity.
Lecture 21 - Order-disorder transition
Lecture 22 - Scattering experiments, Pair correlation function
Lecture 23 - Structure of polymer chain, Introduction to Monte Carlo simulations of polymer chains
Lecture 24 - Monte Carlo algorithm
Lecture 25 - Practical aspects of Monte Carlo simulation
Lecture 26 - Molecular Dynamics Simulations, Review of Thermodynamics
Lecture 27 - Solution Thermodynamics - I
Lecture 28 - Solution Thermodynamics - II
Lecture 29 - Solution Thermodynamics - III

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Lecture 30 - Solution Thermodynamics - IV
Lecture 31 - Phase separation regime, Introduction to lattice model of solutions
Lecture 32 - Lattice Model of Solutions - I
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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - NOC: Chemical Process Safety

Subject Co-ordinator - Dr. Shishir Sinha
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Safety and Accident Loss Statistics
Lecture 2 - Risk Management and Hazardous Substance Rules
Lecture 3 - Nature of Accident and major disasters
Lecture 4 - Fundamental Principles
Lecture 5 - Problems related to Safety and Accident Loss Statistics
Lecture 6 - Toxicology
Lecture 7 - Toxicology
Lecture 8 - Dose Response Relationship
Lecture 9 - Dose Response and Threshold Dose
Lecture 10 - Industrial Hygiene
Lecture 11 - Material Safety Data Sheet - I
Lecture 12 - Material Safety Data Sheet - II
Lecture 13 - Industrial Hygiene
Lecture 14 - Noise, vibration and Radiation
Lecture 15 - Industrial Hygiene
Lecture 16 - Problems related to Industrial Hygiene
Lecture 17 - Introduction to Source Models
Lecture 18 - Source Models for Gas
Lecture 19 - Source Models for Pool Boiling
Lecture 20 - Source Model Problems
Lecture 21 - Fire and Explosions
Lecture 22 - Fire and Explosions
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Lecture 28 - Designs to prevent Fire and Explosion
Lecture 29 - Designs to prevent Fire and Explosion

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Lecture 31 - Sprinklers - I
Lecture 32 - Sprinklers - II
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Lecture 34 - Type of Reliefs
Lecture 35 - Relief Scenario
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Lecture 38 - Hazard Identification Methods and HAZOP
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Lecture 58 - Personal Protective Equipments
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Lecture 4 - Conventional Route for Energy Production from Coal
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Lecture 36 - Energy from Biomass and Wastes 1 (Biological Route)
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Lecture 38 - Energy from Biomass and Wastes 3 (Physical Route)
Lecture 39 - Energy Conversations
Lecture 40 - Tutorial 8
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - Chemical Reaction Engineering

Subject Co-ordinator - Prof. Jayant M Modak
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction & Overview
Lecture 2 - Basic concepts
Lecture 3 - Thermodynamics of Chemical Reactions - Part I
Lecture 4 - Thermodynamics of Chemical Reactions - Part II
Lecture 5 - Chemical Reaction Kinetics - Overview
Lecture 6 - Chemical Reaction Kinetics & Reactor Design
Lecture 7 - Chemical Reactor Design
Lecture 8 - Problem Solving
Lecture 9 - Complex Reactions - Introduction
Lecture 10 - Complex Reactions - Yield & Selectivity
Lecture 11 - Complex Reactions - Quasi Steady State and Quasi Equilibrium Approximations
Lecture 12 - Complex Reactions - Kinetics of Chain Reactions & polymerization
Lecture 13 - Catalytic reactions - Introduction
Lecture 14 - Catalytic reactions - Adsorption & Desorption
Lecture 15 - Catalytic reactions - Kinetics
Lecture 16 - Monomolecular Reaction Network & Lumping Analysis
Lecture 17 - Problem solving
Lecture 18 - Gas-solid Catalytic Reactions - External diffusion
Lecture 19 - Gas-solid Catalytic Reactions - Transport in Catalyst Pellet
Lecture 20 - Gas-solid Catalytic Reactions - Diffusion & Reaction - I
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Lecture 23 - Gas-solid Catalytic Reactions - Nonisothermal effects
Lecture 24 - Gas-solid Noncatalytic Reactions
Lecture 25 - Gas-Liquid Reactions
Lecture 26 - Problem solving
Lecture 27 - Chemical Reactor Design
Lecture 28 - Chemical Reactor Design
Lecture 29 - Nonisothermal Reactor Operation

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Lecture 31 - Case Study - Hydrogenation of Oil
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Lecture 33 - Autothermal reactors
Lecture 34 - Parametric Sensitivity
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Lecture 36 - Stability Analysis - Basics
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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemical Engineering - Fundamentals of Transport Processes - II

Subject Co-ordinator - Prof. V. Kumaran

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 8 - Rate of deformation tensor
Lecture 9 - Mass conservation equation
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Lecture 11 - Angular momentum conservation equation
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Lecture 14 - Unidirectional flow
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Lecture 24 - Inertia of a low Reynolds number
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Lecture 26 - Potential flow around a sphere
Lecture 27 - Two-dimensional potential flow
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NPTEL Video Course - Chemical Engineering - Modern Instrumental Methods of Analysis

Subject Co-ordinator - Dr. J.R. Mudakavi
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 3 - Physical Properties of Electromagnetic Radiation
Lecture 4 - Interaction of Matter with Radiation
Lecture 5 - Ultraviolet and Visible Spectrophotometry-1 (i. Theoretical Aspects)
Lecture 6 - Ultraviolet and Visible Spectrophotometry-2 (ii. Theoretical Aspects)
Lecture 7 - Ultraviolet and Visible Spectrophotometry-3 (iii. Theoretical Aspects)
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Lecture 12 - Fluorescence and Phosphorescence Spectrophotometry-2 (ii. Instrumentation)
Lecture 13 - Fluorescence and Phosphorescence Spectrophotometry-3 (iii. Application)
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Lecture 16 - X-Ray Analytical Techniques-2 (iii. Applications)
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Lecture 18 - Atomic Absorption Spectrometry-2 (ii.Theoretical Aspects)
Lecture 19 - Atomic Absorption Spectrometry-3 (iii. Instrumentation)
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Lecture 29 - Inductively Coupled Plasma Atomic Emission Spectrometry-2 (ii. Instrumentation)

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Lecture 55 - Diffusion equation: Effective conductivity of a composite.
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Lecture 57 - Diffusion equation: Conduction from a point source.
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Lecture 36 - Nitrite, manganese
Lecture 37 - Cadmium, copper, lead
Lecture 38 - Total hardness, zinc
Lecture 39 - Nitrate, chromium
Lecture 40 - Determination of aluminum, cyanide, sulphate
Lecture 41 - Sulphate, ammonia, Conclusions
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NPTEL Video Course - Chemical Engineering - NOC: Trace and Ultra-trace Analysis of Metals using Atomic Absorption Spectrometry

Subject Co-ordinator - Dr. J.R. Mudakavi
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 15 - Instrumentation in AAS - I (Continued...) Radiation Sources
Lecture 16 - Instrumentation in AAS Radiation Sources
Lecture 17 - Instrumentation in AAS - III
Lecture 18 - Instrumentation in AAS - IV
Lecture 19 - Instrumentation in AAS - V
Lecture 20 - Instrumentation in AAS - VI
Lecture 21 - Instrumentation in AAS - VII
Lecture 22 - Interferences in AAS
Lecture 23 - Background correction on flame AAS - I
Lecture 24 - Interferences in AAS - II
Lecture 25 - Interferences in AAS - III
Lecture 26 - Hydride Generation AAS - I
Lecture 27 - Hydride Generation AAS and Cold Vapour Hg AAS
Lecture 28 - Cold vapor Hg AAS Flame Emission
Lecture 29 - Mercury cold vapour technique, FAES and Electrothermal AAS

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Lecture 30 - Electrothermal AAS - II
Lecture 31 - GF AAS Interferences - I
Lecture 32 - GF AAS Interferences - II
Lecture 33 - Interference in ETAAS GF AAS
Lecture 34 - Individual Elements AAS
Lecture 35 - Methods, Nomenclature and techniques
Lecture 36 - Technology and Applications - I
Lecture 37 - Technology and Applications - II
Lecture 38 - Conclusions
Lecture 1 - Course introduction and atomic structure - I
Lecture 2 - Course introduction and atomic structure - II
Lecture 3 - Course introduction and atomic structure - III
Lecture 4 - Course introduction and atomic structure - IV
Lecture 5 - Course introduction and atomic structure - V
Lecture 6 - Course introduction and atomic structure - VI
Lecture 7 - Nature of electromagnetic radiation
Lecture 8 - Interaction of EM radiation with matter - I
Lecture 9 - Interaction of EM radiation with matter - II
Lecture 10 - Instrumentation for ICP AES - I
Lecture 11 - Instrumentation for ICP AES - II
Lecture 12 - Instrumentation for ICP AES - III
Lecture 13 - Instrumentation for ICP AES - IV - Optical mountings
Lecture 14 - Instrumentation for ICP AES - V - Detectors
Lecture 15 - Instrumentation for ICP AES - VI - ICP Torches
Lecture 16 - Instrumentation for ICP AES - VII - Plasma characteristics
Lecture 17 - Instrumentation for ICP AES - VIII - Instruments
Lecture 18 - Practice and Applications of ICP AES - I - Nebulizers
Lecture 19 - Practice and Applications of ICP AES - II - Sample handling
Lecture 20 - Practice and Applications of ICP AES - III - Chemical analysis
Lecture 21 - Practice and Applications of ICP AES - IV - Chemical analysis
Lecture 22 - Practice and Applications of ICP AES - V - Chemical analysis
NPTEL Video Course - Chemical Engineering - NOC: Infrared Spectroscopy for Pollution Monitoring

Subject Co-ordinator - Dr. J.R. Mudakavi

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Analytical Science and Infrared Spectroscopy
Lecture 2 - Environmental Analytical Science
Lecture 3 - Techniques of Elemental Analysis
Lecture 4 - Atomic Structure - I
Lecture 5 - Atomic Structure - II
Lecture 6 - Atomic Structure - III
Lecture 7 - Atomic Structure - IV
Lecture 8 - Interaction of electromagnetic radiation with matter - I
Lecture 9 - Interaction of electromagnetic radiation with matter - II
Lecture 10 - Interaction of electromagnetic radiation with matter - III
Lecture 11 - Interaction of electromagnetic radiation with matter - IV
Lecture 12 - Interaction of electromagnetic radiation with matter - V
Lecture 13 - Interaction of electromagnetic radiation with matter - VI
Lecture 14 - Infrared spectroscopy - Introduction
Lecture 15 - Infra Red Instrumentation
Lecture 16 - Fourier Transform Infrared Spectroscopy
Lecture 17 - Sample Handling in IR
Lecture 18 - Instrumentation in IR
Lecture 19 - Applications of IR
Lecture 20 - IR Spectra Interpretation
Lecture 21 - IR Gas Analysers

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NPTEL Video Course - Chemistry and Biochemistry - NOC:Organo Metallic Chemistry
Subject Co-ordinator - Prof.Debabrata Maiti
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction of Organometallic Chemistry
Lecture 2 - Counting of Electrons
Lecture 3 - Ligand Substitution Reactions
Lecture 4 - Oxidative Addition [1.Concerted Mechanism]
Lecture 5 - Oxidative Addition [2.SN2 Mechanism]
Lecture 6 - Oxidative Addition [3. Radical Mechanism]
Lecture 7 - Reductive Elimination
Lecture 8 - Migratory Insertion and Elimination Reactions
Lecture 9 - Migration and Insertion Reactions
Lecture 10 - Alpha-Migratory Insertion and alpha-Elimination Reactions
Lecture 11 - Beta-Migratory Insertion
Lecture 12 - Beta-Elimination Reaction
Lecture 13 - Alpha-Abstraction and beta-Abstraction
Lecture 14 - 4-Center Reactions; [2+2] Reactions
Lecture 15 - External Attack by a Ligand and Reductive Coupling
Lecture 16 - Hydrogenation Reaction
Lecture 17 - Hydrogenation Reaction [Dihydride Catalyst]
Lecture 18 - Stereoselective Hydrogenation Reaction
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - NOC: Chemical and Biological Thermodynamics: Principles to Applications

Subject Co-ordinator - Prof. Nand Kishore
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Fundamentals of Chemical thermodynamics
Lecture 2 - Work
Lecture 3 - Tutorial-1
Lecture 4 - First Law of Thermodynamics
Lecture 5 - Tutorial-2
Lecture 6 - Adiabatic processes
Lecture 7 - Entropy
Lecture 8 - Entropy and Second Law
Lecture 9 - Entropy and Second Law
Lecture 10 - Third Law of Thermodynamics
Lecture 11 - Discussion on Helmholtz energy
Lecture 12 - Discussion on Gibbs Energy
Lecture 13 - Maxwell relations, Properties of Gibbs energy
Lecture 14 - Further discussion on properties of Gibbs energy
Lecture 15 - Fugacity
Lecture 16 - Tutorial session
Lecture 17 - Tutorial session
Lecture 18 - Chemical potential of a substance in mixture
Lecture 19 - Chemical potential of Liquids, Raoultâ□□s Law, Henryâ□□s Law
Lecture 20 - Thermodynamics of mixing, Excess functions
Lecture 21 - Partial molar volume
Lecture 22 - Activities (Accounting for deviations from Ideal behaviour)
Lecture 23 - Tutorial on thermodynamics of mixing and deviations from ideality
Lecture 24 - Further discussion on relation between C p and C v
Lecture 25 - Chemical Equilibrium
Lecture 26 - Perfect gas equilibria
Lecture 27 - Equilibrium constant
Lecture 28 - Effect of pressure on equilibrium constant and equilibrium composition
Lecture 29 - Effect of temperature on equilibria

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Lecture 30 - Biological standard states and pH
Lecture 31 - Tutorial 1 - Equilibrium constant
Lecture 32 - Tutorial 2 - Equilibrium constant
Lecture 33 - Acids and bases and Equilibrium concepts
Lecture 34 - pH Scale Strong and weak acids and bases
Lecture 35 - Strong and weak acids and bases
Lecture 36 - Acid-base titrations
Lecture 37 - pH curve for titration of weak acid with strong base Buffers and indicators
Lecture 38 - Thermodynamics in systems of biological interest
Lecture 39 - Calorimetry
Lecture 40 - Differential scanning calorimetry (DSC)
Lecture 41 - Further discussion on Differential Scanning Calorimetry (DSC)
Lecture 42 - Explaining Differential Scanning Calorimetric Profiles (DSC Profiles)
Lecture 43 - Applications of DSC in thermal unfolding of proteins and protein-solvent interactions
Lecture 44 - Further discussion on applications of DSC in thermal unfolding of proteins and protein-solvent interactions
Lecture 45 - Isothermal Titration calorimetry (ITC)
Lecture 46 - Further discussion on Isothermal Titration calorimetry (ITC)
Lecture 47 - ITC Experimental Design and Isothermal Titration Calorimetry (ITC) in Drug Design
Lecture 48 - Isothermal Titration Calorimetry (ITC) in Drug Design
Lecture 49 - Isothermal Titration Calorimetry (ITC) in Engineering Binding Affinity
Lecture 50 - Calorimetry in identifying partially folded states of proteins (Molten Globule State)
Lecture 51 - Thermodynamic Characterization of Partially Folded States of Proteins
Lecture 52 - Quantitative Thermodynamic Characterization of Partially Folded States of Proteins
Lecture 53 - ITC in Drug-Protein Interactions
Lecture 54 - Identifying sites for Drug-Protein Interactions by ITC
Lecture 55 - Identifying sites for Drug-Protein Interactions, DSC of Protein-Ligand Complexes. Enthalpy-Entropy Compensation
Lecture 56 - Estimation of Binding Constants in Strong to Ultratight Protein-Ligand, Interactions Using Differential Scanning Calorimetry
Lecture 57 - Continuation of discussion on... Estimation of Binding Constants in Strong to Ultratight Protein-Ligand, Interactions Using Differential Scanning Calorimetry
Lecture 58 - Thermal unfolding of protein by non-calorimetric methods, Addressing thermodynamics of the process
Lecture 59 - Titration Calorimetry as a tool to determine thermodynamic and Kinetic parameters of enzymes
Lecture 60 - Summary of the course on
NPTEL Video Course - Chemistry and Biochemistry - NOC: Chemistry of Main Group Elements

Subject Co-ordinator - Prof. M. S. Balakrishna

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Classification of Elements and Periodic Properties
Lecture 2 - Periodic Properties, Periodic Trends and Classification of Main Group Compounds
Lecture 3 - Classification of Main Group Compounds
Lecture 4 - Effective Nuclear Charge
Lecture 5 - Structure and Bonding Aspects
Lecture 6 - Structure and Bonding Aspects
Lecture 7 - Structure and Bonding Aspects
Lecture 8 - Structure and Bonding Aspects
Lecture 9 - Structure and Bonding Aspects
Lecture 10 - Structure and Bonding Aspects
Lecture 11 - Structure and Bonding Aspects
Lecture 12 - Structure and Bonding Aspects
Lecture 13 - Chemistry of Hydrogen
Lecture 14 - Chemistry of Hydrogen
Lecture 15 - Chemistry of Hydrogen, Hydrides and Hydrogen Bonding
Lecture 16 - Chemistry of Group 1 Elements
Lecture 17 - Chemistry of Group 1 Elements
Lecture 18 - Chemistry of Group 1 Elements
Lecture 19 - Chemistry of Group 1 Elements
Lecture 20 - Chemistry of Group 2 Elements
Lecture 21 - Chemistry of Group 2 Elements
Lecture 22 - Chemistry of Group 2 Elements
Lecture 23 - Chemistry of Group 2 Elements
Lecture 24 - Chemistry of Group 2 Elements
Lecture 25 - Chemistry of Group 13 Elements
Lecture 26 - Chemistry of Group 13 Elements
Lecture 27 - Chemistry of Group 13 Elements
Lecture 28 - Chemistry of Group 13 Elements
Lecture 29 - Chemistry of Group 13 Elements

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Lecture 30 - Wades Rules
Lecture 31 - Chemistry of Group 13 Elements
Lecture 32 - Chemistry of Group 14 Elements
Lecture 33 - Chemistry of Group 14 Elements
Lecture 34 - Chemistry of Group 14 Elements
Lecture 35 - Chemistry of Group 14 Elements
Lecture 36 - Chemistry of Group 14 Elements
Lecture 37 - Chemistry of Group 14 Elements
Lecture 38 - Chemistry of Group 14 Elements
Lecture 39 - Chemistry of Group 15 Elements
Lecture 40 - Chemistry of Group 15 Elements
Lecture 41 - Chemistry of Group 15 Elements
Lecture 42 - Chemistry of Group 15 Elements
Lecture 43 - Chemistry of Group 15 Elements
Lecture 44 - Chemistry of Group 15 Elements
Lecture 45 - Chemistry of Group 15 Elements
Lecture 46 - Chemistry of Group 15 Elements
Lecture 47 - Chemistry of Group 16 Elements
Lecture 48 - Chemistry of Group 16 Elements
Lecture 49 - Chemistry of Group 16 Elements
Lecture 50 - Chemistry of Group 16 Elements
Lecture 51 - Chemistry of Group 16 Elements
Lecture 52 - Chemistry of Group 17 Elements
Lecture 53 - Chemistry of Group 17 Elements
Lecture 54 - Chemistry of Group 18 Elements
Lecture 55 - Chemistry of Group 12 Elements
Lecture 56 - Organometallic Compounds of Main Group Elements
Lecture 57 - Organometallic Compounds of Main Group Elements
Lecture 58 - Organometallic Compounds of Main Group Elements
Lecture 59 - Organometallic Compounds of Main Group Elements
Lecture 60 - Overall Summary

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - NOC:Transition Metal Organometallic Chemistry - Principles

Subject Co-ordinator - Prof. P. Ghosh
Co-ordinating Institute - IIT - Bombay

Lecture 1 - History of Organometallic Compounds
Lecture 2 - Polarity and Reactivity of Mâ□□C bonds
Lecture 3 - Reactivity of Organometallic Compounds
Lecture 4 - Reactivity of Organometallic Compounds
Lecture 5 - 18 Valence Electron Rule and Classification
Lecture 6 - 18 Valence Electron Rule and Classification
Lecture 7 - Reactivity and types of Organometallic compounds
Lecture 8 - Sigma-Donor Ligands
Lecture 9 - Preparation of Sigma-Alkyl Compounds
Lecture 10 - Preparation and Properties of Sigma-Alkyl Compounds
Lecture 11 - Properties of Sigma-Alkyl Compounds
Lecture 12 - Î²â□□ elimination in Sigma-Alkyl Compounds
Lecture 13 - Î²â□□ elimination in Detail
Lecture 14 - TM Sigma-Alkyl Complexes and its Application
Lecture 15 - TM Sigma-Alkyl Complexes and its Application
Lecture 16 - Câ□□H Activation
Lecture 17 - Câ□□H Activation in Details
Lecture 18 - Câ□□H Activation in Details
Lecture 19 - Characterization of Câ□□H Activation
Lecture 20 - Bonding in Câ□□H Activation
Lecture 21 - Câ□□C Bond Activation
Lecture 22 - Câ□□C Bond Activation
Lecture 23 - Câ□□C Bond Activation in Details
Lecture 24 - Transition Metal Perfluoroalkyl (RFâ□□TM) Complexes
Lecture 25 - Preparation of Transition Metal Perfluoroalkyl (RFâ□□TM) Complexes
Lecture 26 - Câ□□F Activation
Lecture 27 - Transition Metal Alkenyl/Aryl Complexes
Lecture 28 - Transition Metal Aryl Complexes
Lecture 29 - Transition Metal Aryl/Alkyne Complexes

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NPTEL Video Course - Chemistry and Biochemistry - NOC:Metal Mediated Synthesis-I

Subject Co-ordinator - Prof. Debabrata Maiti
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Assymetric Hydrogenation
Lecture 2 - Transition Metal Carbenes Fischerand Schrock Carbenes
Lecture 3 - Olefin Metathesis
Lecture 4 - Alkyne Metathesis
Lecture 5 - Cyclopropanation Reaction
Lecture 6 - Catalytic Cyclopropanation Reaction and Introduction to Cross Coupling Reaction
Lecture 7 - Kumada Coupling Reaction
Lecture 8 - Suzuki Coupling Reaction
Lecture 9 - Stille Coupling Reaction
Lecture 10 - Assymetric Suzuki Coupling Reaction
Lecture 11 - Sonogashira Coupling Reaction
Lecture 12 - Heck Coupling Reaction
Lecture 13 - Assymetric Heck Reaction Introduction to Buchwald-Hartwig Coupling Reaction
Lecture 14 - Buchwald-Hartwig Coupling Reaction
Lecture 15 - Role of Ligands its Influence in Buchwald-Hartwig Coupling Reaction
Lecture 16 - Oxidative Cyclization Process
Lecture 17 - Application of Oxidative Cyclization in Natural Product Synthesis
Lecture 18 - Synthesis of Reactive Metallacycle Intermediate Via-Beta-Abstraction and their Applications
Lecture 19 - Kulinkovich Reaction and its Mechanism
Lecture 20 - Pauson-Khand Reaction
NPTEL Video Course - Chemistry and Biochemistry - NOC: Inorganic Chemistry of Life: Principles and Perspectives

Subject Co-ordinator - Prof. C.P. Rao
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of inorganic chemistry of life
Lecture 2 - Elements in biology and or life
Lecture 3 - Selection and criteria for elements
Lecture 4 - Biomolecules
Lecture 5 - Coordination in enzymes
Lecture 6 - Amino acids, peptides and proteins - An introduction
Lecture 7 - Nucleoside, nucleotide and nucleic acids and DNA
Lecture 8 - General introduction of metalloproteins
Lecture 9 - Coordination chemistry aspects - An introduction
Lecture 10 - Stability and lability
Lecture 11 - Techniques used inorganic chemistry life
Lecture 12 - Techniques used inorganic chemistry life (Continued...)
Lecture 13 - Techniques used inorganic chemistry life (Continued...)
Lecture 14 - Techniques used inorganic chemistry life (Continued...)
Lecture 15 - Recap on metalloenzymes
Lecture 16 - Role of Alkali, Alkaline earth elements in life
Lecture 17 - Role of Alkali, Alkaline earth elements in life (Continued...)
Lecture 18 - Role of Alkali, Alkaline earth elements in life (Continued...) Ion transport and ionophores
Lecture 19 - Role of Alkali, Alkaline earth elements in life (Continued...) Ion transport and ionophores
Lecture 20 - Functioning of ATPases and nucleases [Na,K]ATPase
Lecture 21 - Role of vanadium in life - General perspectives
Lecture 22 - Role of vanadium in life - Haloperoxidases
Lecture 23 - Enzymes based on manganese in life
Lecture 24 - Role of Iron in life - General perspectives
Lecture 25 - Role of Iron in life - Transport systems
Lecture 26 - Role of Iron in life - Transport and Storage systems
Lecture 27 - Role of Iron in life - Electron transfer
Lecture 28 - Role of Iron in life - Perspectives of electron transfer proteins
Lecture 29 - Role of Iron in life - Monoxygenases

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Lecture 1 - Symmetry point group
Lecture 2 - Symmetry point group
Lecture 3 - Symmetry point group
Lecture 4 - Symmetry point group
Lecture 5 - Symmetry point group
Lecture 6 - Transformation matrices and Matrix representation
Lecture 7 - More on Matrix representation
Lecture 8 - Matrix representation
Lecture 9 - Introduction to Group Theory
Lecture 10 - Group Multiplication Tables
Lecture 11 - Groups and subgroups
Lecture 12 - Classes, Similarity transformations
Lecture 13 - Introduction to Matrices
Lecture 14 - Application of matrices in solution of simultaneous equations
Lecture 15 - Matrix eigenvalue equation
Lecture 16 - Matrix eigenvalue equation
Lecture 17 - Similarity Transformations
Lecture 18 - Back to transformation matrices
Lecture 19 - Matrix representation revisited
Lecture 20 - Function space and Transformation Operators
Lecture 21 - Transformation Operators form the same group as transformation matrices
Lecture 22 - Transformation Operators form a unitary representation for orthonormal basis
Lecture 23 - Transformation Operators
Lecture 24 - Equivalent representations
Lecture 25 - Unitary Transformation
Lecture 26 - Unitary Transformations (Continued...)
Lecture 27 - Reducible and Irreducible Representations
Lecture 28 - Irreducible Representations and Great Orthogonality Theorem
Lecture 29 - Character Tables
Lecture 30 - Character Tables
Lecture 31 - Practice Session
Lecture 32 - Reducible to Irreducible Representations
Lecture 33 - Character Tables of Cyclic Groups
Lecture 34 - Symmetry of Normal Modes
Lecture 35 - Symmetry of Normal Modes
Lecture 36 - Symmetry of Normal Modes
Lecture 37 - Recap
Lecture 38 - Contribution of internal motion to normal modes
Lecture 39 - Normal mode analysis
Lecture 40 - Infrared and Raman spectroscopy
Lecture 41 - IR and Raman activity
Lecture 42 - IR and Raman activity
Lecture 43 - Symmetry Adapted Linear Combinations (SALC)
Lecture 44 - SALC
Lecture 45 - SALC
Lecture 46 - SALC
Lecture 47 - Projection Operators
Lecture 48 - Projection Operators (Continued...)
Lecture 49 - Generating SALC's using Projection Operators
Lecture 50 - Generating SALC's using Projection Operators (Continued...)
Lecture 51 - Oh complex and Group-subgroup relation
Lecture 52 - Group-Subgroup Relation
Lecture 53 - SALCs as Pi-MO and Cyclopropenyl group
Lecture 54 - SALCs as Pi-MO, Cyclopropenyl group
Lecture 55 - SALCs as Pi-MO, Benzene
Lecture 56 - LCAO Huckel approximation
Lecture 57 - Huckel approximation
Lecture 58 - Stationary states, Multiplicity, Ethylene
Lecture 59 - Napthalene - I
Lecture 60 - Napthalene - II
Lecture 61 - Napthalene - III
Lecture 62 - Transition Metal Complexes
Lecture 63 - Jahn-Teller Theorem, Tetragonal Distortion MOT
Lecture 64 - MOT approach of bonding, H2O, Ferrocene
Lecture 65 - MOT approach of bonding, H2O, Ferrocene
Lecture 66 - Derivation
Lecture 67 - Derivation
Lecture 68 - Derivation
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NPTEL Video Course - Chemistry and Biochemistry - NOC:Computational Chemistry and Classical Molecular Dynamics

Subject Co-ordinator - Prof. B.L. Tembe
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Computational Chemistry
Lecture 2 - Writing Simple Programs
Lecture 3 - Programming Techniques 1 - Evaluating the sine function
Lecture 4 - Programming Techniques 2 - Do loops and if statements
Lecture 5 - Programming Techniques 3 - Roots of a quadratic equation and arrays
Lecture 6 - Programming Techniques 4 - Arrays and matrices
Lecture 7 - Practical Session of Programming 1
Lecture 8 - Programming Techniques 5 - Formats, Functions and Subroutines
Lecture 9 - Programming Techniques 6 - Functions and Subroutines, arranging numbers in as ascending order
Lecture 10 - Programming Techniques 7 - Functions and Subroutines, and the common statement
Lecture 11 - Numerical Methods. Analysis of errors
Lecture 12 - Practical Session on Programming 2 - The exponential function
Lecture 13 - Practical Session on Programming 3 - Functions and Subroutines
Lecture 14 - Interpolation Methods-1
Lecture 15 - Interpolation Methods-2
Lecture 16 - Errors in interpolation, Matrix operations
Lecture 17 - Gauss elimination method for matrix inversion
Lecture 18 - Matrix diagonalization, Similarity transformations
Lecture 19 - Matrix inversion, Matrix diagonalization
Lecture 20 - Curve fitting, Newton Raphson method
Lecture 21 - Random numbers, Numerical integration using Simpson’s rule
Lecture 22 - Numerical Integration and Differential Equations
Lecture 23 - Practical Session on Programming 3
Lecture 24 - Scilab-2
Lecture 25 - Scilab-3
Lecture 26 - Scilab-4
Lecture 27 - Scilab-5
Lecture 28 - Scilab-6
Lecture 29 - Classical Molecular Dynamics-2, Force Fields and Equations of Motion

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NPTEL Video Course - Chemistry and Biochemistry - NOC: Advanced Transition Metal Organometallic Chemistry

Subject Co-ordinator - Prof. P. Ghosh

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Transition Metal Allyl and Enyl Complexes
Lecture 2 - Transition Metal Allyl and Enyl Complexes
Lecture 3 - Transition Metal Allyl and Enyl Complexes
Lecture 4 - Transition Metal Allyl and Enyl Complexes
Lecture 5 - Types of Transition Metal Sandwich Complexes
Lecture 6 - Transition Metal Cyclobutadiene Complexes
Lecture 7 - Transition Metal Cyclobutadiene Complexes
Lecture 8 - Transition Metal Cyclobutadiene Complexes
Lecture 9 - Transition Metal Cyclopentadiene Complexes
Lecture 10 - Transition Metal Cyclopentadiene Complexes
Lecture 11 - Transition Metal Cyclopentadiene Complexes
Lecture 12 - Transition Metal Cyclopentadiene Complexes
Lecture 13 - Transition Metal Cyclopentadiene Complexes
Lecture 14 - Transition Metal Cyclopentadiene Complexes
Lecture 15 - Transition Metal Cyclopentadienyl Carbonyl Complexes
Lecture 16 - Transition Metal Cyclopentadienyl Carbonyl Complexes
Lecture 17 - Transition Metal Cyclopentadienyl Nitrosyl Complexes
Lecture 18 - Transition Metal Cyclopentadienyl Hydride Complexes
Lecture 19 - Transition Metal Cyclopentadienyl Hydride and Halide Complexes
Lecture 20 - Transition Metal Cyclopentadienyl Halide Complexes
Lecture 21 - Transition Metal Cyclopentadienyl Halide and Transition Metal Arene Complexes
Lecture 22 - Transition Metal Arene Complexes
Lecture 23 - Transition Metal Arene Complexes
Lecture 24 - Transition Metal Arene Complexes
Lecture 25 - Transition Metal Arene Complexes
Lecture 26 - Transition Metal Arene Carbonyl Complexes
Lecture 27 - Transition Metal Arene Carbonyl Complexes
Lecture 28 - Transition Metal Arene Cyclopentadienyl Complexes
Lecture 29 - Transition Metal Arene Cyclopentadienyl and C7H7 Complexes

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Lecture 30 - Transition Metal C7H7 Complexes
Lecture 31 - Transition Metal C7H7 Complexes
Lecture 32 - Transition Metal C8H8 and C7H7 Complexes
Lecture 33 - Transition Metal C8H8 Complexes
Lecture 34 - Transition Metal A•â ¬ complexes of heterocycles
Lecture 35 - Cââ□¬â□□C Cross Coupling Reactions
Lecture 36 - Cââ□¬â□□C Cross Coupling Reactions
Lecture 37 - Cââ□¬â□□C Cross Coupling Reactions
Lecture 38 - Cââ□¬â□□C Cross Coupling Reactions
Lecture 39 - Cââ□¬â□□C Cross Coupling Reactions
Lecture 40 - Cââ□¬â□□C Cross Coupling Reactions
Lecture 41 - Cââ□¬â□□C Cross Coupling Reactions
Lecture 42 - Cââ□¬â□□C Cross Coupling Reactions
Lecture 43 - Hydrocyanation Reactions
Lecture 44 - CâË□â□□heteroatom Coupling
Lecture 45 - CâË□â□□heteroatom Coupling
Lecture 46 - CâË□â□□Heteroatom Coupling
Lecture 47 - CâË□â□□Heteroatom Coupling
Lecture 48 - CâË□â□□Heteroatom Coupling
Lecture 49 - Organometallic Catalysis Reactions
Lecture 50 - Organometallic Catalysis Reactions
Lecture 51 - Organometallic Catalysis Reactions
Lecture 52 - Organometallic Catalysis Reactions
Lecture 53 - Organometallic Catalysis Reactions
Lecture 54 - Organometallic Catalysis Reactions
Lecture 55 - Organometallic Catalysis Reactions
Lecture 56 - Organometallic Catalysis Reactions
Lecture 57 - Organometallic Catalysis Reactions
Lecture 58 - Organometallic Catalysis Reactions
Lecture 59 - Organometallic Catalysis Reactions
Lecture 60 - Summary of Advanced Transition Metal Organometallic Chemistry

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NPTEL Video Course - Chemistry and Biochemistry - NOC: Mechanisms in Organic Chemistry

Subject Co-ordinator - Prof. Nandita Madhavan

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Reaction Mechanisms
Lecture 2 - Writing Reaction Mechanisms
Lecture 3 - Types of Polar Reactions
Lecture 4 - The Radical Reactions
Lecture 5 - Reaction Co-ordinate Diagrams
Lecture 6 - The Hammond Postulate
Lecture 7 - Kinetic versus Thermodynamic Control
Lecture 8 - Curtin-Hammett Principle
Lecture 9 - An Introduction to Reaction Kinetics
Lecture 10 - Deriving the Rate Laws
Lecture 11 - Distinguishing Reaction Mechanisms Using Rate Laws
Lecture 12 - Methods to Monitor a Reaction
Lecture 13 - The Hammett Equation
Lecture 14 - Linear Free Energy Relationships (LFER)
Lecture 15 - Hammett Plots for Electronic Effects
Lecture 16 - Scales used in Hammett Plots
Lecture 17 - Deviation from Linear Free Energy Relationships
Lecture 18 - LFER for Sterics
Lecture 19 - Solvent Effects - Part A
Lecture 20 - Solvent Effects - Part B
Lecture 21 - Kinetic Isotope Effect
Lecture 22 - Primary Kinetic Isotope Effect
Lecture 23 - Secondary Kinetic Isotope Effect - Part A
Lecture 24 - Secondary Kinetic Isotope Effect - Part B
Lecture 25 - Heavy Atom Isotope Effects
Lecture 26 - Equilibrium Isotope Effects
Lecture 27 - Isotope Labelling
Lecture 28 - Trapping Intermediates - Part A
Lecture 29 - Trapping Intermediates - Part B

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Lecture 30 - Trapping Intermediates - Part C
Lecture 31 - Checking for Common Intermediates
Lecture 32 - Catalysis - Part A
Lecture 33 - Catalysis - Part B
Lecture 34 - Specific Catalysis
Lecture 35 - General Catalysis - Part A
Lecture 36 - General Catalysis - Part B
Lecture 37 - Enzyme Catalysis
Lecture 38 - Electrophilic Catalysis
Lecture 39 - Other Types of Catalysis
Lecture 40 - Course Summary
NPTEL Video Course - Chemistry and Biochemistry - NOC: Metals in Biology

Subject Co-ordinator - Prof. Debabrata Maiti
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Importance of metals in biology
Lecture 2 - Choice, uptake and assembly of metal ions in cells
Lecture 3 - Control and use of metal ions concentration in biological systems
Lecture 4 - Metal mediated folding of biopolymers
Lecture 5 - Study of binding mode of calcium and zinc in proteins
Lecture 6 - Electron transfer (ET) in living systems
Lecture 7 - Oxygen transport and activation
Lecture 8 - Hydrolytic Enzymes - Part I - Carbonic anhydrase and Liver alcohol dehydrogenase
Lecture 9 - Hydrolytic Enzymes - Part II - Carbopeptidase
Lecture 10 - Hydrolytic Enzymes - Part III - Arginase and Urease
Lecture 11 - Hemerythrin and azidomethemerythrin
Lecture 12 - Dioxygen reactivity in copper
Lecture 13 - Cu-O2 intermediates
Lecture 14 - Copper-Oxygen chemistry - Part I - Mononuclear copper-oxygen
Lecture 15 - Copper-Oxygen chemistry - Part II - Cu-O2 complexes
Lecture 16 - Copper-Oxygen chemistry - Part III - Reactivity summary
Lecture 17 - Iron Catalyzed oxidation of unactivated sp3 C-H bonds - Part I
Lecture 18 - Iron catalyzed oxidation of unactivated sp3 C-H bonds - Part II
Lecture 19 - Iron catalyzed oxidation of unactivated sp3 C-H bonds - Part III
Lecture 20 - Nitrous oxide reductase and its model complex
Lecture 21 - Cytochrome C-oxidase
Lecture 22 - Systematic variations in O-O stretch in Iron-oxo-copper ligand complex
Lecture 23 - Mononuclear nonheme iron (NHI) enzymes
Lecture 24 - Alpha-Keto Glutarate dependent Halogenases
Lecture 25 - Cytochrome P450 - Part I - Introduction
Lecture 26 - Cytochrome P450 - Part II - Reactions
Lecture 27 - Cytochrome P450 - Part III - Mechanism
Lecture 28 - Cytochrome P450 - Part IV - Role of Cystine ligand and distal charge relay
Lecture 29 - Methane monooxygenase

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Lecture 30 - Dinuclear Iron active sites for CH4 to CH4OH conversion and its Mechanism
Lecture 31 - Concerted Vs radical pathway for CH4 to CH4OH conversion
Lecture 32 - Photosynthesis - Part I
Lecture 33 - Photosynthesis - Part II
Lecture 34 - Pumps and channels
Lecture 35 - Quick summary on O2 transport
Lecture 36 - Summary of Dioxygen reactivity in copper
Lecture 37 - Summary of Dioxygen reactivity in iron
Lecture 38 - Summary of Fe-O2 chemistry
NPTEL Video Course - Chemistry and Biochemistry - NOC:NMR Spectroscopy for Chemists and Biologists

Subject Co-ordinator - Prof. Ashutosh Kumar
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic concepts
Lecture 2 - Resonance absorption
Lecture 3 - Bloch Equations
Lecture 4 - Relaxation
Lecture 5 - Introduction to Chemical Shift
Lecture 6 - Factors affecting Isotropic Chemical Shifts
Lecture 7 - Spin-Spin Coupling
Lecture 8 - Interpretation of multiplet structure using first order analysis
Lecture 9 - Analysis of NMR spectra of molecules
Lecture 10 - Quantum Mechanical Analysis - Part I
Lecture 11 - Quantum Mechanical Analysis - Part II
Lecture 12 - Dynamic effects in the NMR Spectra
Lecture 13 - Fourier Transform NMR
Lecture 14 - Theorems on Fourier Transform
Lecture 15 - Practical aspects of Fourier Transform NMR spectra
Lecture 16 - Data Processing in Fourier Transform NMR
Lecture 17 - Dynamic range in Fourier Transform NMR
Lecture 18 - Spin Echo and Solvent Suppression
Lecture 19 - Spin Decoupling in FT NMR and Relaxation Measurements
Lecture 20 - Polarization Transfer
Lecture 21 - Nuclear Overhauser Effect
Lecture 22 - Steady state NOE and Transient NOE
Lecture 23 - Distance and NOE
Lecture 24 - Selective Population Inversion
Lecture 25 - INEPT and Sensitivity Enhancement
Lecture 26 - Rotating Frame Experiments
Lecture 27 - Density matrix description of NMR - I
Lecture 28 - Density matrix description of NMR - II
Lecture 29 - Density matrix description of NMR - III

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Lecture 30 - Time evolution of density operator
Lecture 31 - Density matrix description of NMR - IV
Lecture 32 - Evolution of density operator in the presence of RF
Lecture 33 - Product operator formalism
Lecture 34 - Product operator formalism (Continued...)
Lecture 35 - Product operator formalism (Continued...)
Lecture 36 - Time evolution of basis operators
Lecture 37 - Observable and Non-observable basis operators, Spin echo
Lecture 38 - Spin echo (Continued...)
Lecture 39 - INEPT
Lecture 40 - Multidimensional NMR Spectroscopy
Lecture 41 - Two Dimensional NMR - Part I
Lecture 42 - Two Dimensional NMR - Part II
Lecture 43 - Types of 2D NMR Spectra
Lecture 44 - Two Dimensional Separation of Interaction in NMR
Lecture 45 - Two Dimensional Correlation Experiments - I
Lecture 46 - Two Dimensional Correlation Experiments - II
Lecture 47 - Two Dimensional Correlation Experiments - III
Lecture 48 - Double Quantum Filtered COSY (DQF-COSY)
Lecture 49 - Two Dimensional Nuclear Overhauser Effect Spectroscopy (2D- NOESY)
Lecture 50 - Constant-time COSY
Lecture 51 - Scaling in 2D NMR
Lecture 52 - Total Correlation Spectroscopy
Lecture 53 - 2D Heteronuclear Experiment - I
Lecture 54 - 2D Heteronuclear Experiment - II
Lecture 55 - Multidimensional NMR
Lecture 56 - Structure Determination of Peptides by NMR - I
Lecture 57 - Structure Determination of Peptides by NMR - II
Lecture 58 - Protein–Ligand Interaction - I
Lecture 59 - Protein–Ligand Interaction - II
Lecture 60 - Diffusion Ordered Spectroscopy
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - Bio-Physical Chemistry

Subject Co-ordinator - Dr. P.K. Chowdhury

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - A Course on Bio-physical Chemistry
Lecture 2 - Protein Structure
Lecture 3 - Secondary Structure of Proteins
Lecture 4 - Secondary Structure of Proteins (Continued...)
Lecture 5 - Tertiary Structure
Lecture 6 - Forces in Protein Folding
Lecture 7 - Forces in Protein Folding (Continued...)
Lecture 8 - Electrostatics (Continued...)
Lecture 9 - Intermolecular Interactions
Lecture 10 - Dipole-Dipole Interaction
Lecture 11 - Electrostatics (Continued...)
Lecture 12 - Hydrophobic Effect
Lecture 13 - Hydrophobic Effect (Continued...)
Lecture 14 - Hydrogen Bonding
Lecture 15 - Protein Stability Curves
Lecture 16 - Thermodynamics of Protein Unfolding
Lecture 17 - Thermodynamics of Protein Unfolding (Continued...)
Lecture 18 - Mechanism of Chemical Denaturation
Lecture 19 - Pressure Induced Denaturation (The P-T Diagram)
Lecture 20 - Protein Folding Pathways and Energy Landscapes
Lecture 21 - Diffusion
Lecture 22 - Diffusion (Continued...)
Lecture 23 - Diffusion (Continued...)
Lecture 24 - Langevin Equation and Brownian Motion
Lecture 25 - Langevin Equation and Brownian Motion (Continued...)
Lecture 26 - Langevin Equation and Brownian Motion (Continued...)
Lecture 27 - Protein Folding
Lecture 28 - Protein Folding
Lecture 29 - Protein Folding

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Lecture 30 - Protein Folding
Lecture 31 - Protein Folding Kinetics
Lecture 32 - Protein Folding Kinetics
Lecture 33 - Protein Folding Kinetics
Lecture 34 - Protein Folding Kinetics
Lecture 35 - Experimental Tools
Lecture 36 - Spectroscopy
Lecture 37 - Spectroscopy
Lecture 38 - Electronic Spectroscopy Absorption and Fluorescence
Lecture 39 - Fluorescence
Lecture 40 - Fluorescence Quenching
Lecture 41 - Infrared Spectroscopy of Proteins
Lecture 42 - Infrared Spectroscopy of Proteins (Continued...)
Lecture 1 - Introduction to Spectroscopy - I
Lecture 2 - Introduction to Spectroscopy - II
Lecture 3 - Introduction to Spectroscopy - III
Lecture 4 - Introduction to Spectroscopy - IV
Lecture 5 - Introduction to Spectroscopy - V
Lecture 6 - Introduction to Spectroscopy - VI
Lecture 7 - Rotational, rotational Raman Spectroscopy theory and Application - I
Lecture 8 - Rotational, rotational Raman Spectroscopy theory and Application - II
Lecture 9 - Vibrational Spectroscopy Theory and Application - I
Lecture 10 - Vibrational, Rotational-Vibrational, Raman Spectroscopy - II
Lecture 11 - Vibrational, Rotational-Vibrational, Raman Spectroscopy - III
Lecture 12 - Problems on Rotational, Vibrational and Raman Spectroscopy
Lecture 13 - Atomic Spectroscopy - I
Lecture 14 - Atomic Spectroscopy - II
Lecture 15 - Atomic Spectroscopy - III
Lecture 16 - Atomic Spectroscopy - IV
Lecture 17 - Atomic and Molecular Spectroscopy
Lecture 18 - Electronic Spectra of Diatomic Molecules and UV-Vis Spectroscopy
Lecture 19 - UV-Visible Spectroscopy of Conjugated Molecules
Lecture 20 - UV-Vis Spectroscopy and its Applications - I
Lecture 21 - UV-Vis Spectroscopy and its Applications - II
Lecture 22 - UV-Vis and Fluorescence Spectroscopy
Lecture 23 - Fluorescence Spectroscopy (Continued...)
Lecture 24 - Application of Fluorescence Spectroscopy
Lecture 25 - Application of Steady-State Fluorescence
Lecture 26 - Time-resolved Fluorescence Spectroscopy
Lecture 27 - Microscopy
Lecture 28 - Contrast in Microscopy, Fluorescence Microscopy
Lecture 29 - Fluorescence Microscopy and Application
Lecture 30 - Principle of NMR
Lecture 31 - NMR data processing and Chemical shift
Lecture 32 - Structure Informations from NMR
Lecture 33 - Structure Calculation and 2D-NMR Spectroscopy
Lecture 34 - Mass Spectroscopy
NPTEL Video Course - Chemistry and Biochemistry - NOC: Introductory Non-Linear Dynamics

Subject Co-ordinator - Prof. Ramakrishna Ramaswamy

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction, Stability, Phase Space and Invariant Sets - 1
Lecture 2 - Introduction, Stability, Phase Space and Invariant Sets - 2
Lecture 3 - Introduction, Stability, Phase Space and Invariant Sets - 3
Lecture 4 - Maps and Flows. Simple Examples of Dynamics Systems - 1
Lecture 6 - Logistic map. Simple Examples of Bifurcations
Lecture 7 - Bifurcation Diagrams. Period 3 Implies Chaos. Characterizing Chaos
Lecture 8 - Characterizing The Period-Doubling Route to Chaos
Lecture 9 - Lyapunov Exponents; Invariant measures
Lecture 10 - Intermittency. Crises
Lecture 11 - Fractals
Lecture 12 - Chaos in Flows. The Lorenz and Rossler Systems
Lecture 13 - The Baker and Horseshoe Maps
Lecture 14 - Hamiltonian Chaos - 1
Lecture 15 - Hamiltonian Chaos - 2
NPTEL Video Course - Chemistry and Biochemistry - NOC: Principles of Organic Synthesis

Subject Co-ordinator - Prof. T. Punniyamurthy
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Aldol Reaction
Lecture 2 - Perkin, Claisen and Thorpe Reactions
Lecture 3 - Reaction of Enolates
Lecture 4 - Mannich Reaction
Lecture 5 - Reaction of Alkenes and Carbonyl Compounds
Lecture 6 - Friedel-Crafts and Prins Reactions
Lecture 7 - Grignard Reagents
Lecture 8 - Organolithium Reagents
Lecture 9 - Organocopper, Organozinc and Organomercury Reagents
Lecture 10 - Ritter Reaction and Gabriel Synthesis
Lecture 11 - Reactions of imines and enamines, synthesis of alkaloids and amino acids
Lecture 12 - Reactions of electrophilic and nucleophilic nitrogens, synthesis of amino acids and peptides
Lecture 13 - Principles, effect of substituents and carbon-carbon bond formation
Lecture 14 - Formylation/acylation and related reactions
Lecture 15 - Nitration, Sulphonation and other reactions
Lecture 16 - Principle, Substitution mechanism and reactions of Benzine
Lecture 17 - Schiemann Reaction, Ullmann reaction and Stephens-Castro coupling
Lecture 18 - Ziegler Alkylation, Chichibabin Reaction, Von Richter Rearrangement, Smiles Rearrangement, Bamberger Rearrangement
Lecture 19 - Preparation, properties and reactions
Lecture 20 - Coupling reactions, Japp-Klingemann reaction and Tiffeneau-Demjanov rearrangement
Lecture 21 - Applications of diazonium salts
Lecture 22 - Wagner-Meerwein rearrangement, Pinacol rearrangement, Benzilic acid rearrangement and Arndt-Eistert synthesis
Lecture 23 - Rearrangement of halogen, oxygen, sulfur and nitrogen containing centre
Lecture 24 - Rearrangement to electron-Rich carbon
Lecture 25 - Reactivity and several reactions
Lecture 26 - Reactions of sulfur and silicon containing reagents
Lecture 27 - Preparation and reactions of organoborane and organotin reagents
Lecture 28 - Formation of carbon-carbon and carbon-halogen bonds
Lecture 29 - Cu, Mn, Sm, and Sn Based Reactions, Acyloin Condensation

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Lecture 30 - C-N, C-O bond formation and decarboxylation
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NPTEL Video Course - Chemistry and Biochemistry - NOC: Reagents in Organic Synthesis

Subject Co-ordinator - Prof. Subhas Chandra
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Chromium Based Reagents for Oxidation
Lecture 2 - Non-metal based Reagents for Oxidation
Lecture 3 - Organic Peroxides
Lecture 4 - Oxidation Mediated by DDQ, CAN and SeO2
Lecture 5 - Oxidation Mediated by Mn and Ag
Lecture 6 - Oxidation by Ru, Hypervalent Iodine, Al and Na based Reagents
Lecture 7 - Na and Li Metal based Reduction
Lecture 8 - Hydride based Reduction
Lecture 9 - Hydrogenation
Lecture 10 - Al, Zn and Li Based Reagents for Reduction
Lecture 11 - Reduction With Boranes, Diimide and Trialkylsilanes
Lecture 12 - Li Based Reagents in Organic Synthesis
Lecture 13 - Mg and Na Based Reagents in Organic Synthesis
Lecture 14 - B Based Reagents in Organic Synthesis
Lecture 15 - B and Al Based Reagents in Organic Synthesis
Lecture 16 - S Based Reagents in Organic Synthesis
Lecture 17 - P Based Reagents in Organic Synthesis
Lecture 18 - Si and Pb Based Reagents in Organic Synthesis
Lecture 19 - Sn and Bi Based Reagents in Organic Synthesis
Lecture 20 - Ti Based Reagents in Organic Synthesis
Lecture 21 - Ru Based Reagents in Organic Synthesis
Lecture 22 - Pd Based Reagents in Organic Synthesis
Lecture 23 - Cu Based Reagents in Organic Synthesis
Lecture 24 - Cr and Mn Based Reagents in Organic Synthesis
Lecture 25 - Zn and Hg Based Reagents in Organic Synthesis
Lecture 26 - Au Based Reagents in Organic Synthesis
Lecture 27 - Fe and Co Based Reagents in Organic Synthesis
Lecture 28 - Ag and Rh Based Reagents in Organic Synthesis
Lecture 29 - Ni, Pt and Ir Based Reagents in Organic Synthesis

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Lecture 30 - Introduction to Lanthanides and Sm Based Reagents
Lecture 31 - Samarium(II) Iodide Based Reagents in Organic Synthesis
Lecture 32 - Sm and Yb Based Reagents in Organic Synthesis
Subject Co-ordinator - Prof. Sandip Paul
Co-ordinating Institute - IIT - Guwahati

Lecture 1 - Concepts of heat and work; First Law of Thermodynamics
Lecture 2 - Concepts of enthalpy and heat capacity
Lecture 3 - Introduction to entropy
Lecture 4 - Calculation of entropy for various processes
Lecture 5 - Gibbs and Helmholtz free energy
Lecture 6 - Introduction to chemical potential
Lecture 7 - Clapeyron equation and phase transition; concept of fugacity
Lecture 8 - Calculation of fugacity; free energy of mixing
Lecture 9 - Partial molar quantities; excess thermodynamic quantities
Lecture 10 - Concept of activity and activity coefficients; Debye-Hückel limiting law
Lecture 11 - Phase Diagram of one component systems
Lecture 12 - Phase Diagram of two component systems
Lecture 13 - Phase Diagram of three component system; one dimensional random walk
Lecture 14 - Macroscopic and microscopic states; Boltzmann distribution; Canonical partition function
Lecture 15 - Calculation of different thermodynamical quantities using canonical partition function
Lecture 16 - Introduction to molecular partition function
Lecture 17 - Translational, electronic and nuclear partition function
Lecture 18 - Rotational partition function
Lecture 19 - Vibrational partition function; Introduction to grand canonical ensemble
Lecture 20 - Grand canonical distribution; Introduction to microcanonical ensemble
Lecture 21 - Problems on classical thermodynamics - 1
Lecture 22 - Problems on classical thermodynamics - 2
Lecture 23 - Problems on statistical thermodynamics - 1
Lecture 24 - Problems on statistical thermodynamics - 2
Lecture 25 - Problems on statistical thermodynamics - 3
Lecture 26 - Fermi-Dirac and Bose-Einstein statistics
Lecture 27 - Ideal Fermi gas
Lecture 28 - Ideal Bose gas; Introduction to Bose-Einstein condensation
Lecture 29 - Bose-Einstein condensations
Lecture 30 - Nuclear spin statistics; Ortho- and para-hydrogens
Lecture 31 - Specific Heats of solids
Lecture 32 - Problems on statistical thermodynamics - 4
Lecture 33 - Advance problems - 1
Lecture 34 - Advance Problems - 2
Lecture 35 - Advance Problems - 3
Lecture 36 - Advance Problems - 4
Lecture 37 - Advance Problems - 5
Lecture 30 - High Tc Superconductors
Lecture 31 - The New Carbon family - I - Fullerenes and Nanotubes
Lecture 32 - The New Carbon family - II - Graphene
Lecture 33 - Optoelectronic Materials - I - OLEDs
Lecture 34 - Optoelectronic Materials - II - OLEDs
Lecture 35 - Inorganic Phosphors - I
Lecture 36 - Inorganic Phosphors - II
Lecture 37 - Phosphor Materials
Lecture 38 - Solar Cells
Lecture 39 - Interview with C N R Rao and Interview with E C Subba Rao
Lecture 40 - Perceptions & Projections
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - Mathematics for Chemistry

Subject Co-ordinator - Dr. Madhav Ranganathan, Dr. P.P. Thankachan

Co-ordinating Institute - IIT - Kanpur | IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - Advance Analytical Course

Subject Co-ordinator - Dr. Padma S Vankar
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Advance Analytical Course
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NPTEL Video Course - Chemistry and Biochemistry - NOC: Mathematics for Chemistry

Subject Co-ordinator - Dr. Madhav Ranganathan

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Errors, precision and accuracy
Lecture 2 - Probability and distributions
Lecture 3 - Gaussian distribution and integrals
Lecture 4 - Gaussian distribution, integrals, averages
Lecture 5 - Practice problems 1
Lecture 6 - Vectors and Vector Spaces
Lecture 7 - Linear Independence
Lecture 8 - Scalar and vector fields
Lecture 9 - Gradient, divergence and curl
Lecture 10 - Practice problems 2
Lecture 11 - Line integrals, Potential Theory
Lecture 12 - Surface and Volume Integrals
Lecture 13 - Matrices
Lecture 14 - Linear Systems, Cramer's Rule
Lecture 15 - Practice Problems 3
Lecture 16 - Rank and Inverse of a Matrix
Lecture 17 - Eigenvalues and Eigenvectors
Lecture 18 - Special matrices
Lecture 19 - Spectral decomposition and Normal modes
Lecture 20 - Practice Problems 4
Lecture 21 - Differential equations, Order
Lecture 22 - Exact and Inexact differentials
Lecture 23 - Integrating Factors
Lecture 24 - System of 1st order ODEs, matrix methods
Lecture 25 - Practice Problems 5
Lecture 26 - Types of 2nd order ODEs, nature of solutions
Lecture 27 - Homogeneous 2nd order ODEs
Lecture 28 - Homogeneous and nonhomogeneous equations
Lecture 29 - Nonhomogeneous equations Â□ Variation of parameters

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Lecture 30 - Practice Problems 6
Lecture 31 - Power series method for solving Legendre DE
Lecture 32 - Properties of Legendre Polynomials
Lecture 33 - Associated Legendre Polynomials, Spherical Harmonics
Lecture 34 - Hermite Polynomials, Solution of Quantum Harmonic Oscillator
Lecture 35 - Practice Problems 7
Lecture 36 - Conditions for power series solution
Lecture 37 - Frobenius Method, Bessel Functions
Lecture 38 - Properties of Bessel Functions, circular boundary problems
Lecture 39 - Laguerre Polynomials, solution to radial part of H-atom
Lecture 40 - Practice Problems 8
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - NOC:Quantum Computing

Subject Co-ordinator - Prof. Debabrata Goswami
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - Motivation and Overview
Lecture 2 - Introduction - Technical Details
Lecture 3 - Introduction - Basic tools
Lecture 4 - Computational Tools
Lecture 5 - Quantum Measurement and Teleportation
Lecture 6 - Quantum Teleportation and Cryptography
Lecture 7 - DJ Algorithm and Implementation Aspects
Lecture 8 - Grover's Algorithm
Lecture 9 - Basics of Shor's Algorithm
Lecture 10 - Shor's Algorithm and Quantum Fourier Transform (QFT)
Lecture 11 - Basics of Quantum Mechanics
Lecture 12 - Modern look at Quantum Mechanics
Lecture 13 - Basics of NMR
Lecture 14 - Concepts in NMR Quantum Computing
Lecture 15 - Laser Basics
Lecture 16 - Continuous Wave Lasers
Lecture 17 - Pulsed Lasers
Lecture 18
Lecture 19
Lecture 20
Lecture 21 - Optical Implementation
Lecture 22 - Solutions to problem set - 1
Lecture 23 - Basics of Ion Traps
Lecture 24 - Applications of Ion Traps in QIQC
Lecture 25 - Reviewing Concepts and clarifying problems - 1
Lecture 26 - Reviewing Concepts and clarifying problems - 2
Lecture 27 - Qubits used in Commercial Quantum Computing
Lecture 28 - Spintronics Quantum Computing
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NPTEL Video Course - Chemistry and Biochemistry - NOC: Basics of Fluorescence Spectroscopy

Subject Co-ordinator - Prof. Pratik Sen
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 9 - Modes of LASER cavity and standing waves
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Lecture 40 - Laser safety and summary
NPTEL Video Course - Chemistry and Biochemistry - NOC: Advanced Mathematical Methods for Chemistry

Subject Co-ordinator - Prof. Madhav Ranganathan
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Vectors, Vector Operations and Linear Independence
Lecture 2 - Vector Operations, Generalization of Vectors
Lecture 3 - Vector Differentiation, Vector Transformations
Lecture 4 - Vector Integration, Line, Surface and Volume Integrals
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Lecture 7 - Special Matrices
Lecture 8 - Rotational Matrices, Eigenvalues and Eigenvectors
Lecture 9 - Determinants, Matrix Inverse
Lecture 10 - Practice Problems
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Lecture 14 - Cylindrical Polar Coordinates, Integrals
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Lecture 17 - First order ODEs, exact integrals, integrating factors
Lecture 18 - System of first order ODEs, Linear first order ODEs
Lecture 19 - General solution of a system of linear first order ODEs with constant coefficients
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Lecture 22 - Nonhomogeneous 2nd Order ODE
Lecture 23 - Power Series Method of Solving ODEs
Lecture 24 - Frobenius Method / Power Series Method
Lecture 25 - Time-independent Schrodinger Equation for H-atom
Lecture 26 - Maxima and Minima, Taylor Series
Lecture 27 - Taylor Series for functions of several variables
Lecture 28 - Critical Points of Functions
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NPTEL Video Course - Chemistry and Biochemistry - NOC: Solid State Chemistry

Subject Co-ordinator - Prof. Madhav Ranganathan
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 3 - Crystallisation Kinetics
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Lecture 8 - Bravais Lattices
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Lecture 13 - Schonflies and Hermann-Mauguin Conventions
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NPTEL Video Course - Chemistry and Biochemistry - NOC:Bioinorganic Chemistry

Subject Co-ordinator - Prof. S. P. Rath
Co-ordinating Institute - IIT - Kanpur
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NPTEL Video Course - Chemistry and Biochemistry - Co-ordination chemistry (chemistry of transition elements)

Subject Co-ordinator - Prof. D. Ray
Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Chemistry and Biochemistry - Heterocyclic Chemistry

Subject Co-ordinator - Prof. D.R. Mal
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Chemistry and Biochemistry - Organic photochemistry and pericyclic reactions
Subject Co-ordinator - Dr. N.D. Pradeep Singh
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Chemistry and Biochemistry - Polymer Chemistry

Subject Co-ordinator - Dr. D. Dhara

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Chemistry and Biochemistry - Rate processes

Subject Co-ordinator - Dr. M. Halder

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Chemistry and Biochemistry - NOC: Introduction to Molecular Thermodynamics

Subject Co-ordinator - Prof. Srabani Taraphder
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Review of Classical Thermodynamics - Part I
Lecture 2 - Review of Classical Thermodynamics - Part II
Lecture 3 - Thermodynamic potentials - Part 1
Lecture 4 - Thermodynamic potentials - Part 2
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Lecture 14 - Fundamentals of Statistical Mechanics
Lecture 15 - Statistical Ensembles
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Lecture 17 - Canonical ensemble - Part I
Lecture 18 - Canonical Ensemble - Part I (Continued...)
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Lecture 28 - Statistical thermodynamics of ideal gases (Continued...)
Lecture 29 - Statistical thermodynamics of ideal gases (Continued...)
Lecture 30 - Statistical thermodynamics of diatomic ideal gases
Lecture 31 - Statistical thermodynamics of ideal gas
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Lecture 33 - Specific heat of solids
Lecture 34 - Application of Molecular Thermodynamics
Lecture 35 - Introduction to classical statistical mechanics
Lecture 36 - Introduction to classical statistical mechanics (Continued...)
Lecture 37 - Classical Statistical Mechanics
Lecture 38 - Classical Statistical Mechanics
Lecture 39 - Classical Statistical Mechanics
Lecture 40 - Rate of Chemical Reaction
NPTEL Video Course - Chemistry and Biochemistry - NOC:Molecules in Motion

Subject Co-ordinator - Prof. Amita Pathak Mahanty
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Kinetic theory of gases
Lecture 2 - Kinetic theory of gases (Continued...)
Lecture 3 - Kinetic theory of gases (Continued...)
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Lecture 10 - Kinetic theory of gases (Continued...)
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NPTEL Video Course - Chemistry and Biochemistry - NOC: Experimental Biochemistry

Subject Co-ordinator - Prof. Soumya De, Prof. Swagata Dasgupta

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Buffers
Lecture 3 - Introduction to Biochemistry Laboratory Equipments and Safety Measures
Lecture 4 - Practical Aspects of Making Buffer
Lecture 5 - Making Tris Buffer (pH=8.2)
Lecture 6 - Making Phosphate Buffer (100mM)
Lecture 7 - Amino Acids and Their Properties
Lecture 8 - Amino Acid Titrations
Lecture 9 - pI Determination of Glycine
Lecture 10 - pI Determination of Lysine
Lecture 11 - Summary
Lecture 12 - UV and Visible Spectroscopy
Lecture 13 - Fluorescence Spectroscopy
Lecture 14 - UV/Visible Spectra of Amino Acids and Proteins
Lecture 15 - Fluorescence Spectra of Amino Acids and proteins
Lecture 16 - Spectroscopic Techniques Summary
Lecture 17 - Protein Folding and Denaturation - I
Lecture 18 - Protein Folding and Denaturation - II
Lecture 19 - Urea denaturation of HSA studied by UV/Vis absorbance
Lecture 20 - Temperature denaturation of HSA studied by UV/Vis absorbance
Lecture 21 - Denaturation of HSA by GdnHCl studied by Trp fluorescence
Lecture 22 - Protein Folding and Denaturation Summary
Lecture 23 - Chromatographic Techniques - I
Lecture 24 - Chromatographic Techniques - II
Lecture 25 - Protein Purification by Size Exclusion Chromatography (SEC)
Lecture 26 - Protein Purification by Affinity Chromatography
Lecture 27 - Gel Electrophoresis of DNA and Proteins - Part I
Lecture 28 - Gel Electrophoresis of DNA and Proteins - Part II
Lecture 29 - Gel Electrophoresis of DNA and Proteins - Part II

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Lecture 30 - Isolation and Characterization of Proteins Part - I
Lecture 31 - Isolation and Characterization of Proteins Part - II
Lecture 32 - Isolation and Purification of Proteins
Lecture 33 - Quality and Quantity of the Isolated Protein
Lecture 34 - Enzyme Kinetics - I
Lecture 35 - Enzyme Kinetics - II
Lecture 36 - Enzyme Kinetics (by using enzyme from apple juice)
Lecture 37 - Enzyme Kinetics (by using enzyme from apple juice) (Continued...)
Lecture 38 - Isolation and Characterization of DNA Part - I
Lecture 39 - Isolation and Characterization of DNA Part - II
Lecture 40 - Bacterial Culture for Plasmid DNA Isolation
Lecture 41 - Isolation of Plasmid DNA
Lecture 42 - Isolation and Characterization of DNA Summary
Lecture 43 - Basics of rDNA Technology Part - I
Lecture 44 - Basics of rDNA Technology Part - II
Lecture 45 - Cloning
Lecture 46 - DNA Transformation
Lecture 47 - Protein-Ligand Interaction
Lecture 48 - Protein-Ligand Interaction (Continued...)
Lecture 49 - Interaction study of HSA protein with Curcumin and Gallic acid using UV-Vis spectroscopy
Lecture 50 - Interaction study of HSA protein with Circumin and Gallic acid using UV-Vis spectroscopy (Continued...)
Lecture 51 - Analysis of the Structure of Protein ligand complex
Lecture 52 - Immunoassay Techniques
Lecture 53 - Western Blotting Technique
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NPTEL Video Course - Chemistry and Biochemistry - NOC:Industrial Inorganic Chemistry

Subject Co-ordinator - Prof. Debashis Ray
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Importance of chemical industry, chemicals from materials
Lecture 3 - Bulk and commodity chemicals
Lecture 4 - Fine and speciality chemicals
Lecture 5 - Water
Lecture 6 - Hydrogen
Lecture 7 - Inorganic peroxide compounds
Lecture 8 - Nitrogen compounds
Lecture 9 - Chloramine and Hydroxylamine
Lecture 10 - Nitric acid, Ostwald process and uses
Lecture 11 - Phosphorus and its components
Lecture 12 - Phosphoric acid salts
Lecture 13 - Tetraphosphates diphosphate preparation
Lecture 14 - Hydroxy apatite
Lecture 15 - P4S10 and phosphide preparation
Lecture 16 - Sulfur and copper (1) phosphide
Lecture 17 - Sulfur compounds and sulfur from H2S and SO2
Lecture 18 - Sulfuric acid, catalyst and S2Cl2, applications
Lecture 19 - Sulfur dichloride, thionyl chloride
Lecture 20 - Thiosulfates and dithionite
Lecture 21 - Sodium hydroxyl methanesulfinate and hydrogen sulfide
Lecture 22 - Halogen and halogen compounds
Lecture 23 - Fluorine and inorganic fluorides
Lecture 24 - Hydrogen fluoride and aluminum fluoride
Lecture 25 - Cryolite and other industrially important fluoride salts
Lecture 26 - Electrochemical fluorination, sulfonyl fluorides
Lecture 27 - Chloralkali electrolysis
Lecture 28 - Ion conduction membrane in electrolysis
Lecture 29 - Hydrochloric acid manufacture

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Lecture 30 - Bromine and bromine compounds
Lecture 31 - Hydrogen bromide and alkali bromates
Lecture 32 - Iodine and iodine compounds
Lecture 33 - Mineral fertilizers
Lecture 34 - Nitrogen fertilizer and Urea
Lecture 35 - Potassium fertilizer
Lecture 36 - Metals and their compounds
Lecture 37 - Sodium and its compounds
Lecture 38 - Potassium and its compounds
Lecture 39 - Magnesium and its compounds
Lecture 40 - Calcium and its compounds
Lecture 41 - Barium and its compounds
Lecture 42 - Chromium and its compounds
Lecture 43 - Manganese and its industrially important compounds
Lecture 44 - Silicon and its compounds
Lecture 45 - Organosilicon compounds, organoalkoxysilanes
Lecture 46 - Organomercapto silanes and silicones
Lecture 47 - Silicone rubber
Lecture 48 - Inorganic solids
Lecture 49 - Zeolites
Lecture 50 - Inorganic Fibres
Lecture 51 - Glass fibre production and construction materials
Lecture 52 - Ceramics and its manufacturing processes
Lecture 53 - Specialty ceramic products
Lecture 54 - Ferrites and porcelain enamel
Lecture 55 - Layers of enamelling
Lecture 56 - Carbon modifications
Lecture 57 - Activated carbon
Lecture 58 - Metallic hard materials
Lecture 59 - Fillers and inorganic pigments
Lecture 60 - Oxide pigments, luminescent pigments, corrosion protection pigments, magnetic pigments
NPTEL Video Course - Chemistry and Biochemistry - NOC: Organic Chemistry in Biology and Drug Development

Subject Co-ordinator - Prof. A. Basak
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - A brief introduction to Molecules of Life
Lecture 2 - Biological Macromolecules and Small molecules
Lecture 3 - Amino Acids
Lecture 4 - Amino acids
Lecture 5 - Method of determination of Amino acid sequence
Lecture 6 - Selective peptide bond cleavage
Lecture 7 - Peptide synthesis
Lecture 8 - Peptide synthesis (Continued...) Protection, coupling and deprotection method
Lecture 9 - Recent development of coupling agents; Merrifield’s method of solid phase peptide synthesis
Lecture 10 - Hierarchical structure of proteins
Lecture 11 - Ramachandran plot and protein purification techniques
Lecture 12 - Protein purification techniques (Continued...)
Lecture 13 - Introduction to Enzymes and its kinetics
Lecture 14 - Enzyme catalysed reactions and introduction to catalytic activity of proteases
Lecture 15 - Enzyme Kinetics (Continued...)
Lecture 16 - Concept of Enzyme Inhibition
Lecture 17 - Concept of Enzyme Inhibition (Continued...)
Lecture 18 - Problems on Enzyme Kinetics and Enzyme Inhibition
Lecture 19 - Synthetic Biology
Lecture 20 - Synthetic Biology (Continued...)
Lecture 21 - Synthetic Biology (Continued...)
Lecture 22 - Nucleic Acid
Lecture 23 - Nucleic Acid (Continued...)
Lecture 24 - DNA sequencing method
Lecture 25 - DNA sequencing method (Continued...)
Lecture 26 - DNA sequencing method (Continued...)
Lecture 27 - Synthesis of oligonucleotide
Lecture 28 - Central dogma
Lecture 29 - Central dogma

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Lecture 30 - Central dogma
Lecture 31 - Central dogma
Lecture 32 - Central dogma
Lecture 33 - Molecular Biology
Lecture 34 - Molecular Biology (Continued...)
Lecture 35 - Chemistry of cofactors/coenzymes
Lecture 36 - Chemistry of cofactors/coenzymes (Continued...)
Lecture 37 - Chemistry of cofactors/coenzymes (Continued...)
Lecture 38 - Chemistry of cofactors/coenzymes (Continued...)
Lecture 39 - Chemistry of cofactors/coenzymes (Continued...)
Lecture 40 - Chemistry of cofactors/coenzymes (Continued...)
Lecture 41 - Introduction to Drug Discovery Process
Lecture 42 - Fundamental Principles of Drug Development Process
Lecture 43 - Combinatorial chemistry
Lecture 44 - Neurotransmitters
Lecture 45 - Catechol amine based and GABA neurotransmitters
Lecture 46 - Hypertension
Lecture 47 - Inhibitor design of angiotensin converting enzyme
Lecture 48 - Antimicrobial drugs
Lecture 49 - Chemistry of penicillins
Lecture 50 - Resistance to beta-lactam antibiotics
Lecture 51 - Mechanistic studies of beta-lactamase
Lecture 52 - Non beta-lactam antibiotics
Lecture 53 - Mechanistic enzymology of Isopenicillin N synthase
Lecture 54 - Polyketide Biosynthesis
Lecture 55 - Biosynthesis of macrolide polyketides and introduction to virus
Lecture 56 - Anti-viral drugs
Lecture 57 - Cancer and Chemotherapy
Lecture 58 - Anti-cancer drugs (Continued...)
Lecture 59 - Aromatase inhibition and Anti-ulcer drugs
Lecture 60 - Cholesterol lowering agents
Lecture 61 - Cholesterol Biosynthesis
Lecture 62 - Pharmakinetics and pharmadynamics
Lecture 63 - QSAR principles
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NPTEL Video Course - Chemistry and Biochemistry - Principles and Application of Electron Paramagnetic Resonance

Subject Co-ordinator - Prof. Ranjan Das
Co-ordinating Institute - TIFR
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Remembering the Masters
Lecture 2 - Introduction to EPR spectroscopy
Lecture 3 - Electron-Nuclear Hyperfine Interaction - I
Lecture 4 - Electron-Nuclear Hyperfine Interaction - II
Lecture 5 - Magnetic Moment in Magnetic Field - I
Lecture 6 - Magnetic Moment in Magnetic Field - II
Lecture 7 - EPR Instrumentations - I
Lecture 8 - EPR Instrumentations - II
Lecture 9 - EPR Instrumentations - III
Lecture 10 - EPR Instrumentations - IV
Lecture 11 - Quantum Mechanical Description of EPR - I
Lecture 12 - Quantum Mechanical Description of EPR - II
Lecture 13 - Introduction to Spin Relaxation
Lecture 14 - Theory of First-order EPR Spectra - I
Lecture 15 - Theory of First-order EPR Spectra - II
Lecture 16 - How to Analyse First-order EPR Spectra
Lecture 17 - How to Record EPR Spectra
Lecture 18 - Second-order Effects on EPR Spectra
Lecture 19 - Photochemistry and EPR Spectroscopy
Lecture 20 - Electron Spin Polarisation - I
Lecture 21 - Electron Spin Polarisation - II
Lecture 22 - Anisotropic Interactions in EPR Spectroscopy
Lecture 23 - Theoretical Basis of isotropic Hyperfine Coupling
Lecture 24 - Spin Relaxation and Bloch Equations - I
Lecture 25 - Spin Relaxation and Bloch Equations - II

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NPTEL Video Course - Chemistry and Biochemistry - NOC:Chemistry-I

Subject Co-ordinator - Prof. K. Mangala Sunder

Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Chemistry and Biochemistry - NOC:Chemistry-II

Subject Co-ordinator - Prof. K. Mangala Sunder

Co-ordinating Institute - IIT - Madras

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Lecture 1 - Electromagnetic radiation
Lecture 2 - Interaction of radiation with matter
Lecture 3 - Introduction to chemical applications
Lecture 4 - Analysis of spectra
Lecture 5 - Radiation densities and Einstein's semi classical model
Lecture 6 - Introduction to quantum mechanics - I
Lecture 7 - Introduction to quantum mechanics - II
Lecture 8 - Born-Oppenheimer approximation
Lecture 9 - Beer-Lambert law
Lecture 10 - Diatomic Vibration Spectra Hermonic Model
Lecture 11 - Diatomic Vibration Morse Oscillator Model
Lecture 12 - Normal Vibrational modes Triatomic molecules
Lecture 13 - Normal Vibrational modes Polyatomic molecules
Lecture 14 - Vibrational Polyatomic Infrared Spectroscopy Local Modes and Group Frequencies
Lecture 15 - Microwave spectra of di-atomic molecules
Lecture 16 - Diatomic Molecules Microwave Energies and Transitions
Lecture 17 - Methodology of solving problems
Lecture 18 - Rotational and Vibrational Line Intensities
Lecture 19 - Microwave Spectra of Polyatomic molecules (Symmetric tops)
Lecture 20 - Video Tutorial 2
Lecture 21 - Video Tutorial 2
Lecture 22 - Introduction to Tensors
Lecture 23 - Polarizability Tensor
Lecture 24 - Introduction to Rotational Raman Spectra.
Lecture 25 - Review of basic concepts in Molecular Spectroscopy
Lecture 26 - Review of Microwave Spectroscopy
Lecture 27 - Review of Elementary Vibrational Spectroscopy

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Lecture 30 - Photochemistry of carbonyl compounds, Norrish type 1 and 2 reactions
Lecture 31 - Photochemistry of carbonyl compounds, enone and dienone photochemistry
Lecture 32 - Photochemistry of Nitrogen compounds
Lecture 33 - Photochemistry of aromatic compounds
Lecture 34 - Photoinduced electron transfer reactions
NPTEL Video Course - Chemistry and Biochemistry - NOC:Chemistry I:Introduction To Quantum Chemistry And Molecular Spectroscopy

Subject Co-ordinator - Prof. K. Mangala Sunder

Co-ordinating Institute - IIT - Madras

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Lecture 1 - Lecture 1 - Historical context and experiments: Introducing the Schrödinger equation
Lecture 2 - Lecture 2 - Bohr's atom, De Broglie Matter Waves and Schrodinger equation
Lecture 3 - Lecture 3 - Electromagnetic Radiation
Lecture 4 - Lecture 4 - Interaction of Radiation with Matter
Lecture 5 - Lecture 5 - Molecular Spectroscopy
Lecture 6 - Lecture 6 - Elementary Mathematical Functions 1
Lecture 7 - Lecture 7 - Review of Properties of Elementary Functions II
Lecture 8 - Lecture 8 - Time Dependent Schrödinger Equation & Time Independent Schrödinger Equation
Lecture 9 - Lecture 9 - Schrödinger Equation Particle in a One-dimensional Box : Part I
Lecture 10 - Lecture 10 - Schrödinger Equation Particle in a One-dimensional Box : Part II
Lecture 11 - Lecture 11 - Schrödinger Equation Particle in Two-dimensional Box : Part I
Lecture 12 - Lecture 12 - Particle in Two-dimensional Box : Part II Uncertainty Principle
Lecture 13 - Lecture 13 - Particle in Two-dimensional Box : Part III Expectation Values
Lecture 14 - Lecture 14 - The Quantum Mechanics of Hydrogen Atom - Part I
Lecture 15 - Lecture 15 - The Quantum Mechanics of Hydrogen Atom - Part II
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Lecture 24 - Lecture 20 Harmonic Oscillator Model - Part I
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Lecture 27 - Lecture 23 Harmonic Oscillator Model - Part IV
Lecture 28 - Lecture 24 Particle on a Ring - Part I
Lecture 29 - Lecture 25 Particle on a Ring - Part II

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Lecture 30 - Lecture 26 - Heisenberg's Uncertainty Relation
Lecture 31 - Lecture 27A - Operators, Commutators, Eigenvalues and Eigenvectors
Lecture 32 - Lecture 27B - Operators, Commutators, Eigenvalues and Eigenvectors
Lecture 33 - Lecture 28 - Introduction to Chemical Applications
Lecture 34 - Lecture 29 - Radiation Densities and Einstein's Semiclassical model
Lecture 35 - Lecture 30 - Born Oppenheimer Approximation
Lecture 36 - Lecture 31 - Beer Lambert Law
Lecture 37 - Lecture 32 - Diatomic Vibrational Spectra Harmonic Model
Lecture 38 - Lecture 33 - Diatomic Vibration Morse Oscillator Model
Lecture 39 - Lecture 34 - Molecular Vibrations in Polyatomic Molecules - Qualitative Account
Lecture 40 - Lecture 35 - Polyatomic Vibrations - Illustrative examples of normal vibrations
NPTEL Video Course - Chemistry and Biochemistry - NOC: Introduction to Chemical Thermodynamics and Kinetics

Subject Co-ordinator - Prof. Arijit Kumar De
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Chemical Thermodynamics and Kinetics
Lecture 2 - Properties of gases - Part 1
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Lecture 4 - Introduction - Part 1
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Lecture 6 - First law - Part 1
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Lecture 10 - First law - Part 5
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Lecture 13 - Spontaneity and equilibrium - Part 1
Lecture 14 - Spontaneity and equilibrium - Part 2
Lecture 15 - Spontaneity and equilibrium - Part 3
Lecture 16 - Phase equilibrium - Part 1
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Lecture 19 - Mixtures - Part 1
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Lecture 21 - Chemical Equilibrium - Part 1
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Lecture 26 - Electrochemistry
Lecture 27 - Surfaces and interfaces
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Lecture 38 - Reaction dynamics - Part 1
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Lecture 41 - Reaction dynamics - Part 4
Lecture 42 - Reaction dynamics - Part 5
Lecture 43 - Reaction dynamics - Part 6
Lecture 44 - Reaction dynamics - Part 7
Lecture 45 - Live Session
Lecture 1 - Introduction to X-Ray Crystallography
Lecture 2 - Sources of X-Rays, Crystal Systems and Bravais lattices
Lecture 3 - Crystallographic Symmetries
Lecture 4 - Equivalent Points and 1D Lattices
Lecture 5 - 5 Fold Symmetry and 2D Lattices
Lecture 6 - 2D Space Lattices
Lecture 7 - Crystallographic Point Groups
Lecture 8 - Stereographic Projections of Point Groups
Lecture 9 - Understanding of Crystallographic Space Groups
Lecture 10 - 2D Projection of Space Groups
Lecture 11 - Tutorial - 01
Lecture 12 - 3D Space Groups and Equivalent Points
Lecture 13 - Obtaining Equivalent Points by Shifting of Origin
Lecture 14 - Representation of Orthorhombic and Tetragonal Space Groups
Lecture 15 - Miller Indices for Crystallographic Directions and Planes
Lecture 16 - Miller Indices and Planar Densities
Lecture 17 - Tutorial - 02
Lecture 18 - Cubic Structures and atomic packing factors
Lecture 19 - Ceramic Structures
Lecture 20 - Theory of X-Ray Diffraction
Lecture 21 - Tutorial - 03
Lecture 22 - Origin of Reciprocal Lattice
Lecture 23 - Bragg's Law in Reciprocal Lattice and Origin of Systematic Absences
Lecture 24 - Systematic Absences and Crystallisation Methods
Lecture 25 - Special Method of Crystallisation
Lecture 26 - Tutorial
Lecture 27 - Single Crystal X-Ray Diffraction Data Collection
Lecture 28 - Diffractometers
Lecture 29 - Diffractometers and Detectors
Lecture 30 - Laue's and Bragg's Analysis
Lecture 31 - Experimental Methods and Theoretical Understanding of X-Ray Diffraction
Lecture 32 - Derivation of Friedel's Law from Structure Factor by Vector Space Diagram
Lecture 33 - Structure Factor and Electron Density
Lecture 34 - Systematic Absence Conditions from Special Structure Factor Expression
Lecture 35 - Structure Refinement
Lecture 36 - Single Crystal X-Ray Diffractometer
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Lecture 38 - Data Handling (Solution and Refinement) using Various Crystallographic Packages
Lecture 39 - Structure Solution using Apex II (Bruker Diffractometer)
Lecture 40 - Direct Methods - Part 1
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Lecture 43 - Cambridge Structure Database and its Application
Lecture 44 - Data Reduction - Absorption Correction
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Lecture 47 - Identification from Intensity Statistics the Correct Crystal System and Presence of Inversion Center
Lecture 48 - Identification from Intensity Statistics the presence of 2 fold axis in Lattice
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Lecture 50 - Direct Methods - Part 1
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Lecture 52 - Sigma 1 and Triplet Relationship
Lecture 53 - Patterson Method
Lecture 54 - Powder X-Ray Diffractometer - Theory
Lecture 55 - Powder X-Ray Diffractometer - Lab
Lecture 56 - Polymorphs
Lecture 57 - Polymorphs
Lecture 58 - Review of Reciprocal Lattice
Lecture 59 - Review of Reciprocal Lattice
Lecture 60 - Review of Reciprocal Lattice and Bragg's Law in Reciprocal Lattice
Lecture 61 - Ewald's Sphere and Limiting Sphere
Lecture 62 - Origin of/Introduction to Systematic absences
NPTEL Video Course - Chemistry and Biochemistry - NOC: Advanced Chemical Thermodynamics and Kinetics

Subject Co-ordinator - Prof. Arijit Kumar De
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 3 - Review of Classical Thermodynamics - 3
Lecture 4 - Review of Classical Thermodynamics - 4
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Lecture 21 - Advanced Topic in Chemical Kinetics - 3
Lecture 22 - Introduction to statistical thermodynamics - 1
Lecture 23 - Introduction to statistical thermodynamics - 2
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Lecture 25 - Introduction to bimolecular reaction dynamics - 1
Lecture 26 - Introduction to bimolecular reaction dynamics - 2
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Lecture 28 - Introduction to bimolecular reaction dynamics - 4
Lecture 29 - Unimolecular reaction - 1

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Lecture 31 - Introduction to solution phase reactions dynamics - 1
Lecture 32 - Introduction to solution phase reactions dynamics - 2
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Lecture 34 - Introduction to solution phase reactions dynamics - 4
Lecture 35 - Introduction to solution phase reactions dynamics - 5
Lecture 36 - Non-ideal solutions, Activity of ions (Debye-Huckel theory) - 1
Lecture 37 - Non-ideal solutions, Activity of ions (Debye-Huckel theory) - 2
Lecture 38 - Electrochemistry
Lecture 39 - Electrochemistry
Lecture 40 - Reaction Dynamics
Lecture 41 - Chemical Kinetics
Lecture 42 - Transport Phenomena
Lecture 43 - Equilibrium constant using partition method
Lecture 44 - Photochemistry
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

Lecture 30 - Legendre and Associated Legendre Equation
Lecture 31 - Born-Oppenheimer Approximation
Lecture 32 - Introduction to Angular Momentum
Lecture 33 - Spin 1/2 Angular Momentum
Lecture 34 - Spin Angular Momentum and Coupling of Two Spin-1/2 Angular Momenta
Lecture 35 - Coupling of Two Angular Momenta
Lecture 36 - Video Tutorial for Hermite polynomials and hydrogen atom - Part 1
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Lecture 38 - Variational Principle in Quantum Chemistry
Lecture 39 - Introduction to Variational Principle in Quantum Chemistry
Lecture 40 - Variational Method
Lecture 41 - Hydrogen Molecule Ion
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Lecture 45 - Video Tutorials on Angular Momentum (Orbital and Spin) and Variational Method - Part 1
Lecture 46 - Video Tutorials on Angular Momentum (Orbital and Spin) and Variational Method - Part 2
Lecture 47 - Introduction to Quantum Mechanical Perturbation Theory
Lecture 48 - First Order Time Independent perturbation Theory for Non-Degenerate states
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Lecture 50 - First and Second Order Time Independent Perturbation Theory
Lecture 51 - Time Independent Perturbation Theory for Degenerate States
Lecture 52 - General MO method for Homonuclear Diatomic Molecules
Lecture 53 - General MO method for Heteronuclear Diatomic Molecules
Lecture 54 - Introduction to Hybridization and Valence Bond for Polyatomic Molecules
Lecture 55 - H\textsuperscript{\textregistered}uckel Molecular Orbital Theory - I
Lecture 56 - H\textsuperscript{\textregistered}uckel Molecular Orbital Theory - II

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Lecture 1 - Electrochemistry, double layer, 3 electrode systems, supporting electrolyte
Lecture 2 - Rate constant, concept of impedance, Z of electrical elements, differential impedance
Lecture 3 - Time domain results
Lecture 4 - Graphical representation of data (Complex plane, Bode)
Lecture 5 - Introduction to other techniques
Lecture 6 - Tutorial 01
Lecture 7 - Type of analyzers, single and multi sine
Lecture 8 - FFT details, frequency range and resolution, cross correlation
Lecture 9 - Multi sine, odd harmonic, non-harmonics, crest factor, spectral leakage
Lecture 10 - Windowing
Lecture 11 - Tutorial 02
Lecture 12 - Introduction to KKT
Lecture 13 - Linearity, causality, stability, impedance vs. admittance, measurement model
Lecture 14 - Linear KKT illustration
Lecture 15 - Tutorial 03
Lecture 16 - Introduction to EEC, Choice of circuits, confidence intervals, AIC
Lecture 17 - EEC fitting, initial values, distinguishability
Lecture 18 - Zero/pole representation, Rt and Rp
Lecture 19 - Maxwell, Voigt, Ladder circuits, choice of initial values illustrated
Lecture 20 - Tutorial 04
Lecture 21 - Simple electron transfer reaction
Lecture 22 - Two step reaction with an intermediate (1 of 3)
Lecture 23 - Two step reaction with an intermediate (2 of 3)
Lecture 24 - Two step reaction with an intermediate (3 of 3)
Lecture 25 - E-EAR reaction, negative resistance (1 of 2)
Lecture 26 - E-EAR reaction, negative resistance (2 of 2)
Lecture 27 - Three step reaction with two adsorbed intermediates
Lecture 28 - Catalytic mechanism
Lecture 29 - Examples with Frumkin or Temkin isotherms
Lecture 30 - Challenges in RMA
Lecture 31 - Patterns Reported in Experiments
Lecture 32 - Warburg part - 1
Lecture 33 - Warburg part - 2
Lecture 34 - Warburg part - 3
Lecture 35 - Bounded Warburg
Lecture 36 - CPE
Lecture 37 - Porous electrodes
Lecture 38 - Films, PDM
Lecture 39 - PDM
Lecture 40 - Applications
Lecture 41 - NLEIS. Introduction and mathematical background
Lecture 42 - Electron Transfer reaction
Lecture 43 - Two step reaction
Lecture 44 - Two step reaction (Continued...)
Lecture 45 - Rt and Rp estimation
Lecture 46 - Galvanostatic simulations
Lecture 47 - Instabilities
Lecture 48 - Solution resistance effects
Lecture 49 - Detection on nonlinearities using KKT
Lecture 50 - Frumkin and Temkin isotherms
Lecture 51 - NLEIS Experimental aspects. FFT, PSD, THD
Lecture 52 - Application - other techniques HA, EFM
NPTEL Video Course - Chemistry and Biochemistry - NOC: Medicinal Chemistry

Subject Co-ordinator - Prof. Harinath Chakrapani

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Medicinal Chemistry - Part I
Lecture 2 - Introduction to Medicinal Chemistry - Part II
Lecture 3 - Intermolecular Binding Forces
Lecture 4 - Protein Structure and Function
Lecture 5 - Tutorial 1 - Acidity, Basicity and Related concepts
Lecture 6 - Tutorial 2 - Basic Concepts of Thermodynamics and Kinetics
Lecture 7 - Enzyme Catalysis - Part I
Lecture 8 - Enzyme Catalysis - Part II
Lecture 9 - Tutorial 3 - Binding Forces, Protein Structure and Function
Lecture 10 - Introduction to Receptors
Lecture 11 - Receptor Types and Functions
Lecture 12 - Tutorial 4 - Receptors, Binding Interactions, Ion Channels
Lecture 13 - Nucleic Acids
Lecture 14 - RNA and Protein Synthesis
Lecture 15 - Tutorial 5 - Nucleic acids, and Basics of Molecular Biology
Lecture 16 - Enzymes as Drug Targets
Lecture 17 - Enzyme Kinetics and Inhibition
Lecture 18 - Tutorial 6 - Enzyme Kinetics, Various Modes of Inhibition etc.
Lecture 19 - Receptors as Drug Targets - Part I
Lecture 20 - Receptors as Drug Targets - Part II
Lecture 21 - Tutorial 7 - Receptor-Drug Interactions, Stereochemistry, Chirality, Nomenclature
Lecture 22 - Receptor-Drug Interactions.
Lecture 23 - Stereochemistry and Conformation
Lecture 24 - Tutorial 8 - Determination of Drug-Receptor Interactions, Conformation of Cyclic and Acyclic Struc
Lecture 25 - Nucleic Acids as Drug Targets - Part I
Lecture 26 - Nucleic Acids as Drug Targets - Part II
Lecture 27 - Miscellaneous Drug Targets
Lecture 28 - Tutorial 9 - Nucleic Acids and Related Topics
Lecture 29 - Mechanisms in Biological Chemistry - Part I

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Lecture 69 - Drug Resistance and Synergy
Lecture 30 - Thermodynamic Temperature
Lecture 31 - Definition of Entropy
Lecture 32 - Tutorial Problem - 3
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Lecture 38 - Statistical Formulation of the Second Law
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Lecture 41 - Permutation and Combination
Lecture 42 - Two-Level Systems
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NPTEL Video Course - Chemistry and Biochemistry - Organic Chemistry Lab Certification

Subject Co-ordinator - Prof. Harinath Chakrapani

Co-ordinating Institute - IISER PUNE

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Lecture 2 - Introduction to Claesen - Condensation
Lecture 3 - Introduction to Claesen - Condensation
Lecture 4 - How to separate different components from a mixture using column chromatography
Lecture 5 - Fluorescence phenomenon
Lecture 6 - Reaction Mechanism and Stereochemistry
Lecture 7 - Chemiluminescence Phenomenon
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NPTEL Video Course - Chemistry and Biochemistry - Essentials in Immunology

Subject Co-ordinator - Prof. Anjali Karande, Dr. Dipankar Nandi, Dr. R. Manjunath

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the immune system
Lecture 2 - Cells and Organs of the immune system - Part 1
Lecture 3 - Cells and Organs of the immune system - Part 2
Lecture 4 - Cells and Organs of the immune system - Part 3
Lecture 5 - Innate immunity - Part 1
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Lecture 7 - Development and differentiation of B cells - Part 1
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Lecture 9 - Organization of immunoglobulin genes and Mechanism of immunoglobulin gene rearrangement
Lecture 10 - Generation of antibody diversity
Lecture 11 - Immunoglobulin class switching Regulation of Immunoglobulin gene regulation
Lecture 12 - Structures and functions of Immunoglobulinâ□□s
Lecture 13 - The three complement pathways
Lecture 14 - Hypersensitivity type 1
Lecture 15 - Hypersensitivity types 2, 3 ,4 and Autoimmunity
Lecture 16 - Autoimmunity Autoimmuno-deficiencies f the B cells
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Lecture 25 - T cell receptors
Lecture 26 - T cell Activation
Lecture 27 - T cell Activation / Differentiation
Lecture 28 - T cell synapse, motility and subsets
Lecture 29 - T cell survival
NPTEL Video Course - Chemistry and Biochemistry - Eukaryotic Gene Expression - basics and benefits

Subject Co-ordinator - Prof. P.N. Rangarajan

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 30 - Eukaryotic protein expression systems - I
Lecture 31 - Eukaryotic protein expression systems - II
Lecture 32 - Eukaryotic protein expression systems - III
Lecture 33 - Human Gene Therapy
Lecture 34 - DNA vaccines
Lecture 35 - Transgenic animals
Lecture 36 - Transgenic plants
Lecture 37 - Knockout mic
Lecture 38 - Regulation of Eukaryotic Gene Expression by Small RNAs (RNA Interference, RNAi)
Lecture 39 - Genomics & Proteomics
Lecture 40 - Metabolic Engineering & Synthetic Biology
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - Introductory Quantum Chemistry

Subject Co-ordinator - Prof. K.L. Sebastian
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Wave Particle Duality
Lecture 2 - Standing Waves
Lecture 3 - Path Integrals and Schrodinger Equation
Lecture 4 - Postulates - Part 1
Lecture 5 - Postulates - Part 2
Lecture 6 - Postulates - Part 3
Lecture 7 - Separating Variables and Particle in a Box - Part 1
Lecture 8 - Particle in a box - Part 2
Lecture 9 - Particle in a box - Part 3
Lecture 10 - Particle in a box-time dependent states-Expectations values and time dependent states
Lecture 11 - Particle in a 3 dimensional box
Lecture 12 - Particle in a well of finite depth
Lecture 13 - Finite well, Delta and Step Functions
Lecture 14 - Finite well (Continued...)
Lecture 15 - Tunneling - Part 1
Lecture 16 - Tunneling - Part 2
Lecture 17 - Schrodinger equation for Harmonic Oscillator
Lecture 18 - Harmonic Oscillator - The Series Solution
Lecture 19 - Harmonic Oscillator - Generating function
Lecture 20 - Harmonic Oscillator - Orthogonality of Eigenfunctions
Lecture 21 - Hydrogen Atom
Lecture 22 - Hydrogen Atom
Lecture 23 - Hydrogen atom continued
Lecture 24 - Hydrogen atom
Lecture 25 - Finding R(r)
Lecture 26 - Atomic Orbitals - Part 1
Lecture 27 - Atomic Orbitals - Part 2
Lecture 28 - Atomic Orbitals - Part 3
Lecture 29 - Atomic Orbitals - Part 4 and Hermitian Operators

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Lecture 30 - Measurement, Uncertainty Principle
Lecture 31 - Generalized Uncertainty Principle
Lecture 32 - Generalized Uncertainty Principle (Continued...)
Lecture 33 - Angular Momentum
Lecture 34 - Angular Momentum (Continued...)
Lecture 35 - Angular Momentum (Continued...) and Spin
Lecture 36 - Perturbation Theory
Lecture 37 - Perturbation Theory (Continued...)
Lecture 38 - Variation Method - Introduction
Lecture 39 - Variation Method - Proof and Illustration
Lecture 40 - He atom wave function with spin included - Pauli's principle
Lecture 41 - Hydrogen Molecular ion - Linear variation method
Lecture 42 - Hydrogen Molecular ion (Continued...)
Lecture 43 - Hydrogen Molecular ion (Continued...)
Lecture 44 - Molecular Orbitals The Hydrogen Molecule
Lecture 45 - MO and VB theory
Lecture 46 - MO theory of diatoms
Lecture 47 - Di-atoms (Continued...)
Lecture 48 - Hybridization Huckel theory
Lecture 49 - Huckel MO Theory (Continued...)
NPTEL Video Course - Chemistry and Biochemistry - Introduction to Organometallic Chemistry

Subject Co-ordinator - Prof. A.G. Samuelson
Co-ordinating Institute - IISc - Bangalore

Lecture 1 - Introduction to Organometallic chemistry
Lecture 2 - Metal carbonyl complexes
Lecture 3 - Metal carbonyls - Part II
Lecture 4 - Ligand substitution reactions
Lecture 5 - Substitutes for carbonyl ligands
Lecture 6 - Carbone complexes
Lecture 7 - Carbone complexes (Continued...)
Lecture 8 - Non-Carbon Ancillary ligands
Lecture 9 - Non-Carbon Ancillary ligands (Continued...)
Lecture 10 - Metal alkyl complexes
Lecture 11 - Ligand Insertion Reactions
Lecture 12 - Metal alkenes complexes
Lecture 13 - Alkenes ?2 bonding
Lecture 14 - Metal dihydrogen and hydrides
Lecture 15 - Migratory Insertion reaction with alkynes
Lecture 16 - Ï·m (m=4 dienes and m=2n,polyenes)
Lecture 17 - Oxidative addition & Vaska complex mechanism
Lecture 18 - Reductive elimination
Lecture 19 - Reductive Elimination mechanism
Lecture 20 - Oxidative coupling with C-C bond formation
Lecture 21 - Metathesis reactions
Lecture 22 - Metal-allyls - Ï· 3 complexes-synthesis, bonding
Lecture 23 - Metal-allyls - Ï· 3 complexes-fluxionality, reactivity
Lecture 24 - C-C single bond forming reactions
Lecture 25 - Ï· 5 Cyclopentadienyl - complexes
Lecture 26 - Ï· 6 arene Metal complexes
Lecture 27 - Half sandwich complexes
Lecture 28 - Reactivity changes in coordinated ligands
Lecture 29 - The isolobal analogy

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Lecture 30 - Fluxional Properties of Organometallics
Lecture 31 - Quantifying Steric and electronic factors
Lecture 32 - Hydrogenation reactions
Lecture 33 - Addition of HX to olefins
Lecture 34 - Reactions with CO insertion
Lecture 35 - Organometallics promoted C-X coupling
Lecture 36 - Organometallic polymerization
Lecture 37 - C-H activation
Lecture 38 - Asymmetric Catalysis
Lecture 39 - Medicinal applications of organometallic complexes
Lecture 40 - Special Properties and Applications
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - NOC: Principles and Applications of NMR Spectroscopy

Subject Co-ordinator - Prof. Hanudatta S. Atreya
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to NMR spectroscopy
Lecture 2 - The alignment of nuclear spins in presence of magnetic field
Lecture 3 - Introduction to rotating frame
Lecture 4 - Free induction decay and Fourier transformation of FID
Lecture 5 - NMR Hardware
Lecture 6 - The concept of chemical shift
Lecture 7 - Factors that affect chemical shifts
Lecture 8 - Chemical shift referencing
Lecture 9 - J-coupling
Lecture 10 - Recap of basics
Lecture 11 - Introduction to general one dimensional NMR experiment
Lecture 12 - Practical aspects of recording a 1D NMR experiment - I
Lecture 13 - Practical aspects of recording a 1D NMR experiment - II
Lecture 14 - Practical aspects of recording a 1D NMR experiment - III
Lecture 15 - NMR Data processing
Lecture 16 - Basic aspects of 1D proton NMR analysis
Lecture 17 - Analysis of an example 1D proton spectrum
Lecture 18 - Analysis of 1D 1H NMR spectra of molecules - I
Lecture 19 - Analysis of 1D 1H NMR spectra of molecules - II
Lecture 20 - 1D 13C NMR
Lecture 21 - Why do we need 2D NMR
Lecture 22 - A qualitative explanation of how 2D NMR experiment works
Lecture 23 - Principles of 2D COSY and Total correlation spectroscopy (2D TOCSY)
Lecture 24 - 2D NOE-spectroscopy
Lecture 25 - 2D NOESY and 2D ROESY
Lecture 26 - What is heteronuclear correlation NMR spectroscopy
Lecture 27 - Sensitivity enhancement of heteronuclei via polarization transfer
Lecture 28 - Heteronucler multiple quantum NMR spectroscopy (2D HMQC) and Heteronuclear single quantum NMR spectroscopy (2D HSQC)
Lecture 29 - Practical aspects of recording and processing 2D HMQC or HSQC

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Lecture 30 - HMBC and its utility
Lecture 31 - 2D HSQC TOCSY and its analysis with examples
Lecture 32 - Structure determination of molecules by NMR
Lecture 33 - Structure determination of peptides - I
Lecture 34 - Structure determination of peptides - II
Lecture 35 - Structure determination of peptides - III
Lecture 36 - Chemical exchange
Lecture 37 - Hydrogen or deuterium exchange
Lecture 38 - Diffusion ordered spectroscopy DOSY I
Lecture 39 - DOSY II
Lecture 40 - STD NMR for drug target interactions
NPTEL Video Course - Chemistry and Biochemistry - NOC: Multidimensional NMR Spectroscopy for Structural Studies of Biomolecules

Subject Co-ordinator - Prof. Hanudatta S. Atreya
Co-ordinating Institute - IISc - Bangalore

Lecture 1 - Introduction to NMR spectroscopy
Lecture 2 - Energy levels in NMR spectroscopy
Lecture 3 - Observing the NMR signal
Lecture 4 - Basic concepts in 1D NMR
Lecture 5 - Basic concepts in 1D NMR
Lecture 6 - Basic concepts in 2D NMR spectroscopy
Lecture 7 - Principles of 2D correlation spectroscopy COSY
Lecture 8 - Principles of 2D Total correlation spectroscopy (TOCSY)
Lecture 9 - 2D Nuclear Overhauser Effect Spectroscopy (NOESY)
Lecture 10 - 2D NOESY and 2D ROESY
Lecture 11 - Principles of 2D Heteronuclear NMR
Lecture 12 - 2D Heteronuclear NMR
Lecture 13 - Heteronuclear multiple quantum coherence (HMQC) and single quantum coherence (HSQC) - Part I
Lecture 14 - Heteronuclear multiple quantum coherence (HMQC) and single quantum coherence (HSQC) - Part II
Lecture 15 - 2D HSQC-TOCSY
Lecture 16 - 3D NMR Spectroscopy - Part I
Lecture 17 - 3D NMR Spectroscopy - Part II
Lecture 18 - 3D HNCA and 3D HNCO
Lecture 19 - 3D HN(CO)CA(CB)
Lecture 20 - Protein Backbone resonance assignment and side chain resonance assignment
Lecture 21 - Basic concepts of protein structure
Lecture 22 - Introduction to Structure Determination of Bio-Molecules by NMR
Lecture 23 - Over-expression of proteins in Bacteria
Lecture 24 - Isotope labeling of proteins for NMR studies - Part I
Lecture 25 - Isotope labeling of proteins for NMR studies - Part II
Lecture 26 - Isotope labeling of proteins for NMR studies - Part III
Lecture 27 - Isotope labeling of proteins for NMR studies - Part IV
Lecture 28 - Resonance assignments of Proteins - Part I
Lecture 29 - Resonance assignments of Proteins - Part II

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Lecture 30 - Resonance assignments of Proteins - Part III
Lecture 31 - Determination of protein secondary structure from NMR data
Lecture 32 - Determination of protein secondary structure from NMR data
Lecture 33 - Determination of protein tertiary structure from NMR data - Part I
Lecture 34 - 3D NOESY HSQC
Lecture 35 - Determination of protein tertiary structure from NMR data - Part II
Lecture 36 - Understanding Protein ligand interaction by NMR
Lecture 37 - Understanding Protein ligand interaction by NMR
Lecture 38 - Understanding Protein ligand interaction by NMR
Lecture 39 - Understanding Protein ligand interaction by NMR
Lecture 40 - Understanding Protein ligand interaction by NMR
Lecture 41 - Understanding Protein ligand interaction by NMR
Lecture 42 - Understanding Protein ligand interaction by NMR
NPTEL Video Course - Chemistry and Biochemistry - NOC: Symmetry and Structure in the Solid State

Subject Co-ordinator - Prof. T. N. Guru Row

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Symmetry in 3D World
Lecture 2 - Two Fold Axis Representation with the Help of Esher Diagrams
Lecture 3 - Pure Rotation Axes
Lecture 4 - Properties of Crystal
Lecture 5 - Point Group Generation
Lecture 6 - Combination of Symmetry Elements
Lecture 7 - Arrangement of Symmetry Equivalent Objects
Lecture 8 - Introduction to Plane Lattices
Lecture 9 - Bravais Lattices
Lecture 10 - Details of Stereographic Projections
Lecture 11 - Stereographic Projections (Continued)
Lecture 12 - Point Group and Crystal Systems - 1
Lecture 13 - Point Group and Crystal Systems - 2
Lecture 14 - Point Groups to Space Groups
Lecture 15 - Translation components in Monoclinic System
Lecture 16 - Additional Symmetry Elements
Lecture 17 - Additional Symmetry Elements (Continued...)
Lecture 18 - Space Groups - 1
Lecture 19 - Space Groups - 2
Lecture 20 - Space Groups - 3
Lecture 21 - Space Groups - 4
Lecture 22 - Additional Information on Space Groups
Lecture 23 - Details of Space Groups - 1
Lecture 24 - Details of Space Groups - 2
Lecture 25 - Details of Space Groups - 3
Lecture 26 - Details of Space Groups - 4
Lecture 27 - Crystal Structure of Calcium Carbonate
Lecture 28 - Crystal Structure of Some Minerals
Lecture 29 - Atoms in the Crystal
Lecture 30 - Crystallographic Directions and Planes
Lecture 31 - Interference of Waves
Lecture 32 - X Ray Scattering; optical Analogy
Lecture 33 - X Ray Scattering; Fourier transforms
Lecture 34 - X Ray Scattering; Deriving Laue Conditions from scattering theory
Lecture 35 - X Ray Scattering; Laue conditions to Bragg's Law, Introduction to Reciprocal lattice
Lecture 36 - Bragg's Law in Reciprocal Space - 1
Lecture 37 - Bragg's Law in Reciprocal Space - 2
Lecture 38 - Calculation of Intensities - 1
Lecture 39 - Calculation of Intensities - 2
Lecture 40 - Conversion from Direct to reciprocal space, the inverse relations
Lecture 41 - Diffraction and Reciprocal Space (Continued...)
Lecture 42 - Limits of Resolution
Lecture 43 - Concept of Structure Factors
Lecture 44 - Systematic Absences - 1
Lecture 45 - Systematic Absences - 2
Lecture 46 - Systematic Absences - 3
Lecture 47 - Friedel's Law and Laue classes
Lecture 48 - Experimental Aspects of Data Collection
Lecture 49 - Structure Determination - 1
Lecture 50 - Structure Determination - 2
Lecture 51 - Data Reduction
Lecture 52 - Fourier Syntheses
Lecture 53 - Patterson Method - 1
Lecture 54 - Patterson Method - 2
Lecture 55 - Direct Method
Lecture 56 - Powder Diffraction - 1
Lecture 57 - Powder Diffraction - 2
Lecture 58 - Powder Diffraction - 3
Lecture 59 - Quantum Crystallography - 1
Lecture 60 - Quantum Crystallography - 2
Lecture 61 - Intermolecular Interactions
Lecture 30 - Ultrafast Physical Chemistry
Lecture 31 - Ultrafast Physical Chemistry
Lecture 32 - Maxwell's Equations
Lecture 33 - Maxwell's Equations (Continued...)
Lecture 34 - Ab Initio Molecular Dynamics - 1
Lecture 35 - Ab Initio Molecular Dynamics - 2
Lecture 36 - Ab Initio Molecular Dynamics - 3
Lecture 37 - Ab Initio Molecular Dynamics - 4
Lecture 38 - Attosecond Chemical Dynamics - 1
Lecture 39 - Attosecond Chemical Dynamics - 2
Lecture 40 - Attosecond Chemical Dynamics - 3
Lecture 41 - Attosecond Chemical Dynamics - 4
Lecture 42 - Femtochemistry of Nanocatalysis - 1
Lecture 43 - Femtochemistry of Nanocatalysis - 2
NPTEL Video Course - Civil Engineering - Advanced Geotechnical Engineering

Subject Co-ordinator - Dr. B.V.S. Viswanadham

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Civil Engineering - Soil Dynamics

Subject Co-ordinator - Dr. Deepankar Choudhury
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Degrees of Freedom, SDOF System, Types of Vibrations
Lecture 3 - SDOF System, Types of Vibrations, Free Vibration
Lecture 4 - Problems on Tortional Motion
Lecture 5 - Damped Free Vibrations
Lecture 6 - Damped Free Vibrations, Definition of Critical Damping and problems
Lecture 7 - Decay of Motion
Lecture 8 - Forced Vibrations, Dynamic Magnification Factor
Lecture 9 - Maxwells Diagram of DMF, Discussion on Phase
Lecture 10 - Transmissibility Ratio, Response to Arbitrary, Step and Pulse Excitations
Lecture 11 - Response to Arbitrary, Step and Pulse Excitations, Response to Impact Load
Lecture 12 - Vibration Isolation, Vibrations Measuring Instruments
Lecture 13 - Solutions of Quiz Questions, Multi-Degree of Freedom (MDOF) Systems
Lecture 14 - (MDOF) System
Lecture 15 - 3 Dimensional Wave Propagation, Waves in semi-infinite media, Rayleigh Wave
Lecture 16 - Love Wave, Waves in layered medium, 3D case-Inclined wave, Earthquake Waves
Lecture 17 - Earthquake Waves; P-waves, S-waves, 3 circle method, Estimation of Earthquake Epicentre
Lecture 18 - Stresses in Soil Element, Field Tests, Seismic Reflection Test
Lecture 19 - Seismic Refraction Test, SASW Test, Laboratory & Model Tests
Lecture 20 - Centrifuge Tests Stress Strain Behavior of Cyclically Loaded Soils
Lecture 21 - Estimation of Gmax, Modulus Reduction Curves, Variation of Damping Ratio, Cyclic Plate load Test
Lecture 22 - Liquefaction, Preliminary screening, Simplified Procedure for Liquefacton
Lecture 23 - Cyclic Stress Ratio, Evaluation of CRR, Correction Factors, Corrections for SPT
Lecture 24 - Becker Penetrometer Test (BPT), Cone Penetrometer Test (CPT), SPT v BPT, SASW Test
Lecture 25 - Types of Machine Foundations, Methods of Analysis, Design of Machine Foundations as per IS
Lecture 26 - Tschebotarioff's
Lecture 27 - Problem on Tschebotarioff's method contd., Mass-Spring-Dashpot (MSD) Model
Lecture 28 - MSD Model- Yawing mode of Vibration, Use of MSD model for analysis
Lecture 29 - Problems on Use of MSD Model for Analysis, Rocking mode of Vibrations

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Lecture 30 - Torsional Mode/Yawing Mode, Constant Force type excitation, EHS Theory
Lecture 31 - EHS Theory, Vibrational Control
Lecture 32 - Use of EHS Theory for analysis
Lecture 33 - Use of EHS Theory for analysis II
Lecture 34 - Liquefaction mitigation methods, Vibro Compaction, Densification Techniques
Lecture 35 - Soil Improvement methods, Dynamic Compaction, Reinforcement Techniques
Lecture 36 - Force-based Analysis, Dynamic analysis using MSD model
Lecture 37 - Behaviour of Subgrade Soil below Rail Track
Lecture 38 - Quiz
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Lecture 2 - Inverse Power Method
Lecture 3 - Dynamics of SDOF Structure
Lecture 4 - SDOF Response to Harmonic Loads
Lecture 5 - Response of SDOF Structure to Harmonic Loading
Lecture 6 - Response to Harmonic Loading
Lecture 7 - Response to Harmonic Loading (Continue...)
Lecture 8 - Transmissibility & Base Isolation
Lecture 9 - Dynamic Characteristics & Periodic Loading
Lecture 10 - Pulse Loading
Lecture 11 - Pulse Load Response Characteristics & Impulse Loading
Lecture 12 - Frequency Domain Response Analysis
Lecture 13 - Methods of Analysis for General Loading
Lecture 14 - Numerical Analysis of Response of Single Degree of Freedom Structure & Time Domain Approaches
Lecture 15 - Response Analysis of Single Degree of Freedom System for Earthquake Loads
Lecture 16 - Earthquake Response Analysis for Single Degree of Freedom Structures
Lecture 17 - Generalized Single Degree of Freedom Systems Equations of Motions
Lecture 18 - Generalized Single Degree of Freedom Systems Equations of Motions
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Lecture 20 - Generalized Single Degree of Freedom Systems Equations of Motion & Free Vibrations
Lecture 21 - Equations of Motion for Multi Degree of Freedom Structures
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Lecture 24 - Multi Degree of Freedom Structure Equations of Motions & Free Vibration
Lecture 25 - Free Vibration for Multi Degree of Freedom Structures
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Lecture 27 - Practical Free Vibration Analysis
Lecture 28 - Dynamic Response of Multi Degree of Freedom Systems
Lecture 29 - Dynamic Response of Multi Degree of Freedom Structures
Lecture 30 - Damping for Multi Degree of Freedom Structures
Lecture 31 - Earthquake Response of Multi Degree of Freedom Structures
Lecture 32 - Earthquake Response of Multi Degree of Freedom Structures
Lecture 33 - Dynamic Analysis of Buildings
Lecture 34 - Introduction to Dynamics of Continuous Systems
Lecture 35 - Free Vibration Response of Continuous Systems
Lecture 36 - Free Vibration & Dynamic Response of Continuous Systems
Lecture 37 - Dynamic Response of Continuous Systems
Lecture 38 - Examples for Dynamic Response of Continuous Systems
NPTEL Video Course - Civil Engineering - Watershed Management

Subject Co-ordinator - Dr. T.I. Eldho

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Watershed Management
Lecture 2 - Watershed Management & Stakeholder Analysis
Lecture 3 - Watershed Management Policies
Lecture 4 - Sustainable Watershed Management
Lecture 5 - Agricultural Practices & Watershed Management
Lecture 6 - Soil Erosion & Conservation
Lecture 7 - Watershed Management in Arid Regions & Strategic Planning
Lecture 8 - Integrated Water Resources Management
Lecture 9 - Conjunctive Use of Water Resources
Lecture 10 - Rainwater Harvesting System
Lecture 11 - Rainwater Harvesting & Roof Catchment System
Lecture 12 - Watershed Characteristics
Lecture 13 - Watershed Delineation & Modeling
Lecture 14 - Hydrologic Processes
Lecture 15 - Watershed Modeling
Lecture 16 - Hydrologic Modeling
Lecture 17 - Numerical Watershed Modeling
Lecture 18 - Subsurface & Groundwater Flows
Lecture 19 - Social & Community Aspects of Watershed Management
Lecture 20 - Socio-economy, Private Sector Participation & Gender Issues
Lecture 21 - Integrated Development, Water Legislation & Implementation Issues
Lecture 22 - GIS & Applications in Watershed Management
Lecture 23 - Remote Sensing & Applications in Watershed Management
Lecture 24 - Decision Support Systems & Applications in Watershed Management
Lecture 26 - Applications of Knowledge Based Models in Watershed Management
Lecture 27 - Surface Water Quality & Pollution Issues
Lecture 28 - Groundwater Pollution Problems & Transport Processes
Lecture 29 - Water Quality Modeling
Lecture 30 - Environmental Guidelines for Water Quality Management
Lecture 31 - Storm Water Management
Lecture 32 - Urban Drainage System
Lecture 33 - Flood Routing
Lecture 34 - Flood Control & Management
Lecture 35 - Drought Assessment
Lecture 36 - Drought Analysis
Lecture 37 - Drought Mitigation
Lecture 38 - Water Conservation
Lecture 39 - Water Recycling
Lecture 40 - Water Reclamation & Reuse
NPTEL Video Course - Civil Engineering - Fluid Mechanics

Subject Co-ordinator - Dr. T.I. Eldho

Co-ordinating Institute - IIT - Bombay

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NPTEL Video Course - Civil Engineering - Structural Analysis II

Subject Co-ordinator - Dr. P. Banerji

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable   |   MP3 Audio Lectures - Available / Unavailable

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Lecture 34 - Seismic Analysis and Design of Various Geotechnical Structures - Part I
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Lecture 43 - Seismic Analysis and Design of Various Geotechnical Structures - Part IX
NPTEL Video Course - Civil Engineering - Geosynthetics Engineering: In Theory and Practice

Subject Co-ordinator - Prof. J.N. Mandal

Co-ordinating Institute - IIT - Bombay

Lecture 1 - Introduction
Lecture 2 - Introduction to Reinforced Earth
Lecture 3 - Introduction to Reinforced Earth
Lecture 4 - Introduction to Reinforced Earth
Lecture 5 - Introduction to Reinforced Earth
Lecture 6 - An Overview of Geosynthetics - Part I
Lecture 7 - An Overview of Geosynthetics - Part II
Lecture 8 - An Overview of Geosynthetics - Part III
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Lecture 10 - Geosynthetic Properties and Test Methods
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Lecture 15 - Geosynthetic in Filtration, Drainage and Erosion Control
Lecture 16 - Geosynthetic in Filtration, Drainage and Erosion Control
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Lecture 24 - Geosynthetic in pavements
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Lecture 63 - Designing With Geofoam

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NPTEL Video Course - Civil Engineering - NOC: Geotechnical Engineering Laboratory

Subject Co-ordinator - Prof. J. N. Mandal

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Soil Processing
Lecture 2 - Specific Gravity and Field Density
Lecture 3 - Field Density
Lecture 4 - Grain Size Analysis
Lecture 5 - Grain Size Analysis (Continued...)
Lecture 6 - Grain Size Analysis (Continued...)
Lecture 7 - Atterberg Limit
Lecture 8 - Compaction
Lecture 9 - Compaction (Continued...)
Lecture 10 - Compaction (Continued...)
Lecture 11 - Compaction and Permeability
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Lecture 22 - Consolidation (Continued...)
NPTEL Video Course - Civil Engineering - NOC: Geosynthetics Testing Laboratory

Subject Co-ordinator - Prof. J. N. Mandal

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Types of Geosynthetics
Lecture 3 - Functions
Lecture 4 - Tests for Physical Properties and tensile strength of geosynthetics
Lecture 5 - Tensile Modulus
Lecture 6 - Drop Cone Test
Lecture 7 - Puncture Resistance Test
Lecture 8 - Puncture Resistance Test and Burst Strength Test
Lecture 9 - Grab Tensile Test
Lecture 10 - Grab Tensile Test and Triaxial Test
Lecture 11 - Triaxial and Pullout Test
Lecture 12 - Pullout Test
Lecture 13 - Sewn Seam Strength, Permittivity and Transmissivity
Lecture 14 - Hydraulic Properties and abrasion Test of geosynthetics
Lecture 15 - Endurance properties of Geosynthetics
Lecture 16 - Density, Water Absorption and Compressive Properties tests of Geofoam
Lecture 17 - Compressive Properties of Geofoam
Lecture 18 - Compressive and Tensile Properties of Geofoam
Lecture 19 - Tensile and Shear Properties of Geofoam
Lecture 20 - Shear and Flexural Properties of Geofoam
Lecture 21 - Flexural Properties and Flammability Test of Geofoam

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NPTEL Video Course - Civil Engineering - NOC: Environmental Geotechnics

Subject Co-ordinator - Prof. Devendra Narain Singh

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - Concrete Technology

Subject Co-ordinator - Dr. B. Bhattacharjee

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Production and Composition
Lecture 2 - Structure and Hydration
Lecture 3 - Structure and Hydration
Lecture 4 - Properties and Tests
Lecture 5 - Types and Use
Lecture 6 - Aggregates (Size, Shape)
Lecture 7 - Packing, FM, SM
Lecture 8 - Properties
Lecture 9 - Chemical Admixtures
Lecture 10 - Chemical Admixtures
Lecture 11 - Mineral Admixtures
Lecture 12 - Mineral Admixtures
Lecture 13 - Mineral Admixtures
Lecture 14 - Mix Proportioning of Concrete
Lecture 15 - Mix design of Concrete
Lecture 16 - Mix Design of Concrete
Lecture 17 - Mix Design of concrete
Lecture 18 - Mix Design of concrete
Lecture 19 - Batching and Mixing of concrete
Lecture 20 - RMC and Transporting Concrete
Lecture 21 - Workability and Pumping of Concrete
Lecture 22 - Compaction and Curing Concrete
Lecture 23 - Strength of Concrete
Lecture 24 - Strength of Concrete
Lecture 25 - Strength of Concrete
Lecture 26 - Mechanical Properties of Concrete
Lecture 27 - Creep of Concrete
Lecture 28 - Creep and Shrinkage of Concrete
Lecture 29 - Shrinkage of Concrete
Lecture 30 - Shrinkage of Concrete
Lecture 31 - Fundamental Concepts, Degradation Process, Attacks
Lecture 32 - Frost Action and Rebar Corrosion
Lecture 33 - Carbonation and Chloride Affect
Lecture 34 - Rebar Corrosion
Lecture 35 - Rebar Corrosion and General Strategy
Lecture 36 - High Strength Concrete
Lecture 37 - High Strength Matrics and SCC
Lecture 38 - Self Compacting Concrete
Lecture 39 - Fiber Concrete
Lecture 40 - Fiber and Roller Compacted Concrete
Lecture 41 - Special Concrete and Sustainability
NPTEL Video Course - Civil Engineering - Seismic Analysis of Structures

Subject Co-ordinator - Dr. T.K. Datta, Dr. Ashok Gupta

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Seismology
Lecture 2 - Seismology (Continued...)
Lecture 3 - Seismology (Continued...)
Lecture 4 - Seismology (Continued...)
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Lecture 27 - Inelastic Seismic Response of Structures (Continued...)
Lecture 28 - Inelastic Seismic Response of Structures (Continued...)
Lecture 29 - Inelastic Seismic Response of Structures (Continued...)

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Lecture 30 - Inelastic Seismic Response of Structures (Continued...)
NPTEL Video Course - Civil Engineering - Building materials and Construction

Subject Co-ordinator - Dr. B. Bhattacharjee

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Functions Of Buildings
Lecture 2 - Role Of Material In Construction
Lecture 3 - Concrete
Lecture 4 - Concrete Production (Continued...)
Lecture 5 - Concrete Production (Continued...)
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Lecture 25 - Mix Design Of concrete IS Method
Lecture 26 - Mix Design Of Concrete
Lecture 27 - Masonry
Lecture 28 - Masonry
Lecture 29 - Masonry

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NPTEL Video Course - Civil Engineering - Water Management

Subject Co-ordinator - Dr. A.K. Gosain

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Irrigation Water Management
Lecture 2 - Soil - Water - Plant Relationships
Lecture 3 - Soil - Water - Plant Relationships (Continued...)
Lecture 4 - Soil - Water - Plant Relationships (Continued...)
Lecture 5 - Soil - Water - Plant Relationships (Continued...)
Lecture 6 - Soil - Water - Plant Relationships (Continued...) and Infiltration
Lecture 7 - Crop Water Requirements
Lecture 8 - Crop Water Requirements (Continued...)
Lecture 9 - Crop Water Requirements (Continued...)
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Lecture 14 - Irrigation Efficiencies - Part I
Lecture 15 - Irrigation Efficiencies - Part II and Irrigation Methods and their Suitability
Lecture 16 - Irrigation Methods - III
Lecture 17 - Irrigation Methods - IV
Lecture 18 - Irrigation Methods - V
Lecture 19 - Irrigation Methods - VI
Lecture 20 - Irrigation Methods and their Suitability
Lecture 21 - Border Irrigation System - I
Lecture 22 - Border Irrigation System - II
Lecture 23 - Border Irrigation System - III
Lecture 24 - Border Irrigation System - IV
Lecture 25 - Furrow Irrigation System - I
Lecture 26 - Furrow Irrigation System - II
Lecture 27 - Furrow Irrigation System - III
Lecture 28 - Furrow Irrigation System - IV
Lecture 29 - Sprinkler Irrigation System - I

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Lecture 30 - Sprinkler Irrigation System - II
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NPTEL Video Course - Civil Engineering - NOC: Geoenvironmental Engineering (Environmental Geotechnology) Landfills, Slurry Ponds and Contaminated Sites

Subject Co-ordinator - Prof. Manoj Datta
Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Geoenvironmental Engineering
Lecture 2 - Sources and Impact of Contamination
Lecture 3 - Waste-Soil Interaction
Lecture 4 - Solid Waste Generation and Disposal
Lecture 5 - Waste Minimization by Integrated Solid Waste Management (ISWM)
Lecture 6 - Integrated Solid Waste Management (ISWM) - Case Studies
Lecture 7 - Principles of Landfilling
Lecture 8 - Planning of Landfills - Part 1
Lecture 9 - Planning of Landfills - Part 2
Lecture 10 - Liners for Landfills - Part 1
Lecture 11 - Liners for Landfills - Part 2
Lecture 12 - Liners for Landfills - Part 3
Lecture 13 - Liners for Landfills - Part 4
Lecture 14 - Covers for Landfills - Part 1
Lecture 15 - Covers for Landfills - Part 2
Lecture 16 - Generation and Control of Leachate
Lecture 17 - Generation and Control of Landfill Gas
Lecture 18 - Stability of Slopes - Part 1
Lecture 19 - Stability of Slopes - Part 2
Lecture 20 - Stability of Slopes - Part 3
Lecture 21 - (Missing)
Lecture 22 - Some Solved Examples
Lecture 23 - Subsurface Monitoring Around Landfills - Part 1
Lecture 24 - Subsurface Monitoring Around Landfills - Part 2
Lecture 25 - Cost of Geotechnical Components of Landfills
Lecture 26 - Construction and Operation of Landfills
Lecture 27 - Site Selection for Landfills
Lecture 28 - Closure, Rehabilitation and Expansion of MSW Landfills
Lecture 29 - Control and Remedial Measures at Contaminated Sites - Part 1

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Lecture 30 - Control and Remedial Measures at Contaminated Sites - Part 2
Lecture 31 - Slurry Disposal on Land
Lecture 32 - Disposal of Slurry Waste in Ponds and Impoundments and Dry Waste in Mounds
Lecture 33 - Geotechnical Properties of Coal Ash and Mine Tailings - Part 1
Lecture 34 - Geotechnical Properties of Coal Ash and Mine Tailings - Part 2
Lecture 35 - Planning and Design of Slurry Ponds
Lecture 36 - Stability of Incrementally Raised Embankments - Part 1
Lecture 37 - Stability of Incrementally Raised Embankments - Part 2
Lecture 38 - Remedial Measures for Slope Failures in Embankments / Dykes of Slurry Ponds
Lecture 39 - Environmental Control at Slurry Ponds
Lecture 40 - Geotechnical Reuse of Waste Materials - Part 1
Lecture 41 - Geotechnical Reuse of Waste Materials - Part 2
Lecture 42 - End-of-the-Course Review
Lecture 30 - Natural ventilation design
Lecture 31 - Noise and Acoustic Fundamentals - 1
Lecture 32 - Noise and Acoustic Fundamentals - 2
Lecture 33 - Noise and Acoustic Fundamentals - 3
Lecture 34 - Noise and Acoustic Fundamentals, Noise Outdoors
Lecture 35 - Noise outdoors
Lecture 36 - Sound within enclosure - 1
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Lecture 38 - Sound within enclosure - 3
Lecture 39 - Sound within enclosure - 4
Lecture 40 - Sound within enclosure - 5
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Lecture 42 - Sound within enclosure, isolation
Lecture 43 - Isolation - 1
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Lecture 45 - Auditorium - 1
Lecture 46 - Auditorium - 2
Lecture 47 - Daylighting - 1
Lecture 48 - Daylighting - 2
Lecture 49 - Daylighting - 3
Lecture 50 - Daylighting - 4
Lecture 51 - Daylighting - 5
Lecture 52 - Daylighting - 6
Lecture 53 - Artificial Lighting
Lecture 54 - Design Sky models
Lecture 55 - Live Session
NPTEL Video Course - Civil Engineering - NOC: Fire Protection, Services and Maintenance Management of Buildings

Subject Co-ordinator - Dr. B. Bhattacharjee

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic concepts of Fire Protection - I
Lecture 2 - Basic concepts of Fire Protection - II
Lecture 3 - Fire Resistance
Lecture 4 - Introduction Process of Combustion
Lecture 5 - ventilation and fuel Process of Combustion controlled fire
Lecture 6 - Process of Combustion
Lecture 7 - Effect of Fire on Construction Materials
Lecture 8 - Design for Fire Resistance
Lecture 9 - Design for Fire Resistance
Lecture 10 - Design for Fire Resistance
Lecture 11 - Fire Safety
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Lecture 20 - Introduction to System and Flow Systems
Lecture 21 - Water Supply System
Lecture 22 - Water Supply System
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Lecture 24 - Control Systems
Lecture 25 - Introduction to HVAC
Lecture 26 - Governing Equations for HVAC Process
Lecture 27 - Numerical Problem on HVAC System
Lecture 28 - Numerical Problem on HVAC System (Continued...)
Lecture 29 - Psychrometric Chart

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Lecture 30 - Flow in Pipe Networks and Fixture Units
Lecture 31 - Flow in Pipe Networks (Continued...) and Design of Water Supply Distribution System
Lecture 32 - Design of Water Supply Distribution System (Continued...) and Flow in Waste Water pipes
Lecture 33 - Electrical Systems (introduction)
Lecture 34 - Design of Electrical Systems
Lecture 35 - Intelligent Building
Lecture 36 - Life cycle cost and basics of building maintenance
Lecture 37 - Stages of maintenance management
Lecture 38 - Planning for building maintenance
Lecture 39 - Periodicity of maintenance management
Lecture 40 - Estimation of repair cycle
Lecture 41 - Cost profile of maintenance
Lecture 42 - Lamp replacement
Lecture 43 - Building inspection, Planned and Ad-hoc maintenance
Lecture 44 - Condition survey and health evaluation of buildings
Lecture 45 - Diagnosis of building by visual survey
Lecture 46 - Case studies of visual survey
Lecture 47 - Effect of corrosion and Alkali Aggregate Reaction
Lecture 48 - Sampling and choice of test location
Lecture 49 - Non Destructive Testing - 1
Lecture 50 - Non Destructive Testing - 2
Lecture 51 - Core strength test
Lecture 52 - Carbonation and Chloride measurement
Lecture 53 - Electrical methods of progress measurement
Lecture 54 - Repair, Rehabilitation and Retrofit
Lecture 55 - Periodicity and economics of condition survey
Lecture 56 - Interpretation of test results
NPTEL Video Course - Civil Engineering - NOC:Sustainable Materials and Green Buildings

Subject Co-ordinator - Dr. B. Bhattacharjee

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Planet Equivalent
Lecture 2 - Basics of Carbon Cycle
Lecture 3 - Factors Affecting carbon Cycle
Lecture 4 - Fundamentals of Sustainability
Lecture 5 - Role of Materials and Embodied Energy
Lecture 6 - Case Study for Energy in Building
Lecture 7 - Calculation of Ecological Footprint
Lecture 8 - Role of Cement in Sustainability and Calculation of Chemical Exergy
Lecture 9 - Fuel for Cement
Lecture 10 - Cemebtitious/Supplementary Cementitious Materials and Their Characterization
Lecture 11 - Strength of Concrete With Supplementary Cementitious Materials and Composite Cements
Lecture 12 - Types of Composite Cements
Lecture 13 - Alternative Fuel for cement and Embodied Energy
Lecture 14 - Life Cycle Embodied Energy and Concrete Sustainability
Lecture 15 - Strength of Concrete and Use of Admixtures
Lecture 16 - Curing Methods and Use of Waste Water for Mixing and Curing
Lecture 17 - Modern Composite Concrete
Lecture 18 - Recycled Aggregate-ITZ and Proessing
Lecture 19 - Classification of Recycled Aggregate
Lecture 20 - Crushing and Grinding
Lecture 21 - Operational Energy
Lecture 22 - Operational Energy
Lecture 23 - Operational Energy
Lecture 24 - Thermal Diffusivity and Clay Bricks
Lecture 25 - Types of Bricks Kilns and Carbon Balance
Lecture 26 - Carbon Balance, Comparison of Various Types of Brick Kilns and Sealants, Paints, Adhesive
Lecture 27 - Sealants, Health Hazards of Building Materials and Emission Models
Lecture 28 - Emission Models and Testing
Lecture 29 - Energy Efficient Design of Buildings

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Lecture 30 - Design Optimization of Buildings
Lecture 31 - Building Design Optimization Using Genetic Algorithm
Lecture 32 - Urban Heat Island
Lecture 33 - Urban Heat Island
Lecture 34 - Evapotranspiration
Lecture 35 - Evapotranspiration
Lecture 36 - Energy Conservation Building Code (ECBC2007)
Lecture 37 - Energy Conservation Building Code (ECBC2007) (Continued...)
Lecture 38 - ECBC Compliant Methodology
Lecture 39 - OTTV Methodology
Lecture 40 - Solar Energy and Solar Cells
Lecture 41 - Solar Photo Volatic Cells
Lecture 42 - Solar Water Heating
Lecture 43 - Design Strategies and the Green Design Process
Lecture 44 - Green Building Rating Systems
Lecture 45 - Autoclaved Aerated Concrete, Insulated Precast System and Insulated Precast Forms
Lecture 46 - Insulated Concrete Form and Tunnel Form
Lecture 47 - Modular Construction
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC:Scheduling Techniques in Projects

Subject Co-ordinator - Prof. J. Uma Maheswari
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Projects
Lecture 2 - Inputs to Scheduling
Lecture 3 - Critical Path Method
Lecture 4 - Precedence Diagramming Method
Lecture 5 - Line of Balance Method
Lecture 6 - Resource-driven Scheduling
Lecture 7 - Information-driven Scheduling
Lecture 8 - Dependency Structure Matrix - I
Lecture 9 - Dependency Structure Matrix - II
Lecture 10 - Dependency Structure Matrix - III
Lecture 11 - Beeline Diagramming Method
Lecture 12 - Other Scheduling Techniques
NPTEL Video Course - Civil Engineering - Advanced Hydraulics

Subject Co-ordinator - Dr. Suresh A Kartha

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - advanced hydraulics & course structure
Lecture 2 - Various classifications of open channel flows
Lecture 3 - Flow classifications & velocity distribution
Lecture 4 - Pressure distribution
Lecture 5 - Equation of continuity & energy
Lecture 6 - Specific energy & critical flow
Lecture 7 - Energy, momentum & specific force
Lecture 8 - Computation of critical flow - Part 1
Lecture 9 - Critical flow computations
Lecture 10 - Introduction to uniform flow
Lecture 11 - Manning's equation and normal depth
Lecture 12 - Uniform Flow Computations - Part 1
Lecture 13 - Uniform flow in compound sections, concept of normal slope
Lecture 14 - Uniform flow approximation for flood discharge
Lecture 15 - Design of channels for uniform flow
Lecture 16 - Design of channels using uniform flow
Lecture 17 - Design of erodible channels
Lecture 18 - Introduction to gradually varied flows
Lecture 19 - Gradually varied flow equations
Lecture 20 - Classification of gradually varied flow - Part 1
Lecture 21 - Classification of gradually varied flow - Part 2
Lecture 22 - Gradually varied flow profiles with change in bed slopes
Lecture 23 - GVF profile properties and transitional depths
Lecture 24 - Gradually varied flow computations - Part 1
Lecture 25 - Gradually varied flow computations RK method - Part 2
Lecture 26 - Standard step method for gradually varied flow computations
Lecture 27 - Spatially varied flow
Lecture 28 - Features on spatially varied flow
Lecture 29 - Rapidly varied flow - introduction
Lecture 30 - Theoretical aspects of hydraulic jump
Lecture 31 - Characteristics of jumps in rectangular channel
Lecture 32 - Features of hydraulic jumps
Lecture 33 - Jumps as energy dissipators
Lecture 34 - Jump controls
Lecture 35 - Surges - Part 1
Lecture 36 - Surges - Part 2
Lecture 37 - Channel transitions - Part 1
Lecture 38 - Channel transitions - Part 2
Lecture 39 - Channel transitions - Part 3
Lecture 40 - Application of momentum principles
Lecture 41 - Pumps - 1
Lecture 42 - Turbines - Part 3 (pumps, turbines)
Lecture 43 - Turbines, cavitation
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - Design of Steel Structures

Subject Co-ordinator - Prof. Damodar Maity
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Design of Steel Structures
Lecture 2 - Connections
Lecture 3 - Riveted Connections
Lecture 4 - Design of Rivet Joint
Lecture 5 - Welding
Lecture 6 - Design of Fillet and Butt Welds
Lecture 7 - Bolted Connection
Lecture 8 - Eccentric Connections
Lecture 9 - Design of Eccentric Connection With Load Lying in Plane of Joint Rivet Bolt
Lecture 10 - Eccentric Connection With Load Perpendicular to Plane of Riveted Joint
Lecture 11 - Analysis and Design of Join with Seat Connection
Lecture 12 - Eccentric Connection
Lecture 13 - Load Lying Perpendicular to the Plane of Weld Joint
Lecture 14 - Tension Member
Lecture 15 - Design of Tension Member
Lecture 16 - Design of Tension Member
Lecture 17 - Design of Tension Member
Lecture 18 - Compression Member
Lecture 19 - Design of Compression Member
Lecture 20 - Design of Eccentrically Loaded tension Member
Lecture 21 - Built up Compression Member
Lecture 22 - Design of Built up Compression Member
Lecture 23 - Lacing for Built Up Compression Member
Lecture 24 - Design of Lacing System
Lecture 25 - Design of Batten Plates
Lecture 26 - Introduction to Flexural Members
Lecture 27 - Design Procedure of Beam Members
Lecture 28 - Design of Laterally Supported Beams
Lecture 29 - Design of Laterally Unsupported Beams

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Lecture 30 - Built-Up Beams
Lecture 31 - Built-Up Beams
Lecture 32 - Design of a Built-Up Beams
Lecture 33 - Design of Shear Connections and Purlins
Lecture 34 - Gantry Girders
Lecture 35 - Design of Gantry Girders
Lecture 36 - Introduction to Plate Girders - Part 1
Lecture 37 - Introduction to Plate Girders - Part 2
Lecture 38 - Design of a Plate Girder
Lecture 39 - Column Base - Part 1
Lecture 40 - Column Base - Part 2
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - Hydraulics

Subject Co-ordinator - Prof. Arup Kumar Sharma
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Hydraulics
Lecture 2 - Open Channel Hydraulics - Part 1
Lecture 3 - Open Channel Hydraulics - Part 2
Lecture 4 - Velocity and Pressure Distribution
Lecture 5 - Practical use of velocity co-efficient in channel flow
Lecture 6 - Conservation Principles & Governing Equations
Lecture 7 - Uniform Flow
Lecture 8 - Uniform Flow Formula
Lecture 9 - Computation of Uniform Flow - Part 1
Lecture 10 - Computation of Uniform Flow - Part 2
Lecture 11 - Uniform Flow in Mobile Boundary Channel
Lecture 12 - Incipient Motion Condition and Regime of Flow
Lecture 13 - Concept of Specific Energy
Lecture 14 - Computation of Critical Depth
Lecture 15 - Specific Force, Critical Depth & Sequent Depth
Lecture 16 - Non-uniform Flow
Lecture 17 - Classification of Gradually Varied Flow
Lecture 18 - Characteristic of Gradually Varied Flow
Lecture 19 - Characteristic of Gradually Varied Flow & its Computation
Lecture 20 - Gradually Varied Flow & its Computation
Lecture 21 - Computation of Gradually Varied Flow
Lecture 22 - Gradually Varied Flow
Lecture 23 - Rapidly Varied Flow
Lecture 24 - Hydraulic Jump
Lecture 25 - Flow Over Hump and Channel Contraction
Lecture 26 - Canal Design - 1
Lecture 27 - Canal Design - 2
Lecture 28 - Design of Alluvial Channel - 1
Lecture 29 - Design of Alluvial Channel - 2

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NPTEL Video Course - Civil Engineering - NOC:Higher Surveying

Subject Co-ordinator - Prof. Ajay Dashora

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Higher Surveying
Lecture 2 - Understanding reference system, reference frame, and coordinate system for Earth
Lecture 3 - Coordinate and datum transformations
Lecture 4 - Projected coordinate system
Lecture 5 - Fundamentals of astronomy
Lecture 6 - Applications of concepts of astronomy
Lecture 7 - Time
Lecture 8 - Application of concepts of astronomy and time
Lecture 9 - Fundamental concepts of error, accuracy, and error propagation
Lecture 10 - Applications of error propagation
Lecture 11 - Observation Equation Method of adjustments
Lecture 12 - Condition Equation Method and Combined Method of adjustments
Lecture 13 - Analysis of adjustments and reporting of errors
Lecture 14 - Global Positioning System (GPS)
Lecture 15 - Introduction to Photogrammetry
Lecture 16 - Vertical photogrammetry
Lecture 17 - Stereo photogrammetry
Lecture 18 - Analytical photogrammetry - I
Lecture 19 - Analytical photogrammetry - II
Lecture 20 - Photogrammetric products
Lecture 21 - Image matching
Lecture 22 - Close range photogrammetry
Lecture 23 - Fundamentals of LiDAR
Lecture 24 - LiDAR data acquisition
Lecture 25 - Geolocation and errors of LiDAR data
Lecture 26 - Information extraction from LiDAR data
Lecture 27 - RADAR fundamentals - I
Lecture 28 - RADAR fundamentals - II
Lecture 29 - RADAR fundamentals - III

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Lecture 30 - Radargrammetry
Lecture 31 - Geoscience perspective for RADAR applications
Lecture 32 - Fundamental concepts of hydrographic survey
Lecture 33 - Field procedures for hydrographic Surveying
Lecture 34 - Modern techniques for hydrographic Survey
Lecture 35 - Navigation
Lecture 36 - Conclusive lecture
Lecture 30 - Concept of Suction Stress - II
Lecture 31 - Concept of Suction Stress - III
Lecture 32 - Summary
Lecture 33 - Swelling Behaviour of Soils
Lecture 34 - Estimation of Swelling Pressure in the Laboratory and Behaviour of Collapsible soil
Lecture 35 - Volume Change Behaviour of Bentonite and Kaolin Clay
Lecture 36 - Demonstration of Various Experiments Related to Unsaturated Soil Mechanics
NPTEL Video Course - Civil Engineering - NOC: Subsurface Exploration: Importance and Techniques Involved

Subject Co-ordinator - Prof. Abhishek Kumar
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Phases and classification of subsurface Investigation
Lecture 3 - Test Pits+ Borings
Lecture 4 - Ground water table and rock drilling
Lecture 5 - Standard Penetration Test
Lecture 6 - Cone Penetration Test
Lecture 7 - Dilatometer Test
Lecture 8 - Pressuremeter Test
Lecture 9 - Seismic reflection method
Lecture 10 - Seismic refraction method
Lecture 11 - Electrical Resistivity Survey
Lecture 12 - Magnetic Survey
Lecture 13 - Surface wave method
Lecture 14 - Gravity Survey
Lecture 15 - Offshore Investigation
Lecture 16 - Geophysical Investigation in Offshore Environment
Lecture 17 - Sampling and Geotechnical Investigations in Offshore Environment
Lecture 18 - Important Terminologies in Offshore Environment
Lecture 19 - Dynamic Testing in Pile Driving
Lecture 20 - Dynamic Testing in Pile (Low Strain)
Lecture 21 - Conclusion

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC: Fluid Mechanics

Subject Co-ordinator - Dr. Subhashisa Dutta

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic Concepts of Fluid
Lecture 2 - Properties of Fluid
Lecture 3 - Fluid Flow Analysis
Lecture 4 - Concepts of Hydrostatic
Lecture 5 - Measurement of Pressure and Hydrostatic forces
Lecture 6 - Buoyancy, Metacentre, Stability and Rigid body motion
Lecture 7 - Reynolds Transport Theorem
Lecture 8 - Conservation of Mass
Lecture 9 - Conservation of Momentum
Lecture 10 - Conservation of Momentum Applications
Lecture 11 - Bernoulli's Equation
Lecture 12 - Applications of Bernoulli's Equation
Lecture 13 - Fluid Statics Applications
Lecture 14 - Conservation of Momentum
Lecture 15 - Bernoulli's Equation
Lecture 16 - Lagrangian and Eulerian Descriptions
Lecture 17 - Motion and deformation of fluid elements
Lecture 18 - Problems Solving on Black Board
Lecture 19 - Dimensional Homogeneity
Lecture 20 - Dimensional Analysis and Similarity
Lecture 21 - Laminar and Turbulent Flows
Lecture 22 - Losses in Pipe Fittings
Lecture 23 - Flow in Noncircular Conduits and Multiple Path Pipe flow

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NPTEL Video Course - Civil Engineering - NOC:Remote Sensing and GIS

Subject Co-ordinator - Prof. Rishikesh Bharti

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview and Introduction
Lecture 2 - Basics of Remote Sensing
Lecture 3 - Error corrections in satellite image
Lecture 4 - Error Identification and Correction - I
Lecture 5 - Error Identification and Correction - II
Lecture 6 - Error Identification and Correction - III
Lecture 7 - DIP - I
Lecture 8 - DIP - II
Lecture 9 - DIP - III
Lecture 10 - DIP - IV
Lecture 11 - Image Classification - I
Lecture 12 - Image Classification - II
Lecture 13 - Photogrammetry
Lecture 14 - Thermal Remote Sensing
Lecture 15 - Microwave Remote Sensing
Lecture 16 - HRS - I
Lecture 17 - HRS - II
Lecture 18 - HRS - III
Lecture 19 - HRS - IV
Lecture 20 - HRS - V
Lecture 21 - GIS - I
Lecture 22 - GIS - II
Lecture 23 - Applications of Remote Sensing and GIS - I
Lecture 24 - Applications of Remote Sensing and GIS - II
NPTEL Video Course - Civil Engineering - Concrete Engineering and Technology

Subject Co-ordinator - Dr. Sudhir Misra

Co-ordinating Institute - IIT - Kanpur

Lecture 1 - Introduction and course overview
Lecture 2 - Constituents of concrete - Part 1 of 2
Lecture 3 - Constituents of concrete - Part 2 of 2
Lecture 4 - Admixtures in concrete - mineral and chemical
Lecture 5 - Hydration of cement
Lecture 6 - Basic properties of concrete
Lecture 7 - Proportioning of concrete mixes - Part 1 of 3
Lecture 8 - Proportioning of concrete mixes - Part 2 of 3
Lecture 9 - Proportioning of concrete mixes - Part 3 of 3
Lecture 10 - Pores and porosity in concrete
Lecture 11 - Porosimetry - measuring pores in concrete
Lecture 12 - Principles of quality control in concrete construction
Lecture 13 - Quality control and acceptance criteria for concrete based on compressive strength
Lecture 14 - Fibre reinforced concrete
Lecture 15 - High strength concrete
Lecture 16 - Mass concrete - Part 1 of 2
Lecture 17 - Mass concrete - Part 2 of 2
Lecture 18 - Concreting in cold weather
Lecture 19 - Concreting in hot weather
Lecture 20 - Roller compacted concrete
Lecture 21 - Self-compacting concrete
Lecture 22 - Testing self-compacting concrete
Lecture 23 - Shotcrete and underwater concrete
Lecture 24 - Alkali aggregate reaction - Part 1 of 2
Lecture 25 - Alkali aggregate reaction - Part 2 of 2
Lecture 26 - Reinforcement corrosion in concrete
Lecture 27 - Chloride penetration in concrete
Lecture 28 - Using epoxy-coated bars in concrete structures
Lecture 29 - Using FRP as reinforcement in concrete structures - Part 1 of 2

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Lecture 30 - Using FRP as reinforcement in concrete structures - Part 2 of 2
Lecture 31 - Grouting and importance of formwork in concrete construction
Lecture 32 - Carbonation and freezing & thawing in concrete structures
Lecture 33 - Using recycled aggregates in concrete construction
Lecture 34 - Basic non-destructive testing for concrete structures
Lecture 35 - Measuring permeability in concrete
Lecture 36 - Some additional topics
Lecture 37 - Considerations in repair of concrete structures - Part 1 of 2
Lecture 38 - Considerations in repair of concrete structures - Part 2 of 2
Lecture 39 - Laboratory demonstration
Lecture 40 - Review of the course
NPTEL Video Course - Civil Engineering - Environmental Air Pollution

Subject Co-ordinator - Prof. Mukesh Sharma
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Atmosphere
Lecture 2 - Air Pollution Systems
Lecture 3 - Air Quality Standards
Lecture 4 - Types and Forms of Air Pollutants
Lecture 5 - Measurement Units and Particulate classification
Lecture 6 - Interpretation and Particle size Distribution
Lecture 7 - Atmospheric formation of Air Pollutants - I
Lecture 8 - Atmospheric formation of Air Pollutants - II
Lecture 9 - Atmospheric formation of Air Pollutants - III
Lecture 10 - Kinetics of Air pollution and combustion processes
Lecture 11 - Internal Combustion Engine and Air Pollution - I
Lecture 12 - Internal Combustion Engine and Air Pollution - II
Lecture 13 - Air Pollution and Health - I
Lecture 14 - Air Pollution and Health - II
Lecture 15 - Emission Inventory
Lecture 16 - Sources of Air Pollution
Lecture 17 - Emission from Fugitive Sources and Sulfuric Acid Production
Lecture 18 - Aluminium Production and Air Pollution - I
Lecture 19 - Aluminium Production and Air Pollution - II
Lecture 20 - Coke Production and Air Pollution
Lecture 21 - Examples for Practice
Lecture 22 - Meteorological Measurements and their interpretation
Lecture 23 - Examples for Practice - Dispersion Modeling
Lecture 24 - Vertical Temperature Profile of Atmosphere
Lecture 25 - Stability, Mixing Height and Plume Behavior - I
Lecture 26 - Stability, Mixing Height and Plume Behavior - II
Lecture 27 - Examples - Solar Radiation Based Stability Calculation
Lecture 28 - Air Quality Modeling - I
Lecture 29 - Air Quality Modeling - II

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Lecture 30 - Derivation of Gaussian Model
Lecture 31 - Gaussian Model - Useful Formulation
Lecture 32 - Plume rise, Area and Line Source Model
Lecture 33 - Air Quality Modeling - Maximum Ground Level concentration
Lecture 34 - Examples of Air Quality Modeling
Lecture 35 - Air Pollution Control Devices - I
Lecture 36 - Air Pollution Control Devices - II
Lecture 37 - Source Emission Monitoring
Lecture 38 - Receptor Source Modeling
Lecture 39 - Environmental laws
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - Surveying

Subject Co-ordinator - Dr. Bharat Lohani

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Module 1 - Lecture 1
Module 2 - Lecture 1
Module 2 - Lecture 2
Module 2 - Lecture 3
Module 2 - Lecture 4
Module 2 - Lecture 5
Module 3 - Lecture 1
Module 3 - Lecture 2
Module 3 - Lecture 3
Module 3 - Lecture 4
Module 4 - Lecture 1
Module 4 - Lecture 2
Module 5 - Lecture 1
Module 5 - Lecture 2
Module 5 - Lecture 3
Module 5 - Lecture 4
Module 5 - Lecture 5
Module 5 - Lecture 6
Module 6 - Lecture 1
Module 6 - Lecture 2
Module 6 - Lecture 3
Module 7 - Lecture 1
Module 7 - Lecture 2
Module 7 - Lecture 3
Module 7 - Lecture 4
Module 7 - Lecture 5
Module 8 - Lecture 1
Module 8 - Lecture 2
Module 9 - Lecture 1

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NPTEL Video Course - Civil Engineering - Water Resources Engineering

Subject Co-ordinator - Dr. Pranab K Mohapatra, Prof. Rajesh Srivastava

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1
Lecture 2
Lecture 3
Lecture 4
Lecture 5
Lecture 6
Lecture 7
Lecture 8
Lecture 9
Lecture 10
Lecture 11
Lecture 12
Lecture 13
Lecture 14
Lecture 15
Lecture 16
Lecture 17
Lecture 18
Lecture 19
Lecture 20
Lecture 21
Lecture 22
Lecture 23
Lecture 24
Lecture 25 (Lecture Missing)
Lecture 26
Lecture 27
Lecture 28
Lecture 29

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Lecture 30 - Geotechnical Measurements & Explorations
Lecture 31 - Geotechnical Measurements & Explorations
Lecture 32 - Geotechnical Measurements & Explorations
Lecture 33 - Geotechnical Measurements & Explorations
Lecture 34 - Geotechnical Measurements & Explorations
Lecture 35 - Geotechnical Measurements & Explorations
Lecture 36 - Geotechnical Measurements & Explorations
Lecture 37 - Geotechnical Measurements & Explorations
Lecture 38 - Geotechnical Measurements & Explorations
Lecture 39 - Geotechnical Measurements & Explorations
Lecture 40 - Geotechnical Measurements & Explorations
Lecture 30 - Application of Soil Mechanics
Lecture 31 - Application of Soil Mechanics
Lecture 32 - Application of Soil Mechanics
Lecture 33 - Application of Soil Mechanics
Lecture 34 - Application of Soil Mechanics
Lecture 35 - Application of Soil Mechanics
Lecture 36 - Application of Soil Mechanics
Lecture 37 - Application of Soil Mechanics
Lecture 38 - Application of Soil Mechanics
Lecture 39 - Application of Soil Mechanics
Lecture 40 - Application of Soil Mechanics
NPTEL Video Course - Civil Engineering - NOC:Geology and Soil Mechanics

Subject Co-ordinator - Dr. Priyanka Ghosh

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Description of soil, Engineering Geology Of Soils and Thier Formation
Lecture 2 - Index Properties Of Soil
Lecture 3 - Index Properties Of Soil - A
Lecture 4 - Index Properties Of Soil - B
Lecture 5 - Index Properties Of Soil - C
Lecture 6 - Index Properties Of soil - D
Lecture 7 - Classification Of Soils - A
Lecture 8 - Classification Of Soils - B
Lecture 9 - Classification Of Soils And Clay Mineralogy - A
Lecture 10 - Classification Of Soils And Clay Mineralogy - B
Lecture 11 - Soil compaction - A
Lecture 12 - Soil compaction - B
Lecture 13 - Soil compaction - C
Lecture 14 - Soil compaction - D
Lecture 15 - Soil compaction and Permeability
Lecture 16 - Permeability - A
Lecture 17 - Permeability - B
Lecture 18 - Permeability - C
Lecture 19 - Problems on permeability
Lecture 20 - Seepage
Lecture 21 - Seepage - A
Lecture 22 - Seepage - B
Lecture 23 - Seepage and In situ stress
Lecture 24 - In situ stresses - A
Lecture 25 - In situ stresses - B
Lecture 26 - In situ stresses - A
Lecture 27 - In situ stresses - B
Lecture 28 - In situ stresses - C
Lecture 29 - Consolidation - A

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NPTEL Video Course - Civil Engineering - NOC:Engineering Graphics

Subject Co-ordinator - Dr. Nihar Ranjan Patra
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Objectives, Lettering and Numbering
Lecture 2 - Geometric Constructions - Part I
Lecture 3 - Geometric Constructions - Part II
Lecture 4 - Orthographic Projections - Part I
Lecture 5 - Orthographic Projections - Part II
Lecture 6 - Orthographic Projections - Part III
Lecture 7 - Orthographic Projections - Part IV
Lecture 8 - Orthographic Projections - Part V
Lecture 9 - Isometric Projections - Part I
Lecture 10 - Isometric Projections - Part II
Lecture 11 - Isometric Projections - Part III
Lecture 12 - Isometric Projections - Part IV
Lecture 13 - Isometric Projections - Part V and Oblique Projections - Part I
Lecture 14 - Oblique Projections - Part II
Lecture 15 - Sectioning
Lecture 16 - Hatching
Lecture 17 - Orthographic Projections - Assemblies
Lecture 18 - Missing Lines and Missing Views
Lecture 19 - Perspective View - Part I
Lecture 20 - Perspective View - Part II
Lecture 21 - Perspective View - Part III
Lecture 22 - Angular Perspective and Circles in perspective
Lecture 23 - Perspective View examples and Space Geometry
Lecture 24 - Space Geometry (Continued...)
Lecture 25 - True Length, Point View and Slope of Oblique lines
Lecture 26 - Space Geometry - Introduction
Lecture 27 - Space Geometry - Part 2
Lecture 28 - Auxiliary View, Lines, Planes
Lecture 29 - Relationship between Lines and Planes, Planes and Planes

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Lecture 30 - Intersection of Solids
Lecture 31 - AUTOCAD
Lecture 32 - Development of Surfaces
NPTEL Video Course - Civil Engineering - NOC: Earth Sciences for Civil Engineering

Subject Co-ordinator - Prof. Javed N. Malik

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Geosciences in Civil Engineering - Part 1
Lecture 2 - Introduction to Geosciences in Civil Engineering - Part 2
Lecture 3 - Plate Tectonics and Continental Drift - Part 2
Lecture 4 - Plate Tectonics and Continental Drift - Part 3
Lecture 5 - Plate Tectonics and Continental Drift - Part 4
Lecture 6 - Rock Forming Minerals and their Properties - Part 1
Lecture 7 - Rock types and their Properties - Part 1
Lecture 8 - Rock types and their Properties - Part 2
Lecture 9 - Rock types and their Properties - Part 3
Lecture 10 - Rock types and their Properties - Part 4
Lecture 11 - Rock types and their properties - Part 5
Lecture 12 - Rock types and their properties - Part 6
Lecture 13 - Rock types and their properties - Part 6
Lecture 14 - Seismology and the internal structure of the earth - Part 2
Lecture 15 - Seismology and the internal structure of the earth - Part 3 Edit Lesson
Lecture 16 - Seismology and the internal structure of the earth - Part 4
Lecture 17 - Seismology and the internal structure of the earth - Part 5 and Geological Structures - Part 1
Lecture 18 - Geological Structures - Part 2
Lecture 19 - Geological Structures - Part 3
Lecture 20 - Geological Structures - Part 4

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NPTEL Video Course - Civil Engineering - NOC: Earth Sciences for Civil Engineering - Part 2

Subject Co-ordinator - Prof. Javed N. Malik

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Geological Hazards and Environmental Impact - Part 1
Lecture 2 - Introduction to Geological Hazards and Environmental Impact - Part 2
Lecture 3 - Introduction to Geological Hazards and Environmental Impact - Part 3
Lecture 4 - Active Faults and its Related Hazards in India - Part 1
Lecture 5 - Active Faults and its Related Hazards in India - Part 2
Lecture 6 - Active faults and its related hazards in India - Part 3
Lecture 7 - Active faults and its related hazards in India - Part 4
Lecture 8 - Active faults its related hazards in India - Part 5
Lecture 9 - Active faults its related hazards in India - Part 6
Lecture 10 - Active faults its related hazards in India - Part 7 and Civil Engineering applications - geological considerations in dams, tunnels - Part 1
Lecture 11 - Civil Engineering applications Â– geological considerations in dams, tunnels - Part 2
Lecture 12 - Civil Engineering applications Â– geological considerations in dams, tunnels - Part 3 and Tsunami
Lecture 13 - Tsunami and related hazard - Part 2
Lecture 14 - Tsunami and related hazard - Part 3
Lecture 15 - Landslide and subsidence - Part 1
Lecture 16 - Landslide and subsidence - Part 2
Lecture 17 - Landslide and subsidence - Part 3
Lecture 18 - Flood and related hazard - Part 1
Lecture 19 - Flood and related hazard - Part 2
Lecture 20 - Groundwater
NPTEL Video Course - Civil Engineering - NOC: Hydration, Porosity and Strength of Cementitious Materials

Subject Co-ordinator - Dr. Satyaki Roy, Dr. Sudhir Misra

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Lecture 1 - Introduction to the course
Lecture 2 - Lecture 2 - Concrete - A Three Phase System
Lecture 3 - Lecture 3 - Basic Properties of Concrete
Lecture 4 - Lecture 4 - Portland Cement
Lecture 5 - Lecture 5 - Portland Cement (Continued...)
Lecture 6 - Lecture 6 - Introduction (Aggregates) - 1
Lecture 7 - Lecture 7 - Introduction (Aggregates) - 2
Lecture 8 - Lecture 8 - Introduction (Aggregates) - 3
Lecture 9 - Lecture 9 - Introduction (Concrete Mixture Proportioning Strategies)
Lecture 10 - Lecture 10 - Introduction (Chemical Admixtures)
Lecture 11 - Lecture 11 - Portland Cement Based Paste Systems - I
Lecture 12 - Lecture 12 - Portland Cement Based Paste Systems - II
Lecture 13 - Lecture 13 - Portland Cement Based Paste Systems - III
Lecture 14 - Lecture 14 - Portland Cement Paste Based Systems - IV
Lecture 15 - Lecture 15 - Portland Cement Based Paste Systems - V
Lecture 16 - Lecture 16 - 18 Part 1 - Portland Cement Based Paste Systems - VI
Lecture 17 - Lecture 16 - 18 Part 2 - Portland Cement Based Paste Systems - VII
Lecture 18 - Lecture 19 - Heat of hydration of Portland Cement
Lecture 19 - Lecture 20 - Mass Concrete
Lecture 20 - Lecture 21-22 - Mineral Admixtures - 1
Lecture 23 - Lecture 28-30 - Mineral Admixtures - 4
Lecture 24 - Lecture 31 - From paste to concrete
Lecture 25 - Lecture 32 - Demonstration
Lecture 26 - Lecture 33 - Pores and porosity - A revisit
Lecture 27 - Lecture 34 - Measuring permeability of concrete
Lecture 28 - Lecture 35 - Behavior under load
Lecture 29 - Lecture 36 - Curing of concrete

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Lecture 30 - Lecture 37 - Stress strain behaviour
Lecture 31 - Lecture 38 - Durability of concrete - I
Lecture 32 - Lecture 39 - Durability of concrete - II - Specifications
NPTEL Video Course - Civil Engineering - NOC: Mechanics of Solids

Subject Co-ordinator - Dr. Priyanka Ghosh

Co-ordinating Institute - IIT - Kanpur

Lecture 1 - Course Handout
Lecture 2 - Analysis of Mechanical System
Lecture 3 - Conditions of equilibrium in 2D and 3D
Lecture 4 - FBD with examples on modelling of typical supports and joints
Lecture 5 - Support Conditions
Lecture 6 - FBD of Frame Structures
Lecture 7 - Stability of Truss
Lecture 8 - Solutions of Plane Truss
Lecture 9 - Method of Sections
Lecture 10 - Friction 2
Lecture 11 - Tutorial on Truss
Lecture 12 - Tutorial on Friction
Lecture 13 - Force Displacement Relationship
Lecture 14 - Hoop Stresses
Lecture 15 - Mechanism of belt around wheel
Lecture 16 - Tutorial on Force Displacement Relationship and Geometric Compatibility - 1
Lecture 17 - Tutorial on Force Displacement Relationship and Geometric Compatibility - 2
Lecture 18 - Tutorial on Force Displacement Relationship and Geometric Compatibility - 3
Lecture 19 - Concept of Stress
Lecture 20 - Plane Stress
Lecture 21 - State of Stresses
Lecture 22 - Mohrs Circle representation of plane stress
Lecture 23 - Construction of Mohrs Circle
Lecture 24 - Principal Stresses and Introduction to Concept of Strain
Lecture 25 - Normal Strain and Shear Strain
Lecture 26 - Strain Transformation
Lecture 27 - Strain Measurement
Lecture 28 - Tutorial
Lecture 29 - Tutorial on Concept of Strain.

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC:Principles of Construction Management

Subject Co-ordinator - Dr. Sudhir Misra

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the course
Lecture 2 - Interdisciplinary nature of modern construction projects
Lecture 3 - Overview of steps in execution of a project
Lecture 4 - Illustrative examples for evaluation of bids based on different schemes
Lecture 5 - Resource management in construction projects
Lecture 6 - Estimating quantities
Lecture 7 - Description of items
Lecture 8 - Estimation of project cost
Lecture 9 - Discussion on the case study of boundary wall
Lecture 10 - Running account bills
Lecture 11 - Economic decision making in construction projects
Lecture 12 - Depreciation of construction equipment
Lecture 13 - Repayment of a loan
Lecture 14 - Introduction to planning and scheduling
Lecture 15 - Introduction to planning and scheduling (Continued...)
Lecture 16 - Project scheduling
Lecture 17 - Uncertainties in duration of activities -Using PERT in scheduling
Lecture 18 - Project monitoring and control systems
Lecture 19 - Resource leveling and allocation
Lecture 20 - Crashing of networks
Lecture 21 - Introduction to construction safety
Lecture 22 - Accidents in construction industry - I
Lecture 23 - Accidents in construction industry - II
Lecture 24 - Personal protective equipment
Lecture 25 - Implications of construction accidents
Lecture 26 - Safety organization and safety officer
Lecture 27 - Quality control in construction
Lecture 28 - Quality in construction - welding
Lecture 29 - Epoxy coated bars

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Lecture 30 - Quality control of grouts in ducts of post-tensioned PC members
Lecture 31 - Quality control (QC) issues in concrete
NPTEL Video Course - Civil Engineering - NOC:Foundation Design

Subject Co-ordinator - Dr. Nihar Ranjan Patra

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - (1A) Subsoil Investigation or Site Investigation - Part 1
Lecture 2 - (1B) Subsoil Investigation or Site Investigation - Part 2
Lecture 3 - (2A) Subsoil Investigation or Site Investigation - Part 3
Lecture 4 - (2B) Subsoil Investigation or Site Investigation - Part 4
Lecture 5 - (3A) Subsoil Investigation or Site Investigation - Part 5
Lecture 6 - (3B) Subsoil Investigation or Site Investigation - Part 6
Lecture 7 - (4A) Subsoil Investigation or Site Investigation - Part 7
Lecture 8 - (4B) Foundations
Lecture 9 - (5A) Bearing Capacity Of Shallow Foundations - Part 1
Lecture 10 - (5B) Bearing Capacity Of Shallow Foundations - Part 2
Lecture 11 - (6A) Bearing Capacity Of Shallow Foundations - Part 3
Lecture 12 - (6B) Bearing Capacity Of Shallow Foundations - Part 4
Lecture 13 - (7A) Bearing Capacity Of Shallow Foundations - Part 5
Lecture 14 - (7B) Bearing Capacity Of Shallow Foundations - Part 6
Lecture 15 - (8A) Settlement Analysis - Part 1
Lecture 16 - (8B) Settlement Analysis - Part 2
Lecture 17 - (9A) Settlement Analysis - Part 3
Lecture 18 - (9B) Stress distribution in soils - Part 1
Lecture 19 - (10A) Stress distribution in soils - Part 2
Lecture 20 - (10B) Stress distribution in soils - Part 3
Lecture 21 - (11A) Stress distribution in soils - Part 4
Lecture 22 - (11B) Stress distribution in soils - Part 5
Lecture 23 - (12A) Examples based on bearing capacity and settlement
Lecture 24 - (12B) Design of foundation - Part 1
Lecture 25 - (13A) Design of Foundation - Part 2
Lecture 26 - (13B) Design of Foundation - Part 3
Lecture 27 - (14A) Design of Foundation - Part 4
Lecture 28 - (14B) Design of Foundation - Part 5
Lecture 29 - (15A) Types of foundations (Combined Footing)
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NPTEL Video Course - Civil Engineering - NOC: Photogeology In Terrain Evaluation

Subject Co-ordinator - Prof. Javed N. Malik
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Remote Sensing - Photogeology
Lecture 2 - Introduction to Remote Sensing - Photogeology
Lecture 3 - Fundamental Principle in Remote Sensing
Lecture 4 - Aerial Photography
Lecture 5 - Stereo-photos and their Importance
Lecture 6 - Photo-interpretation Techniques
Lecture 7 - Photogrammetry and its Significance
Lecture 8 - Sensors, Cameras and Panchromatic Data
Lecture 9 - Stereoscopcy and Methods
Lecture 10 - Relief Displacement on Aerial Photographs
Lecture 11 - Fluvial Processes and Landforms
Lecture 12 - Geomorphology of River Channels
Lecture 13 - Drainage Basins and their Features
Lecture 14 - Morphometric Parameters of Fluvial Channels
Lecture 15 - Drainage Patterns and their Morphology
Lecture 16 - Determination of Flightline (Lab)
Lecture 17 - Determination of Flightline (Lab)
Lecture 18 - Exercise on Relief Displacement
Lecture 19 - Exercise on Stereoscopic Parallax
Lecture 20 - Exercise on Stereoscopic Parallax
Lecture 21 - Generation of Digital Elevation Model and Anaglyph
NPTEL Video Course - Civil Engineering - NOC: Photogeology In Terrain Evaluation - Part 2

Subject Co-ordinator - Prof. Javed N. Malik
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Geological Structures, Photo interpretation and Terrain evaluation
Lecture 2 - Photo interpretation/identification of Landforms associated with Folds - 1
Lecture 3 - Photo interpretation/identification of Landforms associated with Folds - 2
Lecture 4 - Identification of features related to ongoing Crustal Deformation and Mountain Building process
Lecture 5 - Identification of Fault Topography
Lecture 6 - Photogeology
Lecture 7 - Photo Interpretations
Lecture 8 - Photo Interpretations
Lecture 9 - Photo Interpretations
Lecture 10 - Photo-Interpretations
Lecture 11 - Photo Interpretations
Lecture 12 - Photo Interpretations
Lecture 13 - Photo Interpretations
Lecture 14 - Photo Interpretations
Lecture 15 - Photo Interpretations
Lecture 16 - Exercise on Identification of Geological Structures and related Landforms
Lecture 17 - Exercise on Identification of Geomorphic Features related to Various Environments
Lecture 18 - Exercise on Identification of Tectonic Features and Geomorphic Mapping using Satellite Data
Lecture 19 - Exercise on Identification of Geological Structures and Geomorphic Landforms on Aerial/Satellite Photos
Lecture 20 - Exercise on Morphometric Parameters and 3D observation of the Earth Surface Features
NPTEL Video Course - Civil Engineering - NOC: Introduction to Accounting and Finance for Civil Engineers

Subject Co-ordinator - Dr. Sudhir Misra
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of the Course
Lecture 2 - Introduction
Lecture 3 - General Discussion on Construction Projects
Lecture 4 - Time value of money
Lecture 5 - Economic Decision Making - I
Lecture 6 - Economic decision making - II
Lecture 7 - Incremental Rate of Return (IROR)
Lecture 8 - Benefit cost ratio
Lecture 9 - Sensitivity analysis - Part 1
Lecture 10 - Sensitivity analysis - Part 2
Lecture 11 - Break-even analysis - Part 1
Lecture 12 - Break-even analysis - Part 2
Lecture 13 - Depreciation of construction equipment
Lecture 14 - Effect of depreciation on cash flows
Lecture 15 - Effect of depreciation and inflation on economic decision making
Lecture 16 - Replacement analysis
Lecture 17 - Risk analysis - Part 1
Lecture 18 - Risk analysis - Part 2
Lecture 19 - Risk analysis - Part 3
Lecture 20 - Simulation - Part 1
Lecture 21 - Simulation - Part 2
Lecture 22 - Bidding - Part 1
Lecture 23 - Bidding - Part 2
Lecture 24 - Bidding - Part 3
Lecture 25 - Bidding - Part 4
Lecture 26 - Bidding - Part 5
Lecture 27 - Bidding - Part 6
Lecture 28 - Bidding - Part 7
Lecture 29 - Introduction to accounting - Part 1

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Lecture 30 - Introduction to accounting - Part 2
Lecture 31 - Introduction to accounting - Part 3
Lecture 32 - Revenue recognition
Lecture 33 - Construction Contract Status Reports
Lecture 34 - Assets and Liabilities
Lecture 35 - Accounting statements - case study
Lecture 36 - Working capital
Lecture 37 - Financing resources for working capital
Lecture 38 - Ratio analysis
NPTEL Video Course - Civil Engineering - NOC: Natural Hazards - Part 1

Subject Co-ordinator - Prof. Javed N. Malik

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Natural Hazards
Lecture 2 - Introduction to Natural Hazards (Types of Hazard)
Lecture 3 - Introduction to Natural Hazards (Earth as a system)
Lecture 4 - Introduction to Natural Hazards (Cyclones and Earthquakes - Part I)
Lecture 5 - Introduction to Natural Hazards (Cyclones and Earthquakes - Part II)
Lecture 6 - Introduction to Natural Hazards (Disaster Management)
Lecture 7 - Introduction to Natural Hazards (Seismic Zonation of India and Landslide)
Lecture 8 - Introduction to Natural Hazards (Flood and Tsunami)
Lecture 9 - Introduction to Natural Hazards (Disaster Prediction and Warning)
Lecture 10 - Introduction to Natural Hazards (Recent Natural Calamities in India and Worldwide)
Lecture 11 - Plate tectonics and related hazards - Part I
Lecture 12 - Plate tectonics and related hazards - Part II
Lecture 13 - Plate tectonics and related hazards - Part III
Lecture 14 - Active fault and Paleoseismology
Lecture 15 - Case study on 2015 Gorkha Earthquake
Lecture 16 - Earthquake and related hazard - Part I
Lecture 17 - Earthquake and related hazard - Part II
Lecture 18 - Earthquake and related hazard - Part III
Lecture 19 - Ground Effects and Evaluation of Earthquake Hazards - Part I
Lecture 20 - Ground Effects and Evaluation of Earthquake Hazards - Part II
Lecture 21 - Ground Effects and Evaluation of Earthquake Hazards - Part III
Lecture 22 - Liquefaction and Related Geological Features
Lecture 23 - Motoring Seismic Activity - Part I
Lecture 24 - Motoring Seismic Activity - Part II
Lecture 25 - Volcano and Related Hazard - Part I
Lecture 26 - Volcano and Related Hazard - Part II
Lecture 27 - Introduction to Landslides
Lecture 28 - Types of Landslide and Related Hazards
Lecture 29 - Civil Engineering applications geological considerations in dams, tunnels - Part 2

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Lecture 30 - Civil Engineering applications geological considerations in dams, tunnels - Part 3 and Tsunami and related hazard - Part 1
Lecture 31 - Tsunami and related hazard - Part 2
Lecture 32 - Tsunami and related hazard - Part 3
Lecture 33 - Landslide and subsidence - Part I
Lecture 34 - Flood and Related Hazards - Part I
Lecture 35 - Flood and Related Hazards - Part II
Lecture 36 - Flood and Related Hazards - Part III
Lecture 37 - Flood and Related Hazards - Part IV
Lecture 38 - Flood and Related Hazards - Part V
Lecture 39 - Introduction to Tsunami
Lecture 40 - Tsunami and Related Hazards - Part I
Lecture 41 - Tsunami and Related Hazards - Part II
Lecture 42 - Tsunami and Related Hazards - Part III
Lecture 43 - Tsunami Modelling
NPTEL Video Course - Civil Engineering - NOC: Structural Dynamics for Civil Engineers - SDOF Systems

Subject Co-ordinator - Prof. Riya Catherine George
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Structural Dynamics
Lecture 2 - Modelling of Dynamic System
Lecture 3 - Undamped Free vibration
Lecture 4 - Damped Free Vibrations
Lecture 5 - Coulomb Damped Free Vibrations
Lecture 6 - Forced Vibrations - Part 1
Lecture 7 - Forced Vibrations - Part 2
Lecture 8 - Examples
Lecture 9 - Harmonic Vibration Examples
Lecture 10 - Vibrations under Periodic Forces
Lecture 11 - Energy and Damping
Lecture 12 - Response to Arbitrary excitations
Lecture 13 - Response to Pulse Excitations

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NPTEL Video Course - Civil Engineering - NOC: Geomorphic Processes: Landforms and Landscapes

Subject Co-ordinator - Prof. Javed N. Malik

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Geomorphic processes- Landforms and Landscapes - Part I
Lecture 2 - Introduction to Geomorphic Processes- Landforms and Landscapes - Part II
Lecture 3 - Introduction to Geomorphic Processes- Landforms and Landscapes - Part III
Lecture 4 - Earth Energy Budget - Part I
Lecture 5 - Earth Energy Budget - Part II
Lecture 6 - Earth and Environment
Lecture 7 - Surface and Ground Water System and Management - Part I
Lecture 8 - Surface and Ground Water System and Management - Part II
Lecture 9 - Surface and Ground Water System and Management - Part III
Lecture 10 - Interior of the Earth and Plate Tectonics - Part I
Lecture 11 - Interior of the Earth and Plate Tectonics - Part II
Lecture 12 - Interior of the Earth and Plate Tectonics - Part III
Lecture 13 - Interior of the Earth and Plate Tectonics - Part IV
Lecture 14 - Interior of the Earth and Plate Tectonics - Part V
Lecture 15 - Fluvial Processes and Related Landforms - Part I
Lecture 16 - Fluvial Processes and Related Landforms - Part II
Lecture 17 - Fluvial Processes and Related Landforms - Part III
Lecture 18 - Fluvial Processes and Related Landforms - Part IV
Lecture 19 - Fluvial Processes and Related Landforms - Part V
Lecture 20 - Fluvial Processes and Related Landforms - Part VI
Lecture 21 - Fluvial Processes and Related Landforms - Part VII
Lecture 22 - Fluvial Processes and Related Landforms - Part VIII
Lecture 23 - Fluvial Processes and Related Landforms - Part IX
Lecture 24 - Tectonic Geomorphology - Part I
Lecture 25 - Tectonic Geomorphology - Part II
Lecture 26 - Tectonic Geomorphology - Part III
Lecture 27 - Tectonic Geomorphology - Part IV
Lecture 28 - Tectonic Geomorphology - Part V
Lecture 29 - Glacial Landforms - Part I

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC:Structural Geology

Subject Co-ordinator - Prof. Santanu Misra
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - I
Lecture 2 - Introduction - II
Lecture 3 - Structural Elements and Measurements
Lecture 4 - How to measure strike-dip-pitch/rake-plunge
Lecture 5 - Stereographic Projection in Structural Geology
Lecture 6 - Concept of Strain and Deformation - Part I
Lecture 7 - Concept of Strain and Deformation - Part II
Lecture 8 - Strain Measurement
Lecture 9 - Stress - Part I
Lecture 10 - Stress - Part II
Lecture 11 - Basics of Rheology - Part I
Lecture 12 - Basics of Rheology - Part II
Lecture 13 - Basics of Rheology - Part III
Lecture 14 - Complex Rheology
Lecture 15 - Role of External Parameters
Lecture 16 - Crystal Defects and associated structures
Lecture 17 - Cataclastic Deformation
Lecture 18 - Intracrystalline Deformation
Lecture 19 - Diffusive Mass Transfer
Lecture 20 - Planar Fabrics (Foliation/ Cleavage/ Schistosity) - I
Lecture 21 - Planar Fabrics (Foliation/ Cleavage/ Schistosity) - II
Lecture 22 - Linear Fabrics (Lineation)
Lecture 23 - Folds and Folding
Lecture 24 - Folds and Folding
Lecture 25 - Folds and Folding
Lecture 26 - Folds and Folding
Lecture 27 - Porphyroblasts
Lecture 28 - Boudinage and Pinch-and-Swell Structures - I
Lecture 29 - Boudinage and Pinch-and-Swell Structures - II

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Lecture 30 - Stereonet Problem I
Lecture 31 - Stereonet Problem II
Lecture 32 - Stereonet Problem III
Lecture 33 - Stereonet Problem IV
Lecture 34 - Stereonet Problem V
Lecture 35 - Fractures and Joints - I
Lecture 36 - Fractures and Joints - II
Lecture 37 - Faults and Faulting - I
Lecture 38 - Stereonet Problem VI - Fold geometry from interlimb angle and fold axes
Lecture 39 - Stereonet Problem VII - Fold geometry from pitch of the limbs on another plane
Lecture 40 - Faults and Faulting - II
Lecture 41 - Ductile Shear Zones - I
Lecture 42 - Ductile Shear Zones - II
Lecture 43 - Basic of Litho-Structural Mapping
Lecture 44 - Paleostress analysis
Lecture 45 - Graphical Problem
Lecture 46 - Three point problem
Lecture 47 - Construction of Topographic Profile
Lecture 48 - Construction of Geological Cross-section
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - Advanced Foundation Engineering

Subject Co-ordinator - Dr. Kousik Deb
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Soil Exploration
Lecture 3 - Soil Exploration - Penetration Tests
Lecture 4 - Soil Exploration - Geophysical Exploration
Lecture 5 - Shallow Foundation - Introduction
Lecture 6 - Shallow Foundation
Lecture 7 - Shallow Foundation
Lecture 8 - Shallow Foundation
Lecture 9 - Shallow Foundation
Lecture 10 - Shallow Foundation
Lecture 11 - Shallow Foundation - Settlement Calculation - I
Lecture 12 - Shallow Foundation - Settlement Calculation - II
Lecture 13 - Shallow Foundation - Settlement Calculation - III
Lecture 14 - Design of Shallow Foundation
Lecture 15 - Design of Raft Foundation
Lecture 16 - Deep Foundation - Introduction
Lecture 17 - Pile Foundation - Load Carrying Capacity - I
Lecture 18 - Pile Foundation - Load Carrying Capacity - II
Lecture 19 - Pile Foundation - Load Carrying Capacity - III and Settlement Calculation
Lecture 20 - Tension and Lateral Loaded Piles
Lecture 21 - Well Foundation
Lecture 22 - Well Foundation (Continued...)
Lecture 23 - Design of Retaining Wall
Lecture 24 - Design of Retaining Wall (Continued...)
Lecture 25 - Design of Sheet Piles
Lecture 26 - Design of Sheet Piles (Continued...)
Lecture 27 - Design of Sheet Piles (Continued...)
Lecture 28 - Design of Sheet Piles (Continued...)
Lecture 29 - Reinforced Earth

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NPTEL Video Course - Civil Engineering - Ground Water Hydrology

Subject Co-ordinator - Dr. Anirban Dhar, Dr. V.R. Desaai

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Ground Water in Hydrologic Cycle (Continued...), Ground Water Budget, Ground Water Level Fluctuations and Environmental Influence
Lecture 3 - Ground water Level Fluctuations and Environmental Influence (Continued...), Literature/Data/Internet Resources
Lecture 4 - Occurrence and Movement of Ground Water
Lecture 5 - Zones of Aeration and Saturation; Aquifers and their characteristics/classification
Lecture 6 - Aquifer Classification (Continued...), Ground water Basins and Springs; Dorcy's Law; Permeability
Lecture 7 - Determination of Permeability
Lecture 8 - Ground Water (GW) flowrates and flow directions; general flow equations through porous media
Lecture 9 - General Flow Equations Through Porous Media (Continued...), Dupuit's Assumptions
Lecture 10 - 1-D Unconfined Ground water Flows; Steady Flow into Wells
Lecture 11 - Steady Flow into Wells (Continued...); Unsteady Flow into Wells
Lecture 12 - Unsteady Flow into Wells (Continued...)
Lecture 13 - Unsteady Flow into Wells (Continued...)
Lecture 14 - Unsteady Radial Flow in Confined and Unconfined Aquifers
Lecture 15 - Unsteady Radial Flow in Leaky Aquifers (Continued...); Well Flow Near Aquifer Boundaries
Lecture 16 - Well Flow for Special Conditions; Partially Penetrating Wells; Horizontal Wells and Collector Wells
Lecture 17 - Well Completion; Well Development; Well Protection; Well Rehabilitation; Well testing for Yields
Lecture 18 - Well Protection/Rehabilitation/Testing for yield (Continued...); Artificial Ground Water Recharge
Lecture 19 - Concept and methods of Artificial Ground Water Recharge (Continued...); Recharge Mounds and Induced Recharge
Lecture 20 - Induced Recharge (Continued...); Wastewater recharge for reuse; Water spreading
Lecture 21 - Pollution and Quality Analysis of Ground Water
Lecture 22 - Ground Water Pollution from Industrial, Agricultural and Miscellaneous Sources (Continued...)
Lecture 23 - Ground Water Pollution from Miscellaneous Sources (Continued...), Attenuation and Underground Disposal
Lecture 24 - Potential Evaluation of Ground water Pollution; Physical/Chemical/Biological analysis of Ground Water
Lecture 25 - Graphical representations of ground water quality (Continued...), SURFACE/SUB-SURFACE INVESTIGATION
Lecture 26 - Graphical representations of ground water quality (Continued...), Sub-surface investigation of ground water
Lecture 27 - Sub-surface investigation of ground water (Continued...)

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Lecture 30 - Radiation method of logging (Continued...); Temperature/caliper/fluid conductivity/fluid velocity/miscellaneous logging methods
Lecture 31 - Saline Water Intrusion in Aquifers
Lecture 32 - Saline Water Intrusion in Aquifers
Lecture 33 - Saline Water Intrusion in Aquifers
Lecture 34 - Saline Water Intrusion in Aquifers
Lecture 35 - Modeling and Management of Ground Water
Lecture 36 - Modeling and Management of Ground Water
Lecture 37 - Modeling and Management of Ground Water
Lecture 38 - Modeling and Management of Ground Water
Lecture 39 - Modeling and Management of Ground Water
Lecture 40 - Modeling and Management of Ground Water
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - Numerical Methods in Civil Engineering

Subject Co-ordinator - Dr. A. Deb
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Numerical Methods
Lecture 2 - Error Analysis
Lecture 3 - Introduction to Linear Systems - I
Lecture 4 - Linear Systems - II
Lecture 5 - Linear Systems - III
Lecture 6 - Linear Systems - Error Bounds
Lecture 7 - Error Bounds and Iterative Methods for Solving Linear Systems
Lecture 8 - Iterative Methods for Solving Linear Systems - I
Lecture 9 - Iterative Methods - II
Lecture 10 - Iterative Methods - III
Lecture 11 - Iterative Methods for Eigen Value Exraction
Lecture 12 - Solving Nonlinear Equations - I
Lecture 13 - Solving Nonlinear Equations - II
Lecture 14 - Solving Multi Dimensional Nonlinear Equations - I
Lecture 15 - Solving Multi Dimensional Nonlinear Equations - II
Lecture 16 - ARC Length and Gradient Based Methods
Lecture 17 - Gradient Based Methods
Lecture 18 - Conjugate Gradient Method - I
Lecture 19 - Conjugate Gradient Method - II
Lecture 20 - Nonlinear Conjugate Gradient and Introduction to PDEs
Lecture 21 - Eigenfunction Solutions for the Wave Equation
Lecture 22 - Analytical Methods for Solving the Wave Equation
Lecture 23 - Analytical Methods for Hyperbolic and Parabolic PDEs
Lecture 24 - Analytical Methods for Parabolic and Elliptic PDEs
Lecture 25 - Analytical Methods for Elliptic PDE's
Lecture 26 - Series Solutions for Elliptic PDE's and Introduction to Differential Operators
Lecture 27 - Differential Operators - I
Lecture 28 - Differential Operators - II
Lecture 29 - Differential Operators - III

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Lecture 30 - Interpolation
Lecture 31 - Polynomial Fitting
Lecture 32 - Orthogonal Polynomials - I
Lecture 33 - Orthogonal Polynomials - II
Lecture 34 - Orthogonal Polynomials - III
Lecture 35 - Spline Functions
Lecture 36 - Orthogonal Basis Functions for Solving PDE's - I
Lecture 37 - Orthogonal Basis Functions for Solving PDE's - II
Lecture 38 - Integral Equations - I
Lecture 39 - Integral Equations - II
Lecture 40 - Integral Equations - III
NPTEL Video Course - Civil Engineering - Probability Methods in Civil Engineering

Subject Co-ordinator - Dr. Rajib Maity
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - Role of Probability in Civil Engineering
Lecture 2 - Random Events and Probability Concept
Lecture 3 - Set Theory and Set Operations
Lecture 4 - Axioms of Probability
Lecture 5 - Probability of Events
Lecture 6 - Concept and Definition of Random Variables
Lecture 7 - Probability Distribution of Random Variables
Lecture 8 - CDF and Descriptors of Random Variables
Lecture 9 - Further Descriptors of Random Variables
Lecture 10 - Discrete Probability Distribution
Lecture 11 - Probability Distribution of Continuous RVs
Lecture 12 - Probability Distribution of Continuous RVs (Continued...1)
Lecture 13 - Probability Distribution of Continuous RVs (Continued...2)
Lecture 14 - Functions of Single Random Variables
Lecture 15 - Functions of Random Variables - Different Methods
Lecture 16 - Functions of Random Variables - Different Methods (Continued...)
Lecture 17 - Expectation and Moments of Functions of RV
Lecture 18 - Expectation and Moments of Functions of RV (Continued...)
Lecture 19 - Joint Probability Distribution
Lecture 20 - Marginal Probability Distribution
Lecture 21 - Conditional Probability Distribution
Lecture 22 - Conditional Probability Distribution (Continued...)
Lecture 23 - Properties of Multiple Random Variables
Lecture 24 - Properties of Multiple Random Variables (Continued...)
Lecture 25 - MGF of Multivariate RVs and Multivariate Probability Distributions
Lecture 26 - Multivariate Distribution and Functions of Multiple Random Variables
Lecture 27 - Functions of Multiple Random Variables (Continued...1)
Lecture 28 - Functions of Multiple Random Variables (Continued...2)
Lecture 29 - Introduction to Copulas
Lecture 30 - Introduction to Copulas (Continued...)
Lecture 31 - Probability Models using Normal Distribution
Lecture 32 - Probability Models using Log Normal and Exponential Distribution
Lecture 33 - Probability Models using Gamma and Extreme Value Distribution
Lecture 34 - Probability Models using Discrete Probability Distributions
Lecture 35 - Sampling Distribution and Parameter Estimation
Lecture 36 - Sampling Distribution and Parameter Estimation (Continued...)
Lecture 37 - Hypothesis Testing
Lecture 38 - Goodness - of - fit tests
Lecture 39 - Regression Analyses and Correlation
Lecture 40 - Regression Analyses and Correlation (Continued...)
Lecture 30 - Deflection of RC Beams
NPTEL Video Course - Civil Engineering - Engineering Geology

Subject Co-ordinator - Dr. Debasis Roy

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Engineering Geology
Lecture 2 - Geologic Structures
Lecture 3 - Geologic Maps and Stratigraphic Sections
Lecture 4 - Remote Sensing in Engineering Geology
Lecture 5 - Physical Properties of Minerals
Lecture 6 - Crystallography and Optical Properties
Lecture 7 - Chemical Characteristics of Minerals
Lecture 8 - Origin And Types of Rocks
Lecture 9 - Origin And Types of Soils
Lecture 10 - Igneous Rocks
Lecture 11 - Sedimentary Rocks
Lecture 12 - Metamorphic Rocks
Lecture 13 - Weathering
Lecture 14 - Sediment Transport and Deposition
Lecture 15 - Introduction to Subsurface Exploration
Lecture 16 - Introduction to Subsurface Exploration
Lecture 17 - Sampling and Non - Intrusive Methods
Lecture 18 - Index Properties and Classification of Soils
Lecture 19 - Index Properties of Rock and Rock Mass
Lecture 20 - Stress-Strain Behavior of Soil and Rock - I
Lecture 21 - Stress-Strain Behavior of Soil and Rock - II
Lecture 22 - In-situ State of Stress
Lecture 23 - Geologic Considerations in Tunneling
Lecture 24 - Geologic Considerations in Dam Construction
Lecture 25 - Groundwater - Preliminaries
Lecture 26 - Groundwater Flow - I
Lecture 27 - Groundwater Flow - II
Lecture 28 - Groundwater Related Engineering Issues
Lecture 29 - Groundwater Over Utilization

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Lecture 30 - Plate Tectonics
Lecture 31 - Plate Tectonics - 2 and Earthquake
Lecture 32 - Earthquake Hazard Assessment
Lecture 33 - Geologic Hazards - Seismicity and Volcanism
Lecture 34 - Geologic Hazards - Shoreline Processes
Lecture 35 - Geologic Hazards - Shoreline Processes
Lecture 36 - Geologic Hazards - Landslide Hazards - Zoning
Lecture 37 - Geologic Hazards Subsidence, Collapsible Soils
Lecture 38 - Preparation of Geologic Sections
Lecture 39 - Index testing of soil & rocks
Lecture 40 - Identification of minerals and rock samples
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - Introduction to Transportation Engineering

Subject Co-ordinator - Dr. K.S. Reddy, Dr. Bhargab Maitra

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Transportation Engineering
Lecture 2 - Elements of Concern and Components
Lecture 3 - Traffic Stream Characteristics
Lecture 4 - Traffic Studies
Lecture 5 - Traffic Studies
Lecture 6 - Highway Capacity and Level of Service
Lecture 7 - Intersection Control and Signalization
Lecture 8 - Functional Classification, Design Elements
Lecture 9 - Cross Section Elements
Lecture 10 - Stopping Sight Distance And Decision Sight
Lecture 11 - Overtaking, Intermediate and Headlight Sight
Lecture 12 - Intersection Sight Distance - I
Lecture 13 - Intersection Sight Distance - II
Lecture 14 - Horizontal Alignment - I
Lecture 15 - Horizontal Alignment - II
Lecture 16 - Horizontal Alignment - III
Lecture 17 - Horizontal Alignment - IV
Lecture 18 - Horizontal Alignment - V
Lecture 19 - Horizontal Alignment - VI
Lecture 20 - Vertical Alignment - I
Lecture 21 - Vertical Alignment - II
Lecture 22 - Vertical Alignment - III
Lecture 23 - Highway Alignment
Lecture 24 - Principles of Pavement Design
Lecture 25 - Traffic Loading - I
Lecture 26 - Traffic Loading - II
Lecture 27 - Pavement Materials - I
Lecture 28 - Pavement Materials - II
Lecture 29 - Pavement Materials - III

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Lecture 30 - Pavement Materials - IV
Lecture 31 - Pavement Materials - V
Lecture 32 - Design of Bituminous Mixes - I
Lecture 33 - Design of Bituminous Mixes - II
Lecture 34 - Analysis of Flexible Pavements
Lecture 35 - Analysis of Concrete Pavements
Lecture 36 - Flexible Pavement Design Indian Roads Congress
Lecture 37 - Flexible Pavement Design AASHTO Method - 1993
Lecture 38 - Concrete Pavement Design Indian Congress Method
Lecture 39 - Concrete Pavement Design PCA and AASHTO Methods
Lecture 40 - Pavement Evaluation and Rehabilitation
Lecture 41 - Overlay Design - IRC Method
NPTEL Video Course - Civil Engineering - Strength of Materials

Subject Co-ordinator - Prof. S.K. Bhattacharyya
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - Strength of Materials
Lecture 2 - Analysis of Stress - I
Lecture 3 - Analysis of Stress - II
Lecture 4 - Analysis of Stress - III
Lecture 5 - Analysis of Stress - IV
Lecture 6 - Analysis of Stress - V
Lecture 7 - Analysis of Strain - I
Lecture 8 - Analysis of Strain - II
Lecture 9 - Analysis of Strain - III
Lecture 10 - Analysis of Strain - IV
Lecture 11 - Analysis of Strain - V
Lecture 12 - Analysis of Strain - VI
Lecture 13 - Analysis of Strain - VII
Lecture 14 - Analysis of Strain - VIII
Lecture 15 - Application of Stress/Strain
Lecture 16 - Application of Stress / Strain
Lecture 17 - Application of Stress / Strain
Lecture 18 - Torsion - I
Lecture 19 - Torsion - II
Lecture 20 - Torsion - III
Lecture 21 - Torsion - IV
Lecture 22 - Bending of Beams - I
Lecture 23 - Bending of Beams - II
Lecture 24 - Bending of Beams - III
Lecture 25 - Bending of Beams - IV
Lecture 26 - Stresses in Beams - I
Lecture 27 - Stresses in Beams - II
Lecture 28 - Stresses in Beams - III
Lecture 29 - Stresses in Beams - IV

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Lecture 30 - Deflection of Beams - I
Lecture 31 - Deflection of Beams - II
Lecture 32 - Deflection of Beams - III
Lecture 33 - Deflection of Beams - IV
Lecture 34 - Combined Stresses - I
Lecture 35 - Combined Stresses - II
Lecture 36 - Combined Stresses - III
Lecture 37 - Stability of Columns - I
Lecture 38 - Stability of Columns - II
Lecture 39 - Springs - I
Lecture 40 - Springs - II
NPTEL Video Course - Civil Engineering - NOC: Probability Methods in Civil Engineering

Subject Co-ordinator - Dr. Rajib Maity

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Random Events and Probability Concept
Lecture 2 - Set Theory and Set Operations
Lecture 3 - Axioms of Probability
Lecture 4 - Probability of Events
Lecture 5 - Concept and definition of Random variables
Lecture 6 - Probability distribution of random variables
Lecture 7 - CDF and Descriptors of Random Variables
Lecture 8 - Further Descriptors of Random Variables
Lecture 9 - Discrete Probability Distribution
Lecture 10 - Probability Distribution of Continuous RVs
Lecture 11 - Probability Distribution of Continuous RVs (Continued.....1)
Lecture 12 - Probability Distribution of Continuous RVs (Continued.....2)
Lecture 13 - Functions of Single Random Variables
Lecture 14 - Functions of Different Variables - Different Methods
Lecture 15 - Functions of Random Variables
Lecture 16 - Probability Models using Normal Distribution
Lecture 17 - Probability Models using Log Normal and Exponential Distribution
Lecture 18 - Probability Models using Gamma and Extreme Value Distribution
Lecture 19 - Probability Models using Discrete Probability Distributions
Lecture 20 - Sampling Distribution and Parameter Estimation
Lecture 21 - Sampling Distribution and Parameter Estimation (Continued...)
Lecture 22 - Hypothesis Testing
Lecture 23 - Goodness of Fit-Tests
Lecture 24 - Regression Analyses and Correlation
Lecture 25 - Regression Analyses and Correlation (Continued...)

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NPTEL Video Course - Civil Engineering - NOC: Visual Semiotics for Visual Communication

Subject Co-ordinator - Prof. Mainak Ghosh

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Visual Semantics for Visual Communication
Lecture 2 - Visual Semantics for Visual Communication (Continued...)
Lecture 3 - Visual Semantics for Visual Communication (Continued...)
Lecture 4 - Visual Semantics for Visual Communication (Continued...)
Lecture 5 - Introduction to Millimeter-Wave Technology (Continued...)
Lecture 6 - Visual Semantics for Visual Communication (Continued...)
Lecture 7 - Visual Semantics for Visual Communication (Continued...)
Lecture 8 - Visual Semantics for Visual Communication (Continued...)
Lecture 9 - Introduction to Millimeter-Wave Technology
Lecture 10 - Visual Semantics for Visual Communication (Continued...)
Lecture 11 - Visual Semantics for Visual Communication (Continued...)
Lecture 12 - Visual Semantics for Visual Communication (Continued...)
Lecture 13 - Conceptual Model and Affordances
Lecture 14 - Visual Semantics for Visual Communication (Continued...)
Lecture 15 - Visual Semantics for Visual Communication (Continued...)
Lecture 16 - Visual Semantics for Visual Communication (Continued...)
Lecture 17 - Visual Semantics for Visual Communication (Continued...)
Lecture 18 - Visual Semantics for Visual Communication (Continued...)
Lecture 19 - Visual Semantics for Visual Communication (Continued...)
Lecture 20 - Visual Semantics for Visual Communication (Continued...)
NPTEL Video Course - Civil Engineering - NOC: Integrated Waste Management for a Smart City

Subject Co-ordinator - Prof. Brajesh Kumar Dubey
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Introduction (Continued...)
Lecture 3 - Introduction (Continued...)
Lecture 4 - Introduction (Continued...)
Lecture 5 - Introduction (Continued...)
Lecture 6 - Introduction (Continued...)
Lecture 7 - Municipal Solid Waste Characteristics and Quantities
Lecture 8 - Municipal Solid Waste Characteristics and Quantities (Continued...)
Lecture 9 - Municipal Solid Waste Characteristics and Quantities (Continued...)
Lecture 10 - Municipal Solid Waste Characteristics and Quantities (Continued...)
Lecture 11 - MSW Characteristics - Thermal Properties and Chemical Composition
Lecture 12 - Chemical Analysis Procedure
Lecture 13 - Chemical Analysis Procedure (Continued...)
Lecture 14 - Working with Data and Statistical Methods
Lecture 16 - Waste Management Rules 2016 (Continued...)
Lecture 17 - Swachh Bharat Mission and Smart Cities Program Overview
Lecture 18 - Storage of Solid Waste
Lecture 19 - MSW Collection System
Lecture 20 - MSW Collection System (Continued...)
Lecture 21 - Waste Collection and Transport
Lecture 22 - Waste Collection and Transport (Continued...)
Lecture 23 - Waste Collection and Transport (Continued...)
Lecture 24 - Waste Collection and Transport (Continued...)
Lecture 25 - Waste Collection and Transport (Continued...)
Lecture 26 - Collection System
Lecture 27 - Collection System (Continued...)
Lecture 28 - Review of MSW Management in Proposed Smart Cities
Lecture 29 - Biological Treatment of Waste

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NPTEL Video Course - Civil Engineering - NOC: Computational Hydraulics

Subject Co-ordinator - Dr. Anirban Dhar
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Computational Hydraulics
Lecture 2 - Problem Definition and Governing Equations (GE)
Lecture 3 - Classification of Problems based on Initial Condition (IC) and/or Boundary Conditions (BC)
Lecture 4 - Classification of Differential Equations
Lecture 5 - Numerical Methods
Lecture 6 - Finite Difference Approximation
Lecture 7 - Ordinary Differential Equation
Lecture 8 - Ordinary Differential Equation
Lecture 9 - Partial Differential Equation
Lecture 10 - Partial Differential Equation
Lecture 11 - Partial Differential Equation
Lecture 12 - Partial Differential Equation
Lecture 13 - Finite Volume Method - Overview
Lecture 14 - Finite Volume Method - BVP
Lecture 15 - Finite Volume Method - IBVP
Lecture 16 - Finite Volume Method - Conservation Law
Lecture 17 - Upwind Approach
Lecture 18 - Godunov Approach
Lecture 19
Lecture 20
Lecture 21 - Mesh-Tree Method
Lecture 22 - Mesh-Free Method
Lecture 23 - Mesh-Free Method
Lecture 24 - Numerical Method
Lecture 25 - Algebraic Equation
Lecture 26 - Algebraic Equation
Lecture 27 - Algebraic Equation
Lecture 28 - Algebraic Equation
Lecture 29 - Algebraic Equation

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Lecture 30 - Algebraic Equation
Lecture 31 - One-Dimensional Flow
Lecture 32 - Steady Two-Dimensional Flow
Lecture 33 - Unsteady Two-Dimensional Flow using Finite Difference Method
Lecture 34
Lecture 35
Lecture 36
Lecture 37
Lecture 38
Lecture 39
Lecture 40 - Steady Channel Flow
Lecture 41 - Steady Channel Flow
Lecture 42 - Steady Channel Flow
Lecture 43 - Steady Channel Flow
Lecture 44
Lecture 45
Lecture 46
Lecture 47
Lecture 48
Lecture 49 - Unsteady Flow in Pipes
Lecture 50 - Surface Water and Ground Water Interaction
Lecture 51 - Course Summary
NPTEL Video Course - Civil Engineering - NOC:Design of Steel Structures

Subject Co-ordinator - Prof. Damodar Maity
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Design of Steel Structures (Limit State Method)
Lecture 2 - Steel as a Structural Material
Lecture 3 - Limit State Design
Lecture 4 - Introduction to Connections
Lecture 5 - Introduction to Bolt Connections
Lecture 6 - Design of Ordinary Black Bolts
Lecture 7 - Worked out Examples on Design of Ordinary Black Bolts
Lecture 8 - Design of High Strength Friction Grip Bolts
Lecture 9 - Weld connection
Lecture 10 - Design of Fillet Welds
Lecture 11 - Design of Butt Welds
Lecture 12 - Design of Plug and Slot Weld
Lecture 13 - Eccentric Connection (Load Lying in Plane of Bolted Joint)
Lecture 14 - Design of Eccentric Connection (Load Lying in Plane of Bolted Joint)
Lecture 15 - Eccentric Connection (Load Lying in Plane of Welded Joint)
Lecture 16 - Eccentric Connection (Load Lying Perpendicular to Plane of Bolted Joint)
Lecture 17 - Design of Eccentric Connection (Load Lying Perpendicular to Plane of Bolted Joint)
Lecture 18 - Eccentric Connection (Load Lying Perpendicular to Plane of Welded Joint)
Lecture 19 - Tension Members and Net Area
Lecture 20 - Calculation of Net Area in Tension Members
Lecture 21 - Net area, Staggered bolt, Chain bolt, Staggered pitch, Deduction of area
Lecture 22 - Strength Calculation of Tension Members
Lecture 23 - Strength of Tension Members with Weld Connection
Lecture 24 - Steps for Design of Tension Members
Lecture 25 - Design Calculation for Tension Members
Lecture 26 - Design of Gusset Plate
Lecture 27 - Lug Angles
Lecture 28 - Splices in Tension Members
Lecture 29 - Compression Members

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Lecture 30 - Design Strength of Compression Members
Lecture 31 - Compressive Strength
Lecture 32 - Compressive Strength of Angle Struts
Lecture 33 - Compressive Strength of Double Angles
Lecture 34 - Design of Compression Members
Lecture 35 - Design of Builtup Compression Members
Lecture 36 - Lacing Systems
Lecture 37 - Design of Lacing Systems
Lecture 38 - Connection Design of Lacing Systems
Lecture 39 - Design of Double Lacing System
Lecture 40 - Batten Plates
Lecture 41 - Design of Batten Plates using Bolt Connection
Lecture 42 - Design of Batten Plates using Weld Connection
Lecture 43 - Design of Column Splices
Lecture 44 - Design of Column Splices due to Shear
Lecture 45 - Introduction to Flexural Members
Lecture 46 - Failure Modes of Flexural Members
Lecture 47 - Laterally Supported Beams
Lecture 48 - Design of Laterally Supported Beams
Lecture 49 - Laterally Supported Beams with High Shear
Lecture 50 - Laterally Unsupported Beams
Lecture 51 - Strength Calculation of Laterally Unsupported Beams
Lecture 52
Lecture 53
Lecture 54
Lecture 55
Lecture 56
Lecture 57
Lecture 58 - Worked out Example for Gantry Girder
Lecture 59 - Slab Base
Lecture 60 - Design of Slab Base
Lecture 61 - Eccentrically Loaded Base Plate
Lecture 62 - Gusset Base
Lecture 63 - Design of Gusset Base
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC: Reinforced Concrete Road Bridges

Subject Co-ordinator - Prof. Nirjhar Dhang
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Classification of Bridges
Lecture 3 - General Features of Design
Lecture 4 - IRC Loading
Lecture 5 - Design Codes
Lecture 6 - Working Stress Method
Lecture 7 - Limit State Method of Design as per IS456
Lecture 8 - Limit State Method of Design as per IRC 112
Lecture 9 - Design of Slab Bridges - Part I
Lecture 10 - Design of Slab Bridges - Part II
Lecture 11 - Design of Slab Bridges - Part III
Lecture 12 - Design of Slab Bridges - Part IV
Lecture 13 - Design of Slab Bridges - Part V
Lecture 14 - Design of Slab Bridges - Part VI
Lecture 15 - Abutment
Lecture 16 - Design of RCC T Beam Bridge - Part I
Lecture 17 - Design of RCC T Beam Bridge - Part II
Lecture 18 - Design of RCC T Beam Bridge - Part III
Lecture 19 - Design of RCC T Beam Bridge - Part IV
Lecture 20 - Summary and Closure
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC: Structural Analysis - I

Subject Co-ordinator - Prof. Amit Shaw
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Idealization of Structures, Threats and Responses
Lecture 3 - Static Equilibrium
Lecture 4 - Determinate and Indeterminate Structures
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NPTEL Video Course - Civil Engineering - NOC: Soil Mechanics, Geotechnical Engineering-I

Subject Co-ordinator - Prof. Dilip Kumar Baidya
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Soil Formation
Lecture 3 - Soil Classification
Lecture 4 - Soil Classification (Continued...)
Lecture 5 - Soil Classification (Continued...)
Lecture 6 - Three-phase diagram
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NPTEL Video Course - Civil Engineering - NOC: Introduction to Mineral Processing

Subject Co-ordinator - Prof. Arun Kumar Majumder

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 31 - Industrial Screening (Continued...)
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Subject Co-ordinator - Prof. Koushik Deb

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Civil Engineering - NOC: Theory of Elasticity

Subject Co-ordinator - Prof. Biswanath Banjerjee, Prof. Amit Shaw

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Civil Engineering - NOC: Fluid Inclusion in Mineral Principles, Methodology, Practice and Application

Subject Co-ordinator - Prof. M.K. Panigrahi
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Civil Engineering - NOC:Matrix Method of Structural Analysis
Subject Co-ordinator - Prof. Biswanath Banjerjee, Prof. Amit Shaw
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC: Plastic Waste Management

Subject Co-ordinator - Prof. Brajesh Kumar Dubey

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Plastics - Types
Lecture 3 - Plastics - Types (Continued...)
Lecture 4 - Plastics - Uses and Global Statistics
Lecture 5 - Plastics - Global Statistics
Lecture 6 - Plastic Waste Sources
Lecture 7 - Plastic Waste Sources (Continued...)
Lecture 8 - Plastic Waste Sources and Production
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Lecture 11 - Plastic Waste Management Rules 2016 (India)
Lecture 12 - Plastic Waste Management Rules (Continued...)
Lecture 13 - Plastic Waste Management Rules (Continued...)
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Lecture 15 - Global Rules and Regulations
Lecture 16 - Plastic Bans including China Sword Policy Implication on Global Plastic Waste Management
Lecture 17 - Plastic Bans - Global Examples
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Lecture 30 - Use of Waste Plastics in Road Construction
Lecture 31 - Possible Alternate Materials to Plastics - Greener Alternatives
Lecture 32 - Biodegradable Plastics
Lecture 33 - Greener Plastic Products
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NPTEL Video Course - Civil Engineering - NOC: Mass, Momentum and Energy Balances in Engineering Analysis

Subject Co-ordinator - Prof. Pavitra Sandilya

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Civil Engineering - Advanced Structural Analysis

Subject Co-ordinator - Prof. Devdas Menon
Co-ordinating Institute - IIT - Madras
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NPTEL Video Course - Civil Engineering - Finite Element Analysis

Subject Co-ordinator - Dr. B.N. Rao

Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Civil Engineering - Urban transportation planning

Subject Co-ordinator - Dr. V. Thamizh Arasan

Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Civil Engineering - Mechanics of Solids

Subject Co-ordinator - Prof. M.S. Sivakumar

Co-ordinating Institute - IIT - Madras

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC:Sustainable River Basin Management

Subject Co-ordinator - Dr. Franziska Steinbruch

Co-ordinating Institute - IGCS

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Lecture 84 - Example problems
Lecture 85 - Cylindrical polar coordinate system
Lecture 86 - Displacement field
Lecture 87 - Governing differential equation and solution
Lecture 88 - Example problems
Lecture 89 - Thin walled pressure vessels
Lecture 90 - General Principals
Lecture 91 - Different failure modes
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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC:Advanced Concrete Technology

Subject Co-ordinator - Prof. Manu Santhanam
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 26 - Mixture proportioning
Lecture 27 - Fresh concrete - Part 1
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NPTEL Video Course - Civil Engineering - NOC: Glass in Buildings: Design and Application

Subject Co-ordinator - Prof. K.N. Satyanarayana

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 21 - Introduction to Useful Daylighting in Buildings
Lecture 22 - Fundamentals of Daylighting - Part I
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Lecture 24 - Daylighting Strategies - Techniques - Part I - Video 1
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Lecture 28 - Daylighting Strategies - Techniques - Part II - Video 3
Lecture 29 - ECBC and Green Building Requirements

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Lecture 31 - Daylighting Controls - Part I
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Lecture 75 - Sustainability on Glass Processing
NPTEL Video Course - Civil Engineering - NOC: Advanced Topics in the Science and Technology of Concrete

Subject Co-ordinator - Prof. Manu Santhanam, Dr. Ravindra Gettu

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Calcium sulfoaluminate cement-based binder
Lecture 2 - Micro-structural characterisation of cementitious materials - Part 1
Lecture 3 - Micro-structural characterisation of cementitious materials - Part 2
Lecture 4 - Micro-structural characterisation of cementitious materials - Part 3
Lecture 5 - Interview with Prof Karen Scrivener
Lecture 6 - Performance of Fiber reinforced materials
Lecture 7 - Ultra-High performance concrete (UHPC)
Lecture 8 - Ultra-High performance concrete (UHPC)
Lecture 9 - Closed-Loop testing - Part 1
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Lecture 11 - Uni-axial tensile test of textile reinforced concrete (TRC) panel
Lecture 12 - Fiber reinforced concrete
Lecture 13 - Strain softening response of concrete Under uniaxial compression
Lecture 14 - Tension test of 7-wire steel strand
Lecture 15 - Bond Test of Strand-concrete System
Lecture 16 - Interview with Prof. S. P. Shah
Lecture 17 - Introduction to concrete durability
Lecture 18 - Sulphate attack of concrete
Lecture 19 - Development and performance approach for durability and service life production for structures
Lecture 20 - Colorimetric test to assess carbonation resistance in concrete
Lecture 21 - Experiments on durability index
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Lecture 23 - Chloride induced corrosion and service life of reinforced concrete structures - Part 1
Lecture 24 - Chloride induced corrosion and service life of reinforced concrete structures - Part 2
Lecture 25 - Corrosion control and cathodic protection of steel reinforcement
Lecture 26 - LCA of cement and concrete - Part 1
Lecture 27 - LCA of cement and concrete - Part 2
Lecture 28 - Chloride threshold testing using linear polarization resistance (LPR) and electrochemical impedance spectroscopy (EIS)
Lecture 29 - Interview with Prof George Sergi

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NPTEL Video Course - Civil Engineering - NOC: Infrastructure Planning and Managements

Subject Co-ordinator - Dr. Ashwin Mahalingam

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to infrastructure and the Transportation sector - Part 1A
Lecture 2 - Introduction to infrastructure and the Transportation sector - Part 1B
Lecture 3 - Introduction to infrastructure and the Transportation sector - Part 1C
Lecture 4 - Introduction to infrastructure and the Transportation sector - Part 1D
Lecture 5 - Introduction to Power and Telecom sectors - Part 2A
Lecture 6 - Introduction to Power and Telecom sectors - Part 2B
Lecture 7 - Urban and Rural Infrastructure - Part 1A
Lecture 8 - Urban and Rural Infrastructure - Part 1B
Lecture 9 - Urban and Rural Infrastructure - Part 1C
Lecture 10 - Phases and Players in Infrastructure Planning and Managements - Part 2A
Lecture 11 - Phases and Players in Infrastructure Planning and Managements - Part 2B
Lecture 12 - Infrastructure Economics and Finance
Lecture 13 - Public-Private Partnership for Infrastructure
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Lecture 16 - Public-Private Partnership for Infrastructure - Case Studies - Part 3
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Lecture 19 - Risks and Challenges in Infrastructure - Part 3
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Lecture 22 - Political Risk in Infrastructure - Part 1
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Lecture 26 - Actor Mapping and Social Network Analysis - Part 1
Lecture 27 - Actor Mapping and Social Network Analysis - Part 2
Lecture 28 - Fair Process and Negotiations - Part 1
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Lecture 32 - Sustainable Development and Socio - Economic Analysis - Part 1
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Lecture 36 - Flexibilities and Options on Projects - Part 1
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Lecture 40 - Case Study on PPP Project - Delhi Airport
Lecture 41 - Case Study on PPP Project - Tirupur Water Supply
Lecture 42 - Polycentric Governance and Incomplete Design - Part 1
Lecture 43 - Polycentric Governance and Incomplete Design - Part 2
Lecture 44 - Successful Project Delivery Strategies - Part 1
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Lecture 46 - Guest Lecture by K Venkatesh
Lecture 47 - Guest Lecture by Kavitha Selvaraj
NPTEL Video Course - Civil Engineering - NOC: Design of Masonry Structures

Subject Co-ordinator - Prof. Arun Menon
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introductory - Part I
Lecture 2 - Introductory - Part II
Lecture 3 - Introductory - Part III
Lecture 4 - Introductory - Part IV
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Lecture 36 - Special Topics - Confined Masonry
Lecture 37 - Special Topics - Masonry Infill in RC Frames
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Lecture 39 - Special Topics - Assessment of Existing Masonry Structures - Part II
Lecture 40 - Special Topics - Assessment of Existing Masonry Structures - Part III
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - Foundation Engineering

Subject Co-ordinator - Prof. Priti Maheswari, Prof. N.K. Samadhiya, Prof. Mahendra Singh

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 28 - Foundation Engineering - 2
Lecture 29 - Foundation Engineering - 3
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - Modern Surveying Techniques

Subject Co-ordinator - Prof. S.K. Ghosh
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Geographic Information System An Introduction
Lecture 2 - Introduction to Global Positioning System
Lecture 3 - GPS Positioning Methods
Lecture 4 - GPS Solutions and Errors
Lecture 5 - GPS Application
Lecture 6 - Remote Sensing Introduction
Lecture 7 - Electromagnetic Spectrum
Lecture 8 - Sensors and Platform
Lecture 9 - Sensors and Platform
Lecture 10 - Image Interpretation
Lecture 11 - Statistical Evaluation of RS Data
Lecture 12 - Rectification and Restoration
Lecture 13 - Image Enhancement
Lecture 14 - Image Transformation
Lecture 15 - Orthogonal Transformation
Lecture 16 - Image Classification (Supervised Classification)
Lecture 17 - Image Classification (Unsupervised Classification)
Lecture 18 - Spatial Filtering-Noise Removal
Lecture 19 - Spatial Filtering-Edge Removal
Lecture 20 - Photogramatic-Basic concepts of a single photography
Lecture 21 - Stereoscopy-Basic concepts
Lecture 22 - Stereoscopy-Geometry of overlapping photograph
Lecture 23 - Terrestrial Photogrammetry
Lecture 24 - Digital Elevation Model-Basic Concepts
Lecture 25 - Digital Elevation Model-Data Input and Stamping
Lecture 26 - Digital Elevation Model-Surface representation and analysis
Lecture 27 - GIS-Introductory Concepts
Lecture 28 - GIS-Data Input
Lecture 29 - Data Verification and Editing

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Lecture 30 - GIS Data Model
Lecture 31 - GIS Data Base
Lecture 32 - Spatial Analysis
Lecture 33 - Map Overlay and Spatial Correlation
Lecture 34 - Application to Drought Management
Lecture 35 - GIS base planning model for educational facilities in rural areas
Lecture 36 - Application extraction of building attributes
Lecture 37 - Zonal based tourism planning
Lecture 38 - Zonal Planning using remote sensing
Lecture 39 - Municipal GIS for assessment of property tax
Lecture 40 - Application of remote sensing
NPTEL Video Course - Civil Engineering - Transportation Engineering II

Subject Co-ordinator - Prof. Rajat Rastogi

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Railway Engineering
Lecture 2 - Gauges and Permanent Way
Lecture 3 - Wheel and Axles, Coning of Wheels
Lecture 4 - Track Resistances, Hauling Capacity
Lecture 5 - Track Modulus, Stresses in Track
Lecture 6 - Stresses in Components of Track
Lecture 7 - Rails
Lecture 8 - Creep in Rails
Lecture 9 - Wears & Failures in Rails
Lecture 10 - Jointed or Welded rails
Lecture 11 - Sleepers
Lecture 12 - Ballast
Lecture 13 - Fastenings
Lecture 14 - Geometric Design - Alignment of Track
Lecture 15 - Horizontal Curve and Super elevation
Lecture 16 - Speeds on Track
Lecture 17 - Transition Curve & Widening of Track
Lecture 18 - Vertical Curve & Gradients
Lecture 19 - Turnouts - Components
Lecture 20 - Crossing and Design of Turnout
Lecture 21 - Track Junctions and Designs
Lecture 22 - Signals - Part 1
Lecture 23 - Signals - Part 2
Lecture 24 - Train Control Systems
Lecture 25 - Interlocking of Track
Lecture 26 - High Speed Tracks
Lecture 27 - Introduction of Air Transport
Lecture 28 - Aircraft Characteristics
Lecture 29 - Aircraft Controls, Airport Site&Size Selection
NPTEL Video Course - Civil Engineering - NOC: Introduction to Geographic Information Systems

Subject Co-ordinator - Dr. Arun K. Saraf

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - What is Geographic Information Systems?
Lecture 2 - Different components of GIS
Lecture 3 - Different types of vector data and concept of topology
Lecture 4 - Raster data models and comparisons with vector
Lecture 5 - TIN data model and comparisons with raster
Lecture 6 - Non-spatial data (attributes) and their type
Lecture 7 - Raster data compression techniques
Lecture 8 - Spatial database systems and their types
Lecture 9 - Pre-processing of spatial datasets
Lecture 10 - Geo-referencing
Lecture 11 - Different map projections
Lecture 12 - Spatial interpolation techniques
Lecture 13 - Digital Elevation Models and different types of resolutions
Lecture 14 - Quality assessment of freely available DEMS
Lecture 15 - GIS analysis - Part 1
Lecture 16 - GIS analysis - Part 2 (Overlaying Operations)
Lecture 17 - GIS analysis - Part 3 (Buffer Analysis)
Lecture 18 - Classification Methods
Lecture 19 - Errors in GIS and Key elements of maps
Lecture 20 - Limitations of GIS
NPTEL Video Course - Civil Engineering - NOC: Principles and Applications of Building Science

Subject Co-ordinator - Dr. E. Rajasekar
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Solar Geometry
Lecture 2 - Climate Classification
Lecture 3 - Thermal Comfort in Built Environment - 1
Lecture 4 - Thermal Comfort in Built Environment - 2
Lecture 5 - Thermal Adaptation
Lecture 6 - Bioclimatic Assessment
Lecture 7 - Thermal Performance of Building Envelop
Lecture 8 - Thermal Performance of Building Envelop - Indices and Measures (1/2)
Lecture 9 - Thermal Performance of Building Envelop - Indices and Measures (2/2)
Lecture 10 - Glazing and Shading Systems
Lecture 11 - Shading Analysis
Lecture 12 - Energy Efficiency and Simulation
Lecture 13 - Building Acoustics - Basics
Lecture 14 - Sound Propagation
Lecture 15 - Acoustic Quality Indicators (1/2)
Lecture 16 - Acoustic Quality Indicators (2/2)
Lecture 17 - Acoustic Design Considerations
Lecture 18 - Acoustic Materials
Lecture 19 - Lighting - Basics
Lecture 20 - Lighting Â— Design Concepts
NPTEL Video Course - Civil Engineering - NOC:Digital Land Surveying And Mapping

Subject Co-ordinator - Prof. Jayanta Kumar Ghosh
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Applications
Lecture 2 - Fundamentals and Operations
Lecture 3 - Overview of Digital Land Surveying
Lecture 4 - Introduction of GPS
Lecture 5 - GPS Signal (Civilian Perspective)
Lecture 6 - GPS User Segment
Lecture 7 - GPS Positioning of Control Point
Lecture 8 - Demonstration of GPS Receivers, Software and Positioning of Control Point
Lecture 9 - GPS Position
Lecture 10 - Principle of GPS Positioning and GPS Observables
Lecture 11 - Errors in GPS Observables
Lecture 12 - GPS Data Pre-processing
Lecture 13 - GPS Data Pre-processing
Lecture 14 - GPS Data Processing
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Lecture 16 - Quality Assessment of GPS Surveying
Lecture 17 - Introduction to Total Station
Lecture 18 - Parts of Total Station
Lecture 19 - Accessories of Total Station
Lecture 20 - Handling and Setting of Total Station
Lecture 21 - Measurement of Distance
Lecture 22 - Measurement of Distance Using TS
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Lecture 24 - Measurement of Vertical Angle and Height Using TS
Lecture 25 - Errors in Total Station
Lecture 26 - Other Errors in Total Station
Lecture 27 - Errors and Quality of Surveying Measurements
Lecture 28 - Error Propagation and Survey Specifications
Lecture 29 - Basics of Vertical Representation

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Lecture 30 - Contouring
Lecture 31 - Mapping Fundamentals
Lecture 32 - Mapping Basics
Lecture 33 - Mapping Software
Lecture 34 - Automated Mapping
Lecture 35 - Working Steps
Lecture 36 - Establishment of Control Point
Lecture 37 - Detailing of Digital Land Surveying
Lecture 38 - Demonstration of Digital Land Survey Detailing
Lecture 39 - Data Preparation and Map Making
Lecture 40 - Overview of the Course
NPTEL Video Course - Civil Engineering - NOC:Digital Image Processing of Remote Sensing Data

Subject Co-ordinator - Dr. Arun K. Saraf
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Remote-sensing Image and How it is represented
Lecture 2 - Different Techniques of Image Acquisition
Lecture 3 - Why is Digital Image processing Important?
Lecture 4 - Image characteristics and Different Resolutions in Remote Sensing
Lecture 5 - Electromagnetic spectrum, solar reflection, and thermal emission
Lecture 6 - Color Representation and Transformations
Lecture 7 - Image histograms and statistics
Lecture 8 - Geo-referencing Techniques
Lecture 9 - Image Enhancement Techniques part 1
Lecture 10 - Image Enhancement Techniques part 2
Lecture 11 - Multispectral Transform, Scatter Plot, Principal Component Analysis and Decorrelation Stretch
Lecture 12 - Spatial Filtering Techniques
Lecture 13 - Frequency Domain Fourier Transformation
Lecture 14 - Basic Image Compression Techniques and Different Image File Formats
Lecture 15 - Image Classification Techniques
Lecture 16 - Principles of Image Interpretation
Lecture 17 - SAR Interferometry (InSAR) Techniques
Lecture 18 - Image Merging and Image Mosaicing Techniques
Lecture 19 - Application of Image Analysis
Lecture 20 - Limitations and Future of Digital Image Processing
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC: Applied Environmental Microbiology

Subject Co-ordinator - Dr. Gargi Singh

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - I
Lecture 2 - Introduction - II
Lecture 3 - Cell Structure - I
Lecture 4 - Cell Structure - II
Lecture 5 - Central Dogma - I
Lecture 6 - Central Dogma - II
Lecture 7 - Microbial Energetics - I
Lecture 8 - Microbial Energetics - II
Lecture 9 - Microbial Energetics - III
Lecture 10 - Microbial Energetics - IV
Lecture 11 - Microbial Metabolism - I
Lecture 12 - Microbial Metabolism - II
Lecture 13 - Functional Diversity of Bacteria - I
Lecture 14 - Functional Diversity of Bacteria - II
Lecture 15 - Functional Diversity of Bacteria - III
Lecture 16 - Microbial Ecosystem - I
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Lecture 25 - Environmental Genomics - V
Lecture 26 - Microbial Symbiosis - I
Lecture 27 - Microbial Symbiosis - II
Lecture 28 - Virus - I
Lecture 29 - Virus - II

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Lecture 30 - Applied Environmental Microbiology
Lecture 31 - Techniques in Environmental Microbiology - I
Lecture 32 - Techniques in Environmental Microbiology - II
Lecture 33 - Bioremediation - I
Lecture 34 - Bioremediation - II
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Lecture 36 - Wastewater Microbiology - I
Lecture 37 - Wastewater Microbiology - II
Lecture 38 - Built Microbiology
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NPTEL Video Course - Civil Engineering - NOC:Digital Elevation Models and Applications

Subject Co-ordinator - Prof. Arun K. Saraf
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Concept of Digital Elevation Model and How It Is Represented
Lecture 2 - Various Techniques to Generate Digital Elevation Model - 1
Lecture 3 - Various Techniques to Generate Digital Elevation Model - 2
Lecture 4 - Various Techniques to Generate Digital Elevation Model - 3
Lecture 5 - Importance of Spatial Resolution With DEMs
Lecture 6 - How To Assess Quality of DEM?
Lecture 7 - Integration of DEMs With Satellite Data
Lecture 8 - Common Derivatives of DEMs- Slope and Aspect
Lecture 9 - Triangulated Irregular Network (TIN) and Its Derivatives
Lecture 10 - Shaded Relief Models and Their Applications
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Lecture 14 - DEMs Derivatives - 4
Lecture 15 - DEM Based Surface Hydrologic Modelling - 1
Lecture 16 - DEM Based Surface Hydrologic Modelling - 2
Lecture 17 - DEM and DAM Simulation and Its Application In Ground Water Hydrology
Lecture 18 - Applications of DEMs In Solar and Wind Energy Potential Estimations
Lecture 19 - Applications of DEMs In Viewshed and Flood Hazard Mapping
Lecture 20 - DEMs Sources, Limitations and Future of Digital Elevation Models

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC:Environmental Engineering-Chemical Processes

Subject Co-ordinator - Prof. Bhanu Prakash Vellanki

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction, Fundamentals of Equilibrium and Kinetics
Lecture 2 - Equilibrium-Process Feasibility, Gibbs Energy-Standard Condition
Lecture 3 - Gibbs Free Energy-Non Standard Conditions - I
Lecture 4 - Gibbs Free Energy-Non Standard Conditions - II
Lecture 5 - Phase Equilibrium
Lecture 6 - Component Balance
Lecture 7 - Reaction Kinetics
Lecture 8 - Rate of Reaction - I
Lecture 9 - Rate of Reaction - II, Types of Reactors
Lecture 10 - Mass Balance on different types of Reactors
Lecture 11 - Material Balance for Complex Reactions
Lecture 12 - Material Balance for Reversible Reactions
Lecture 13 - Determination of Kinetic Equations
Lecture 14 - Acid-Base Reactions
Lecture 15 - Acid Dissociation Constant, Strength of Acid
Lecture 16 - Ionization Fractions
Lecture 17 - Introduction to VMINTEQ
Lecture 18 - Estimation of pH using VMINTEQ
Lecture 19 - Mixing Problems
Lecture 20 - Inverse Dose Problems
Lecture 21 - logC-pH Diagram
Lecture 22 - Carbonate System
Lecture 23 - Carbonate System
Lecture 24 - VMINTEQ
Lecture 25 - VMINTEQ
Lecture 26 - VMINTEQ
Lecture 27 - Buffer Intensity
Lecture 28 - Alkalinity
Lecture 29 - Alkalinity

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Lecture 30 - Acidity and its Applications
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Lecture 32 - Mixing of Two Solutions and Conservative Quantities - I
Lecture 33 - Mixing of Two Solutions and Conservative Quantities - II
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Lecture 36 - Aqueous Complexes
Lecture 37 - Aqueous Complexes
Lecture 38 - Aqueous Complexes of Aluminium (Al)
Lecture 39 - Aqueous Complexes of Mercury (Hg)
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Lecture 41 - Applications of Precipitation and Dissolution
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Lecture 43 - Equilibrium of Precipitation - II
Lecture 44 - Examples Related to Equilibrium of Precipitation
Lecture 45 - Other Examples of Equilibrium of Precipitation
Lecture 46 - Solubility and Competitive Precipitation
Lecture 47 - Predominance Area Diagram and Introduction to Redox Processes
Lecture 48 - Redox Reactions and its Applications
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Lecture 50 - Kinetics of Redox Processes
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Lecture 59 - Applications of Ecell
Lecture 60 - logC-Pe and pH-Pe Diagram
NPTEL Video Course - Civil Engineering - NOC: Environmental Remediation of Contaminated Sites

Subject Co-ordinator - Prof. Bhanu Prakash Vellanki

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - I
Lecture 2 - Introduction - II
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Lecture 4 - Introduction to hazardous waste laws and risk assessment
Lecture 5 - The major aspects of Risk Assessment
Lecture 6 - Risk Characterization
Lecture 7 - Risk Assessment - Deterministic approach
Lecture 8 - Risk Assessment - Stochastic Approach
Lecture 9 - Hazardous Waste laws - The TCLP Test
Lecture 10 - Hazardous rules and regulations
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Lecture 12 - Remediation of contaminated GW- Javendel et al-'s approach
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Lecture 25 - Mechanism of natural attenuation and the affecting factors
Lecture 26 - Pathways of Contaminant Transport and Rate of Degradation of Contaminant
Lecture 27 - Rate of Degradation of Contaminant when advection is considered
Lecture 28 - Rate of Degradation of Contaminant when both diffusion and advection are considered
Lecture 29 - Example of Rate of Degradation in natural attenuation

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Lecture 30 - Case study
Lecture 31 - Results of Case Study
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Lecture 33 - Case Study
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Lecture 36 - Introduction to Solidification and Stabilisation and Case Study
Lecture 37 - Different contaminant reactions during solidification and stabilisation
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Lecture 39 - Calculations for fractions of binders, admixtures, waste and water used in solidification
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Lecture 41 - Discussion of TCLP approach (Continued...) and Cost estimation of Solidification
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npTEL Video Course - Civil Engineering - NOC:Global Navigation Satellite Systems and Applications

Subject Co-ordinator - Prof. Arun K. Saraf
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Global Navigation Satellite System (GNSS)
Lecture 2 - How position is determined by the GNSS? - Part I
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Lecture 4 - How position is determined by the GNSS? - Part III
Lecture 5 - NAVSTAR - Global Positioning System
Lecture 6 - Global Navigation Satellite System (GLONASS)
Lecture 7 - BeiDou Navigation Satellite System (BDS)
Lecture 8 - Indian Regional Navigation Satellite System (IRNSS)
Lecture 9 - GALILEO
Lecture 10 - Quasi-Zenith Satellite System (QZSS)
Lecture 11 - Differential Global Navigation Satellite System (DGNSS)
Lecture 12 - Real-Time Kinematic (RTK)
Lecture 13 - Satellite Based Augmentation System (SBAS)
Lecture 14 - GNSS Errors
Lecture 15 - GNSS Correction Methods
Lecture 16 - Why altitude estimated by GNSS receivers is not very accurate
Lecture 18 - Global Navigation Satellite Systems (GNSS) Applications - II
Lecture 19 - GNSS
Lecture 20 - GNSS
NPTEL Video Course - Civil Engineering - Ground Improvement Techniques

Subject Co-ordinator - Dr. G.L. Sivakumar Babu

Co-ordinating Institute - IISc - Bangalore

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Lecture 2 - Classification of ground modification techniques
Lecture 3 - Emerging trends in ground improvement
Lecture 4 - Mechanical modification
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Lecture 6 - Deep compaction
Lecture 7 - Dynamic compaction
Lecture 8 - Vibro-compaction methods
Lecture 9 - Case studies in stone columns
Lecture 10 - Prefabricated Vertical Drains (PVDS) - I
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Lecture 33 - Soil Nailing
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Lecture 35 - Design of embankments on soft soil using geocells, Use of geosynthetics for filtration and drainage
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Lecture 38 - Fatigue failure & Vibration energy flow models
Lecture 39 - Problem solving session - 1
Lecture 40 - Problem solving session - 2
Lecture 41 - Problem solving session - 3
Lecture 42 - Problem solving session - 4
NPTEL Video Course - Civil Engineering - Water Resources Systems : Modeling Techniques and Analysis

Subject Co-ordinator - Prof. P.P. Mujumdar

Co-ordinating Institute - IISc - Bangalore

Lecture 1 - Introduction
Lecture 2 - Definitions and types of systems
Lecture 3 - Optimization
Lecture 4 - Optimization
Lecture 5 - Constrained optimization (1)
Lecture 6 - Constrained optimization (2)
Lecture 7 - Kuhn-Tucker conditions and Introduction to Linear Programming
Lecture 8 - Linear Programming
Lecture 9 - Linear Programming
Lecture 10 - Linear Programming
Lecture 11 - Linear Programming
Lecture 12 - Linear Programming
Lecture 13 - Linear Programming
Lecture 14 - Introduction to Dynamic Programming
Lecture 15 - Dynamic Programming
Lecture 16 - Dynamic Programming
Lecture 17 - Dynamic Programming
Lecture 18 - Simulation
Lecture 19 - Multi-objective planning
Lecture 20 - Reservoir sizing
Lecture 21 - Reservoir capacity using Linear Programming (1)
Lecture 22 - Reservoir capacity using Linear Programming (2)
Lecture 23 - Reservoir operation
Lecture 24 - Multi-reservoir systems
Lecture 25 - Stationary policy using Dynamic Programming
Lecture 26 - Hydropower generation
Lecture 27 - Basic probability theory (1)
Lecture 28 - Basic probability theory (2)
Lecture 29 - Chance constrained Linear Programming for reservoir operation and design (1)
Lecture 30 - Chance constrained Linear Programming for reservoir operation and design (2)
Lecture 31 - Stochastic Dynamic Programming for reservoir operation (1)
Lecture 32 - Stochastic Dynamic Programming for reservoir operation (2)
Lecture 33 - Stochastic Dynamic Programming for reservoir operation (3)
Lecture 34 - Fuzzy optimization (1)
Lecture 35 - Fuzzy optimization (2)
Lecture 36 - Fuzzy optimization for water quality control and reservoir operation
Lecture 37 - Conjunctive use of ground and surface water
Lecture 38 - Hydropower optimization
Lecture 39 - Crop yield optimization
Lecture 40 - Multi-basin and multi-reservoir systems
Lecture 30 - FEM for stability analysis. Euler-Bernoulli beam and general formulations
Lecture 31 - 3D beam element; plate element; imperfection sensitive structures; beams on elastic foundations
Lecture 32 - Dynamic analysis of stability and analysis of time varying systems
Lecture 33 - Dynamic analysis of stability and analysis of time varying systems
Lecture 34 - FE modelling of vehicle structure interactions
Lecture 35 - Inverse response sensitivity analysis
Lecture 36 - Inverse response sensitivity analysis (Continued...)
Lecture 37 - Introduction and review of continuum mechanics
Lecture 38 - Review of measures of strain and stress; balance laws
Lecture 39 - Total and updated Lagrangian formulations
Lecture 40 - Closure
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - Natural Language Processing

Subject Co-ordinator - Prof. Pushpak Bhattacharyya

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Stages of NLP
Lecture 3 - Stages of NLP Continue...
Lecture 4 - Two approaches to NLP
Lecture 5 - Sequence Labelling and Noisy Channel
Lecture 6 - Noisy Channel
Lecture 7 - Argmax Based Computation
Lecture 8 - Noisy Channel Application to NLP
Lecture 9 - Brief on Probabilistic Parsing & Start of Part of Speech Tagging
Lecture 10 - Part of Speech Tagging
Lecture 11 - Part of Speech Tagging counted ...
Lecture 12 - Part of Speech Tagging counted ... and Indian Language in Focus; Morphology Analysis
Lecture 13 - PoS Tagging contd..., Indian Language Consideration; Accuracy Measure
Lecture 14 - PoS Tagging; Fundamental Principle; Why Challenging; accuracy
Lecture 15 - PoS Tagging; Accuracy Measurement; Word categories
Lecture 16 - AI and Probability; HMM
Lecture 17 - HMM
Lecture 18 - HMM, Viterbi, Forward Backward Algorithm
Lecture 19 - HMM, Viterbi, Forward Backward Algorithm (Continued...)
Lecture 20 - HMM, Forward Backward Algorithms, Baum Welch Algorithm
Lecture 21 - HMM, Forward Backward Algorithms, Baum Welch Algorithm (Continued...)
Lecture 22 - Natural Language Processing and Informational Retrieval
Lecture 23 - CLIA; IR Basics
Lecture 24 - IR Models
Lecture 25 - IR Models
Lecture 26 - NLP and IR
Lecture 27 - Least Square Method; Recap of PCA; Towards Latent Semantic Indexing (LSI)
Lecture 28 - PCA; SVD; Towards Latent Semantic Indexing (LSI)
Lecture 29 - Wordnet and Word Sense Disambiguation

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Lecture 30 - Wordnet and Word Sense Disambiguation (Continued...)
Lecture 31 - Wordnet; Metonymy and Word Sense Disambiguation
Lecture 32 - Word Sense Disambiguation
Lecture 33 - Word Sense Disambiguation; Overlap Based Method; Supervised Method
Lecture 34 - Word Sense Disambiguation
Lecture 35 - Word Sense Disambiguation
Lecture 36 - Resource Constrained WSD; Parsing
Lecture 37 - Parsing
Lecture 38 - Parsing Algorithm
Lecture 39 - Parsing Ambiguous Sentences; Probabilistic Parsing
Lecture 40 - Probabilistic Parsing Algorithms
Lecture 30 - NP-Completeness - V
Lecture 31 - NP-Completeness - VI
Lecture 32 - Approximation Algorithms
Lecture 33 - Approximation Algorithms
Lecture 34 - Approximation Algorithms for NP
NPTEL Video Course - Computer Science and Engineering - Software Engineering

Subject Co-ordinator - Prof. N.L. Sarda, Prof. Umesh Bellur, Prof. Rushikesh K Joshi

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Software Engineering - Challenges
Lecture 2 - Introduction to Software Engineering
Lecture 3 - Overview of Phases
Lecture 4 - Overview of Phases
Lecture 5 - Requirements Engineering / Specification
Lecture 6 - Formal Specification
Lecture 7 - Algebraic Specification Methods
Lecture 8 - Systems Modeling Overview
Lecture 9 - Process Modeling - DFD, Function Decomp
Lecture 10 - Process Modeling - DFD, Function Decomp
Lecture 11 - Data Modeling - ER Diagrams, Mapping
Lecture 12 - Data Modeling - ER Diagrams, Mapping
Lecture 13 - Production Quality Software - Introduction
Lecture 14 - Software Design - Primary Consideration
Lecture 15 - Design Patterns
Lecture 16 - Class and Component Level Design
Lecture 17 - Architectural Design
Lecture 18 - Software Testing - I
Lecture 19 - Software Testing - II
Lecture 20 - Structural Programming and Some implementation
Lecture 21 - Software Metrics and Quality
Lecture 22 - Verification and Validation
Lecture 23 - Case Study
Lecture 24 - Case Study
Lecture 25 - Software Evolution
Lecture 26 - Agile Development
Lecture 27 - Software Reuse CBSE
Lecture 28 - Reuse Continued
Lecture 29 - Introduction to Project Management

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Lecture 30 - Project Scope Management
Lecture 31 - Project Time Management
Lecture 32 - Estimation - I
Lecture 33 - Estimation - II
Lecture 34 - Project Quality Management
Lecture 35 - Quality Management Systems - I
Lecture 36 - Quality Management Systems
Lecture 37 - Project Configuration Management
Lecture 38 - Project Risk Management
Lecture 39 - Other PM Processes
Lecture 30 - Week 6 Assignment Solving
Lecture 31 - Functional Testing
Lecture 32 - Input Space Partitioning
Lecture 33 - Input Space Partitioning
Lecture 34 - Input Space Partitioning Coverage Criteria
Lecture 35 - Syntax-Based Testing
Lecture 36 - Mutation Testing
Lecture 37 - Mutation Testing for Programs
Lecture 38 - Mutation Testing
Lecture 39 - Mutation Testing Vs. Graphs and Logic Based Testing
Lecture 40 - Assignment Solving for Week8
Lecture 41 - Mutation testing
Lecture 42 - Mutation Testing
Lecture 43 - Mutation testing
Lecture 44 - Software Testing Course
Lecture 45 - Testing of web Applications and Web Services
Lecture 46 - Testing of web Applications and Web Services
Lecture 47 - Testing of web Applications and Web Services
Lecture 48 - Testing of Object-Oriented Applications
Lecture 49 - Testing of Object-Oriented Applications
Lecture 50 - Symbolic Testing - 1
Lecture 51 - Symbolic Testing - 2
Lecture 52 - DART
Lecture 53 - DART
Lecture 54 - DART
Lecture 55 - Testing of Object-Oriented Applications
Lecture 56 - Testing of Mobile Applications
Lecture 57 - Non-Functional System Testing
Lecture 58 - Regression Testing
Lecture 59 - Assignment
Lecture 60 - Software Testing
NPTEL Video Course - Computer Science and Engineering - NOC: Design and Pedagogy of the Introductory Programming Course

Subject Co-ordinator - Prof. Abhiram G Ranade
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Overview
Lecture 2 - Introduction and Survey.0
Lecture 3 - Introduction and Survey.1
Lecture 4 - Introduction and Survey.2
Lecture 5 - Basic Ideas in Our Approach.0
Lecture 6 - Basic Ideas in Our Approach.1
Lecture 7 - Basic Ideas in Our Approach.2
Lecture 8 - Basic Ideas in Our Approach.3
Lecture 9 - Basic Ideas in Our Approach.4
Lecture 10 - Basic Ideas in Our Approach.5
Lecture 11 - Basic Ideas in Our Approach.6
Lecture 12 - Pedagogy.0
Lecture 13 - Pedagogy.1
Lecture 14 - Pedagogy.2
Lecture 15 - Pedagogy.3
Lecture 16 - Pedagogy.4
Lecture 17 - Advanced Programming Topics.0
Lecture 18 - Advanced Programming Topics.1
Lecture 19 - Advanced Programming topics.2
Lecture 20 - In class questions, Assignments, Examinations.0
Lecture 21 - In class questions, Assignments, Examinations.1
Lecture 22 - Summing up

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Lecture 30 - Computing Mathematical Functions - Part 2
Lecture 31 - Computing Mathematical Functions - Part 3
Lecture 32 - Computing Mathematical Functions - Part 4
Lecture 33 - Loops in various applications - Part 1
Lecture 34 - Loops in various applications - Part 2
Lecture 35 - Loops in various applications - Part 3
Lecture 36 - Loops in various applications - Part 4
Lecture 37 - Loops in various applications - Part 5
Lecture 38 - Functions - Part 1
Lecture 39 - Functions - Part 2
Lecture 40 - Functions - Part 3
Lecture 41 - Functions - Part 4
Lecture 42 - Functions - Part 5
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Lecture 44 - Recursion - Part 2
Lecture 45 - Recursion - Part 3
Lecture 46 - Virahanka Numbers - Part 1
Lecture 47 - Virahanka Numbers - Part 2
Lecture 48 - Virahanka Numbers - Part 3
Lecture 49 - Program Organization and Functions - Part 1
Lecture 50 - Program Organization and Functions - Part 2
Lecture 51 - Program Organization and Functions - Part 3
Lecture 52 - Program Organization and Functions - Part 4
Lecture 53 - Advanced Features of Functions - Part 1
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Lecture 55 - Advanced Features of Functions - Part 3
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Lecture 57 - Array Part-1 - Part 1
Lecture 58 - Array Part-1 - Part 2
Lecture 59 - Array Part-1 - Part 3
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Lecture 69 - Array Part-2 - Part 4
Lecture 70 - More on Arrays - Part 1
Lecture 71 - More on Arrays - Part 2
Lecture 72 - More on Arrays - Part 3
Lecture 73 - More on Arrays - Part 4
Lecture 74 - Arrays and recursion - Part 1
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Lecture 76 - Arrays and recursion - Part 3
Lecture 77 - Arrays and recursion - Part 4
Lecture 78 - Arrays and recursion - Part 5
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Lecture 80 - Structures - Part 2
Lecture 81 - Structures - Part 3
Lecture 82 - Structures - Part 4
Lecture 83 - Structures Part 2 - Part 1
Lecture 84 - Structures Part 2 - Part 2
Lecture 85 - Structures Part 2 - Part 3
Lecture 86 - Classes - Part 1
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Lecture 88 - Classes - Part 3
Lecture 89 - Classes - Part 4
Lecture 90 - Classes - Part 5
Lecture 91 - Classes - Part 6
Lecture 92 - Representing variable length entities - Part 1
Lecture 93 - Representing variable length entities - Part 2
Lecture 94 - Representing variable length entities - Part 3
Lecture 95 - Representing variable length entities - Part 4
Lecture 96 - Representing variable length entities - Part 5
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Lecture 98 - Representing variable length entities - Part 7
Lecture 99 - The Standard Library - Part 1
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Lecture 101 - The Standard Library - Part 3
Lecture 102 - The Standard Library - Part 4
Lecture 103 - The Standard Library - Part 5
Lecture 104 - Data structure based programming - Part 1
Lecture 105 - Data structure based programming - Part 2
Lecture 106 - Data structure based programming - Part 3
Lecture 107 - Data structure based programming - Part 4
Lecture 108 - Data structure based programming - Part 5
Lecture 109 - Medium size programs - Part 1
Lecture 110 - Medium size programs - Part 2
Lecture 111 - Medium size programs - Part 3
Lecture 112 - Medium size programs - Part 4
Lecture 113 - A graphical editor and solver for circuits - Part 1
Lecture 114 - A graphical editor and solver for circuits - Part 2
Lecture 115 - A graphical editor and solver for circuits - Part 3
Lecture 116 - A graphical editor and solver for circuits - Part 4
Lecture 117 - Cosmological simulation - Part 1
Lecture 118 - Cosmological simulation - Part 2
Lecture 119 - Cosmological simulation - Part 3
Lecture 120 - Cosmological simulation - Part 4
Lecture 30 - Addressing a local network and DHCP
Lecture 31 - Addressing a local network manually
Lecture 32 - Addressing in Public and Private Networks
Lecture 33 - Verifying Connectivity using Ping
Lecture 34 - Using network address translation to communicate on internet
Lecture 35 - Using Sub nets and Summary of addressing
Lecture 36 - Summary of the week
Lecture 37 - Analogy for the week 2
Lecture 38 - Discussion on dabbawala analogy
Lecture 39 - From dabbawala to routers and switches
Lecture 40 - What is routing?
Lecture 41 - Static routing in a router in CPT
Lecture 42 - How does a switch forwards packets CPT
Lecture 43 - How to add static route in a router? (CPT)
Lecture 44 - Traveler's dilemma
Lecture 45 - Discussing the Traveler's dilemma
Lecture 46 - From Traveler's dilemma to Dynamic Routing
Lecture 47 - Dynamic Routing with Distance Vector
Lecture 48 - Distance Vector Routing in Detail
Lecture 49 - Dynamic Routing with Link State
Lecture 50 - Setting up dynamic routing in Packet Tracer
Lecture 51 - Summary of the week
Lecture 52 - Introduction to analogy for week 3
Lecture 53 - Analogy for week 3
Lecture 54 - Questions on analogy for week 3
Lecture 55 - Understanding the new order requirements
Lecture 56 - Introduction to Tranport Layer
Lecture 57 - Introduction to TCP
Lecture 58 - Introduction to UDP
Lecture 59 - Exploring UDP on Cisco Packet Tracer
Lecture 60 - TCP Connection Establishment
Lecture 61 - TCP Connection Closure
Lecture 62 - Summary of TCP and UDP on Cisco Packet Tracer
Lecture 63 - The story of the delivery fiasco
Lecture 64 - From delivery fiasco to Port Numbers
Lecture 65 - Application Layer in depth
Lecture 66 - Port number in Wireshark
Lecture 67 - Summary of port number and PAT
Lecture 68 - Summary of the entire TCP IP stack
Lecture 69 - Introducing the analogy for week 4
Lecture 70 - The secret box
Lecture 71 - Questions on analogy for week 4
Lecture 72 - Secret of the secret box
Lecture 73 - From secret box to encryption
Lecture 74 - Introduction to security and CIA
Lecture 75 - Information Security and Defence in Depth
Lecture 76 - Information Classification and Access Control
Lecture 77 - Process Management
Lecture 78 - Introduction to Network Security
Lecture 79 - Network Breach and Countermeasures
Lecture 80 - Internet Security
Lecture 81 - Securing the Internet Usage
Lecture 82 - Internet Security Products
Lecture 83 - Personal Computing Device Recommendations
Lecture 84 - Responsible Behavior on the Internet
Lecture 85 - Best practices for home Network and Media Devices
Lecture 86 - Closing thoughts on security
Lecture 87 - The story of a family trip
Lecture 88 - The troubleshooting approach
Lecture 89 - Troubleshooting Physical and Data Link Layers
Lecture 90 - Troubleshooting Network Layer
Lecture 91 - Troubleshooting Transport and Application Layers
Lecture 92 - Troubleshooting Summary
Lecture 93 - Troubleshooting Heuristics
Lecture 94 - Troubleshooting Challenge - 1
Lecture 95 - Troubleshooting challenge - 2
Lecture 96 - Troubleshooting Challenge - 3
Lecture 97 - Thats How we Troubleshoot
Lecture 98 - Week Summary
Lecture 99 - Course Closure
Lecture 100 - Course Credits
Lecture 30 - Half-Plane Range Query
Lecture 31 - Well Separated Partitioning
Lecture 32 - Quadtree Epsilon-WSPD
Lecture 33 - Construction of Epsilon-WSPD
Lecture 34 - Epsilon-WSPD to Geometric Spanner
Lecture 35 - Epsilon-Nets & VC Dimension
Lecture 36 - Epsilon-Nets & VC Dimension contd
Lecture 37 - Geometric Set Cover
Lecture 38 - Geometric Set Cover (with Bounded VC Dimension)
Lecture 39 - Shape Representation
Lecture 40 - Shape Comparison
Lecture 30 - More on Resolution in FOL
Lecture 31 - Resolution
Lecture 32 - Resolution and Tableaux
Lecture 33 - Completeness of Tableaux Method
Lecture 34 - Completeness of the Hilbert System
Lecture 35 - First-Order Theories
Lecture 36 - Towards Logic Programming
Lecture 37 - Verification of Imperative Programs
Lecture 38 - Verification of WHILE Programs
Lecture 39 - References
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NPTEL Video Course - Computer Science and Engineering - Computer Architecture (Prof. Anshul Kumar)

Subject Co-ordinator - Prof. Anshul Kumar

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Computer Architecture
Lecture 2 - History of Computers
Lecture 3 - Instruction Set Architecture - I
Lecture 4 - Instruction Set Architecture - II
Lecture 5 - Instruction Set Architecture - III
Lecture 6 - Recursive Programs
Lecture 7 - Architecture Space
Lecture 8 - Architecture Examples
Lecture 9 - Performance
Lecture 10 - Performance
Lecture 11 - Binary Arithmetic, ALU Design
Lecture 12 - ALU Design, Overflow
Lecture 13 - Multiplier Design
Lecture 14 - Divider Design
Lecture 15 - Fast Addition, Multiplication
Lecture 16 - Floating Point Arithmetic
Lecture 17 - Processor Design - Introduction
Lecture 18 - Processor Design
Lecture 19 - Processor Design - Simple Design
Lecture 20 - Processor Design - Multi Cycle Approach
Lecture 21 - Processor Design - Control for Multi Cycle
Lecture 22 - Processor Design - Micro programmed Control
Lecture 23 - Processor Design - Exception Handling
Lecture 24 - Pipelined Processor Design Basic Idea
Lecture 25 - Pipelined Processor Design
Lecture 26 - Pipelined Processor Design
Lecture 27 - Pipelined Processor Design
Lecture 28 - Memory Hierarchy
Lecture 29 - Memory Hierarchy

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Lecture 30 - Memory Hierarchy
Lecture 31 - Memory Hierarchy
Lecture 32 - Memory Hierarchy
Lecture 33 - Input / Output Subsystem
Lecture 34 - Input / Output Subsystem
Lecture 35 - Input / Output Subsystem
Lecture 36 - Input / Output Subsystem
Lecture 37 - Input / Output Subsystem
Lecture 38 - Concluding Remarks
NPTEL Video Course - Computer Science and Engineering - Data Structures And Algorithms

Subject Co-ordinator - Prof. Naveen Garg
Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Data Structures and Algorithms
Lecture 2 - Stacks
Lecture 3 - Queues and Linked Lists
Lecture 4 - Dictionaries
Lecture 5 - Hashing
Lecture 6 - Trees
Lecture 7 - Tree Walks / Traversals
Lecture 8 - Ordered Dictionaries
Lecture 9 - Deletion
Lecture 10 - Quick Sort
Lecture 11 - AVL Trees
Lecture 12 - AVL Trees
Lecture 13 - Trees
Lecture 14 - Red Black Trees
Lecture 15 - Insertion in Red Black Trees
Lecture 16 - Disk Based Data Structures
Lecture 17 - Case Study
Lecture 18 - Tries
Lecture 19 - Data Compression
Lecture 20 - Priority Queues
Lecture 21 - Binary Heaps
Lecture 22 - Why Sorting
Lecture 23 - More Sorting
Lecture 24 - Graphs
Lecture 25 - Data Structures for Graphs
Lecture 26 - Two Applications of Breadth First Search
Lecture 27 - Depth First Search
Lecture 28 - Applications of DFS
Lecture 29 - DFS in Directed Graphs

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Lecture 30 - Applications of DFS in Directed Graphs
Lecture 31 - Minimum Spanning Trees
Lecture 32 - The Union
Lecture 33 - Prims Algorithm for Minimum Spanning Trees
Lecture 34 - Single Source Shortest Paths
Lecture 35 - Correctness of Dijkstra's Algorithm
Lecture 36 - Single Source Shortest Paths
NPTEL Video Course - Computer Science and Engineering - Introduction to Computer Graphics

Subject Co-ordinator - Prof. Prem K Kalra

Co-ordinating Institute - IIT - Delhi

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Lecture 1 - Introduction
Lecture 2 - Raster Graphics
Lecture 3 - Raster Graphics (Continued...)
Lecture 4 - Clipping
Lecture 5 - Polygon Clipping and Polygon Scan Conversion
Lecture 6 - Transformations
Lecture 7 - Transformations (Continued...)
Lecture 8 - 3D Viewing
Lecture 9 - 3D Viewing (Continued...)
Lecture 10 - Curves
Lecture 11 - Assignment - I
Lecture 12 - Curves (Continued...)
Lecture 13 - Curves (Continued...)
Lecture 14 - Curves (Continued...)
Lecture 15 - Curves (Continued...)
Lecture 16 - Surfaces
Lecture 17 - Surfaces (Continued...)
Lecture 18 - Surfaces (Continued...)
Lecture 19 - Surfaces (Continued...)
Lecture 20 - Hierarchical Models
Lecture 21 - Rendering
Lecture 22 - Rendering (Continued...)
Lecture 23 - Rendering (Continued...)
Lecture 24 - Ray Tracing
Lecture 25 - Ray Tracing (Continued...)
Lecture 26 - Ray Tracing (Continued...)
Lecture 27 - Assignment
Lecture 28 - Hidden Surface Elimination
Lecture 29 - Hidden Surface Elimination (Continued...)

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Lecture 30 - Hidden Surface Elimination (Continued...)
Lecture 31 - Fractals
Lecture 32 - Fractals (Continued...)
Lecture 33 - Computer Animation
Lecture 34 - Animation (Continued...)
Lecture 35 - Animation (Continued...)
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NPTEL Video Course - Computer Science and Engineering - Principles of Programming Languages

Subject Co-ordinator - Prof. S. Arun Kumar

Co-ordinating Institute - IIT - Delhi

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Lecture 1 - Introduction
Lecture 2 - Syntax
Lecture 3 - Grammars
Lecture 4 - Ambiguity
Lecture 5 - PLO
Lecture 6 - Semantics
Lecture 7 - Syntactic Classes
Lecture 8 - Transition Systems
Lecture 9 - PL0
Lecture 10 - Binding
Lecture 11 - Environments
Lecture 12 - Declarations
Lecture 13 - Commands
Lecture 14 - Stores
Lecture 15 - Summary
Lecture 16 - Declarations and Commands
Lecture 17 - Blocks
Lecture 18 - Qualification
Lecture 19 - Pragmatics
Lecture 20 - Data
Lecture 21 - Structured Data
Lecture 22 - Sequences
Lecture 23 - Control
Lecture 24 - Non-Determinacy
Lecture 25 - Programming Languages
Lecture 26 - Programming Languages
Lecture 27 - Programming Languages
Lecture 28 - Data as Functions
Lecture 29 - Data and Fixpoints

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Lecture 30 - Normal Forms
Lecture 31 - Programming Languages
Lecture 32 - Monomorphism
Lecture 33 - Polymorphism
Lecture 34 - Type Checking
Lecture 35 - Contexts
Lecture 36 - Abstracts
Lecture 37 - Procedures
Lecture 38 - Meanings
Lecture 39 - Parameters
Lecture 40 - The Future
NPTEL Video Course - Computer Science and Engineering - Parallel Computing

Subject Co-ordinator - Dr. Subodh Kumar

Co-ordinating Institute - IIT - Delhi

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Lecture 1 - Introduction
Lecture 2 - Parallel Programming Paradigms
Lecture 3 - Parallel Architecture
Lecture 4 - Parallel Architecture (case studies)
Lecture 5 - Open MP
Lecture 6 - Open MP (Continued.)
Lecture 7 - Open MP (Continued..)
Lecture 8 - Open MP & PRAM Model of Computation
Lecture 9 - PRAM
Lecture 10 - Models of Parallel Computation, Complexity
Lecture 11 - Memory Consistency
Lecture 12 - Memory Consistency & Performance Issues
Lecture 13 - Parallel Program Design
Lecture 14 - Shared Memory & Message Passing
Lecture 15 - MPI
Lecture 16 - MPI (Continued.)
Lecture 17 - MPI (Continued..)
Lecture 18 - Algorithmic Techniques
Lecture 19 - Algorithmic Techniques (Continued.)
Lecture 20 - Algorithmic Techniques (Continued..)
Lecture 21 - CUDA
Lecture 22 - CUDA (Continued.)
Lecture 23 - CUDA (Continued..)
Lecture 24 - CUDA (Continued...)
Lecture 25 - CUDA (Continued....)
Lecture 26 - CUDA (Continued.....)
Lecture 27 - CUDA (Continued......)
Lecture 28 - Algorithms, Merging & Sorting
Lecture 29 - Algorithms, Merging & Sorting (Continued.)

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Lecture 30 - Algorithms, Merging & Sorting (Continued..)
Lecture 31 - Algorithms, Merging & Sorting (Continued...)
Lecture 32 - Algorithms, Merging & Sorting (Continued....)
Lecture 33 - Lower Bounds Lock Free Synchronization, Load Stealing
Lecture 34 - Lock Free Synchronization, Graph Algorithms
NPTEL Video Course - Computer Science and Engineering - Operating Systems

Subject Co-ordinator - Prof. Sorav Bansal

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to UNIX System Calls - Part 1
Lecture 2 - Introduction to UNIX System Calls - Part 2
Lecture 3 - Threads, Address Spaces, Filesystem Devices
Lecture 4 - PC Architecture
Lecture 5 - x86 Instruction Set, GCC Calling Conventions
Lecture 6 - Physical Memory Map, I/O, Segmentation
Lecture 7 - Segmentation, Trap Handling
Lecture 8 - Traps, Trap Handlers
Lecture 9 - Kernel Data Structures, Memory Management
Lecture 10 - Segmentation Review, Introduction to Paging
Lecture 11 - Paging
Lecture 12 - Process Address Spaces Using Paging
Lecture 13 - Translation Lookaside Buffer, Large Pages, Boot Sector
Lecture 14 - Loading the kernel, Initializing the Page table
Lecture 15 - Setting up page tables for user processes
Lecture 16 - Processes in action
Lecture 17 - Process structure, Context Switching
Lecture 18 - Process Kernel stack, Scheduler, Fork, Context-Switch, Process Control Block, Trap Entry and Return
Lecture 19 - Creating the first process
Lecture 20 - Handling User Pointers, Concurrency
Lecture 21 - Locking
Lecture 22 - Fine-grained Locking and its challenges
Lecture 23 - Locking variations
Lecture 24 - Condition variables
Lecture 25 - Multiple producer, multiple consumer queue; semaphores; monitors
Lecture 26 - Transactions and lock-free primitives read/write locks
Lecture 27 - Synchronization in xv6
Lecture 28 - More synchronization in xv6
Lecture 29 - Demand Paging; Introduction to Page Replacement

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Lecture 30 - Page Replacement, Thrashing
Lecture 31 - Storage Devices, Filesystem Interfaces
Lecture 32 - File System Implementation
Lecture 33 - File System Operation
Lecture 34 - Cash Recovery and Logging
Lecture 35 - Logging in Linux ext3 filesystem
Lecture 36 - Protection and Security
Lecture 37 - Scheduling Policies
Lecture 38 - Lock-free multiprocessor coordination, Read-Copy-Update
Lecture 39 - Microkernel, Exokernel, Multikernel
Lecture 40 - Virtualization, Cloud Computing, Technology Trends

Subject Co-ordinator - Prof. Smruti R. Sarangi
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - The Language of Bits - Part-I
Lecture 3 - The Language of Bits - Part-II
Lecture 4 - The Language of Bits - Part-III
Lecture 5 - Assembly Language - Part-I
Lecture 6 - Assembly Language - Part-II
Lecture 7 - Assembly Language - Part-III
Lecture 8 - ARM Assembly Language - Part-I
Lecture 9 - ARM Assembly Language - Part-II
Lecture 10 - x86 Assembly Language - Part-I
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Lecture 16 - A Primer on Digital Logic - Part-III
Lecture 17 - Computer Arithmetic - Part-I
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Lecture 23 - Processor Design - Part-I
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Lecture 1 - Introduction to Parallel Programming
Lecture 2 - Parallel Architectures and Programming Models
Lecture 3 - Pipelining
Lecture 4 - Superpipelining and VLIW
Lecture 5 - Memory Latency
Lecture 6 - Cache and Temporal Locality
Lecture 7 - Cache, Memory bandwidth and Spatial Locality
Lecture 8 - Intuition for Shared and Distributed Memory architectures
Lecture 9 - Shared and Distributed Memory architectures
Lecture 10 - Interconnection networks in Distributed Memory architectures
Lecture 11 - OpenMP
Lecture 12 - Program with Single thread
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Lecture 17 - Shared Memory Consistency Models and the Sequential Consistency Model
Lecture 18 - Race Conditions
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Lecture 22 - Manual distribution of work and critical sections
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Lecture 26 - Matrix-Matrix operations (Matrix-Matrix Multiply)
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NPTEL Video Course - Computer Science and Engineering - NOC: Synthesis of Digital Systems

Subject Co-ordinator - Prof. Preeti Ranjan Panda
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Outline - What is Synthesis?
Lecture 2 - Chip Design Flow and Hardware Modelling
Lecture 3 - VHDL
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Lecture 6 - VHDL
Lecture 7 - Introduction to High-level Synthesis
Lecture 8 - Language front-end Design Representation
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Lecture 10 - Memory Modelling and Compiler Transformation in High Level Synthesis
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Lecture 13 - Scheduling in High Level Synthesis
Lecture 14 - Force Directed Scheduling and Register Allocation
Lecture 15 - High Level Synthesis and Timing Issues
Lecture 16 - Finite State Machine Synthesis
Lecture 17 - Finite State Machine Synthesis
Lecture 18 - The Retiming Problem
Lecture 19 - Efficient Solution to Retiming and Introduction to Logic Synthesis
Lecture 20 - Binary Decision Diagrams
Lecture 21 - Introduction to Logic Synthesis
Lecture 22 - Two-level Logic Optimisation
Lecture 23 - Multi-Level Logic Optimisation
Lecture 24 - Multi-level Logic Synthesis
Lecture 25 - Introduction to Timing Analysis
Lecture 26 - Timing Analysis and Critical Paths

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NPTEL Video Course - Computer Science and Engineering - NOC: Computer Organization and Architecture - A Pedagogical Aspect

Subject Co-ordinator - Prof. Arnab Sarkar, Prof. Jatindra Kumar Deka, Dr. Santosh Biswas

Co-ordinating Institute - IIT - Guwahati

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Lecture 2 - Digital Logic Building Blocks
Lecture 3 - Information Representation and Number Systems
Lecture 4 - Basic Elements of a Processor
Lecture 5 - Storage and I/O Interface
Lecture 6 - Execution of Program and Programming Languages
Lecture 7 - Components of Central Processing Unit (CPU) and External Interface
Lecture 8 - Main Memory
Lecture 9 - Instruction Execution
Lecture 10 - Instruction Format
Lecture 11 - Instruction Set
Lecture 12 - Addressing Modes
Lecture 13 - Flags and Conditional Instructions
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Lecture 16 - Control Signals and Timing Sequence
Lecture 17 - Control Signals for Complete Instruction Execution
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Lecture 20 - Design of Hardwired controlled Control Unit
Lecture 21 - Microinstructions and Microprograms
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Lecture 24 - Basics of Memory and Cache - Part 1
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NPTEL Video Course - Computer Science and Engineering - NOC: Randomized Algorithms

Subject Co-ordinator - Prof. Benny George K
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 5 - Expectation of Random Variables
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Lecture 9 - Median Algorithm
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Lecture 20 - Cover Time
Lecture 21 - Rapid Mixing
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Lecture 23 - Pratt's Certificate
Lecture 24 - Primality Testing
Lecture 25 - Miller Rabin Algorithm
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Lecture 28 - Randomized MST
Lecture 29 - Introduction to approximate counting

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NPTEL Video Course - Computer Science and Engineering - NOC: Parallel Algorithms

Subject Co-ordinator - Prof. Sajith Gopalan
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 19 - Cole's Merge Sort
Lecture 20 - Analysis of Cole's Merge Sort; Lower bound for sorting
Lecture 21 - Sorting Lower bound; Connected Components
Lecture 22 - Connected Components (CREW)
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Lecture 24 - Sorting on a 2D mesh
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Lecture 26 - Sorting, Offline routing on a 2D mesh
Lecture 27 - Sorting on a 3D mesh
Lecture 28 - Mesh of Trees, Hypercube
Lecture 29 - Hypercube (Continued...)

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC: Advanced Computer Architecture

Subject Co-ordinator - Prof. John Jose
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Review of Basic Computer Organization
Lecture 2 - Performance Evaluation Methods
Lecture 3 - Introduction to RISC Instruction Pipeline
Lecture 4 - Instruction Pipeline and Performance
Lecture 5 - Pipeline Hazards
Lecture 6 - Control Hazards and Branch Prediction
Lecture 7 - MIPS Pipeline for Multi-Cycle Operations
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Lecture 13 - Tutorial 3
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Lecture 15 - Exploiting ILP
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Lecture 20 - Tutorial 6
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Lecture 27 - Secondary Storage Systems
Lecture 28 - Tutorial 9
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Lecture 30 - Routing Techniques in Network on Chip
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Lecture 2 - Introduction to finite automata
Lecture 3 - Finite automata continued, deterministic finite automata (DFAs), language accepted by a DFA
Lecture 4 - Regular languages, their closure properties
Lecture 5 - DFAs solve set membership problems in linear time, pumping lemma
Lecture 6 - More examples of nonregular languages, proof of pumping lemma, pumping lemma as a game, converse of pumping lemma does not hold
Lecture 7 - A generalization of pumping lemma, nondeterministic finite automata (NFAs), computation trees for NFAs
Lecture 8 - Formal description of NFA, language accepted by NFA, such languages are also regular
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Lecture 21 - Languages generated by a cfg, leftmost derivation, more examples of cfgs and cfls
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Lecture 33 - Equivalence of acceptance by empty stack and acceptance by final state
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Lecture 38 - Simulation of multitape TMs by basic model. Nondeterministic TM (NDTM). Equivalence of NDTMs with TMs
Lecture 39 - Counter machines and their equivalence to basic TM model
Lecture 40 - TMs can simulate computers, diagonalization proof
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Lecture 42 - Separation of recursive and r.e. classes, halting problem and its undecidability
NPTEL Video Course - Computer Science and Engineering - Riemann Hypothesis and its Applications

Subject Co-ordinator - Prof. Manindra Agrawal

Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Computer Science and Engineering - Biometrics

Subject Co-ordinator - Prof. Phalguni Gupta

Co-ordinating Institute - IIT - Kanpur

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Subject Co-ordinator - Prof. Phalguni Gupta

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NPTEL Video Course - Computer Science and Engineering - Compiler Design (Prof. Sanjeev K Aggarwal)

Subject Co-ordinator - Prof. Sanjeev K Aggarwal

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Subject Co-ordinator - Prof. Satyadev Nandakumar
Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Computer Science and Engineering - NOC: Fundamentals of Database Systems

Subject Co-ordinator - Dr. Arnab Bhattacharyya

Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Computer Science and Engineering - NOC: Theory of Computation

Subject Co-ordinator - Prof. Raghunath Tewari

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NPTEL Video Course - Computer Science and Engineering - NOC:Modern Algebra

Subject Co-ordinator - Prof. Manindra Agrawal

Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Computer Science and Engineering - NOC:Advanced Graph Theory

Subject Co-ordinator - Dr.Rajiv Misra
Co-ordinating Institute - IIT - Patna

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NPTEL Video Course - Computer Science and Engineering - NOC: Cloud Computing and Distributed Systems

Subject Co-ordinator - Dr. Rajiv Misra
Co-ordinating Institute - IIT - Kanpur
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Lecture 2 - Virtualization
Lecture 3 - Hotspot Mitigation for Virtual Machine Migration
Lecture 4 - Server Virtualization
Lecture 5 - Software Defined Network
Lecture 6 - Geo-distributed Cloud Data Centers
Lecture 7 - Leader Election in Rings (Classical Distributed Algorithms)
Lecture 8 - Leader Election (Ring LE and Bully LE Algorithm)
Lecture 9 - Design of Zookeeper
Lecture 10 - Time and Clock Synchronization in Cloud Data Centers
Lecture 11 - Global State and Snapshot Recording Algorithms
Lecture 12 - Distributed Mutual Exclusion
Lecture 13 - Consensus in Cloud Computing and Paxos
Lecture 14 - Byzantine Agreement
Lecture 15 - Failures and Recovery Approaches in Distributed Systems
Lecture 16 - Design of Key-Value Stores
Lecture 17 - Design of HBase
Lecture 18 - Peer to Peer Systems in Cloud Computing
Lecture 19 - MapReduce
Lecture 20 - Introduction to Spark
Lecture 21 - Introduction to Kafka

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NPTEL Video Course - Computer Science and Engineering - NOC: Big Data Computing

Subject Co-ordinator - Dr. Rajiv Misra
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Lecture 33 - Spark GraphX and Graph Analytics - Part II
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NPTEL Video Course - Computer Science and Engineering - Cryptography and Network Security

Subject Co-ordinator - Dr. Debdeep Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - Real Time Systems

Subject Co-ordinator - Prof. Rajib Mall

Co-ordinating Institute - IIT - Kharagpur

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Lecture 2 - Real-Time System Characteristics
Lecture 3 - Few Basic Issues
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www.digimath.in
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NPTEL Video Course - Computer Science and Engineering - Artificial Intelligence (Prof. P. Dasgupta)

Subject Co-ordinator - Prof. P. Dasgupta

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Problem Solving by Search
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NPTEL Video Course - Computer Science and Engineering - Computer Networks

Subject Co-ordinator - Prof. Sujoy Ghosh
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - Data Communication

Subject Co-ordinator - Prof. Ajit Pal

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Computer Science and Engineering - Internet Technology

Subject Co-ordinator - Prof. Indranil Sengupta
Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course – Computer Science and Engineering – Programming and Data Structure

Subject Co-ordinator – Dr. P.P. Chakraborty
Co-ordinating Institute – IIT – Kharagpur
Sub-Titles – Available / Unavailable | MP3 Audio Lectures – Available / Unavailable

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NPTEL Video Course - Computer Science and Engineering - NOC: Programming in C++

Subject Co-ordinator - Prof. Partha Pratim Das

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Computer Science and Engineering - NOC:Complex Network : Theory and Application

Subject Co-ordinator - Prof. Animesh Mukherjee
Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Computer Science and Engineering - Fundamental Algorithms: Design and Analysis

Subject Co-ordinator - Prof. Sourav Mukhopadhyay
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Solving Recurrences
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Lecture 6 - Decision Tree
Lecture 7 - Linear Time Sorting
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Lecture 20 - Floyd Marshall
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC: Natural Language Processing

Subject Co-ordinator - Prof. Pawan Goyal

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Computer Science and Engineering - NOC:Embedded Systems Design

Subject Co-ordinator - Prof. Anupam Basu
Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Computer Science and Engineering - NOC: Wireless Ad Hoc and Sensor Networks

Subject Co-ordinator - Prof. Sudip Misra
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC:VLSI Physical Design

Subject Co-ordinator - Prof. Indranil Sengupta

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Computer Science and Engineering - NOC: Internetwork Security

Subject Co-ordinator - Prof. Sourav Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Computer Science and Engineering - NOC: Introduction to Algorithms and Analysis

Subject Co-ordinator - Prof. Sourav Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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Subject Co-ordinator - Prof. Indranil Sengupta

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Computer Science and Engineering - NOC: Introduction to Internet of Things

Subject Co-ordinator - Prof. Sudip Misra

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Computer Science and Engineering - NOC: Cloud Computing

Subject Co-ordinator - Prof. Soumya Kanti Ghosh

Co-ordinating Institute - IIT - Kharagpur

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Lecture 60 - Pointer in Structures
Lecture 61 - Dynamic Allocation and File
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC: Real Time Operating System

Subject Co-ordinator - Prof. Rajib Mall

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Basics of Task scheduling
Lecture 3 - Cyclic executives
Lecture 4 - Cyclic Scheduler
Lecture 5 - Cyclic Scheduler
Lecture 6 - Exercises on Frame size Selection
Lecture 7 - Event-driven schedulers
Lecture 8 - Rate Monotonic Algorithm
Lecture 9 - RMA Task Schedulability
Lecture 10 - Rate Monotonic Analysis
Lecture 11 - RMA Generalizations
Lecture 12 - Further RMA Generalizations
Lecture 13 - Resource Sharing among Real-Time Tasks
Lecture 14 - Solution to Priority Inversion Problem
Lecture 15 - Highest Locker Protocol
Lecture 16 - Priority Ceiling Protocol
Lecture 17 - PCP Priority Inversions
Lecture 18 - Analysis of PCP priority inversions
Lecture 19 - Some basic issues in Real-Time Operating Systems
Lecture 20 - Unix as a Real-Time operating System

----------------------------------------------------------------------------------
Lecture 1 - Introduction to soft computing
Lecture 2 - Introduction to Fuzzy Logic
Lecture 3 - Fuzzy membership functions (Continued...) and Defining Membership functions
Lecture 4 - Fuzzy operations
Lecture 5 - Fuzzy relations
Lecture 6 - Fuzzy Relations (Continued...) and Fuzzy propositions
Lecture 7 - Fuzzy implications
Lecture 8 - Fuzzy Inferences
Lecture 9 - Defuzzification techniques (Part-I)
Lecture 10 - Defuzzification Techniques (Part-I) (Continued...)
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Lecture 12 - Fuzzy Logic Controller (Continued...)
Lecture 13 - Fuzzy logic controller (Continued...)
Lecture 14 - Concept of Genetic Algorithm
Lecture 15 - Concept of Genetic Algorithm (Continued...) and GA Strategies
Lecture 16 - GA Operator
Lecture 17 - GA operator
Lecture 18 - GA Operator
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Lecture 25 - Multi-objective optimization problem solving (Continued...)
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Lecture 28 - Non-Pareto based approaches to solve MOOPs (Continued...)
Lecture 29 - Pareto-Based approaches to solve MOOPs
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Lecture 32 - Pareto-based approach to solve MOOPs (Continued...)
Lecture 33 - Pareto-based approach to solve MOOPs (Continued...)
Lecture 34 - Introduction to Artificial Neural Network
Lecture 35 - ANN Architectures
Lecture 36 - Training ANNs
Lecture 37 - Training ANNs (Continued....)
Lecture 38 - Training ANNs (Continued....)
Lecture 39 - Training ANNs (Continued....)
Lecture 40 - Soft computing tools
NPTEL Video Course - Computer Science and Engineering - NOC: Data Mining

Subject Co-ordinator - Prof. Pabitra Mitra

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction, Knowledge Discovery Process
Lecture 2 - Data Preprocessing - I
Lecture 3 - Data Preprocessing - II
Lecture 4 - Association Rules
Lecture 5 - Apriori algorithm
Lecture 6 - Rule generation
Lecture 7 - Classification
Lecture 8 - Decision Tree - I
Lecture 9 - Decision Tree - II
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Lecture 12 - Bayes Classifier - I
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Lecture 14 - Bayes Classifier - III
Lecture 15 - Bayes Classifier - IV
Lecture 16 - Bayes Classifier - V
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Lecture 25 - Support Vector Machine - IV
Lecture 26 - Support Vector Machine - V
Lecture 27 - Kernel Machines
Lecture 28 - Artificial Neural Networks - I
Lecture 29 - Artificial Neural Networks - II

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Lecture 30 - Artificial Neural Networks - III
Lecture 31 - Artificial Neural Networks - IV
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Lecture 37 - Regression - I
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Lecture 40 - Regression - IV
Lecture 41 - Dimensionality Reduction - I
Lecture 42 - Dimensionality Reduction - II
Lecture 43 - Tutorial
Lecture 44 - Live Session
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC: Data Base Management System

Subject Co-ordinator - Prof. Partha Pratim Das

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Overview
Lecture 2 - Introduction to DBMS/1
Lecture 3 - Introduction to DBMS/2
Lecture 4 - Introduction to Relational Model/1
Lecture 5 - Introduction to Relational Model/2
Lecture 6 - Introduction to SQL/1
Lecture 7 - Introduction to SQL/2
Lecture 8 - Introduction to SQL/3
Lecture 9 - Intermediate SQL/1
Lecture 10 - Intermediate SQL/2
Lecture 11 - Advanced SQL
Lecture 12 - Formal Relational Query Languages
Lecture 13 - Entity-Relationship Model/1
Lecture 14 - Entity-Relationship Model/2
Lecture 15 - Entity-Relationship Model/3
Lecture 16 - Relational Database Design
Lecture 17 - Relational Database Design (Continued...)
Lecture 18 - Relational Database Design/3
Lecture 19 - Relational Database Design (Continued...)
Lecture 20 - Relational Database Design/5
Lecture 21 - Application Design and Development/1
Lecture 22 - Application Design and Development/2
Lecture 23 - Application Design and Development/3
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Lecture 27 - Indexing and Hashing/2
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Lecture 30 - Indexing and Hashing/5
Lecture 31 - Transactions/1
Lecture 32 - Transactions/2
Lecture 33 - Transactions/3
Lecture 34 - Concurrency Control/1
Lecture 35 - Concurrency Control/2
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Lecture 38 - Query Processing and Optimization/1
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NPTEL Video Course - Computer Science and Engineering - NOC:Software Engineering

Subject Co-ordinator - Prof. Rajib Mall

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - I
Lecture 2 - Introduction - II
Lecture 3 - Introduction - III
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Lecture 6 - Life Cycle Model
Lecture 7 - Life Cycle Model
Lecture 8 - Waterfall Model
Lecture 9 - Waterfall Derivatives
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Lecture 12 - Agile Model
Lecture 13 - Extreme Programming and Scrum
Lecture 14 - Scrum
Lecture 15 - Introduction to requirement specification
Lecture 16 - Requirement gathering and analysis
Lecture 17 - Functional requirements
Lecture 18 - Representation of complex programming logic
Lecture 19 - Design Fundamentals
Lecture 20 - Modular Design
Lecture 21 - Classification of Cohesion
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Lecture 23 - Introduction to structured analysis and structured design
Lecture 24 - Basics of Data Flow Diagrams (DFD)
Lecture 25 - Developing DFD Model
Lecture 26 - Examples of DFD Model development
Lecture 27 - DFD Model - More Examples
Lecture 28 - Essentials of Structure Chart
Lecture 29 - Transform Analysis, Transaction Analysis

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Lecture 30 - Structured Design Examples
Lecture 31 - Use Case Modelling
Lecture 32 - Factoring Use Cases
Lecture 33 - Overview of Class diagram
Lecture 34 - Inheritance relationship
Lecture 35 - Association relationship
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Lecture 37 - Interaction Modelling
Lecture 38 - Development of Sequence diagrams
Lecture 39 - State-Machine diagram
Lecture 40 - An Object-Oriented design process
Lecture 41 - Domain Analysis
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Lecture 59 - Path Testing
Lecture 60 - Dataflow and Mutation Testing
NPTEL Video Course - Computer Science and Engineering - NOC: Computer Networks and Internet Protocol

Subject Co-ordinator - Prof. Sandip Chakraborty, Prof. Soumya Kanti Ghosh

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Computer Networks - A brief history
Lecture 2 - Data Networks - from Circuit Switching Network to Packet Switching Network
Lecture 3 - Network Protocol Stack
Lecture 4 - Services at the Different Layers of the Protocol Stack
Lecture 5 - Application Layer I - Different Protocols at the Application Layer
Lecture 6 - Application Layer II - Domain Name Systems
Lecture 7 - Application Layer III - The Web
Lecture 8 - Application Layer III - Hypertext Transfer Protocol
Lecture 9 - Application Layer III - Internet Mail Transfer
Lecture 10 - Application Layer IV - File Transfer (FTP)
Lecture 11 - Transport Layer I - Services
Lecture 12 - Transport Layer II - Connection
Lecture 13 - Transport Layer II - Connection (Continued...)
Lecture 14 - Transport Layer IV - Reliability
Lecture 15 - Transport Layer V - Sliding Window Protocols
Lecture 16 - Transport Layer Performance
Lecture 17 - Buffer Management and Congestion Control
Lecture 18 - Transport Layer Primitives
Lecture 19 - Transmission Control Protocol I - Basics
Lecture 20 - Transmission Control Protocol II - Connections
Lecture 21 - Transmission Control Protocol III - Flow Control
Lecture 22 - Transmission Control Protocol IV - Congestion Control
Lecture 23 - User Datagram Protocol
Lecture 24 - Socket Programming - I
Lecture 25 - Socket Programming - II
Lecture 26 - Network Layer I - Introduction
Lecture 27 - IP Addressing (IPv4) I - Classful addressing
Lecture 28 - IP Addressing (IPv4) II - CIDR
Lecture 29 - IP Addressing (IPv4) III - Network Address Translation (NAT)
Lecture 30 - IPv6 Addressing
Lecture 31 - Internet QoS - I (What is QoS)
Lecture 32 - Internet QoS - II (Basic QoS Architecture)
Lecture 33 - Internet QoS - III (Traffic Policing and Traffic Shaping)
Lecture 34 - Internet QoS - IV (Traffic Scheduling)
Lecture 35 - Internet QoS - V (Integrated and Differentiated Service Architecture)
Lecture 36 - IP Routing Table
Lecture 37 - Routing in the Internet I - Intra-domain routing
Lecture 38 - Routing in the Internet II - Routing protocols
Lecture 39 - Routing in the Internet III - Inter-domain Routing
Lecture 40 - Routing in the Internet IV - Border Gateway Protocol
Lecture 41 - IP Routers
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Lecture 44 - Software Defined Networking - II (Open Flow)
Lecture 45 - Software Defined Networking - III (Demo)
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Lecture 47 - Data Link Layer - Basic Concepts
Lecture 48 - Data Link Layer - Ethernet
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Lecture 59 - Network Security - II
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NPTEL Video Course - Computer Science and Engineering - NOC: Blockchain Architecture Design and Use Cases

Subject Co-ordinator - Praveen Jayachandran, Prof. Sandip Chakraborty

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Blockchain - I (Basics)
Lecture 2 - Introduction to Blockchain - II (History)
Lecture 3 - Introduction to Blockchain - III (Architecture)
Lecture 4 - Introduction to Blockchain - IV (Conceptualization)
Lecture 5 - Basic Crypto Primitives - I
Lecture 6 - Basic Crypto Primitives - II
Lecture 7 - Bitcoin Basics - I
Lecture 8 - Bitcoin Basics - II
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Lecture 10 - Distributed Consensus
Lecture 11 - Consensus in Bitcoin - I (The Basics)
Lecture 12 - Consensus in Bitcoin - II (PoW and Beyond)
Lecture 13 - Consensus in Bitcoin - III (The Miners)
Lecture 14 - Permissioned Blockchain - I (Basics)
Lecture 15 - Permissioned Blockchain - II (Consensus)
Lecture 16 - Permissioned Blockchain - III (RAFT Consensus)
Lecture 17 - Permissioned Blockchain - IV (Byzantine General Problem)
Lecture 18 - Permissioned Blockchain - V (Practical Byzantine Fault Tolerance)
Lecture 19 - Blockchain for Enterprise - Overview
Lecture 20 - Blockchain Components and Concepts
Lecture 21 - Hyperledger Fabric - Transaction Flow
Lecture 22 - Hyperledger Fabric Details
Lecture 23 - Fabric - Membership and Identity Management
Lecture 24 - Hyperledger Fabric Network Setup
Lecture 25 - Fabric Demo on IBM Blockchain Cloud - I
Lecture 26 - Fabric Demo on IBM Blockchain Cloud - II
Lecture 27 - Fabric Demo, deploy from scratch - III
Lecture 28 - Hyperledger Composer - Application Development
Lecture 29 - Hyperledger Composer - Network Administration

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Lecture 30 - Blockchain Use Cases
Lecture 31 - Blockchain in Financial Service - I (Payments and Secure Trading)
Lecture 32 - Blockchain in Financial Service - II (Compliance and Mortgage)
Lecture 33 - Blockchain in Financial Service - III (Financial Trade)
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Lecture 42 - Blockchain in Government - V (Tax Payments and Land Registry Records)
Lecture 43 - Blockchain Security - I (Overview)
Lecture 44 - Blockchain Security - II (Membership and Access control in Fabric)
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Lecture 46 - Blockchain Security - III (Fabric SideDB)
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Lecture 48 - Research Aspects - II (Bitcoin-NG)
Lecture 49 - Research Aspects - III (Collective Signing)
Lecture 50 - Research Aspects - IV (Byzcoin)
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Lecture 55 - Blockchain for Science - II (Blockchain and AI)
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Lecture 57 - Comparing Ecosystems - Ethereum development tools and Quorum
Lecture 58 - Comparing Ecosystems - Corda Part 1
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Lecture 60 - Concluding the course

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NPTEL Video Course - Computer Science and Engineering - NOC: Switching Circuits and Logic Design

Subject Co-ordinator - Prof. Indranil Sengupta
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Octal and Hexadecimal Number Systems
Lecture 3 - Signed and Unsigned Binary Number Representation
Lecture 4 - Binary Addition and Subtraction
Lecture 5 - BCD and Gray Code Representations
Lecture 6 - Error Detection and Correction
Lecture 7 - Logic Gates
Lecture 8 - Logic Families to Implement Gates
Lecture 9 - Emerging Technologies - Part I
Lecture 10 - Emerging Technologies - Part II
Lecture 11 - Switching Algebra
Lecture 12 - Algebraic Manipulation
Lecture 13 - Properties of Switching Functions
Lecture 14 - Obtaining Canonical Representations of Functions
Lecture 15 - Functional Completeness
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NPTEL Video Course - Computer Science and Engineering - NOC: Programming in Java

Subject Co-ordinator - Prof. Debasis Samanta
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Java Programming Steps
Lecture 3 - Java Tools and Resources
Lecture 4 - Demonstration - I
Lecture 5 - Java Applet Programming
Lecture 6 - Demonstration - II
Lecture 7 - Encapsulation
Lecture 8 - Demonstration - III
Lecture 9 - Java Programming Insights
Lecture 10 - Demonstration - IV
Lecture 11 - Java Static Scope Rule
Lecture 12 - Demonstration - V
Lecture 13 - Inheritance
Lecture 14 - Demonstration - VI
Lecture 15 - Information Hiding
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Lecture 18 - Packages - II
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Lecture 27 - Multithreading - I
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| Lecture 31 - I-O Stream - II |
| Lecture 32 - I-O Stream - III |
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| Lecture 34 - Applet Programming - I |
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| Lecture 39 - AWT Programming - I |
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| Lecture 41 - Demonstration - XV |
| Lecture 42 - AWT Programming - III |
| Lecture 43 - Swing - I |
| Lecture 44 - Swing - II |
| Lecture 45 - Demonstration - XVI |
| Lecture 46 - Demonstration - XVII |
| Lecture 47 - Demonstration - XVIII |
| Lecture 48 - Networking with Java |
| Lecture 49 - Demonstration - XIX |
| Lecture 50 - JDBC - I |
| Lecture 51 - JDBC - II |
| Lecture 52 - JDBC - III |
| Lecture 53 - Demonstration - XX |
| Lecture 54 - Demonstration - XXI |
| Lecture 55 - Demonstration - XXII |
| Lecture 56 - Case Studies - I |
| Lecture 57 - Case Studies - II |
| Lecture 58 - Case Studies - III |
| Lecture 59 - Case Studies - IV |
| Lecture 60 - Case Studies - V |
NPTEL Video Course - Computer Science and Engineering - NOC: Discrete Structures

Subject Co-ordinator - Prof. Dipanwita Roychowdhury

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Propositional Logic
Lecture 2 - Introduction to Propositional Logic (Continued...)
Lecture 3 - Introduction to Propositional Logic (Continued...)
Lecture 4 - Introduction to Propositional Logic (Continued...)
Lecture 5 - Introduction to Propositional Logic (Continued...)
Lecture 6 - Introduction to Propositional Logic (Continued...)
Lecture 7 - Predicate Logic
Lecture 8 - Predicate Logic (Continued...)
Lecture 9 - Predicate Logic (Continued...)
Lecture 10 - Predicate Logic (Continued...)
Lecture 11 - Proof Techniques
Lecture 12 - Proof Techniques (Continued...)
Lecture 13 - Proof Techniques (Continued...)
Lecture 14 - Proof Techniques (Continued...)
Lecture 15 - Proof Techniques (Continued...)
Lecture 16 - Sets and Functions
Lecture 17 - Sets and Functions (Continued...)
Lecture 18 - Sets and Functions (Continued...)
Lecture 19 - Sets and Functions (Continued...)
Lecture 20 - Sets and Functions (Continued...)
Lecture 21 - Relations and their Properties
Lecture 22 - Relations and their Properties (Continued...)
Lecture 23 - Relations and their Properties (Continued...)
Lecture 24 - Relations and their Properties (Continued...)
Lecture 25 - Relations and their Properties (Continued...)
Lecture 26 - Recursion
Lecture 27 - Recursion (Continued...)
Lecture 28 - Recursion (Continued...)
Lecture 29 - Recursion (Continued...)

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Lecture 30 - Recursion (Continued...)
Lecture 31 - Recurrence relations
Lecture 32 - Recurrence relations (Continued...)
Lecture 33 - Recurrence relations (Continued...)
Lecture 34 - Recurrence relations (Continued...)
Lecture 35 - Recurrence relations (Continued...)
Lecture 36 - Counting Techniques and Pigeonhole Principle
Lecture 37 - Counting Techniques and Pigeonhole Principle (Continued...)
Lecture 38 - Counting Techniques and Pigeonhole Principle (Continued...)
Lecture 39 - Counting Techniques and Pigeonhole Principle (Continued...)
Lecture 40 - Counting Techniques and Pigeonhole Principle (Continued...)
Lecture 41 - Combinatorics
Lecture 42 - Combinatorics (Continued...)
Lecture 43 - Combinatorics (Continued...)
Lecture 44 - Combinatorics (Continued...)
Lecture 45 - Combinatorics (Continued...)
Lecture 46 - Algebraic Structures
Lecture 47 - Algebraic Structures (Continued...)
Lecture 48 - Algebraic Structures (Continued...)
Lecture 49 - Algebraic Structures (Continued...)
Lecture 50 - Algebraic Structures (Continued...)
Lecture 51 - Ring and Modular Arithmetic
Lecture 52 - Ring and Modular Arithmetic (Continued...)
Lecture 53 - Ring and Modular Arithmetic (Continued...)
Lecture 54 - Ring and Modular Arithmetic (Continued...)
Lecture 55 - Ring and Modular Arithmetic (Continued...)
Lecture 56 - Finite Field and Applications
Lecture 57 - Finite Field and Applications (Continued...)
Lecture 58 - Finite Field and Applications (Continued...)
Lecture 59 - Finite Field and Applications (Continued...)
Lecture 60 - Finite Field and Applications (Continued...)
Lecture 1 - Introduction To Embedded Systems
Lecture 2 - Design Considerations of Embedded Systems
Lecture 3 - Microprocessors and Microcontrollers
Lecture 4 - Architecture of ARM Microcontroller - Part 1
Lecture 5 - Architecture of ARM Microcontroller - Part 2
Lecture 6 - Architecture of ARM Microcontroller - Part 3
Lecture 7 - ARM Instruction Set - Part 1
Lecture 8 - ARM Instruction Set - Part 2
Lecture 9 - ARM Instruction Set - Part 3
Lecture 10 - About the STM32F401 Nucleo Board
Lecture 11 - PWM and Interrupt on STM32F401
Lecture 12 - Digital to Analog Conversion
Lecture 13 - Analog to Digital Conversion - Part 1
Lecture 14 - Analog to Digital Conversion - Part 2
Lecture 15 - Output Devices, Sensors and Actuators - Part 1
Lecture 16 - Output Devices, Sensors and Actuators - Part 2
Lecture 17 - Output Devices, Sensors and Actuators - Part 3
Lecture 18 - Microcontroller Development Boards
Lecture 19 - Mbed C Programming Environment
Lecture 20 - Interfacing With STM32F401 Board
Lecture 21 - Interfacing With Arduino Uno
Lecture 22 - Interfacing 7-Segment LED And LCD Displays - Part 1
Lecture 23 - Interfacing 7-segment LED and LCD Displays - Part 2
Lecture 24 - Serial Port Terminal Application (Coolterm)
Lecture 25 - Experiment With Temperature Sensor
Lecture 26 - Experiment With Ldr Light Sensor - Part 1
Lecture 27 - Experiment With Ldr Light Sensor - Part 2
Lecture 28 - Experiment With Speaker
Lecture 29 - Experiment With Microphone
Lecture 30 - Design Of Control System
Lecture 31 - Experiments With Relay
Lecture 32 - Experiments On Speed Control Of Dc Motor
Lecture 33 - Experiment With Multiple Sensors And Relay
Lecture 34 - Introduction To Internet Of Things
Lecture 35 - Gsm And Bluetooth
Lecture 36 - Design Of A Home Automation System
Lecture 37 - Design Of A Simple Alarm System Using Touch Sensor
Lecture 38 - Accelerometer
Lecture 39 - Experiment Using Accelerometer
Lecture 40 - Experiment Using Bluetooth
Lecture 41 - Experiment With Gas Sensor
Lecture 42 - Summarization Of The Course
NPTEL Video Course - Computer Science and Engineering - NOC: Hardware Security

Subject Co-ordinator - Dr. Debdeep Mukhopadhyay
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

| Lecture 1 | Introduction to Hardware Security - Part 1 |
| Lecture 2 | Introduction to Hardware Security - Part 2 |
| Lecture 3 | Algorithm to Hardware |
| Lecture 4 | Finite Field Architectures - 1 |
| Lecture 5 | Finite Field Architectures - 1 (Continued...) |
| Lecture 6 | Hardware Design for Finite Field Inverse |
| Lecture 7 | Hardware Architecture for Finite Field Inverse |
| Lecture 8 | Background on Cryptography, Cryptanalysis and Advanced Encryption Standard (AES) |
| Lecture 9 | Advanced Encryption Standard (AES) and Side Channel Analysis |
| Lecture 10 | Field Isomorphisms |
| Lecture 11 | Field Isomorphisms (Continued...) |
| Lecture 12 | Hardware Implementation of Advanced Encryption |
| Lecture 13 | Hardware Implementation of Advanced Encryption |
| Lecture 14 | Hardware Implementation of Advanced Encryption (Continued...) |
| Lecture 15 | Compact AES-Box |
| Lecture 16 | Compact AES S-Box - Part II |
| Lecture 17 | Compact AES S-Box in Normal Basis - Part I |
| Lecture 18 | Compact AES S-Box in Normal Basis - Part II |
| Lecture 19 | Hardware for Elliptic Curve Cryptography - Part I |
| Lecture 20 | Hardware for Elliptic Curve Cryptography - Part II |
| Lecture 21 | Hardware for Elliptic Curve Cryptography - Part III |
| Lecture 22 | Hardware for Elliptic Curve Cryptography - Part IV |
| Lecture 23 | Hardware for Elliptic Curve Cryptography - Part V |
| Lecture 24 | Introduction to Side Channel Analysis |
| Lecture 25 | Power Analysis - Part I |
| Lecture 26 |
| Lecture 27 |
| Lecture 28 |
| Lecture 29 |

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Lecture 30 - Key Enablers of Industrial IoT
Lecture 31 - Key Enablers of Industrial IoT
Lecture 32 - Key Enablers of Industrial IoT
Lecture 33 - Key Enablers of Industrial IoT
Lecture 34 - Key Enablers of Industrial IoT
Lecture 35 - Key Enablers of Industrial IoT
Lecture 36 - IIoT Analytics and Data Management
Lecture 37 - IIoT Analytics and Data Management
Lecture 38 - IIoT Analytics and Data Management
Lecture 39 - IIoT Analytics and Data Management
Lecture 40 - IIoT Analytics and Data Management
Lecture 41 - Analytics and Data Management
Lecture 42 - IIoT Analytics and Data Management
Lecture 43 - IIoT Analytics and Data Management
Lecture 44 - IIoT Analytics and Data Management
Lecture 45 - Advanced Technologies
Lecture 46 - Advanced Technologies
Lecture 47 - Advanced Technologies
Lecture 48 - Advanced Technologies
Lecture 49 - IIoT Applications
Lecture 50 - IIoT Applications
Lecture 51 - IIoT Applications
Lecture 52 - IIoT Applications
Lecture 53 - IIoT Applications
Lecture 54 - IIoT Applications
Lecture 55 - IIoT Applications
Lecture 56 - IIoT Applications
Lecture 57 - IIoT Applications
Lecture 58 - Case Studies for Industry 4.0 and IIoT
Lecture 59 - Milk Processing and Packaging Industries
Lecture 60 - Manufacturing Industries - Part I
Lecture 61 - Manufacturing Industries - Part II
Lecture 62 - Student Projects - Part I
Lecture 63 - Student Projects - Part II
Lecture 64 - Virtual Reality Lab
Lecture 65 - Steel Technology Lab

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NPTEL Video Course - Computer Science and Engineering - NOC: Introduction to Automata, Languages and Computation

Subject Co-ordinator - Prof. Sourav Mukhopadhyay
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Deterministic Finite Automata (DFA)
Lecture 2 - Input alphabet
Lecture 3 - Extended transition function
Lecture 4 - Language of DFA
Lecture 5 - Building DFA
Lecture 6 - Building DFA (Continued...)
Lecture 7 - NFA (Nondeterministic Finite Automata)
Lecture 8 - Language of a NFA
Lecture 9 - Equivalence of DFAs and NFAs
Lecture 10 - Subset Construction
Lecture 11 - ε-NFA
Lecture 12 - Extended transition function of NFA
Lecture 13 - Language of NFA
Lecture 14 - NFA to NFA
Lecture 15 - NFA to DFA
Lecture 16 - Regular expression
Lecture 17 - Regular expression (Continued...)
Lecture 18 - More on regular expression
Lecture 19 - Equivalence of NFA and regular expression
Lecture 20 - Equivalence of NFA and regular expression (Continued...)
Lecture 21 - DFA to Regular expression
Lecture 22 - DFA to Regular expression (Continued...)
Lecture 23 - Construction of regular expression from a DFA (example)
Lecture 24 - Closure properties of Regular Set
Lecture 25 - Closure properties of Regular Set (Continued...)
Lecture 26 - Substitution
Lecture 27 - Pumping Lemma
Lecture 28 - Application of the pumping lemma
Lecture 29 - More on Pumping lemma

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Lecture 30 - Ardens Theorem
Lecture 31 - Minimization of FA
Lecture 32 - Minimization of FA (Continued...)
Lecture 33 - Two way FA
Lecture 34 - Finite automata with output
Lecture 35 - Equivalence of Moore and Mealy machine
Lecture 36 - Context free grammars (CFG)
Lecture 37 - Context free language (CFL)
Lecture 38 - More example on CFL
Lecture 39 - More on CFG
Lecture 40 - Derivation Tree/Parse Tree
Lecture 41 - Leftmost and Rightmost derivations
Lecture 42 - Ambiguity in CFG
Lecture 43 - Simplification of CFG
Lecture 44 - Algorithms to construct reduced grammar
Lecture 45 - Elimination of Null and Unit productions
Lecture 46 - Chomsky Normal Form (CNF)
Lecture 47 - Greibach Normal Form (GNF)
Lecture 48 - Pushdown Automata (PDA)
Lecture 49 - Language accepted by PDA
Lecture 50 - Example of a language accepted by PDA
Lecture 51 - Deterministic PDA
Lecture 52 - Equivalence of language accepted
Lecture 53 - Equivalence PDA
Lecture 54 - Equivalence PDA and CFL
Lecture 55 - Equivalence PDA and CFL (Continued...)
Lecture 56 - Relationship between regular language and CFL
Lecture 57 - Pumping lemma for CFLs
Lecture 58 - Closer properties of CFLs
Lecture 59 - Turning Machine
Lecture 60 - Language accepted by a Turning machine
Lecture 30 - Process Synchronization (Continued...)
Lecture 31 - Process Synchronization (Continued...)
Lecture 32 - Process Synchronization (Continued...)
Lecture 33 - Process Synchronization (Continued...)
Lecture 34 - Process Synchronization (Continued...)
Lecture 35 - Synchronization Examples
Lecture 36 - Synchronization Examples, Deadlock
Lecture 37 - Deadlock
Lecture 38 - Deadlock (Continued...)
Lecture 39 - Deadlock (Continued...)
Lecture 40 - Deadlock (Continued...)
Lecture 41 - Memory Management
Lecture 42 - Memory Management (Continued...)
Lecture 43 - Memory Management (Continued...)
Lecture 44 - Memory Management (Continued...)
Lecture 45 - Memory Management (Continued...)
Lecture 46 - Memory Management (Continued...)
Lecture 47 - Memory Management (Continued...)
Lecture 48 - Memory Management (Continued...)
Lecture 49 - Virtual Memory
Lecture 50 - Virtual Memory (Continued...)
Lecture 51 - Virtual Memory (Continued...)
Lecture 52 - Virtual Memory (Continued...)
Lecture 53 - Virtual Memory (Continued...)
Lecture 54 - Virtual Memory (Continued...)
Lecture 55 - Virtual Memory (Continued...)
Lecture 56 - Virtual Memory (Continued...)
Lecture 57 - File System and Secondary Storage
Lecture 58 - File System and Secondary Storage (Continued...)
Lecture 59 - File System and Secondary Storage (Continued...)
Lecture 60 - File System and Secondary Storage (Continued...)
NPTEL Video Course - Computer Science and Engineering - NOC: Deep Learning (Prof. P.K. Biswas)

Subject Co-ordinator - Prof. P.K. Biswas
Co-ordinating Institute - IIT - Kharagpur

Lecture 1 - Introduction
Lecture 2 - Feature Descriptor - I
Lecture 3 - Feature Descriptor - II
Lecture 4 - Bayesian Learning - I
Lecture 5 - Bayesian Learning - II
Lecture 6 - Discriminant Function - I
Lecture 7 - Discriminant Function - II
Lecture 8 - Discriminant Function - III
Lecture 9 - Linear Classifier - I
Lecture 10 - Linear Classifier - II
Lecture 11 - Support Vector Machine - I
Lecture 12 - Support Vector Machine - II
Lecture 13 - Linear Machine
Lecture 14 - Multiclass Support Vector Machine - I
Lecture 15 - Multiclass Support Vector Machine - II
Lecture 16 - Optimization
Lecture 17 - Optimization Techniques in Machine Learning
Lecture 18 - Nonlinear Functions
Lecture 19 - Introduction to Neural Network
Lecture 20 - Neural Network - II
Lecture 21 - Multilayer Perceptron - I
Lecture 22 - Multilayer Perceptron - II
Lecture 23 - Backpropagation Learning
Lecture 24 - Loss Function
Lecture 25 - Backpropagation Learning- Example - I
Lecture 26 - Backpropagation Learning- Example - II
Lecture 27 - Backpropagation Learning- Example - III
Lecture 28 - Autoencoder
Lecture 29 - Autoencoder Vs PCA - I

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Lecture 30 - Autoencoder Vs PCA - II
Lecture 31 - Autoencoder Training
Lecture 32 - Autoencoder Variants - I
Lecture 33 - Autoencoder Variants - II
Lecture 34 - Convolution
Lecture 35 - Cross Correlation
Lecture 36 - CNN Architecture
Lecture 37 - MLP versus CNN, Popular CNN Architecture
Lecture 38 - Popular CNN Architecture
Lecture 39 - Popular CNN Architecture
Lecture 40 - Vanishing and Exploding Gradient
Lecture 41 - GoogleNet
Lecture 42 - ResNet, Optimisers
Lecture 43 - Optimisers
Lecture 44 - Optimisers
Lecture 45 - Optimisers
Lecture 46 - Normalization
Lecture 47 - Batch Normalization - I
Lecture 48 - Batch Normalization - II
Lecture 49 - Layer, Instance, Group Normalization
Lecture 50 - Training Trick, Regularization, Early Stopping
Lecture 51 - Face Recognition
Lecture 52 - Deconvolution Layer
Lecture 53 - Semantic Segmentation - I
Lecture 54 - Semantic Segmentation - II
Lecture 55 - Semantic Segmentation - III
Lecture 56 - Image Denoising
Lecture 57 - Variational Autoencoder - I
Lecture 58 - Variational Autoencoder - II
Lecture 59 - Variational Autoencoder - III
Lecture 60 - Generative Adversarial Network
NPTEL Video Course - Computer Science and Engineering - NOC:Computer Vision

Subject Co-ordinator - Prof. Jayanta Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Fundamentals of Image Processing - Part I
Lecture 2 - Fundamentals of Image Processing - Part II
Lecture 3 - Image Transform - Part I
Lecture 4 - Image Transform - Part II
Lecture 5 - Projective Geometry - Part I
Lecture 6 - Projective Geometry - Part II
Lecture 7 - Projective Transformation
Lecture 8 - Homography
Lecture 9 - Homography
Lecture 10 - Homography
Lecture 11 - Camera Geometry - Part I
Lecture 12 - Camera Geometry - Part II
Lecture 13 - Camera Geometry - Part III
Lecture 14 - Camera Geometry - Part IV
Lecture 15 - Camera Geometry - Part V
Lecture 16 - Stereo Geometry - Part I
Lecture 17 - Stereo Geometry - Part II
Lecture 18 - Stereo Geometry - Part III
Lecture 19 - Stereo Geometry - Part IV
Lecture 20 - Stereo Geometry - Part V
Lecture 21 - Stereo Geometry - Part VI
Lecture 22 - Stereo Geometry - Part VII
Lecture 23 - Stereo Geometry - Part VIII
Lecture 24 - Feature Detection And Description - Part I
Lecture 25 - Feature Detection And Description - Part II
Lecture 26 - Feature Detection And Description - Part III
Lecture 27 - Feature Detection And Description - Part IV
Lecture 28 - Feature Detection And Description - Part V
Lecture 29 - Feature Matching And Model Fitting - Part I
NPTEL Video Course - Computer Science and Engineering - NOC: Ethical Hacking

Subject Co-ordinator - Prof. Indranil Sengupta

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Ethical Hacking
Lecture 2 - Basic Concepts of Networking - Part I
Lecture 3 - Basic Concepts of Networking - Part II
Lecture 4 - TCP/IP Protocol Stack - Part I
Lecture 5 - TCP/IP Protocol Stack - Part II
Lecture 6 - IP addressing and routing - Part I
Lecture 7 - IP addressing and routing - Part II
Lecture 8 - TCP and UDP - Part I
Lecture 9 - TCP and UDP - Part II
Lecture 10 - IP subnetting
Lecture 11 - Routing protocols - Part I
Lecture 12 - Routing protocols - Part II
Lecture 13 - Routing protocols - Part III
Lecture 14 - IP version 6
Lecture 15 - Routing examples
Lecture 16 - Demonstration - Part I
Lecture 17 - Demonstration - Part II
Lecture 18 - Demonstration - Part III
Lecture 19 - Nessus Installation
Lecture 20 - How to use nessus
Lecture 21 - Metasploit Exploiting System Software - I
Lecture 22 - Metasploit Exploiting System Software - II
Lecture 23 - Metasploit Exploiting System Software and Privilege
Lecture 24 - Metasploit Social Eng Attack
Lecture 25 - MITM (Man in The middle) Attack
Lecture 26 - Basic concepts of cryptography
Lecture 27 - Private-key cryptography - Part I
Lecture 28 - Private-key cryptography - Part II
Lecture 29 - Public-key cryptography - Part I

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Lecture 30 - Public-key cryptography - Part II
Lecture 31 - Cryptographic hash functions - Part I
Lecture 32 - Cryptographic hash functions - Part II
Lecture 33 - Digital signature and certificate
Lecture 34 - Applications - Part I
Lecture 35 - Applications - Part II
Lecture 36 - Steganography
Lecture 37 - Biometrics
Lecture 38 - Network Based Attacks - Part I
Lecture 39 - Network Based Attacks - Part II
Lecture 40 - DNS and Email Security
Lecture 41 - Password cracking
Lecture 42 - Phishing attack
Lecture 43 - Maloeware
Lecture 44 - Wifi hacking
Lecture 45 - Dos and DDos attack
Lecture 46 - Elements of Hardware Security
Lecture 47 - Side Channel Attacks - Part I
Lecture 48 - Side Channel Attacks - Part II
Lecture 49 - Physical Unclonable Function
Lecture 50 - Hardware Trojan
Lecture 51 - Web Application Vulnerability Scanning
Lecture 52 - SQL Injection Authentication Bypass - Part 1
Lecture 53 - SQL Injection Error Based - Part 2
Lecture 54 - SQL Injection Error Based from Web Application - Part 3
Lecture 55 - SQLMAP
Lecture 56 - Cross Site Scripting
Lecture 57 - File Upload Vulnerability
Lecture 58 - The NMAP Tool
Lecture 59 - The NMAP Tool
Lecture 60 - The NMAP Tool
Lecture 61 - Network Analysis using Wireshark
Lecture 62 - Summarization of the Course

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NPTEL Video Course - Computer Science and Engineering - NOC:Software Project Management

Subject Co-ordinator - Prof. Durga Prasad Mohapatra

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - I
Lecture 2 - Introduction - II
Lecture 3 - Introduction - III
Lecture 4 - Project Management Standards
Lecture 5 - Life Cycle Models - I
Lecture 6 - Life Cycle Models - II
Lecture 7 - Life Cycle Models - III
Lecture 8 - Life Cycle Models - IV
Lecture 9 - Life Cycle Models - V
Lecture 10 - Life Cycle Models - VI
Lecture 11 - Project Evaluation and Programme Management
Lecture 12 - Project Evaluation and Programme Management (Continued...)
Lecture 13 - Project Evaluation and Programme Management (Continued...)
Lecture 14 - Project Evaluation and Programme Management (Continued...)
Lecture 15 - Project Evaluation and Programme Management (Continued...)
Lecture 16 - Project Estimation Techniques
Lecture 17 - Project Estimation Techniques (Continued...)
Lecture 18 - Project Estimation Techniques (Continued...)
Lecture 19 - Project Estimation Techniques (Continued...)
Lecture 20 - Project Estimation Techniques (Continued...)
Lecture 21 - Project Estimation Techniques (Continued...)
Lecture 22 - Project Estimation Techniques (Continued...)
Lecture 23 - Project Estimation Techniques (Continued...)
Lecture 24 - Project Estimation Techniques (Continued...)
Lecture 25 - Project Estimation Techniques (Continued...)
Lecture 26 - Project Scheduling
Lecture 27 - Project Scheduling Using PERT/CPM
Lecture 28 - Project Scheduling Using PERT/CPM (Continued...)
Lecture 29 - Computation of Project Characteristics Using PERT/CPM

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Lecture 30 - Computation of Project Characteristics Using PERT/CPM
Lecture 31 - PERT, Project Crashing
Lecture 32 - Team Management
Lecture 33 - Organization and Team Structure
Lecture 34 - Team Structure (Continued...) and Risk Management
Lecture 35 - Risk Management (Continued...) and Introduction to Software Quality
Lecture 36 - Resource Allocation
Lecture 37 - Resource Allocation (Continued...)
Lecture 38 - Resource Allocation (Continued...)
Lecture 39 - Project Monitoring and Control
Lecture 40 - Project Monitoring and Control (Continued...)
Lecture 41 - Project Monitoring and Control (Continued...)
Lecture 42 - Project Monitoring and Control (Continued...)
Lecture 43 - Project Monitoring and Control (Continued...)
Lecture 44 - Project Monitoring and Control (Continued...)
Lecture 45 - Project Monitoring and Control (Continued...)
Lecture 46 - Project Monitoring and Control (Continued...)
Lecture 47 - Project Monitoring and Control (Continued...)
Lecture 48 - Contract Management
Lecture 49 - Contract Management (Continued...)
Lecture 50 - Project Close Out
Lecture 51 - Software Quality Management
Lecture 52 - ISO 9000
Lecture 53 - ISO 9001, SEI CMM
Lecture 54 - SEI CMM (Continued...)
Lecture 55 - SEI CMM (Continued...)
Lecture 56 - Personal Software Process (PSP)
Lecture 57 - Software Reliability - I
Lecture 58 - Software Reliability - II
Lecture 59 - Software Reliability - III
Lecture 60 - Software Testing
NPTEL Video Course - Computer Science and Engineering - NOC: Spatial Informatics

Subject Co-ordinator - Prof. Soumya Kanti Ghosh

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Spatial Data Models - 1
Lecture 3 - Spatial Data Models - 2
Lecture 4 - Spatial Data Models - 3
Lecture 5 - Spatial Data Models - 4
Lecture 6 - Spatial Web Services - 1
Lecture 7 - Spatial Web Services - 2
Lecture 8 - Spatial Web Services - 3
Lecture 9 - Spatial Web Services - 4
Lecture 10 - Spatial Web Services - Demo
Lecture 11 - Spatial Database
Lecture 12 - Spatial Query Processing / SQL - 1
Lecture 13 - Spatial Query Processing / SQL - 2
Lecture 14 - Spatial Query Processing / SQL - 3
Lecture 15 - Spatial Query Processing / SQL - 4
Lecture 16 - Spatial Query Demo Tutorial
Lecture 17 - Spatial Indexing - I
Lecture 18 - Spatial Indexing - II
Lecture 19 - Spatial Indexing - III
Lecture 20 - Spatial Indexing - IV
Lecture 21 - Spatial Networks - I
Lecture 22 - Spatial Networks - II
Lecture 23 - Spatial Networks - III
Lecture 24 - Spatial Networks - IV
Lecture 25 - Spatial Networks - V
Lecture 26 - Spatial Analysis - I
Lecture 27 - Spatial Analysis - II
Lecture 28 - Spatial Analysis - III
Lecture 29 - Spatial Analysis - IV

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Lecture 30 - Spatial Analysis - V
Lecture 31 - Remote Sensing and GIS - I
Lecture 32 - Remote Sensing and GIS - II
Lecture 33 - Remote Sensing and GIS - III
Lecture 34 - Remote Sensing and GIS - IV
Lecture 35 - Remote Sensing and GIS - V
Lecture 36 - SDS / Spatial Cloud / GeoViz - I
Lecture 37 - SDS / Spatial Cloud / GeoViz - II
Lecture 38 - SDS / Spatial Cloud / GeoViz - III
Lecture 39 - SDS / Spatial Cloud / GeoViz - IV
Lecture 40 - SDS / Spatial Cloud / GeoViz - V
Lecture 30 - Feature Selection
Lecture 31 - Cauchy Schwartz Inequality
Lecture 32 - Feature Selection Criteria Function
Lecture 33 - Feature Selection Criteria Function
Lecture 34 - Principal Components
Lecture 35 - Comparison Between Performance of Classifiers
Lecture 36 - Basics of Statistics, Covariance, and their Properties
Lecture 37 - Data Condensation, Feature Clustering, Data Visualization
Lecture 38 - Probability Density Estimation
Lecture 39 - Visualization and Aggregation
Lecture 40 - Support Vector Machine (SVM)
Lecture 41 - FCM and Soft-Computing Techniques
Lecture 42 - Examples of Uses or Application of Pattern Recognition; And When to do clustering
Lecture 43 - Examples of Real-Life Dataset
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - Performance Evaluation of Computer Systems

Subject Co-ordinator - Prof. Krishna Moorthy Sivalingam

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to performance evaluation of computer systems
Lecture 2 - How to avoid common mistakes
Lecture 3 - Selection of techniques and metrics
Lecture 4 - Case study
Lecture 5 - Random Variables and probability distributions
Lecture 6 - Probability distributions - I
Lecture 7 - Probability distributions - II
Lecture 8 - Probability distributions - III
Lecture 9 - Stochastic process
Lecture 10 - Markov Chain
Lecture 11 - Slotted Aloha protocol model and discrete-time birth death process
Lecture 12 - Continuous time Markov chain and queuing theory - I
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Lecture 14 - Queuing theory - II
Lecture 15 - Queuing theory - III
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Lecture 22 - Simulations - I
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Lecture 25 - Operational laws - I
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Lecture 27 - Open and closed queuing networks
Lecture 28 - Approximate MVA
Lecture 29 - Convolution algorithm - I

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Lecture 35 - 2k factorial design
Lecture 36 - 2k r factorial design and 2k-p fractional factorial design
Lecture 37 - Programming aspects of discrete-event simulations - I
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Lecture 31 - Recursive Sets, Recursively Innumerable Sets, Encoding of TM, Halting Problem
Lecture 32 - Problems and Instances, Universal TM, Decidability
Lecture 33 - RICE'S Theorem, Linear Bounded Automata, Properties of TM
Lecture 34 - POST'S Correspondence Problems
Lecture 35 - POST'S Correspondence Problems (Continued.), Time and Tape Complexity of TM
Lecture 36 - NP - Complete Problems, Cook's Theorem
Lecture 37 - NP - Complete Problems (Continued.)
Lecture 38 - Regulated Rewriting
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Lecture 41 - DNA Computing
Lecture 42 - Membrane Computing

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NPTEL Video Course - Computer Science and Engineering - Computer Graphics

Subject Co-ordinator - Prof. Sukhendu Das
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - CRT Display Devices
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Lecture 4 - CRT Display Devices (Continued...)
Lecture 5 - CRT Display Devices (Continued...)
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Lecture 8 - Three Dimensional Graphics
Lecture 9 - Three Dimensional Graphics (Continued...)
Lecture 10 - Three Dimensional Graphics (Continued...)
Lecture 11 - Projection Transformations And Viewing Pipeline
Lecture 12 - 3D Viewing - Projection Transformations And Viewing Pipeline
Lecture 13 - Scan Converting Lines, Circles And Ellipses
Lecture 14 - Scan Converting Lines, Circles And Ellipses (Continued...)
Lecture 15 - Scan Converting Lines, Circles And Ellipses (Continued...)
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Lecture 17 - Scan Converting Lines, Circles And Ellipses (Continued...)
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Lecture 20 - Clipping - Lines And Polygons
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Lecture 39 - Graphics Programming Using Open GL
Lecture 40 - Graphics Programming Using Open GL (Continued...)
Lecture 41 - Advanced Topics
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Lecture 43 - Digital Image Processing (Continued...)
NPTEL Video Course - Computer Science and Engineering - Computer Organization

Subject Co-ordinator - Prof. S. Raman

Co-ordinating Institute - IIT - Madras

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Lecture 3 - Introduction To System
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Lecture 5 - Processor As a State Machine
Lecture 6 - Data Path Architecture
Lecture 7 - Data Path Controller
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Lecture 10 - Controller Design (Contd)
Lecture 11 - Typical Micro Instructions
Lecture 12 - Addressing Modes
Lecture 13 - Problem Exercise
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Lecture 15 - Introduction to memory system
Lecture 16 - CPU - Memory Interaction
Lecture 17 - Cache Organization
Lecture 18 - Cache Organization
Lecture 19 - Virtual Memory
Lecture 20 - Virtual Memory
Lecture 21 - Performance Calculation
Lecture 22 - Segmentation
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Lecture 24 - Programmed I/O
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Lecture 26 - DMA
Lecture 27 - Device Service Routines
Lecture 28 - Evolution Of I/O
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NPTEL Video Course - Computer Science and Engineering - Database Design

Subject Co-ordinator - Dr. S. Srikanth, Prof. D. Janaki Ram

Co-ordinating Institute - IIT - Madras | IIIT - Bangalore

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Lecture 8 - Search DFID
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Lecture 10 - Hill Climbing
Lecture 11 - Solution Space Search, Beam Search
Lecture 12 - TSP Greedy Methods
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Lecture 17 - Population Based Methods II
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Lecture 59 - Boyer-Moore String Matching Algorithm
Lecture 60 - File I/O
Lecture 61 - Modular Programming
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NPTEL Video Course - Computer Science and Engineering - NOC: Programming and Data Structures (PDS)

Subject Co-ordinator - Dr. N.S. Narayanaswamy
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Computer Science and Engineering - NOC: Programming, Data Structures and Algorithms (Aricent)

Subject Co-ordinator - Dr. N S. Narayanaswamy, Prof. Shankar Balachandran, Prof. Hema A Murthy

Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Computer Science and Engineering - NOC: Computer Architecture

Subject Co-ordinator - Prof. Madhu Mutyam

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Quantitative Principles of Computer Design
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NPTEL Video Course - Computer Science and Engineering - Virtual Reality

Subject Co-ordinator - Prof. Steven LaVall
Co-ordinating Institute - IIT - Madras
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NPTEL Video Course – Computer Science and Engineering – NOC: Algorithms for Big Data

Subject Co-ordinator – Prof. John Augustine

Co-ordinating Institute – IIT – Madras

Sub-Titles – Available / Unavailable | MP3 Audio Lectures – Available / Unavailable

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Lecture 2 – Lesson 2 – Conditional probability
Lecture 3 – Lesson 3 – Example problems
Lecture 4 – Lesson 4 – Karger's mincut algorithm
Lecture 5 – Lesson 5 – Analysis of Karger's mincut algorithm
Lecture 6 – Lesson 6 – Random variables
Lecture 7 – Lesson 7 – Randomized quicksort
Lecture 8 – Problem solving video – The rich get richer
Lecture 9 – Problem solving video – Monty Hall problem
Lecture 10 – Lesson 1 – Bernoulli, Binomial, and Geometric distributions
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Lecture 12 – Lesson 3 – Application of Chernoff bound
Lecture 13 – Lesson 4 – Application of Chebyshev's inequality
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Lecture 15 – Lesson 2 – SAT Problem
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Lecture 28 – Lesson 6 – Estimating expectation of continuous function
Lecture 29 – Lesson 1 – Universal hash functions

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NPTEL Video Course - Computer Science and Engineering - NOC: Programming, Data Structures and Algorithms in Python

Subject Co-ordinator - Prof. Madhavan Mukund

Co-ordinating Institute - Chennai Mathematical Institute

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Lecture 5 - Lecture 1 - Assignment statement, basic types - int, float, bool
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Lecture 44 - Lecture 4 - Matrix multiplication
Lecture 45 - Lecture 5 - Wrap-up, Python vs other languages
NPTEL Video Course - Computer Science and Engineering - NOC: Privacy and Security in Online Social Networks

Subject Co-ordinator - Prof. Ponnurangam Kumaraguru

Co-ordinating Institute - IIITD

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Lecture 8 - Tutorial 2 - Part 2 Facebook API
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Lecture 10 - Misinformation on Social Media
Lecture 11 - Privacy and Social Media
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Lecture 13 - Tutorial 3 - Part 2 MySQL
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Lecture 22 - Link Farming in Online Social Media
Lecture 23 - Nudges
Lecture 24 - Semantic attacks
Lecture 25 - Tutorial 5 - Analyzing text using Python NLTK
Lecture 26 - Profile Linking on Online Social Media
Lecture 27 - Anonymous Networks
Lecture 28 - Tutorial 6 - Gephi Network Visualization
Lecture 29 - Privacy in Location Based Social Networks - Part 1

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Lecture 32 - Beware of What You Share Inferring Home Location in Social Networks
Lecture 33 - On the dynamics of username change behavior on Twitter
Lecture 34 - Boston Marathon Analyzing Fake Content on Twitter
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC: Mobile Computing

Subject Co-ordinator - Prof. Pushpendra Singh
Co-ordinating Institute - IIITD
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NPTEL Video Course - Computer Science and Engineering - NOC: Introduction to Modern Application Development

Subject Co-ordinator - Tanmai Gopal, Prof. Gaurav Raina

Co-ordinating Institute - IIT - Madras

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Lecture 3 - Building a web-app
Lecture 4 - Networks
Lecture 5 - Practical - Running your own web-server
Lecture 6 - Protocols
Lecture 7 - Practical - SSH + Network experiments
Lecture 8 - Practical - Building a webapp with nodejs and using git. Introduction to reverse proxies.
Lecture 9 - Practical - Introduction to server-side javascript and HTML/CSS
Lecture 10 - Introduction to client-side Javascript
Lecture 11 - Practical - APIs and mobile apps use web-servers
Lecture 12 - Introduction to databases
Lecture 13 - Data modelling and constraints
Lecture 14 - Interacting with a DBMS
Lecture 15 - Practical - Deeper exploration of a DBMS (column types and more)
Lecture 16 - Introduction to SQL
Lecture 17 - Understanding database performance
Lecture 18 - Transactions and ACID properties
Lecture 19 - Database security, backup and recovery
Lecture 20 - Analytics and Views
Lecture 21 - Scaling a database
Lecture 22 - Connecting your webapp to your database and SQL Injection
Lecture 23 - SQL and NoSQL systems
Lecture 24 - Authentication with HTTP
Lecture 25 - Understanding security, and some best practices for webapps
Lecture 26 - Introduction to authentication, hashing, curl and sessions
Lecture 27 - Introduction to mobile apps
Lecture 28 - Introduction to Mobile Application Development Part 2
Lecture 29 - Introduction to Android

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Lecture 30 - Getting started with Android Application Development
Lecture 31 - Building Custom UI using XML and Logs
Lecture 32 - Building a Blog App
Lecture 33 - Deploying an app to the Google Play Store
Lecture 34 - Introduction to iOS
Lecture 35 - The API Economy
NPTEL Video Course - Computer Science and Engineering - NOC:Information Security-3

Subject Co-ordinator - Prof. V. Kamakoti
Co-ordinating Institute - IIT - Madras

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Lecture 2 - Storage Hierarchy, Exceptions, Interrupts and traps
Lecture 3 - OS Management Services
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Lecture 7 - Scheduling Algorithm
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Lecture 25 - Basic Networking Administration
Lecture 26 - Filesystems and Devices
Lecture 27 - Shell Introduction
Lecture 28 - Shell Comments and Variables
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NPTEL Video Course - Computer Science and Engineering - NOC:AI:Constraint Satisfaction

Subject Co-ordinator - Prof. Deepak Khemani
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Constraint Satisfaction Problems
Lecture 2 - CSP Examples: Map colouring, N-Queens, Classroom scheduling
Lecture 3 - CSP Examples: Huffman-Clowes Labelling, Waltz Algorithm, Crosswords
Lecture 4 - Model Based Diagnosis - An application of CSP
Lecture 5 - Constraint Networks - An Introduction
Lecture 6 - Binary Constraint Networks (BCN), Equivalent Networks
Lecture 7 - Projection Networks
Lecture 8 - Constraint Propagation
Lecture 9 - Algorithms AC1 and AC3
Lecture 10 - Can we do better than AC3?
Lecture 11 - Algorithm AC4
Lecture 12 - Generalized AC, Path-Consistency
Lecture 13 - i-Consistency, Algorithm PC1
Lecture 14 - Algorithm PC2, Strong i-Consistency
Lecture 15 - Directional Consistency and Graph Ordering
Lecture 16 - Min-Width and Min-Induced-Width Ordering
Lecture 17 - Directional Arc-Consistency and Tree CSPs
Lecture 18 - Directional Path-Consistency and Directional i-Consistency
Lecture 19 - Backtrack-Free search and Adaptive Consistency
Lecture 20 - Adaptive Consistency: Bucket Elimination
Lecture 21 - Search Methods for Solving CSPs
Lecture 22 - Algorithm Backtracking
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Lecture 29 - Gaschnig's Backjumping: The Culprit Variable

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NPTEL Video Course - Computer Science and Engineering - NOC: Computer Organization

Subject Co-ordinator - Prof. V. Kamakoti
Co-ordinating Institute - IIT - Madras
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Lecture 21 - Introduction to Pipelining
Lecture 22 - Pipelining
Lecture 23 - Data Hazards
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Lecture 25 - Dynamic Instruction Scheduling
Lecture 26 - Dynamic Instruction Scheduling (Continued...)
Lecture 27 - Control Hazard, Branch Prediction
Lecture 28 - Process Management
Lecture 29 - Branch prediction

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Lecture 30 - Global Branch Prediction
Lecture 31 - Structural Hazard, Architectural Enhancements
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Lecture 36 - Multilevel Paging
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Lecture 38 - Page Frame Allocation, Beledy's Anomaly
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Lecture 43 - Multilevel Caching, Multitasking
Lecture 44 - Cache, Degree of Multiprogramming
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Lecture 46 - Shared Memory Architecture - Part I
Lecture 47 - Virtually Indexed - Virtually Tagged and Physically Tagged Caches
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Lecture 50 - Concurrent Programming in Hardware - Part I
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NPTEL Video Course - Computer Science and Engineering - NOC:Distributed Systems

Subject Co-ordinator - Dr. Rajiv Misra
Co-ordinating Institute - IIT - Patna

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Distributed Systems
Lecture 2 - Basic Algorithms in Message Passing System
Lecture 3 - Leader Election in Rings
Lecture 4 - Distributed Models of Computation, Causality and Logical Time
Lecture 5 - Size of Vector Clock, Matrix Clocks, Virtual Time and Physical Clock Synchronization
Lecture 6 - Global State and Snapshot Recording Algorithms
Lecture 7 - Distributed Mutual Exclusion and Non-Token based Approaches
Lecture 8 - Quorum Based Distributed Mutual Exclusion Approaches
Lecture 9 - Token Based Distributed Mutual Exclusion Approaches
Lecture 10 - Consensus and Agreement Algorithms
Lecture 11 - Checkpointing and Rollback Recovery
Lecture 12 - Deadlock Detection in Distributed Systems
Lecture 13 - Distributed Shared Memory
Lecture 14 - Distributed Minimum Spanning Tree
Lecture 15 - Termination Detection in Distributed System
Lecture 16 - Message Ordering and Group Communication
Lecture 17 - Self-Stabilization
Lecture 18 - Case Study 1 - Distributed Randomized Algorithms
Lecture 19 - Case Study 2 - Peer-to-Peer Computing and Structured Overlay Network
Lecture 20 - Case Study 3 - The Google File System (GFS)
Lecture 21 - Case Study 4 - MapReduce
Lecture 22 - Case Study 5 - HDFS
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Lecture 24 - Case Study 7 - Distributed Algorithms for Sensor Networks
Lecture 25 - Case Study 8 - Authentication in Distributed Systems
Lecture 26 - Case Study 9 - Bitcoin
Lecture 27 - Case Study 10 - BlockChain Technology

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NPTEL Video Course - Computer Science and Engineering - NOC: Social Networks

Subject Co-ordinator - Prof. Sudarshan Iyengar

Co-ordinating Institute - IIT - Ropar

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Answer to the puzzle
Lecture 3 - Introduction to Python - 1
Lecture 4 - Introduction to Python - 2
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Lecture 6 - Introduction to Networkx - 2
Lecture 7 - Social Networks
Lecture 8 - Google Page Rank
Lecture 9 - Searching in a Network
Lecture 10 - Link Prediction
Lecture 11 - The Contagions
Lecture 12 - Importance of Acquaintances
Lecture 13 - Marketing on Social Networks
Lecture 14 - Introduction to Datasets
Lecture 15 - Ingredients Network
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Lecture 17 - Web Graph
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Lecture 23 - Introduction
Lecture 24 - Advanced Material
Lecture 25 - Programming Illustration
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Lecture 27 - Introduction
Lecture 28 - Granovetter's Strength of weak ties
Lecture 29 - Triads, clustering coefficient and neighborhood overlap

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| Lecture 130 | Simple Branching Process for Modeling Epidemics |
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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC: An Introduction to Probability in Computing
Subject Co-ordinator - Prof. John Augustine
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Probability - A box of chocolates
Lecture 2 - Introduction to Probability - Axiomatic Approach to Probability Theory
Lecture 3 - Introduction to Probability - Verifying Matrix Multiplication (Statement, Algorithm and Independence)
Lecture 4 - Introduction to Probability - Verifying Matrix Multiplication (Correctness and Law of Total Probability)
Lecture 5 - Introduction to Probability - How Strong is your Network?
Lecture 6 - Introduction to Probability - How to Understand the World? Play with it!
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Lecture 8 - Tutorial 2
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Lecture 10 - Discrete Random Variables - Linearity of Expectation and Jensen's Inequality
Lecture 11 - Discrete Random Variables - Conditional Expectation I
Lecture 12 - Discrete Random Variables - Conditional Expectation II
Lecture 13 - Discrete Random Variables - Geometric Random Variables and Collecting Coupons
Lecture 14 - Discrete Random Variables - Randomized Selection
Lecture 15 - Tail Bounds I - Markov's Inequality
Lecture 16 - Tail Bounds I - The Second Moment, Variance and Chebyshev's Inequality
Lecture 17 - Tail Bounds I - Median via Sampling
Lecture 18 - Tail Bounds I - Median via Sampling - Analysis
Lecture 19 - Tail Bounds I - Moment Generating Functions and Chernoff Bounds
Lecture 20 - Tail Bounds I - Parameter Estimation
Lecture 21 - Tail Bounds I - Control Group Selection
Lecture 22 - Applications of Tail Bounds - Routing in Sparse Networks
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Lecture 24 - Applications of Tail Bounds - Random Graphs
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Lecture 1 - Introduction to Human Computer Interaction
Lecture 2 - What is HCI? Commonalities and Differences in Interfaces
Lecture 3 - Door handle, Elevators, Contextual Inquiry, Affinity Diagrams
Lecture 4 - Lab Session Contextual Inquiry
Lecture 5 - Lab Session Affinity Diagram
Lecture 6 - Tutorial on Photoshop
Lecture 7 - Tutorial on UI Designing using Photoshop
Lecture 8 - Institutional Review Board, Ethics committee, IRB documents / application, consent form
Lecture 9 - Tutorial on Proto.io
Lecture 10 - Tutorial on Lookback
Lecture 11 - How to understand user needs? Surveys, Questionnaire
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Lecture 19 - Lab Session
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Lecture 60 - Meltdown Attack - Recovering from Exception

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC: Data Science for Engineers

Subject Co-ordinator - Prof. Shankar Narasimhan, Prof. Ragunathan Rengasamy

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Data science for engineers Course philosophy and expectation
Lecture 2 - Introduction to R
Lecture 3 - Introduction to R (Continued...)
Lecture 4 - Variables and datatypes in R
Lecture 5 - Data frames
Lecture 6 - Recasting and joining of dataframes
Lecture 7 - Arithmetic, Logical and Matrix operations in R
Lecture 8 - Advanced programming in R
Lecture 9 - Advanced Programming in R
Lecture 10 - Control structures
Lecture 11 - Data visualization in R Basic graphics
Lecture 12 - Linear Algebra for Data science
Lecture 13 - Solving Linear Equations
Lecture 14 - Solving Linear Equations (Continued...)
Lecture 15 - Linear Algebra - Distance, Hyperplanes and Halfspaces, Eigenvalues, Eigenvectors
Lecture 16 - Linear Algebra - Distance, Hyperplanes and Halfspaces, Eigenvalues, Eigenvectors (Continued... 1)
Lecture 17 - Linear Algebra - Distance, Hyperplanes and Halfspaces, Eigenvalues, Eigenvectors (Continued... 2)
Lecture 18 - Linear Algebra - Distance, Hyperplanes and Halfspaces, Eigenvalues, Eigenvectors (Continued... 3)
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Lecture 20 - Random Variables and Probability Mass/Density Functions
Lecture 21 - Sample Statistics
Lecture 22 - Hypotheses Testing
Lecture 23 - Optimization for Data Science
Lecture 24 - Unconstrained Multivariate Optimization
Lecture 25 - Unconstrained Multivariate Optimization (Continued...)
Lecture 26 - Gradient (Steepest) Descent (OR) Learning Rule
Lecture 27 - Multivariate Optimization With Equality Constraints
Lecture 28 - Multivariate Optimization With Inequality Constraints
Lecture 29 - Introduction to Data Science

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Lecture 67 - What is your date of birth?
Lecture 68 - Birthday Paradox - Find your twin 01

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Lecture 109 - Recursion 01
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Lecture 115 - Snakes and Ladders - Not on the Board
Lecture 116 - Snakes and Ladders - Not on the Board - Part 01
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Lecture 122 - Spiral Traversing - Let's Animate
Lecture 123 - Spiral Traversing - Let's Animate - Part 01
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Lecture 125 - Spiral Traversing - Let's Animate - Part 03
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Lecture 128 - Spiral Traversing - Let's Animate - Part 06
Lecture 129 - Spiral Traversing - Let's Animate - Part 07
Lecture 130 - GPS - Track the route
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Lecture 135 - Tuples - Python Data Structure
Lecture 136 - Lottery Simulation - Profit or Loss
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Lecture 143 - Image Processing - Enhance your images
Lecture 144 - Image Processing - Enhance your images - Part 01
Lecture 145 - Image Processing - Enhance your images - Part 02
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Lecture 225 - Collatz Conjecture - Part 02
Lecture 226 - JOC Conclusion
Lecture 30 - Multinomial theorem
Lecture 31 - Problems on Binomial theorem
Lecture 32 - Pascal's Triangle
Lecture 33 - Fun facts on Pascal's Triangle
Lecture 34 - Catalan Numbers - Part 1
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Lecture 36 - Catalan Numbers - Part 3
Lecture 37 - Catalan Numbers - Part 4
Lecture 38 - Examples of Catalan numbers
Lecture 39 - Chapter Summary
Lecture 40 - Introduction to Set Theory
Lecture 41 - Example, definition and notation
Lecture 42 - Sets - Problems Part 1
Lecture 43 - Subsets - Part 1
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Lecture 53 - Power Set - Part 1
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Lecture 66 - Symmetric difference
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Lecture 108 - Laws of Logic
Lecture 109 - De Morgan's Law - Part 1
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Lecture 118 - Conclusion
Lecture 119 - Introduction to Relation
Lecture 120 - Graphical Representation of a Relation
Lecture 121 - Various sets
Lecture 122 - Matrix Representation of a Relation
Lecture 123 - Relation - An Example
Lecture 124 - Cartesian Product
Lecture 125 - Set Representation of a Relation
Lecture 126 - Revisiting Representations of a Relation
Lecture 127 - Examples of Relations
Lecture 128 - Number of relations - Part 1
Lecture 129 - Number of relations - Part 2
Lecture 130 - Reflexive relation - Introduction
Lecture 131 - Example of a Reflexive relation
Lecture 132 - Reflexive relation - Matrix representation
Lecture 133 - Number of Reflexive relations
Lecture 134 - Symmetric Relation - Introduction
Lecture 135 - Symmetric Relation - Matrix representation
Lecture 136 - Symmetric Relation - Examples and non examples
Lecture 137 - Parallel lines revisited
Lecture 138 - Number of symmetric relations - Part 1
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Lecture 140 - Examples of Reflexive and Symmetric Relations
Lecture 141 - Pattern
Lecture 142 - Transitive relation - Examples and non examples
Lecture 143 - Antisymmetric relation
Lecture 144 - Examples of Transitive and Antisymmetric Relation
Lecture 145 - Antisymmetric - Graphical representation
Lecture 146 - Antisymmetric - Matrix representation

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Lecture 186 - Cardinality condition in Onto function - Part 1
Lecture 187 - Cardinality condition in Onto function - Part 2
Lecture 188 - Introduction to Bijection
Lecture 189 - Examples of Bijection
Lecture 190 - Cardinality condition in Bijection - Part 1
Lecture 191 - Cardinality condition in Bijection - Part 2
Lecture 192 - Counting number of functions
Lecture 193 - Number of functions
Lecture 194 - Number of One-One functions - Part 1
Lecture 195 - Number of One-One functions - Part 2
Lecture 196 - Number of One-One functions - Part 3
Lecture 197 - Number of Onto functions
Lecture 198 - Number of Bijections
Lecture 199 - Counting number of functions.
Lecture 200 - Motivation for Composition of functions - Part 1
Lecture 201 - Motivation for Composition of functions - Part 2
Lecture 202 - Definition of Composition of functions
Lecture 203 - Why study Composition of functions
Lecture 204 - Example of Composition of functions - Part 1
Lecture 205 - Example of Composition of functions - Part 2
Lecture 206 - Motivation for Inverse functions
Lecture 207 - Inverse functions
Lecture 208 - Examples of Inverse functions
Lecture 209 - Application of inverse functions - Part 1
Lecture 210 - Three stories
Lecture 211 - Three stories - Connecting the dots
Lecture 212 - Mathematical induction - An illustration
Lecture 213 - Mathematical Induction - Its essence
Lecture 214 - Mathematical Induction - The formal way
Lecture 215 - MI - Sum of odd numbers
Lecture 216 - MI - Sum of powers of 2
Lecture 217 - MI - Inequality 1
Lecture 218 - MI - Inequality 1 (solution)
Lecture 219 - MI - To prove divisibility
Lecture 220 - MI - To prove divisibility (solution)
Lecture 221 - MI - Problem on satisfying inequalities
Lecture 222 - MI - Problem on satisfying inequalities (solutions)
Lecture 223 - MI - Inequality 2
Lecture 224 - MI - Inequality 2 solution

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Lecture 225 - Mathematical Induction - Example 9
Lecture 226 - Mathematical Induction - Example 10 solution
Lecture 227 - Binomial Coefficients - Proof by induction
Lecture 228 - Checker board and Trionioes - A puzzle
Lecture 229 - Checker board and triominoes - Solution
Lecture 230 - Mathematical induction - An important note
Lecture 231 - Mathematical Induction - A false proof
Lecture 232 - A false proof - Solution
Lecture 233 - Motivation for Pegionhole Principle
Lecture 234 - Group of n people
Lecture 235 - Set of n integers
Lecture 236 - 10 points on an equilateral triangle
Lecture 237 - Pegionhole Principle - A result
Lecture 238 - Consecutive integers
Lecture 239 - Consecutive integers solution
Lecture 240 - Matching initials
Lecture 241 - Matching initials - Solution
Lecture 242 - Numbers adding to 9
Lecture 243 - Numbers adding to 9 - Solution
Lecture 244 - Deck of cards
Lecture 245 - Deck of cards - Solution
Lecture 246 - Number of errors
Lecture 247 - Number of errors - Solution
Lecture 248 - Puzzle - Challenge for you
Lecture 249 - Friendship - an interesting property
Lecture 250 - Connectedness through Connecting people
Lecture 251 - Traversing the bridges
Lecture 252 - Three utilities problem
Lecture 253 - Coloring the India map
Lecture 254 - Definition of a Graph
Lecture 255 - Degree and degree sequence
Lecture 256 - Relation between number of edges and degrees
Lecture 257 - Relation between number of edges and degrees - Proof
Lecture 258 - Hand shaking lemma - Corollary
Lecture 259 - Problems based on Hand shaking lemma
Lecture 260 - Havel Hakimi theorem - Part 1
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Lecture 262 - Havel Hakimi theorem - Part 3
Lecture 263 - Havel Hakimi theorem - Part 4
Lecture 264 - Havel Hakimi theorem - Part 5
Lecture 265 - Regular graph and irregular graph
Lecture 266 - Walk
Lecture 267 - Trail
Lecture 268 - Path and closed path
Lecture 269 - Definitions revisited
Lecture 270 - Examples of walk, trail and path
Lecture 271 - Cycle and circuit
Lecture 272 - Example of cycle and circuit
Lecture 273 - Relation between walk and path
Lecture 274 - Relation between walk and path - An induction proof
Lecture 275 - Subgraph
Lecture 276 - Spanning and induced subgraph
Lecture 277 - Spanning and induced subgraph - A result
Lecture 278 - Introduction to Tree
Lecture 279 - Connected and Disconnected graphs
Lecture 280 - Property of a cycle
Lecture 281 - Edge condition for connectivity
Lecture 282 - Connecting connectedness and path
Lecture 283 - Connecting connectedness and path - An illustration
Lecture 284 - Cut vertex
Lecture 285 - Cut edge
Lecture 286 - Illustration of cut vertices and cut edges
Lecture 287 - NetworkX - Need of the hour
Lecture 288 - Introduction to Python - Installation
Lecture 289 - Introduction to Python - Basics
Lecture 290 - Introduction to NetworkX
Lecture 291 - Story so far - Using NetworkX
Lecture 292 - Directed, weighted and multi graphs
Lecture 293 - Illustration of Directed, weighted and multi graphs
Lecture 294 - Graph representations - Introduction
Lecture 295 - Adjacency matrix representation
Lecture 296 - Incidence matrix representation
Lecture 297 - Isomorphism - Introduction
Lecture 298 - Isomorphic graphs - An illustration
Lecture 299 - Isomorphic graphs - A challenge
Lecture 300 - Non-isomorphic graphs
Lecture 301 - Isomorphism - A question
Lecture 302 - Complement of a Graph - Introduction

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Lecture 303 - Complement of a Graph - Illustration
Lecture 304 - Self complement
Lecture 305 - Complement of a disconnected graph is connected
Lecture 306 - Complement of a disconnected graph is connected - Solution
Lecture 307 - Which is more? Connected graphs or disconnected graphs?
Lecture 308 - Bipartite graphs.
Lecture 309 - Bipartite graphs
Lecture 310 - Bipartite graphs - A puzzle
Lecture 311 - Bipartite graphs - Converse part of the puzzle
Lecture 312 - Definition of Eulerian Graph
Lecture 313 - Illustration of eulerian graph
Lecture 314 - Non- example of Eulerian graph
Lecture 315 - Litmus test for an Eulerian graph
Lecture 316 - Why even degree?
Lecture 317 - Proof for even degree implies graph is eulerian
Lecture 318 - A condition for Eulerian trail
Lecture 319 - Why the name Eulerian
Lecture 320 - Can you traverse all location?
Lecture 321 - Defintion of Hamiltonian graphs
Lecture 322 - Examples of Hamiltonian graphs
Lecture 323 - Hamiltonian graph - A result
Lecture 324 - A result on connectedness
Lecture 325 - A result on Path
Lecture 326 - Dirac's Theorem
Lecture 327 - Dirac's theorem - A note
Lecture 328 - Ore's Theorem
Lecture 329 - Dirac's Theorem v/s Ore's Theorem
Lecture 330 - Eulerian and Hamiltonian Are they related
Lecture 331 - Importance of Hamiltonian graphs in Computer science
Lecture 332 - Constructing non intersecting roads
Lecture 333 - Definition of a Planar graph
Lecture 334 - Examples of Planar graphs
Lecture 335 - V - E + R = 2
Lecture 336 - Illustration of V - E + R =2
Lecture 337 - V - E + R = 2; Use induction
Lecture 338 - Proof of V - E + R = 2
Lecture 339 - Famous non-planar graphs
Lecture 340 - Litmus test for planarity
Lecture 341 - Planar graphs - Inequality 1
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Lecture 342 - 3 Utilities problem - Revisited
Lecture 343 - Complete graph on 5 vertices is non-planar - Proof
Lecture 344 - Prisoners and cells
Lecture 345 - Prisoners example and Proper coloring
Lecture 346 - Chromatic number of a graph
Lecture 347 - Examples on Proper coloring
Lecture 348 - Recalling the India map problem
Lecture 349 - Recalling the India map problem - Solution
Lecture 350 - NetworkX - Digraphs
Lecture 351 - NetworkX - Adjacency matrix
Lecture 352 - NetworkX - Random graphs
Lecture 353 - NetworkX - Subgraph
Lecture 354 - NetworkX - Isomorphic graphs Part 1
Lecture 355 - NetworkX - Isomorphic graphs Part 2
Lecture 356 - NetworkX - Isomorphic graphs
Lecture 357 - NetworkX - Graph complement
Lecture 358 - NetworkX - Eulerian graphs
Lecture 359 - NetworkX - Bipartite graphs
Lecture 360 - NetworkX - Coloring
Lecture 361 - Counting in a creative way
Lecture 362 - Example 1 - Fun with words
Lecture 363 - Words and the polynomial
Lecture 364 - Words and the polynomial - Explained
Lecture 365 - Example 2 - Picking five balls
Lecture 366 - Picking five balls - Solution
Lecture 367 - Picking five balls - Another version
Lecture 368 - Definition of Generating function
Lecture 369 - Generating function examples - Part 1
Lecture 370 - Generating function examples - Part 2
Lecture 371 - Generating function examples - Part 3
Lecture 372 - Binomial expansion - A generating function
Lecture 373 - Binomial expansion - Explained
Lecture 374 - Picking 7 balls - The naive way
Lecture 375 - Picking 7 balls - The creative way
Lecture 376 - Generating functions - Problem 1
Lecture 377 - Generating functions - Problem 2
Lecture 378 - Generating functions - Problem 3
Lecture 379 - Why Generating function?
Lecture 380 - Introduction to Advanced Counting

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NPTEL Video Course - Computer Science and Engineering - NOC:Deep Learning

Subject Co-ordinator - Prof. Mitesh Khapra
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Biological Neuron
Lecture 2 - From Spring to Winter of AI
Lecture 3 - The Deep Revival
Lecture 4 - From Cats to Convolutional Neural Networks
Lecture 5 - Faster, higher, stronger
Lecture 6 - The Curious Case of Sequences
Lecture 7 - Beating humans at their own games (literally)
Lecture 8 - The Madness (2013)
Lecture 9 - (Need for) Sanity
Lecture 10 - Motivation from Biological Neurons
Lecture 11 - McCulloch Pitts Neuron, Thresholding Logic
Lecture 12 - Perceptrons
Lecture 13 - Error and Error Surfaces
Lecture 14 - Perceptron Learning Algorithm
Lecture 15 - Proof of Convergence of Perceptron Learning Algorithm
Lecture 16 - Deep Learning (CS7015)
Lecture 17 - Deep Learning (CS7015)
Lecture 18 - Deep Learning (CS7015)
Lecture 19 - Deep Learning (CS7015)
Lecture 20 - Deep Learning (CS7015)
Lecture 21 - Deep Learning (CS7015)
Lecture 22 - Deep Learning (CS7015)
Lecture 23 - Feedforward Neural Networks (a.k.a multilayered network of neurons)
Lecture 24 - Learning Parameters of Feedforward Neural Networks (Intuition)
Lecture 25 - Output functions and Loss functions
Lecture 26 - Backpropagation (Intuition)
Lecture 27 - Backpropagation
Lecture 28 - Backpropagation
Lecture 29 - Backpropagation

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Lecture 30 - Backpropagation
Lecture 31 - Derivative of the activation function
Lecture 32 - Information content, Entropy and cross entropy
Lecture 33 - Recap
Lecture 34 - Contours Maps
Lecture 35 - Momentum based Gradient Descent
Lecture 36 - Nesterov Accelerated Gradient Descent
Lecture 37 - Stochastic And Mini-Batch Gradient Descent
Lecture 38 - Tips for Adjusting Learning Rate and Momentum
Lecture 39 - Line Search
Lecture 40 - Gradient Descent with Adaptive Learning Rate
Lecture 41 - Bias Correction in Adam
Lecture 42 - Eigenvalues and Eigenvectors
Lecture 43 - Linear Algebra
Lecture 44 - Eigenvalue Decomposition
Lecture 45 - Principal Component Analysis and its Interpretations
Lecture 46 - PCA
Lecture 47 - PCA
Lecture 48 - PCA
Lecture 49 - PCA
Lecture 50 - Singular Value Decomposition
Lecture 51 - Introduction to Autoencoders
Lecture 52 - Link between PCA and Autoencoders
Lecture 53 - Regularization in autoencoders (Motivation)
Lecture 54 - Denoising Autoencoders
Lecture 55 - Sparse Autoencoders
Lecture 56 - Contractive Autoencoders
Lecture 57 - Bias and Variance
Lecture 58 - Train error vs Test error
Lecture 59 - Train error vs Test error (Recap)
Lecture 60 - True error and Model complexity
Lecture 61 - L2 regularization
Lecture 62 - Dataset augmentation
Lecture 63 - Parameter sharing and tying
Lecture 64 - Adding Noise to the inputs
Lecture 65 - Adding Noise to the outputs
Lecture 66 - Early stopping
Lecture 67 - Ensemble Methods
Lecture 68 - Dropout

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Lecture 69 - A quick recap of training deep neural networks
Lecture 70 - Unsupervised pre-training
Lecture 71 - Better activation functions
Lecture 72 - Better initialization strategies
Lecture 73 - Batch Normalization
Lecture 74 - One-hot representations of words
Lecture 75 - Distributed Representations of words
Lecture 76 - SVD for learning word representations
Lecture 77 - SVD for learning word representations (Continued...)
Lecture 78 - Continuous bag of words model
Lecture 79 - Skip-gram model
Lecture 80 - Skip-gram model (Continued...)
Lecture 81 - Contrastive estimation
Lecture 82 - Hierarchical softmax
Lecture 83 - GloVe representations
Lecture 84 - Evaluating word representations
Lecture 85 - Relation between SVD and Word2Vec
Lecture 86 - The convolution operation
Lecture 87 - Relation between input size, output size and filter size
Lecture 88 - Convolutional Neural Networks
Lecture 89 - Convolutional Neural Networks (Continued...)
Lecture 90 - CNNs (success stories on ImageNet)
Lecture 91 - CNNs (success stories on ImageNet) (Continued...)
Lecture 92 - Image Classification continued (GoogLeNet and ResNet)
Lecture 93 - Visualizing patches which maximally activate a neuron
Lecture 94 - Visualizing filters of a CNN
Lecture 95 - Occlusion experiments
Lecture 96 - Finding influence of input pixels using backpropagation
Lecture 97 - Guided Backpropagation
Lecture 98 - Optimization over images
Lecture 99 - Create images from embeddings
Lecture 100 - Deep Dream
Lecture 101 - Deep Art
Lecture 102 - Fooling Deep Convolutional Neural Networks
Lecture 103 - Sequence Learning Problems
Lecture 104 - Recurrent Neural Networks
Lecture 105 - Backpropagation through time
Lecture 106 - The problem of Exploding and Vanishing Gradients
Lecture 107 - Some Gory Details
NPTEL Video Course - Computer Science and Engineering - NOC: Foundations to Computer Systems Design

Subject Co-ordinator - Prof. V. Kamakoti

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the Course
Lecture 2 - CMOS Transistors and Gates
Lecture 3 - Basic Gates
Lecture 4 - Building Gates Using Simulator
Lecture 5 - Hierarchical Design and Verification
Lecture 6 - Building Blocks of a Digital Computer
Lecture 7 - Binary Number Systems
Lecture 8 - Signed Number Systems
Lecture 9 - Twos Complement Number System
Lecture 10 - Binary Adder Circuits
Lecture 11 - Building the ALU of HACK
Lecture 12 - HACK ALU Functionality
Lecture 13 - Tips for Project P1
Lecture 14 - Sequential Logic Design
Lecture 15 - Latches and Flipflops
Lecture 16 - The Memory Hierarchy
Lecture 17 - Design of Program Counter
Lecture 18 - Introduction to Computer Organization
Lecture 19 - Memory Mapped I/O
Lecture 20 - Tips for Projects P2 and P3
Lecture 21 - Tips for Project 4
Lecture 22 - Tips for Project 4
Lecture 23 - Introduction to Computer Architecture
Lecture 24 - The HACK Microarchitecture
Lecture 25 - The HACK CPU - A Deep Dive - Part 1
Lecture 26 - The HACK CPU - A Deep Dive - Part 2
Lecture 27 - The Data Memory
Lecture 28 - The HACK Computer
Lecture 29 - The Assembler Construction

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Lecture 30 - Understanding the Working of Assembler
Lecture 31 - Assembler
Lecture 32 - Assembler
Lecture 33 - Assembler
Lecture 34 - Project 6
Lecture 35 - Virtual Machines - What and Why?
Lecture 36 - The VM Instruction Set Architecture
Lecture 37 - The execution of a VM Program
Lecture 38 - How powerful is the VM?
Lecture 39 - Project 7
Lecture 40 - Project 7
Lecture 41 - Deep Understanding of VM ISA using VM Emulator
Lecture 42 - Virtual Machine II - Program flow commands and Introduction to Function Calls
Lecture 43 - Implementation of Function Call
Lecture 44 - Working of the Virtual Machine
Lecture 45 - Project 8
Lecture 46 - Handling Static Variables
Lecture 47 - Project 8
Lecture 48 - Introduction to The JACK Programming Language
Lecture 49 - Project 9
Lecture 50 - Understanding Syntax of JACK using Examples
Lecture 51 - Project 9
Lecture 52 - The JACK Syntax - Language Specification
Lecture 53 - Application Development using JACK
Lecture 54 - JACK Compiler
Lecture 55 - Project 10
Lecture 56 - The JACK Grammar
Lecture 57 - Compiler for JACK
Lecture 58 - The Token Analyzer
Lecture 59 - Testing the Correctness
Lecture 60 - The Jack Compiler - Back-end Introduction
Lecture 61 - The Jack Compiler - Handling Variables
Lecture 62 - The Jack Compiler - Handling Expressions
Lecture 63 - The Jack Compiler - Handling Flow of Control
Lecture 64 - The Jack Compiler - Handling Objects
Lecture 65 - The Jack Compiler - Handling Arrays
Lecture 66 - The Jack Compiler Backend
Lecture 67 - The Jack Compiler Backend
Lecture 68 - The Jack Compiler Backend

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Lecture 69 - The Jack Compiler Backend
Lecture 70 - The Jack Compiler Backend
Lecture 71 - The Jack Compiler Backend
Lecture 72 - Jack Compiler
Lecture 73 - Jack Compiler
Lecture 74 - Jack Compiler
Lecture 75 - Understand the Operating System - Compiler Interactions
Lecture 76 - Project 12 - One sample journey from Jack to Hack
Lecture 77 - Concluding Remarks
Lecture 1 - Introduction to the Course History of Artificial Intelligence
Lecture 2 - Overview of Machine Learning
Lecture 3 - Why Linear Algebra? Scalars, Vectors, Tensors
Lecture 4 - Basic Operations
Lecture 5 - Norms
Lecture 6 - Linear Combinations Span Linear Independence
Lecture 7 - Matrix Operations Special Matrices Matrix Decompositions
Lecture 8 - Introduction to Probability Theory Discrete and Continuous Random Variables
Lecture 9 - Conditional, Joint, Marginal Probabilities Sum Rule and Product Rule Bayes' Theorem
Lecture 10 - Bayes' Theorem - Simple Examples
Lecture 11 - Independence Conditional Independence Chain Rule Of Probability
Lecture 12 - Expectation
Lecture 13 - Variance Covariance
Lecture 14 - Some Relations for Expectation and Covariance (Slightly Advanced)
Lecture 15 - Machine Representation of Numbers, Overflow, Underflow, Condition Number
Lecture 16 - Derivatives, Gradient, Hessian, Jacobian, Taylor Series
Lecture 17 - Matrix Calculus (Slightly Advanced)
Lecture 18 - Optimization 1 Unconstrained Optimization
Lecture 19 - Introduction to Constrained Optimization
Lecture 20 - Introduction to Numerical Optimization Gradient Descent - 1
Lecture 21 - Gradient Descent 2 Proof of Steepest Descent Numerical Gradient Calculation Stopping Criteria
Lecture 22 - Introduction to Packages
Lecture 23 - The Learning Paradigm
Lecture 24 - A Linear Regression Example
Lecture 25 - Linear Regression Least Squares Gradient Descent
Lecture 26 - Coding Linear Regression
Lecture 27 - Generalized Function for Linear Regression
Lecture 28 - Goodness of Fit
Lecture 29 - Bias-Variance Trade Off

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Lecture 30 - Gradient Descent Algorithms
Lecture 31 - Introduction to Week 5 (Deep Learning)
Lecture 32 - Logistic Regression
Lecture 33 - Binary Entropy cost function
Lecture 34 - OR Gate Via Classification
Lecture 35 - NOR, AND, NAND Gates
Lecture 36 - XOR Gate
Lecture 37 - Differentiating the sigmoid
Lecture 38 - Gradient of logistic regression
Lecture 39 - Code for Logistic Regression
Lecture 40 - Multinomial Classification - Introduction
Lecture 41 - Multinomial Classification - One Hot Vector
Lecture 42 - Multinomial Classification - Softmax
Lecture 43 - Schematic of multinomial logistic regression
Lecture 44 - Biological neuron
Lecture 45 - Structure of an Artificial Neuron
Lecture 46 - Feedforward Neural Network
Lecture 47 - Introduction to back prop
Lecture 48 - Summary of Week 05
Lecture 49 - Introduction to Convolution Neural Networks (CNN)
Lecture 50 - Types of convolution
Lecture 51 - CNN Architecture Part 1 (LeNet and Alex Net)
Lecture 52 - CNN Architecture Part 2 (VGG Net)
Lecture 53 - CNN Architecture Part 3 (GoogleNet)
Lecture 54 - CNN Architecture Part 4 (ResNet)
Lecture 55 - CNN Architecture Part 5 (DenseNet)
Lecture 56 - Train Network for Image Classification
Lecture 57 - Semantic Segmentation
Lecture 58 - Hyperparameter optimization
Lecture 59 - Transfer Learning
Lecture 60 - Segmentation of Brain Tumors from MRI using Deep Learning
Lecture 61 - Activation Functions
Lecture 62 - Learning Rate decay, Weight initialization
Lecture 63 - Data Normalization
Lecture 64 - Batch Norm
Lecture 65 - Introduction to RNNs
Lecture 66 - Example - Sequence Classification
Lecture 67 - Training RNNs - Loss and BPTT
Lecture 68 - Vanishing Gradients and TBPTT
Lecture 69 - RNN Architectures
Lecture 70 - LSTM
Lecture 71 - Why LSTM Works
Lecture 72 - Deep RNNs and Bi- RNNs
Lecture 73 - Summary of RNNs
Lecture 74 - Introduction.
Lecture 75 - Knn
Lecture 76 - Binary decision trees
Lecture 77 - Binary regression trees
Lecture 78 - Bagging
Lecture 79 - Random Forest
Lecture 80 - Boosting
Lecture 81 - Gradient boosting
Lecture 82 - Unsupervised learning and Kmeans
Lecture 83 - Agglomerative clustering
Lecture 84 - Probability Distributions- Gaussian, Bernoulli
Lecture 85 - Covariance Matrix of Gaussian Distribution
Lecture 86 - Central Limit Theorem
Lecture 87 - Naïve Bayes
Lecture 88 - MLE Intro
Lecture 89 - PCA - Part 1
Lecture 90 - PCA - Part 2
Lecture 91 - Support Vector Machines
Lecture 92 - MLE, MAP and Bayesian Regression
Lecture 93 - Introduction to Generative model
Lecture 94 - Generative Adversarial Networks (GAN)
Lecture 95 - Variational Auto-encoders (VAE)
Lecture 96 - Applications
Lecture 97 - Applications
Lecture 98 - Introduction to Week 12
Lecture 99 - Application 1 description - Fin Heat Transfer
Lecture 100 - Application 1 solution
Lecture 101 - Application 2 description - Computational Fluid Dynamics
Lecture 102 - Application 2 solution
Lecture 103 - Application 3 description - Topology Optimization
Lecture 104 - Application 3 solution
Lecture 105 - Application 4 description of PDE/ODE using Neural Networks
Lecture 106 - Summary and road ahead
Lecture 1 - Secure Systems Engineering
Lecture 2 - Program Binaries
Lecture 3 - Buffer Overflows in the Stack
Lecture 4 - Buffer Overflows
Lecture 5 - Gdb - Demo
Lecture 6 - Skip instruction - Demo
Lecture 7 - Buffer Overflow - Demo
Lecture 8 - Buffer Overflow (create a shell) - Demo
Lecture 9 - Preventing buffer overflows with canaries and W^X
Lecture 10 - Return-to-libc attack
Lecture 11 - ROP Attacks
Lecture 12 - Demonstration of Canaries, W^X, and ASLR to prevent Buffer Overflow Attacks
Lecture 13 - Demonstration of a Return-to-Libc Attack
Lecture 14 - Demonstration of a Return Oriented Programming (ROP) Attack
Lecture 15 - ASLR - Part 1
Lecture 16 - ASLR - Part 2
Lecture 17 - Buffer overreads
Lecture 18 - Demonstration of Load Time Relocation
Lecture 19 - Demonstration of Position Independent Code
Lecture 20 - PLT Demonstration
Lecture 21 - Format string vulnerabilities
Lecture 22 - Integer Vulnerabilities
Lecture 23 - Heap
Lecture 24 - Heap exploits
Lecture 25 - Demo of Integer Vulnerabilites - I
Lecture 26 - Demo of Integer Vulnerabilites - II
Lecture 27 - Demo of Format String Vulnerabilities
Lecture 28 - Access Control
Lecture 29 - Access control in linux
Lecture 30 - Mandatory access Control
Lecture 31 - Confinement in Applications
Lecture 32 - Software fault isolation
Lecture 33 - Trusted Execution Environments
Lecture 34 - ARM Trustzone
Lecture 35 - SGX - Part 1
Lecture 36 - SGX - Part 2
Lecture 37 - PUF - Part 1
Lecture 38 - PUF - Part 2
Lecture 39 - PUF - Part 3
Lecture 40 - Covert Channels
Lecture 41 - Flush+Reload Attacks
Lecture 42 - Prime+Probe
Lecture 43 - Meltdown
Lecture 44 - Spectre Variant - 1
Lecture 45 - Spectre variant - 2
Lecture 46 - rowhammer
Lecture 47 - Heap demo - 1
Lecture 48 - Heap demo - 2
Lecture 49 - Heap demo - 3
Lecture 50 - PowerAnalysisAttacks
Lecture 51 - Hardware Trojans
Lecture 52 - FANCI
Lecture 53 - Detecting Hardware Trojans in ICs
Lecture 54 - Protecting against Hardware Trojans
Lecture 55 - Side Channel Analysis
Lecture 56 - Fault Attacks on AES
Lecture 57 - Demo
Lecture 58 - Demo
Lecture 59 - Demo
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC: Multimodal Interaction

Subject Co-ordinator - Dr. Stefan Hillmann, Prof. Dr. Sebastian Moller

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Medium vs. Modality
Lecture 3 - Multimedia and Multimodality
Lecture 4 - Modality Relations
Lecture 5 - Characteristics of Multimodal Systems
Lecture 6 - Introduction
Lecture 7 - Speech Production
Lecture 8 - Hearing - Ear
Lecture 9 - Hearing - Perception
Lecture 10 - Introduction
Lecture 11 - The Human Eye
Lecture 12 - Gestalt Perception
Lecture 13 - Resolution and Sensitivity
Lecture 14 - Depth Perception
Lecture 15 - Reading
Lecture 16 - Introduction
Lecture 17 - Haptics
Lecture 18 - Smell
Lecture 19 - Taste
Lecture 20 - Memory
Lecture 21 - Motorsystem
Lecture 22 - Introduction
Lecture 23 - Processing Multiple Signals
Lecture 24 - Multimodal Dual-Tasks
Lecture 25 - Effects of Discongurent Signals
Lecture 26 - Relevance
Lecture 27 - Introduction 1
Lecture 28 - Introduction 2
Lecture 29 - Gesture to Space

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Lecture 30 - Turn Taking
Lecture 31 - Conclusion
Lecture 32 - Introduction
Lecture 33 - Overview
Lecture 34 - Automatic Speech Recognition
Lecture 35 - Emotion Recognition
Lecture 36 - Text Recognition
Lecture 37 - Introduction
Lecture 38 - Icons
Lecture 39 - Text Generation
Lecture 40 - Text to Speech
Lecture 41 - Speech Generation
Lecture 42 - Introduction
Lecture 43 - Multimodal Interactive Systems Development
Lecture 44 - Introduction
Lecture 45 - Virtual Reality
Lecture 46 - Introduction to Audio for Virtual Reality
Lecture 47 - Spatial Hearing
Lecture 48 - Dummy Heads
Lecture 49 - Individuality of HRTFs
Lecture 50 - Sterophony
Lecture 51 - Crosstalk Cancelation
Lecture 52 - Ambisonics
Lecture 53 - Sound Field Synthesis
Lecture 54 - Challenges with Projection-based Systems
Lecture 55 - Capturing of Sound Scenes
Lecture 56 - Closing Remarks
NPTEL Video Course - Computer Science and Engineering - NOC:Deep Learning - Part 2

Subject Co-ordinator - Prof. Mitesh Khapra
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Recap of Probability Theory
Lecture 2 - Why are we interested in Joint Distributions
Lecture 3 - How do we represent a joint distribution
Lecture 4 - Can we represent the joint distribution more compactly
Lecture 5 - Can we use a graph to represent a joint distribution
Lecture 6 - Different types of reasoning encoded in a Bayesian Network
Lecture 7 - Independencies encoded by a Bayesian Network (Case 1)
Lecture 8 - Independencies encoded by a Bayesian Network (Case 2)
Lecture 9 - Independencies encoded by a Bayesian Network (Case 3)
Lecture 10 - Bayesian Networks
Lecture 11 - I-Maps
Lecture 12 - Markov Networks
Lecture 13 - Factors in Markov Network
Lecture 14 - Local Independencies in a Markov Network
Lecture 15 - Joint Distributions
Lecture 16 - The concept of a latent variable
Lecture 17 - Restricted Boltzmann Machines
Lecture 18 - RBMs as Stochastic Neural Networks
Lecture 19 - Unsupervised Learning with RBMs
Lecture 20 - Computing the gradient of the log likelihood
Lecture 21 - Motivation for Sampling
Lecture 22 - Motivation for Sampling - Part 2
Lecture 23 - Markov Chains
Lecture 24 - Why do we care about Markov Chains?
Lecture 25 - Setting up a Markov Chain for RBMs
Lecture 26 - Training RBMs Using Gibbs Sampling
Lecture 27 - Training RBMS Using Contrastive Divergence
Lecture 28 - Revisiting Autoencoders
Lecture 29 - Variational Autoencoders

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Lecture 30 - Variational Autoencoders
Lecture 31 - Neural Autoregressive Density Estimator
Lecture 32 - Masked Autoencoder Density Estimator (MADE)
Lecture 33 - Generative Adversarial Networks - The Intuition
Lecture 34 - Generative Adversarial Networks - Architecture
Lecture 35 - Generative Adversarial Networks - The Math Behind it
Lecture 36 - Generative Adversarial Networks - Some Cool Stuff and Applications
Lecture 37 - Bringing it all together (the deep generative summary)
NPTEL Video Course - Computer Science and Engineering - NOC: Machine Learning

Subject Co-ordinator - Prof. Henrik Bostrom, Prof. Fredrik Kilander, Prof. Carl Gustaf Jansson

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the Machine Learning Course
Lecture 2 - Foundation of Artificial Intelligence and Machine Learning
Lecture 3 - Intelligent Autonomous Systems and Artificial Intelligence
Lecture 4 - Applications of Machine Learning
Lecture 5 - Tutorial for week 1
Lecture 6 - Characterization of Learning Problems
Lecture 7 - Objects, Categories and Features
Lecture 8 - Feature related issues
Lecture 9 - Scenarios for Concept Learning
Lecture 10 - Tutorial for week 2
Lecture 11 - Forms of Representation
Lecture 12 - Decision Trees
Lecture 13 - Bayes (ian) Belief Networks
Lecture 14 - Artificial Neural Networks
Lecture 15 - Genetic algorithm
Lecture 16 - Logic Programming
Lecture 17 - Tutorial for week 3
Lecture 18 - Inductive Learning based on Symbolic Representations and Weak Theories
Lecture 19 - Generalization as Search - Part 1
Lecture 20 - Generalization as Search - Part 2
Lecture 21 - Decision Tree Learning Algorithms - Part 1
Lecture 22 - Decision Tree Learning Algorithms - Part 2
Lecture 23 - Instance Based Learning - Part 1
Lecture 24 - Instance Based Learning - Part 2
Lecture 25 - Cluster Analysis
Lecture 26 - Tutorial for week 4
Lecture 27 - Machine Learning enabled by Prior Theories
Lecture 28 - Explanation Based Learning
Lecture 29 - Inductive Logic Programming

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Lecture 30 - Machine learning, perceptron, linearly separable
Lecture 31 - Linear Models for Classification
Lecture 32 - Biological Neural Network
Lecture 33 - Perceptron
Lecture 34 - Perceptron Learning
Lecture 35 - Logical XOR
Lecture 36 - Activation Functions
Lecture 37 - Gradient Descent
Lecture 38 - Feedforward and Backpropagation Neural Network
Lecture 39 - Why Word2Vec?
Lecture 40 - What are CBOW and Skip-Gram Models?
Lecture 41 - One word learning architecture
Lecture 42 - Forward pass for Word2Vec
Lecture 43 - Matrix Operations Explained
Lecture 44 - CBOW and Skip Gram Models
Lecture 45 - Building Skip-gram model using Python
Lecture 46 - Reduction of complexity - sub-sampling, negative sampling
Lecture 47 - Binary tree, Hierarchical softmax
Lecture 48 - Mapping the output layer to Softmax
Lecture 49 - Updating the weights using hierarchical softmax
Lecture 50 - Discussion on the results obtained from word2vec
Lecture 51 - Recap and Introduction
Lecture 52 - ANN as a LM and its limitations
Lecture 53 - Sequence Learning and its applications
Lecture 54 - Introduction to Recurrent Neural Network
Lecture 55 - Unrolled RNN
Lecture 56 - RNN - Based Language Model
Lecture 57 - BPTT - Forward Pass
Lecture 58 - BPTT - Derivatives for W,V and U
Lecture 59 - BPTT - Exploding and vanishing gradient
Lecture 60 - LSTM
Lecture 61 - Truncated BPTT
Lecture 62 - GRU
Lecture 63 - Introduction and Historical Approaches to Machine Translation
Lecture 64 - What is SMT?
Lecture 65 - Noisy Channel Model, Bayes Rule, Language Model
Lecture 66 - Translation Model, Alignment Variables
Lecture 67 - Alignments again!
Lecture 68 - IBM Model 1
Lecture 69 - IBM Model 2
Lecture 70 - Introduction to Phrase-based translation
Lecture 71 - Symmetrization of alignments
Lecture 72 - Extraction of Phrases
Lecture 73 - Learning/estimating the phrase probabilities using another Symmetrization example
Lecture 74 - Introduction to evaluation of Machine Translation
Lecture 75 - BLEU - A short Discussion of the seminal paper
Lecture 76 - BLEU Demo using NLTK and other Metrics
Lecture 77 - Encoder-Decoder model for Neural Machine Translation
Lecture 78 - RNN Based Machine Translation
Lecture 79 - Recap and Connecting Bloom Taxonomy with Machine Learning
Lecture 80 - Introduction to Attention based Translation
Lecture 81 - Research Paper discussion on Neural machine translation by jointly learning to align and translate
Lecture 82 - Typical NMT architecture architecture and models for multi-language translation
Lecture 83 - Beam Search, Stochastic Gradient Descend, Mini Batch, Batch
Lecture 84 - Beam Search, Stochastic Gradient Descend, Mini Batch, Batch
Lecture 85 - Introduction to Conversation Modeling
Lecture 86 - A few examples in Conversation Modeling
Lecture 87 - Some ideas to Implement IR-based Conversation Modeling
Lecture 88 - Discussion of some ideas in Question Answering
Lecture 89 - Hyperspace Analogue to Language - HAL
Lecture 90 - Correlated Occurence Analogue to Lexical Semantic - COALS
Lecture 91 - Global Vectors - Glove
Lecture 92 - Evaluation of Word vectors
NPTEL Video Course - Computer Science and Engineering - NOC: Python for Data Science

Subject Co-ordinator - Prof. Ragunathan Rengasamy

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Python for Data Science
Lecture 2 - Introduction to Python
Lecture 3 - Introduction to Spyder - Part 1
Lecture 4 - Introduction to Spyder - Part 2
Lecture 5 - Variables and Datatypes
Lecture 6 - Operators
Lecture 7 - Lists Part - 1
Lecture 8 - Lists Part - 2
Lecture 9 - Tuples
Lecture 10 - Dictionary
Lecture 11 - Sets
Lecture 12 - Numpy Part - 1
Lecture 13 - Numpy Part - 2
Lecture 14 - Matrix
Lecture 15 - Linear algebra Part - 1
Lecture 16 - Linear algebra Part - 2
Lecture 17 - Reading data
Lecture 18 - Pandas Dataframes - I
Lecture 19 - Pandas Dataframes - II
Lecture 20 - Pandas Dataframes - III
Lecture 21 - Control structures and Functions
Lecture 22 - Exploratory data analysis
Lecture 23 - Data Visualization - Part I
Lecture 24 - Data Visualization - Part II
Lecture 25 - Dealing with missing data
Lecture 26 - Module
Lecture 27 - Linear Regression
Lecture 28 - Model Assessment
Lecture 29 - Diagnostics to Improve Linear Model Fit

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Lecture 30 - Multiple Linear Regression
Lecture 31 - Cross Validation
Lecture 32 - Classification
Lecture 33 - Logistic Regression
Lecture 34 - Logistic Regression (Continued...)
Lecture 35 - Performance Measures
Lecture 36 - K - Nearest Neighbors (kNN)
Lecture 37 - K - means Clustering
Lecture 38 - Decision Trees
Lecture 39 - Introduction to Classification Case Study
Lecture 40 - Case Study on Classification - Part I
Lecture 41 - Case Study on Classification - Part II
Lecture 42 - Introduction to Regression Case Study
Lecture 43 - Case Study on Regression - Part I
Lecture 44 - Case Study on Regression - Part II
Lecture 45 - Case Study on Regression - Part III
Lecture 30 - Introduction to word embeddings
Lecture 31 - Recurrent Neural Networks - Part 1
Lecture 32 - Recurrent Neural Networks - Part 2
Lecture 33 - Time Series Forecasting with RNNs
Lecture 34 - Text Generation with RNNs
Lecture 35 - TensorFlow Customization
Lecture 36 - Customizing tf.keras - Part 1
Lecture 37 - Customizing tf.keras - Part 2
Lecture 38 - TensorFlow Distributed Training
NPTEL Video Course - Computer Science and Engineering - NOC: Introduction to Cryptology

Subject Co-ordinator - Dr. Sugata Gangopadhyay
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction Caeser cipher
Lecture 2 - Modular arithmetic, shift cipher
Lecture 3 - Affine Cipher, Vigenere Cipher
Lecture 4 - Prefect secrecy, Application of Shift Cipher
Lecture 5 - Problem Discussion on Affine cipher and Perfect Secrecy
Lecture 6 - Product Cipher, Block Cipher, Modes of Operation for Block Cipher
Lecture 7 - Substitution Permutation network, Fiestel Cipher
Lecture 8 - S-Box Theory
Lecture 9 - Cryptanalysis and its Variants, Linear Attack
Lecture 10 - Problem Discussion
Lecture 11 - Public Key Cryptology Introduction RSA Cryptosystem
Lecture 12 - Complexity analysis of Euclidian Algorithm and RSA Cryptosystem square and multiply algorithm
Lecture 13 - Primality testing
Lecture 14 - Efficien Computation of Jacobi Symbol Primality Testing
Lecture 15 - Problem Discussion on Jacobi Symbol Calculation and RSA Cryptosystem
Lecture 16 - Cryptographic hash function
Lecture 17 - Random Oracle model, Security of hash functions
Lecture 18 - Randomized Algorithm and its application on Preimage resistance and collision resistance
Lecture 19 - Iterated Hash Functions
Lecture 20 - Problem Discussionn
NPTEL Video Course - Computer Science and Engineering - Combinatorics

Subject Co-ordinator - Dr. L. Sunil Chandran

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Pigeon hole principle - (Part 1)
Lecture 2 - Pigeon hole principle - (Part 2)
Lecture 3 - Pigeon hole principle - (Part 3)
Lecture 4 - Pigeon hole principle - (Part 4)
Lecture 5 - Elementary concepts and basic counting principles
Lecture 6 - Elementary concepts; Binomial theorem; Bijective proofs - Part (1)
Lecture 7 - Bijective proofs - Part (2)
Lecture 8 - Bijective proofs - Part (3); Properties of binomial coefficients; Combinatorial identities - Part (1)
Lecture 9 - Combinatorial identities - Part (2); Permutations of multisets - Part (1)
Lecture 10 - Permutations of multisets - Part (2)
Lecture 11 - Multinomial Theorem, Combinations of Multisets - Part (1)
Lecture 12 - Combinations of Multisets - Part (2)
Lecture 13 - Combinations of Multisets - Part (3), Bounds for binomial coefficients
Lecture 14 - Sterling’s Formula, Generalization of Binomial coefficients - Part (1)
Lecture 15 - Generalization of Binomial coefficients - Part (2)
Lecture 16 - Generalization of Binomial coefficients - Part (3); Double counting - Part (1)
Lecture 17 - Double counting - Part (2)
Lecture 18 - Hall’s Theorem for regular bipartite graphs; Inclusion exclusion principle - Part (1)
Lecture 19 - Inclusion exclusion principle - Part (2)
Lecture 20 - Inclusion exclusion principle - Part (3)
Lecture 21 - Inclusion exclusion principle - Part (4)
Lecture 22 - Inclusion exclusion principle - Part (5)
Lecture 23 - Recurrence Relations - Part (1)
Lecture 24 - Recurrence Relations - Part (2)
Lecture 25 - Recurrence Relations - Part (3)
Lecture 26 - Recurrence Relations - Part (4)
Lecture 27 - Recurrence Relations - Part (5)
Lecture 28 - Generating functions - Part (1)
Lecture 29 - Generating functions - Part (2)
Lecture 30 - Solving recurrence relations using generating functions - Part (1)
Lecture 31 - Solving recurrence relations using generating functions - Part (2)
Lecture 32 - Exponential generating functions - Part (1)
Lecture 33 - Exponential generating functions - Part (2), Partition Number - Part (1)
Lecture 34 - Partition Number - Part (2)
Lecture 35 - Partition Number - Part (3)
Lecture 36 - Partition Number - Part (4); Catalan Numbers - Part (1)
Lecture 37 - Catalan Numbers - Part (2)
Lecture 38 - Catalan Numbers - Part (3), Sterling numbers of the 2nd kind
Lecture 39 - Difference Sequences
Lecture 40 - Sterling Numbers
Lecture 41 - Summary
Lecture 30 - Partial Redundancy Elimination - Part 2
Lecture 31 - The Static Single Assignment Form
Lecture 32 - The Static Single Assignment Form
Lecture 33 - The Static Single Assignment Form
Lecture 34 - Automatic Parallelization - Part 1
Lecture 35 - Automatic Parallelization - Part 2
Lecture 36 - Automatic Parallelization - Part 3
Lecture 37 - Automatic Parallelization - Part 4
Lecture 38 - Instruction Scheduling - Part 1
Lecture 39 - Instruction Scheduling - Part 2
Lecture 40 - Instruction Scheduling - Part 3
Lecture 41 - Software Pipelining
Lecture 42 - Energy-Aware Software Systems - Part 1
Lecture 43 - Energy-Aware Software Systems - Part 2
Lecture 44 - Energy-Aware Software Systems - Part 3
Lecture 45 - Energy-Aware Software Systems - Part 4
Lecture 46 - Just-In-Time Compilation and Optimizations for .NET CLR
Lecture 47 - Garbage Collection
Lecture 48 - Interprocedural Data-Flow Analysis
Lecture 49 - Worst Case Execution Time - Part 1
Lecture 50 - Worst Case Execution Time - Part 2
NPTEL Video Course - Computer Science and Engineering - Graph Theory

Subject Co-ordinator - Dr. L. Sunil Chandran

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Matchings
Lecture 3 - More on Hall’s theorem and some applications
Lecture 4 - Tutte’s theorem on existence of a perfect matching
Lecture 5 - More on Tutte’s theorem
Lecture 6 - More on Matchings
Lecture 7 - Dominating set, path cover
Lecture 8 - Gallai â–¶ Millgram theorem, Dilworthâ–¶ s theorem
Lecture 9 - Connectivity
Lecture 10 - Mengerâ–¶ s theorem
Lecture 11 - More on connectivity
Lecture 12 - Minors, topological minors and more on k- linkedness
Lecture 13 - Vertex coloring
Lecture 14 - More on vertex coloring
Lecture 15 - Edge coloring
Lecture 16 - Proof of Vizingâ–¶ s theorem, Introduction to planarity
Lecture 17 - 5- coloring planar graphs, Kuratowskyâ–¶ s theorem
Lecture 18 - Proof of Kuratowskyâ–¶ s theorem, List coloring
Lecture 19 - List chromatic index
Lecture 20 - Adjacency polynomial of a graph and combinatorial Nullstellensatz
Lecture 21 - Chromatic polynomial, k - critical graphs
Lecture 22 - Gallai-Roy theorem, Acyclic coloring, Hadwigerâ–¶ s conjecture
Lecture 23 - Perfect graphs
Lecture 24 - Interval graphs, chordal graphs
Lecture 25 - Proof of weak perfect graph theorem (WPPT)
Lecture 26 - Second proof of WPPT, Some non-perfect graph classes
Lecture 27 - More special classes of graphs
Lecture 28 - Bxicity,Sphericity, Hamiltonian circuits
Lecture 29 - More on Hamiltonicity
Lecture 30 - Chvatal’s theorem, toughness, Hamiltonicity and 4-color conjecture
Lecture 31 - Network flows
Lecture 32 - More on network flows
Lecture 33 - Circulations and tensions
Lecture 34 - More on circulations and tensions, flow number and Tutte’s flow conjectures
Lecture 35 - Random graphs and probabilistic method
Lecture 36 - Probabilistic method
Lecture 37 - Probabilistic method
Lecture 38 - Probabilistic method
Lecture 39 - Graph minors and Hadwiger’s conjecture
Lecture 40 - More on graph minors, tree decompositions
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NPTEL Video Course - Computer Science and Engineering - High Performance Computing

Subject Co-ordinator - Prof. Mathew Jacob
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Programs and Data
Lecture 2 - Data Representation
Lecture 3 - Registers and Memory
Lecture 4 - Instructions, Addressing Modes
Lecture 5 - A RISC Instruction Set
Lecture 6 - A RISC Instruction Set (Continued...)
Lecture 7 - Function Call and Return
Lecture 8 - Function Call and Return (Continued...)
Lecture 9 - Instruction Execution
Lecture 10 - Instruction Execution (Continued...)
Lecture 11 - Software organization
Lecture 12 - System Calls
Lecture 13 - Virtual memory
Lecture 14 - Virtual memory (Continued...)
Lecture 15 - Virtual Memory (Continued...)
Lecture 16 - Process
Lecture 17 - Process scheduling
Lecture 18 - Process lifetime
Lecture 19 - Interprocess communication
Lecture 20 - Concurrent programming
Lecture 21 - Pipelining
Lecture 22 - Pipeline hazards
Lecture 23 - Pipeline hazards (Continued...)
Lecture 24 - Pipeline hazards (Continued...)
Lecture 25 - Cache memory
Lecture 26 - Memory hierarchy
Lecture 27 - Cache operation
Lecture 28 - Cache operation (Continued)
Lecture 29 - Cache aware programming

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Lecture 30 – Cache aware programming (Continued...)
Lecture 31 – More on cache
Lecture 32 – Measuring time
Lecture 33 – Program Profiling
Lecture 34 – Secondary storage
Lecture 35 – Files and disks
Lecture 36 – Directories
Lecture 37 – Protection and Performance
Lecture 38 – Parallel architecture
Lecture 39 – Cache coherence
Lecture 40 – MPI programming
Lecture 41 – MPI programming (Continued...)
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - Numerical Optimization

Subject Co-ordinator - Dr. Shirish K. Shevade

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Mathematical Background
Lecture 3 - Mathematical Background (Continued...)
Lecture 4 - One Dimensional Optimization - Optimality Conditions
Lecture 5 - One Dimensional Optimization (Continued...)
Lecture 6 - Convex Sets
Lecture 7 - Convex Sets (Continued...)
Lecture 8 - Convex Functions
Lecture 9 - Convex Functions (Continued...)
Lecture 10 - Multi Dimensional Optimization - Optimality Conditions, Conceptual Algorithm
Lecture 11 - Line Search Techniques
Lecture 12 - Global Convergence Theorem
Lecture 13 - Steepest Descent Method
Lecture 14 - Classical Newton Method
Lecture 15 - Trust Region and Quasi-Newton Methods
Lecture 16 - Quasi-Newton Methods - Rank One Correction, DFP Method
Lecture 17 - i) Quasi-Newton Methods - Broyden Family ii) Coordinate Descent Method
Lecture 18 - Conjugate Directions
Lecture 19 - Conjugate Gradient Method
Lecture 20 - Constrained Optimization - Local and Global Solutions, Conceptual Algorithm
Lecture 21 - Feasible and Descent Directions
Lecture 22 - First Order KKT Conditions
Lecture 23 - Constraint Qualifications
Lecture 24 - Convex Programming Problem
Lecture 25 - Second Order KKT Conditions
Lecture 26 - Second Order KKT Conditions (Continued...)
Lecture 27 - Weak and Strong Duality
Lecture 28 - Geometric Interpretation
Lecture 29 - Lagrangian Saddle Point and Wolfe Dual
Lecture 30 - Linear Programming Problem
Lecture 31 - Geometric Solution
Lecture 32 - Basic Feasible Solution
Lecture 33 - Optimality Conditions and Simplex Tableau
Lecture 34 - Simplex Algorithm and Two-Phase Method
Lecture 35 - Duality in Linear Programming
Lecture 36 - Interior Point Methods - Affine Scaling Method
Lecture 37 - Karmarkar's Method
Lecture 38 - Lagrange Methods, Active Set Method
Lecture 39 - Active Set Method (Continued...)
Lecture 40 - Barrier and Penalty Methods, Augmented Lagrangian Method and Cutting Plane Method
Lecture 41 - Summary
NPTEL Video Course - Computer Science and Engineering - Storage Systems

Subject Co-ordinator - Dr. K. Gopinath

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview
Lecture 2 - Storage, Processing, Networking
Lecture 3 - Naming and Storing
Lecture 4 - Storage Filesystems
Lecture 5 - Access Architecture, Hard Disks
Lecture 6 - SCSI
Lecture 7 - Fibre Channel Protocol (FCP)
Lecture 8 - FCP, 10Gb Ethernet, iSCSI, TCP
Lecture 9 - NFS, NFSv2
Lecture 10 - NFSv2, NFSv3, NFSv4, CIFS
Lecture 11 - USB Storage
Lecture 12 - Tiering
Lecture 13 - Mobile/Personal/Organizational - type Storage
Lecture 14 - Parallel/Cloud/Web-scale Storage
Lecture 15 - Long-term Storage
Lecture 16 - Storage interfaces
Lecture 17 - User-Memory-CPU interactions
Lecture 18 - Spinlock, Concurrency
Lecture 19 - Block Layer design
Lecture 20 - FAT, TFAT, F2FS, LFS, FTL
Lecture 21 - Data Structures
Lecture 22 - Abstractions
Lecture 23 - Link & Write Operations
Lecture 24 - ZFS
Lecture 25 - RAID in Filesystems
Lecture 26 - RAID-Z, NetApp RAID4, Flash Filesystems
Lecture 27 - Reliability
Lecture 28 - Performance
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| Lecture 30 | CAP Theorem |
| Lecture 31 | POSIX/NFS/S3/Zookeeper, ACID Vs. BASE |
| Lecture 32 | Consistency & Commit problems |
| Lecture 33 | Paxos |
| Lecture 34 | Group Communication problem |
| Lecture 35 | Message Ordering |
| Lecture 36 | Ordering Models |
| Lecture 37 | Orderings in Filesystems |
| Lecture 38 | Semantics of highly scalable filesystems |
| Lecture 39 | GFS |
| Lecture 40 | GFS Model |
| Lecture 41 | GFS functions and operations |
| Lecture 42 | GFS problems, BigTable |
| Lecture 43 | Lessons to learn |
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - System Analysis and Design

Subject Co-ordinator - Prof. V. Rajaraman

Co-ordinating Institute - IISc - Bangalore

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NPTEL Video Course - Computer Science and Engineering - Principles of Compiler Design

Subject Co-ordinator - Prof. Y.N. Srikanth
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Electrical Engineering - Nonlinear Dynamical Systems

Subject Co-ordinator - Prof. Harish K. Pillai, Prof. Madhu N. Belur

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 8 - Extension of Lyapunov's Theorem in different contexts
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Lecture 10 - Bendixson criterion and Poincare-Bendixson criterion. Example
Lecture 11 - Bendixson and Poincare-Bendixson criteria van-der-Pol Oscillator
Lecture 12 - Scilab simulation of Lotka Volterra predator prey model, van-der-Pol Oscillator Review of linear system
Lecture 13 - Signals, operators
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Lecture 15 - Nyquist plots and Nyquist criterion for stability
Lecture 16 - Interconnection between linear system & non-linearity, passive filters
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NPTEL Video Course - Electrical Engineering - Power System Dynamics and Control

Subject Co-ordinator - Dr. A.M. Kulkarni

Co-ordinating Institute - IIT - Bombay

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Lecture 6 - Analysis of LINEAR Time Invariant Dynamical Systems (Continued.)
Lecture 7 - Stiff Systems, Multi Time Scale Modeling
Lecture 8 - Numerical Integration
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Lecture 10 - Numerical Integration (Continued.)
Lecture 11 - Modeling of Synchronous Machines
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NPTEL Video Course - Electrical Engineering - Power Electronics

Subject Co-ordinator - Prof. Kishore Chatterjee, Prof. B.G. Fernandes

Co-ordinating Institute - IIT - Bombay

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NPTEL Video Course - Electrical Engineering - Fabrication of Silicon VLSI Circuits using the MOS technology

Subject Co-ordinator - Prof. A.N. Chandorkar

Co-ordinating Institute - IIT - Bombay

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Lecture 27 - Thin Film Deposition and Etching in VLSI Processing
Lecture 28 - Etching in VLSI Processing and Back -End Technology

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NPTEL Video Course - Electrical Engineering - NOC:Computational Electromagnetics and Applications

Subject Co-ordinator - Prof. Krish Sankaran

Co-ordinating Institute - IIT - Bombay

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC: Fundamentals of Wavelets, Filter Banks and Time Frequency Analysis

Subject Co-ordinator - Prof. V.M. Gadre
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 5 - Module 2 - Lecture 2 - Dilates and Translates of Haar Wavelets
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Lecture 7 - Module 3 - Lecture 1 - Piecewise Constant Representation of a Function
Lecture 8 - Module 3 - Lecture 2 - Ladder of Subspaces
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| Lecture 35 - | Module 11 - Lecture 2 - Effect of X (-Z) in time domain and aliasing |
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| Lecture 37 - | Module 12 - Lecture 1 - Revisiting aliasing and the Idea of perfect reconstruction |
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NPTEL Video Course – Electrical Engineering – NOC: Microwave Theory and Techniques

Subject Co-ordinator – Prof. Girish Kumar

Co-ordinating Institute – IIT – Bombay

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Lecture 1 – Microwave Theory and Techniques Introduction – I
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Lecture 3 – Microwave Theory and Techniques Introduction – III
Lecture 4 – Effects of Microwaves on Human Body – I
Lecture 5 – Effects of Microwaves on Human Body – II
Lecture 6 – Waveguides – I
Lecture 7 – Waveguides – II
Lecture 8 – Waveguides – III
Lecture 9 – Transmission Lines – I
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Lecture 12 – Smith Chart and Impedance Matching – II
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Lecture 26 – Microwave Diodes
Lecture 27 – Microwave Attenuators
Lecture 28 – Microwave RF Switches
Lecture 29 – Series and Shunt SPDT Switches and Introduction to Phase Shifters

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Lecture 46 - Fundamentals of Antennas
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Lecture 53 - Microwave Systems
Lecture 54 - Microwave Measurements and Lab Demonstration
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Lecture 56 - Power Divider and Combiner Design in CST
Lecture 57 - Hybrid Coupler Design
Lecture 58 - Antenna Design and Amplifier Simulation in CST
Lecture 59 - Mixer Design in NI AWR Software - I
Lecture 60 - Mixer Design in NI AWR Software - II
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NPTEL Video Course - Electrical Engineering - NOC: Principles of Digital Communications

Subject Co-ordinator - Prof. S.N. Merchant
Co-ordinating Institute - IIT - Bombay
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Lecture 1 - Course Overview
Lecture 2 - Introduction to Information Theory
Lecture 3 - Entropy and its properties
Lecture 4 - Lossless Source Coding Theorem
Lecture 5 - Prefix Codes and Kraft's Inequality
Lecture 6 - Huffman Coding
Lecture 7 - Discrete Memory-less Channels
Lecture 8 - Channel Capacity - I
Lecture 9 - Channel Capacity - II
Lecture 10 - Channel Coding Theorem
Lecture 11 - Differential Entropy - I
Lecture 12 - Differential Entropy - II
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Lecture 14 - Channel Capacity - IV
Lecture 15 - Summary of Information Theory
Lecture 16 - Signal Space Representations - I
Lecture 17 - Signal Space Representations - II
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Lecture 21 - ML, MAP Detectors for AWGN Channel
Lecture 22 - Optimal Receiver
Lecture 23 - Probability of error for Optimal Receiver
Lecture 24 - Probability of Error for M-ary Scheme
Lecture 25 - Pulse Code Modulation
Lecture 26 - Uniform Quantizer
Lecture 27 - Step Size and Quantization Noise
Lecture 28 - Non-uniform Quantizer (Lloyd-Max Quantizer)
Lecture 29 - Companded Quantization - I

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NPTEL Video Course - Electrical Engineering - NOC: Fundamental of Power Electronics

Subject Co-ordinator - Prof. Vivek Agarwal

Co-ordinating Institute - IIT - Bombay

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Lecture 1 - Familiarization with Power Electronic Systems
Lecture 2 - Overview of Basic Power Electronic Circuits from Laymans Point of View
Lecture 3 - Applications, Definitions, and Nature of Power Electronic Circuits
Lecture 4 - Components of a Power Electronic System
Lecture 5 - Analysis of Switched Networks
Lecture 6 - Review of engineering maths for power electronic circuit analysis
Lecture 7 - Review of semiconductor physics
Lecture 8 - P-N Junction
Lecture 9 - Power Diodes
Lecture 10 - Thyristors
Lecture 11 - Motivation for rectifier capacitor filter
Lecture 12 - Circuit Operation
Lecture 13 - Designing the circuit
Lecture 14 - Simulation setup for NgSpice and gEDA schematic capture
Lecture 15 - Simulating the circuit
Lecture 16 - Practicals
Lecture 17 - Inrush current limiting - Intro
Lecture 18 - Inrush current limiting - Resistor solution
Lecture 19 - Inrush current limiting - Thermistor solution
Lecture 20 - Inrush current limiting - Transformer solution
Lecture 21 - Inrush current limiting - MOSFET solution
Lecture 22 - Inrush current limiting - Relay, contactor
Lecture 23 - Three phase rectifier capacitor filter
Lecture 24 - Simulation - 3 phase rectifier capacitor filter
Lecture 25 - Power factor - Motivation
Lecture 26 - Power factor - Discussion
Lecture 27 - Power factor - Sinusoidal
Lecture 28 - Power factor for rectifier cap filter
Lecture 29 - Passive power improvement circuit

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Lecture 31 - Linear regulators - Intro
Lecture 32 - Shunt regulator
Lecture 33 - Example on shunt regulator
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Lecture 35 - Applications of shunt regulator
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Lecture 37 - Efficiency of series
Lecture 38 - Negative and dual voltage regulators
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Lecture 40 - Improvements to series regulator
Lecture 41 - Regulator performance parameters
Lecture 42 - Datasheet of few IC regulators
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Lecture 44 - Practicals 1
Lecture 45 - Switched mode DC-DC converter intro
Lecture 46 - Volt-sec and Amp-sec balance
Lecture 47 - Input-output relationship
Lecture 48 - Buck converter - operation and waveforms
Lecture 49 - Buck converter - component selection
Lecture 50 - Primary configurations
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Lecture 79 - Area products and mfiles
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Lecture 81 - BJT base drive
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Lecture 90 - Intro for close loop control
Lecture 91 - Close looping dc-dc converters
Lecture 92 - Simulation of close loop control
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Lecture 94 - Instability in current control and slope compensation
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Lecture 96 - Simulation of current control
Lecture 97 - Single phase inverter with sinusoidal pwm
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NPTEL Video Course - Electrical Engineering - Circuit Theory

Subject Co-ordinator - Prof. S.C. Dutta Roy

Co-ordinating Institute - IIT - Delhi

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Lecture 1 - Review of Signals and Systems
Lecture 2 - Review of Signals and Systems
Lecture 3 - Network Equations; Initial and Final Conditions
Lecture 4 - Problem Session 1
Lecture 5 - Step, Impulse and Complete Responses
Lecture 6 - 2nd Order Circuits
Lecture 7 - Transformer Transform Domain Analysis
Lecture 8 - Problem Session 2
Lecture 9 - Network Theorems and Network Functions
Lecture 10 - Network Functions (Continued.)
Lecture 11 - Amplitude and Phase of Network Functions
Lecture 12 - Problem Session 3
Lecture 13 - Poles, Zeros and Network Response
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Lecture 15 - Single Tuned Circuits (Continued.)
Lecture 16 - Double Tuned Circuits
Lecture 17 - Double Tuned Circuits (Continued.)
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Lecture 21 - Two-port Networks (Continued.)
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Lecture 28 - Interconnection of Two-port Networks (Continued.)
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Lecture 35 - The Nyquist Stability Criterion and Stability Margins
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Lecture 40 - Feedback System Performance Based on the Frequency Response (Continued.)
Lecture 41 - Compensator Design Using Frequency Response Plots
NPTEL Video Course - Electrical Engineering - Embedded Systems

Subject Co-ordinator - Prof. Santanu Chaudhary
Co-ordinating Institute - IIT - Delhi

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NPTEL Video Course - Electrical Engineering - Power System Generation, Transmission and Distribution (Encapsulated from earlier Video)

Subject Co-ordinator - Prof. D.P. Kothari
Co-ordinating Institute - IIT - Delhi
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Lecture 1 - Electric Energy Systems A Perspective
Lecture 2 - Structure of Power Systems
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Lecture 29 - Newton Raphson (NR), Load Flow Method

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Lecture 31 - Control of Voltage Profile
Lecture 32 - Optimal System Operation (Economic Operation)
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Lecture 34 - Optimal Generation Scheduling
Lecture 35 - Optimal Load Flow (Continued.) and Hydro Thermal Scheduling
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NPTEL Video Course - Electrical Engineering - Power System Dynamics

Subject Co-ordinator - Dr. M.L. Kothari

Co-ordinating Institute - IIT - Delhi

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Lecture 1 - Introduction to Power System Stability Problem - Part-1
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Lecture 4 - Solution of Switching Equation
Lecture 5 - The Equal Area Criterion for Stability - Part-1
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Lecture 15 - Excitation Systems - Part-2
Lecture 16 - Modeling of Excitation Systems - Part-1
Lecture 17 - Modeling of Excitation Systems - Part-2
Lecture 23 - Dynamic Modeling of Steam turbines and Governors
Lecture 24 - Dynamic modeling of Hydro Turbines and Governors
Lecture 25 - Load modeling for Stability Studies
Lecture 26 - Numerical Integration Methods for Solving a Set of Ordinary Nonlinear Differential Equation
Lecture 27 - Simulation of Power System Dynamic Response
Lecture 28 - Dynamic Equivalents for Large Scale Systems - Part-1
Lecture 29 - Dynamic Equivalents for Large Scale Systems - Part-2

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Lecture 30 - Dynamic Equivalents for Large Scale Systems - Part-3
Lecture 31 - Direct Method of Transient Stability Analysis - Part-1
Lecture 32 - Direct Method of Transient Stability Analysis - Part-2
Lecture 33 - Sub Synchronous Oscillations - Part-1
Lecture 34 - Sub Synchronous Oscillations - Part-2
Lecture 35 - Voltage Stability - Part-1
Lecture 36 - Voltage Stability - Part-2
Lecture 37 - Voltage Stability - Part-3
Lecture 38 - Voltage Stability - Part-4
Lecture 39 - Methods of Improving Stability - Part-1
Lecture 40 - Methods of Improving Stability - Part-2
Lecture 30 - Advantages of Negative Feedback Amplifiers
Lecture 31 - Analysis of Feedback Amplifiers
Lecture 32 - Analysis of the Series - Series and Other Feedback Configurations
Lecture 33 - Problem Session-8 on Feedback Amplifiers
Lecture 34 - Sinusoidal Oscillators
Lecture 35 - More on Oscillators
Lecture 36 - Solutions to Minor-2 Exam and Concluding Discussions on Oscillators
Lecture 37 - Problem Session-9 on Oscillators
Lecture 38 - Tuned (or Narrowband) Amplifiers
Lecture 39 - Widebanding Techniques
Lecture 40 - Widebanding By Using an Inductance
Lecture 41 - Problem Session-10 on Tuned Amplifiers
Lecture 42 - Widebanding by Using Compound Devices
Lecture 43 - Cascode Configuration as Wideband Amplifier
Lecture 44 - Widebanding by Local Feedback
Lecture 45 - Problem Session-11 on Minor-3 Problems & Widebanding by Compound Devices
Lecture 46 - Widebanding by Local Feedback and Feedback Cascades
Lecture 47 - Widebanding by Overall Feedback and Dual Loop Feedback
Lecture 48 - The Differential Pair and the Gilbert Cell as Wideband Amplifiers
Lecture 49 - Correction to Gilbert Cell Analysis and Operational Amplifier Imperfections
Lecture 50 - Op-Amp offsets, Compensation and Slew Rate
Lecture 51 - Op-Amp Compensation, Slew Rate and Some Problems
Lecture 1 - Introduction to the Course
Lecture 2 - Digital Representation of Analog Signals, Delta Modulation
Lecture 3 - Digital Representation of Analog Signals, Pulse Code Modulation
Lecture 4 - Digital Representation of Analog Signals
Lecture 5 - Quantization Noise in Delta Modulation (Continued...) and Time Division Multiplexing
Lecture 6 - Introduction to Line Coding
Lecture 7 - Spectral Properties of Line Codes
Lecture 8 - Spectral Properties of Line Codes
Lecture 9 - Spectral Properties of Line Codes
Lecture 10 - Baseband Pulse Shaping
Lecture 11 - Baseband Pulse Shaping; Raised Cosine Family of Pulses
Lecture 12 - Partial Response Signalling
Lecture 13 - Precoding for Duobinary and Modified Duobinary Systems
Lecture 14 - Precoding for Modified Duobinary Systems (Continued...) and General Partial Response Signalling
Lecture 15 - Binary Baseband Digital Modulation Techniques
Lecture 16 - Many Baseband Digital Modulation Techniques
Lecture 17 - Passband Digital Modulations - I
Lecture 18 - Passband Digital Modulations - II
Lecture 19 - Passband Digital Modulations - III
Lecture 20 - Passband Digital Modulations - IV
Lecture 21 - Passband Modulations for Band Limited Channels
Lecture 22 - Baseband and Passband Digital Demodulations
Lecture 23 - Digital Modulation Part - II Matched Filters
Lecture 24 - Matched Filters and Coherent Demodulation- I
Lecture 25 - Coherent Demodulation for Binary Wave Form
Lecture 26 - Demodulators for Binary Waveforms (Continued...)
Lecture 27 - Performance Analysis of Binary Digital Modulations
Lecture 28 - Error Rates for Binary Signalling
Lecture 29 - Performance of Non Coherent FSK and Differential Phase Shift Keying
Lecture 30 - Demodulation of DPSK and M\'ary Signals
Lecture 31 - Performance of M\'ary Digital Modulations
Lecture 32 - Performance of M\'ary Digital Modulations (Continued...)
Lecture 33 - Introduction to Information Theory, Part-1
Lecture 34 - Source Coding
Lecture 35 - Error Free Communication Over a Noisy Channel
Lecture 36 - The Concept of Channel Capacity
Lecture 37 - Error Correcting Codes
Lecture 38 - Error Correcting Codes (Continued...)

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NPTEL Video Course - Electrical Engineering - Introduction To Electronic Circuits

Subject Co-ordinator - Prof. S.C. Dutta Roy

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the Course and Basic Electrical Quantity
Lecture 2 - R.L.C. Components, Energy Considerations, Sources and Circuit Laws
Lecture 3 - KCL, KVL and Network Analysis
Lecture 4 - Networks Theorems ( Thevenin's Norton's )
Lecture 5 - Source Transformation; Super Position Theorem and Non-Linear One-Ports
Lecture 6 - Signal Wave Forms
Lecture 7 - Periodic Wave Forms and Elements of Amplifiers
Lecture 8 - Operational Amplifiers and Diodes
Lecture 9 - Rectifiers and Power Supplies
Lecture 10 - Wave Shaping Circuits
Lecture 11 - More on Wave Shaping Circuits and Introduction to Natural Response of Circuits
Lecture 12 - Natural Response (Continued...)
Lecture 13 - Natural Response of 2nd Order Circuit
Lecture 14 - Natural Response of 2nd Order Circuit (Continued...)
Lecture 15 - Impedance Functions, Poles, Zeros and their Applications
Lecture 16 - Natural Response and Poles and Zeros and Introduction to Forced Response
Lecture 17 - Phasors and their Applications in AC Ckts, analysis
Lecture 18 - More About Phasors and Introduction to Complete Response
Lecture 19 - Complete Response of Electrical Circuits
Lecture 20 - AC Circuit Analysis
Lecture 21 - Filter Circuits and Resonance
Lecture 22 - Resonance (Continued...)
Lecture 23 - General Network Analysis
Lecture 24 - Two-Port Networks
Lecture 25 - Semiconductor Physics
Lecture 26 - Semiconductor Physics (Continued...)
Lecture 27 - More About Diodes Including Zener Diodes
Lecture 28 - Bipolar Junction Transistors
Lecture 29 - Transistors Characteristics and Biasing

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Lecture 30 - BJT Biasing and Introduction to Power Amplifiers
Lecture 31 - BJT Power Amplifiers
Lecture 32 - Power Amplifier
Lecture 33 - Power Amplifiers (Continued...) and an Introduction to Small Signal Modelling of BJT
Lecture 34 - Small Signal Model and Small Signal Amplifiers
Lecture 35 - Small Signal Amplifiers (Continued...)
Lecture 36 - Small Signal Amplifier (Continued...)
Lecture 37 - Small Signal Amplifiers (Continued...)
Lecture 38 - Negative Feedback
Lecture 39 - Digital Circuits
Lecture 40 - Digital Circuits (Continued...)
NPTEL Video Course - Electrical Engineering - NOC: Analog Electronic Circuit

Subject Co-ordinator - Dr. Shouribrata Chatterjee

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Analog Circuits Introduction to the Diode
Lecture 2 - Diodes, Introduction to The Transistor
Lecture 3 - MOS Device, Characteristics
Lecture 4 - DC operating point
Lecture 5 - DC operating point, amplifier design
Lecture 6 - Common source amplifier, small signal analysis
Lecture 7 - Common gate, common drain
Lecture 8 - Common gate circuit
Lecture 9 - Source degenerated amplifier
Lecture 10 - Swing limits
Lecture 11 - Swing limits (Continued...), multi transistor amplifiers
Lecture 12 - Multi-transistor amplifiers
Lecture 13 - Introduction to current sources
Lecture 14 - Current sources/mirrors (Continued...)
Lecture 15 - Current sources, biasing
Lecture 16 - Differential circuits
Lecture 17 - Differential amplifiers-I
Lecture 18 - Differential amplifiers-II
Lecture 19 - Differential amplifiers-III
Lecture 20 - Self biased active load diff. amp
Lecture 21 - Diff. Cascode amplifier, two stage amplifiers
Lecture 22 - Two stage diff. amps, op-amps
Lecture 23 - Op-amps, OTAs
Lecture 24 - Circuits with op-amps
Lecture 25 - Capacitance in MOS devices
Lecture 26 - Common source, drain, gate-revisited
Lecture 27 - Common gate, common drain with capacitances
Lecture 28 - Cascode, cascade-revisit with capacitance
Lecture 29 - Cascade amplifier (with capacitance)

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Lecture 30 - Diversion
Lecture 31 - Diversion Continued
Lecture 32 - Compensation
Lecture 33 - Op-amp Design with Compensation
Lecture 34 - Unity Gain Bandwidth
Lecture 35 - Power Amplification
Lecture 36 - Power Amplifiers-2
Lecture 37 - Power Amplifiers- Class A,B,AB,C ClassD
Lecture 38 - Class D Amplifiers, Push-pull Amplifiers
Lecture 39 - Introduction to Voltage Regulators
Lecture 40 - Voltage Regulators- line, load; Conclusion Regulation

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NPTEL Video Course - Electrical Engineering - NOC: Nonlinear and Adaptive Control

Subject Co-ordinator - Prof. Shubhendu Bhasin

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Preliminaries
Lecture 3 - Model Reference Adaptive Control - Part 1
Lecture 4 - Model Reference Adaptive Control - Part 2
Lecture 5 - Model Reference Adaptive Control - Part 3
Lecture 6 - Adaptive Command Tracking
Lecture 7 - Robust Model Reference Adaptive Control - Part 1
Lecture 8 - Robust Model Reference Adaptive Control - Part 2
Lecture 9 - Robust Model Reference Adaptive Control - Part 3
Lecture 10 - Robust Model Reference Adaptive Control - Part 4

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NPTEL Video Course - Electrical Engineering - NOC: Information Theory, Coding and Cryptography

Subject Co-ordinator - Prof. Ranjan Bose
Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Information Theory
Lecture 2 - Entropy, Mutual Information, Conditional and Joint Entropy
Lecture 3 - Measures for Continuous, Random Variable, Relative Entropy
Lecture 4 - Variable Length Codes, Prefix Codes
Lecture 5 - Source Coding Theorem
Lecture 6 - various source coding Techniques
Lecture 7 - Optimum Quantizer, Practical Application of Source Coding
Lecture 8 - Introduction to Super Information
Lecture 9 - Channel Models and Channel Capacity
Lecture 10 - Noisy Channel Coding Theorem
Lecture 11 - Gaussian Channel and Information Capacity Theorem
Lecture 12 - Capacity of MIMO Channels
Lecture 13 - Introduction to Error Control Coding
Lecture 14 - Introduction to Galois Field
Lecture 15 - Equivalent Codes, Generator Matrix and Parity Check Matrix
Lecture 16 - Systematic Codes, Error Detections and Correction
Lecture 17 - Erasure and Errors, Standard Array and Syndrome Decoding
Lecture 18 - Probability of Error, Coding Gain and Hamming Bound
Lecture 19 - Hamming Codes, LDPC Codes and MDS Codes
Lecture 20 - Introduction to Cyclic Codes
Lecture 21 - Generator Polynomial, Syndrome Polynomial and Matrix Representation
Lecture 22 - Fire Code, Golay Code, CRC Codes and Circuit Implementation of Cyclic Codes
Lecture 23 - Introduction to BCH Codes
Lecture 24 - Multiple Error Correcting BCH Codes, Decoding of BCH Codes
Lecture 25 - Introduction to Reed Solomon (RS) Codes
Lecture 26 - Introduction to Convolutional Codes
Lecture 27 - Trellis Codes
Lecture 28 - Vitrebi Decoding and Known good Convolutional Codes
Lecture 29 - Introduction to Turbo Codes

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Lecture 30 - Introduction to Trellis Coded Modulation (TCM)
Lecture 31 - Ungerboek's Design Rules and Performance Evaluation of TCM Schemes
Lecture 32 - TCM for Fading Channel and Space Time Trellis Codes (STTC)
Lecture 33 - Introduction to Space Time Block Codes (STBC)
Lecture 34 - Space Time Codes
Lecture 35 - Space Time Codes (Continued...)
Lecture 36 - Introduction to Cryptography
Lecture 37 - Some Well-Known Algorithms
Lecture 38 - Introduction to Physical Layer Security
Lecture 39 - Secrecy Outage Capacity, Secrecy Outage Probability, Cooperative Jamming
Lecture 30 - Wave Guides (Continued...)
Lecture 31 - Wave Guides (Continued...) Rectangular Wave Guides - 1
Lecture 32 - Resonators General Properties
Lecture 33 - Resonators (Continued...) Transmission Line Resonators
Lecture 34 - Resonators (Continued...) Wave Guide Resonators
Lecture 35 - Radiation
Lecture 36 - Radiation (Continued...)
Lecture 37 - Radiation (Continued...) - 1
Lecture 38 - Radiation (Continued...) - 2
Lecture 39 - Radiation (Continued...) Monopole Antennas half Wave Dipole Antenna
Lecture 40 - Radiation (Continued...)
Lecture 41 - Radiation (Continued...) 2 - Element Arrays, Yagi-Uda Array
Subject Co-ordinator - Prof. Abhishek Dixit
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Signal Spaces
Lecture 3 - Inner Product and Orthogonal Expansion
Lecture 4 - Signal Spaces
Lecture 5 - Signal Spaces
Lecture 6 - Signal Spaces
Lecture 7 - Random Variables and Random Processes
Lecture 8 - Random Variables and Random Processes
Lecture 9 - Random Variables and Random Processes
Lecture 10 - Random Variables and Random Processes
Lecture 11 - Random Variables and Random Processes
Lecture 12 - Random Variables and Random Processes
Lecture 13 - Random Variables and Random Processes
Lecture 14 - Random Variables and Random Processes
Lecture 15 - Random Variables and Random Processes
Lecture 16 - Random Variables and Random Processes
Lecture 17 - Random Variables and Random Processes
Lecture 18 - Waveform Coding
Lecture 19 - Modulation
Lecture 20 - Modulation
Lecture 21 - Modulation
Lecture 22 - Modulation
Lecture 23 - Modulation
Lecture 24 - Modulation
Lecture 25 - Modulation
Lecture 26 - Modulation
Lecture 27 - Modulation
Lecture 28 - Modulation
Lecture 29 - Modulation

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Lecture 30 - Detection
Lecture 31 - Detection
Lecture 32 - Detection
Lecture 33 - Detection
Lecture 34 - Detection
Lecture 35 - Detection
Lecture 36 - Detection
Lecture 37 - Detection
Lecture 38 - Detection
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC: Electric Vehicles - Part 1

Subject Co-ordinator - Prof. Amit Jain

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Intro EV Historical Background
Lecture 2 - Intro EV Benefits of Using Evs
Lecture 3 - Intro EV Overview of types of Evs and its Challenges
Lecture 4 - Intro EV Motor Drive Technologies
Lecture 5 - Intro EV Energy Source Technologies
Lecture 6 - Intro EV Battery Charging Technologies
Lecture 7 - Intro EV Vehicle to Grid
Lecture 8 - Intro EV Subsystems and Configurations
Lecture 9 - Intro HEV Subsystems and Configurations
Lecture 10 - Intro HEV Subsystems and Modes of Operation
Lecture 11 - Vehicle_Dynamics_intro_and_tractive_effort
Lecture 12 - Vehicle_Dynamics_and_dynamic_equation
Lecture 13 - Vehicle Dynamics simulation dynamic equation constant Fte
Lecture 14 - Vehicle Dynamics dynamic equation variable Fte
Lecture 15 - Vehicle Dynamics simulation dynamic equation variable Fte
Lecture 16 - Vehicle Dynamics Modelling and simulation in Simulink
Lecture 17 - Summary Electric Vehicles Part 1 Course

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NPTEL Video Course – Electrical Engineering – NOC: Power Electronics

Subject Co-ordinator - Prof. G.Bhuvaneshwari
Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

| Lecture 1 | Introduction to Power Electronics |
| Lecture 2 | Power Devices |
| Lecture 3 | Power Devices |
| Lecture 4 | Power Devices |
| Lecture 5 | Single-phase Uncontrolled Rectifiers |
| Lecture 6 | Single-phase Controlled Rectifiers - I |
| Lecture 7 | Single-phase Controlled Rectifiers - II |
| Lecture 8 | Three Phase Rectifiers - I |
| Lecture 9 | Numericals on devices and Single-phase Rectifiers |
| Lecture 10 | Three Phase Rectifiers - II |
| Lecture 11 | Dual Converter and Communication Overlap |
| Lecture 12 | Communication Overlap - II and AC-AC Converter - Introduction |
| Lecture 13 | Single-Phase and Three-Phase AC Voltage Controllers |
| Lecture 14 | Three-Phase AC Voltage Controllers and Cycloconverters |
| Lecture 15 | Non-Isolated DC-DC Converters - I |
| Lecture 16 | Non-Isolated DC-DC Converters - II |
| Lecture 17 | Isolated DC-DC Converters - I |
| Lecture 18 | Isolated DC-DC Converters - II and Cuk Converters |
| Lecture 19 | Voltage Source Inverters |
| Lecture 20 | VSI PWM Techniques - I |
| Lecture 21 | VSI PWM Techniques - II |
| Lecture 22 | SPWM and SVM Technique |
| Lecture 23 | Current Source Inverter |
| Lecture 24 | Power Electronics Applications |

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NPTEL Video Course - Electrical Engineering - NOC:Electrical Machines

Subject Co-ordinator - Prof. G.Bhuvaneshwari
Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Electrical Machines - I
Lecture 2 - Single-phase and Three-phase AC Circuits, Magnetic circuits
Lecture 3 - Magnetic Circuit - II
Lecture 4 - Magnetic Circuit - III
Lecture 5 - Transformers - Introduction
Lecture 6 - Transformers - Amp-Turn Balance, Ideal and practical transformers
Lecture 7 - Transformer Equivalent circuit and Reducing leakage
Lecture 8 - Transformer equivalent circuit parameter determination
Lecture 9 - Transformers - Voltage regulation and efficiency
Lecture 10 - Auto-transformers
Lecture 11 - PU notation and Introduction to Instrument transformers
Lecture 12 - Instrument Transformers and All Day Efficiency
Lecture 13 - Three Phase Transformers - I
Lecture 14 - Three Phase Transformers - II
Lecture 15 - Electromechanical Energy Conversion - I
Lecture 16 - Electromechanical Energy Conversion - II
Lecture 17 - Electromechanical Energy Conversion - III
Lecture 18 - DC Machines-Introduction, Constructional Features
Lecture 19 - DC Machines - EMF and Torque Equations and Generator Operation
Lecture 20 - DC Machines - OCC and Load Characteristics Classification
Lecture 21 - DC Machines - Armature Reaction
Lecture 22 - DC Machines - Voltage Build-up and Load Characteristics
Lecture 23 - DC Generator Characteristics and Introduction to DC Motors
Lecture 24 - DC Motors
Lecture 25 - DC Motor
Lecture 26 - DC Motor
Lecture 27 - DC Machine
Lecture 28 - DC Machine
Lecture 29 - 3 Phase Induction Machine

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Lecture 30 - 3 Phase Induction Machine
Lecture 31 - 3 Phase Induction Machine
Lecture 32 - Testing of Induction Motor
Lecture 33 - 3 Phase Induction Machine
Lecture 34 - Synchronous Machines
Lecture 35 - Synchronous Machines
Lecture 36 - Numerical Session
Lecture 37 - Synchronization of Alternators
Lecture 38 - Synchronous Machines
Lecture 39 - Synchronous Machines
Lecture 40 - Synchronous Machines
Lecture 41 - Single Phase Induction Motors
NPTEL Video Course - Electrical Engineering - Advanced Control Systems

Subject Co-ordinator - Prof. S. Majhi

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Control structures and performance measures
Lecture 3 - Time and frequency domain performance measures
Lecture 4 - Design of controller
Lecture 5 - Design of controller for SISO system
Lecture 6 - Controller design for TITO processes
Lecture 7 - Limitations of PID controllers
Lecture 8 - PI-PD controller for SISO system
Lecture 9 - PID-P controller for Two Input Two Output system
Lecture 10 - Effects of measurement noise and load
Lecture 11 - Identification of dynamic models of plants
Lecture 12 - Relay control system for identification
Lecture 13 - Off-line identification of process dynamics
Lecture 14 - On-line identification of plant dynamics
Lecture 15 - State space based identification
Lecture 16 - State space analysis of systems
Lecture 17 - State space based identification of systems - 1
Lecture 18 - State space based identification of systems - 2
Lecture 19 - Identification of simple systems
Lecture 20 - Identification of FOPDT model
Lecture 21 - Identification of second order plus dead time model
Lecture 22 - Identification of SOPDT model
Lecture 23 - Steady state gain from asymmetrical relay test
Lecture 24 - Identification of SOPDT model with pole multiplicity
Lecture 25 - Existence of limit cycle for unstable system
Lecture 26 - Identification procedures
Lecture 27 - Identification of underdamped systems
Lecture 28 - Off-line identification of TITO systems
Lecture 29 - On-line identification of TITO systems
Lecture 30 - Review of time domain based identification
Lecture 31 - DF based analytical expressions for on-line identification
Lecture 32 - Model parameter accuracy and sensitivity
Lecture 33 - Improved identification using Fourier series and wavelet transform
Lecture 34 - Reviews of DF based identification
Lecture 35 - Advanced Smith predictor controller
Lecture 36 - Design of controllers for the advanced Smith predictor
Lecture 37 - Model-free controller design
Lecture 38 - Model Based PID controller Design - I
Lecture 39 - Model Based PI-PD controller Design - II
Lecture 40 - Tuning of reconfigurable PID controllers
NPTEL Video Course - Electrical Engineering - NOC: Optimization Techniques for Digital VLSI Design

Subject Co-ordinator - Dr. Santosh Biswas, Prof. Chandan Karfa

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Digital VLSI Design Flow
Lecture 2 - High-level Synthesis (HLS) flow with an example
Lecture 3 - Automation of High-level Synthesis Steps
Lecture 4 - Impact of Coding Style on HLS Results
Lecture 5 - Impact of Compiler Optimizations on HLS Results
Lecture 6 - RTL Optimizations for Timing
Lecture 7 - Retiming
Lecture 8 - RTL Optimizations for Area
Lecture 9 - RTL Optimizations for Power
Lecture 10 - High Level Synthesis
Lecture 11 - Overview of FPGA Technology Mapping
Lecture 12 - Introduction to Physical Synthesis
Lecture 13 - Introduction to Digital VLSI Testing - I
Lecture 14 - Introduction to Digital VLSI Testing - II
Lecture 15 - Optimization Techniques for ATPG - Part I
Lecture 16 - Optimization Techniques for ATPG - Part II
Lecture 17 - Optimization Techniques for Design for Testability
Lecture 18 - High-level fault modeling and RTL level Testing
Lecture 19 - LTL/CTL based Verification
Lecture 20 - Verification of Large Scale Systems
Lecture 21 - BDD based verification
Lecture 22 - Verification
Lecture 23 - Verification
Lecture 24 - Verification
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC:Advanced Topics in Probability and Random Processes

Subject Co-ordinator - Prof. Prabin K Bora
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Probability Basics
Lecture 2 - Random Variable - I
Lecture 3 - Random Variable - II
Lecture 4 - Random Vectors and Random Processes
Lecture 5 - Infinite Sequence of Events - I
Lecture 6 - Infinite Sequence of Events - II
Lecture 7 - Convergence of Sequence of Random Variables
Lecture 8 - Weak Convergence - I
Lecture 9 - Weak Convergence - II
Lecture 10 - Laws of Large Numbers
Lecture 11 - Central Limit Theorem
Lecture 12 - Large Deviation Theory
Lecture 13 - Crammer's Theorem for Large Deviation
Lecture 14 - Introduction to Markov Processes
Lecture 15 - Discrete Time Markov Chain - 1
Lecture 16 - Discrete Time Markov Chain - 2
Lecture 17 - Discrete Time Markov Chain - 3
Lecture 18 - Discrete Time Markov Chain - 4
Lecture 19 - Discrete Time Markov Chain - 5
Lecture 20 - Continuous Time Markov Chain - 1
Lecture 21 - Continuous Time Markov Chain - 2
Lecture 22 - Continuous Time Markov Chain - 3
Lecture 23 - Martingale Process - 1
Lecture 24 - Martingale Process - 2

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NPTEL Video Course - Electrical Engineering - NOC: Microwave Engineering

Subject Co-ordinator - Dr. Ratnajit Bhattacharjee
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Microwave Engineering
Lecture 2 - Introduction to Transmission Line Theory
Lecture 3 - Lossy Transmission Line
Lecture 4 - Smith Chart
Lecture 5 - Introduction to Waveguides and Rectangular Waveguide
Lecture 6 - Circular Waveguide
Lecture 7 - Attenuation Waveguide
Lecture 8 - N-port microwave networks and equivalent voltages and currents
Lecture 9 - Scattering Matrix (S-Parameters) Part-1
Lecture 10 - Scattering Matrix (S-parameters) Part-2 and Transmission Matrix (ABCD-Parameters)
Lecture 11 - Impedance Matching Using L-Section and Series Stub Networks
Lecture 12 - Impedance Matching Using Shunt Stub, Double Stub and Quarter wave Transformer
Lecture 13 - Multisection Matching Networks and Tapered Lines
Lecture 14 - Series and Parallel RLC Resonators
Lecture 15 - Transmission Line Resonators
Lecture 16 - Waveguide Resonators
Lecture 17 - Introduction to power dividers
Lecture 18 - Directional couplers
Lecture 19 - Microwave Filters - Part 1
Lecture 20 - Microwave Filters - Part 2
Lecture 21 - Characteristics of Microwave BJT and FET
Lecture 22 - PIN Diodes and Control Circuits
Lecture 23 - Schottky Diodes and Detectors and Tunnel Diodes
Lecture 24 - Gunn Diodes, IMPATT Diodes and Varactor Diodes
Lecture 25 - Two-Port Power Gain and Stability
Lecture 26 - Design of single stage transistor amplifier (for maximum gain, specified gain, low noise)
Lecture 27 - RF oscillator
Lecture 28 - Limitations of Conventional Tubes at Microwave Ranges
Lecture 29 - Introduction to Klystron

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Lecture 30 - Reflex Klystron, Magnetron and TWT
Lecture 31 - Ferrite Devices
Lecture 32 - Planar transmission lines for MIC
Lecture 33 - Lumped elements for MIC
Lecture 34 - Lumped inductor, HMIC and MMIC
Lecture 35 - Overview of Radar
Lecture 36 - Cellular Communication
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NPTEL Video Course - Electrical Engineering - Advanced Electric Drives

Subject Co-ordinator - Dr. S.P. Das

Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Electrical Engineering - High Voltage DC Transmission

Subject Co-ordinator - Dr. S.N. Singh
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Electrical Engineering - NOC: An Introduction to Coding Theory

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Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC: Principles of Communication Systems - Part II

Subject Co-ordinator - Prof. Aditya K. Jagannatham
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 3 - Spectrum of Transmitted Digital Communication Signal, Autocorrelation Function and Power Spectral Density
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Lecture 7 - Digital Communication Receiver, Noise Properties and Output Noise Power
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Lecture 9 - Probability of Error in Digital Communication and Probability Density Functions of Output
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Lecture 13 - Optimal Decision Rule for Amplitude Shift Keying (ASK), Bit Error Rate (BER) and Comparison with BPSK
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Lecture 15 - Introduction to Frequency Shift Keying (FSK)
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Lecture 19 - Matched Filtering, Bit Error Rate and Symbol Error Rate for Quadrature Phase Shift Keying (QPSK)
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Lecture 21 - M-ary PAM (Pulse Amplitude Modulation) - Part-II, Optimal Decision Rule and Probability of Error
Lecture 22 - M-ary QAM (Quadrature Amplitude Modulation) Part-I, Introduction, Transmitted Waveform and Average Symbol Power
Lecture 23 - M-ary QAM (Quadrature Amplitude Modulation) - Part-II, Optimal Decision Rule, Probability of Error
Lecture 24 - M-ary PSK (Phase Shift Keying) Part-I, Introduction, Transmitted Waveform and Constellation Diagram
Lecture 25 - M-ary PSK (Phase Shift Keying) - Part-II, Optimal Decision Rule, Nearest Neighbor Criterion and Approximate Probability of Error
Lecture 26 - Introduction to Information Theory, Relevance of Information Theory and Characterization of Information Sources
Lecture 27 - Definition of Entropy, Average of Information / Uncertainty of source and Properties of Entropy
Lecture 28 - Entropy Example- Binary Source Maximum and Minimum Entropy of Binary Source
Lecture 29 - Maximum Entropy of Source with M-ary Alphabet, Concave/Convex Functions and Jensens Inequality

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NPTEL Video Course - Electrical Engineering - NOC: Applied Engineering Electromagnetics

Subject Co-ordinator - Dr. Pradeep Kumar K

Co-ordinating Institute - IIT - Kanpur

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Lecture 4 - Terminating T-lines
Lecture 5 - Circuit parameters of a T-line
Lecture 6 - Lossy Transmission lines and primary constants
Lecture 7 - When to apply T-line Theory?
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Lecture 9 - Lumped equivalent circuits of T-lines
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NPTEL Video Course - Electrical Engineering - NOC: Principles of Signals and Systems

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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Lecture 2 - Analog and Digital Signals
Lecture 3 - Energy and Power Signals
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Lecture 5 - Memory/Memory-less and Causal/Non-Causal Systems
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Lecture 43 - Fourier Analysis Examples - II
Lecture 44 - Fourier Analysis Examples - III
Lecture 45 - Fourier Analysis Examples - IV
Lecture 46 - Fourier Analysis Examples - V
Lecture 47 - Fourier Analysis Examples - VI
Lecture 48 - Fourier Analysis Bode Plot - I
Lecture 49 - Fourier Analysis Bode Plot - II
Lecture 50 - Fourier Transform Examples
Lecture 51 - Fourier Transform Problems
Lecture 52 - Sampling
Lecture 53 - Sampling
Lecture 54 - Fourier Analysis of Discrete Time Signals and Systems - Introduction
Lecture 55 - Fourier Analysis of Discrete Time Signals - Duality, Parseval's Theorem
Lecture 56 - Discrete Time Fourier Transform
Lecture 57 - Discrete Time Fourier Transform
Lecture 58 - Discrete Time Fourier Transform
Lecture 59 - DTFT
Lecture 60 - Discrete Fourier Transform - Definition, Inverse DFT, Relation between DFT and DFS, Relation between DFT and DTFT
Lecture 61 - Discrete Fourier Transform
Lecture 62 - Example Problems
Lecture 63 - Example Problems
Lecture 64 - DTFT Example Problems - III
Lecture 65 - DTFT Example Problems - IV
Lecture 66 - DTFT Example Problems - V
Lecture 67 - DFT Example Problems - I
Lecture 68 - Example Problems
Lecture 69 - Group/Phase Delay - Part I
Lecture 70 - Group/Phase Delay - Part II
Lecture 71 - IIR Filter Structures
Lecture 72 - IIR Filter Structures
Lecture 73 - IIR Filter Structures
Lecture 74 - IIR Filter Structures
Lecture 75 - IIR Filter
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai


Subject Co-ordinator - Prof. Aditya K. Jagannatham
Co-ordinating Institute – IIT – Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Vectors and Matrices - Linear Independence and Rank
Lecture 2 - Eigenvectors and Eigenvalues of Matrices and their Properties
Lecture 3 - Positive Semidefinite (PSD) and Positive Definite (PD) Matrices and their Properties
Lecture 4 - Inner Product Space and its Properties
Lecture 5 - Inner Product Space and its Properties
Lecture 6 - Properties of Norm, Gaussian Elimination and Echleon form of matrix
Lecture 7 - Gram Schmidt Orthogonalization Procedure
Lecture 8 - Null Space and Trace of Matrices
Lecture 9 - Eigenvalue Decomposition of Hermitian Matrices and Properties
Lecture 10 - Matrix Inversion Lemma (Woodbury identity)
Lecture 11 - Introduction to Convex Sets and Properties
Lecture 12 - Affine Set Examples and Application
Lecture 13 - Norm Ball and its Practical Applications
Lecture 14 - Ellipsoid and its Practical Applications
Lecture 15 - Norm Cone, Polyhedron and its Applications
Lecture 16 - Applications
Lecture 17 - Positive Semi Definite Cone And Positive Semi Definite (PSD) Matrices
Lecture 18 - Introduction to Affine functions and examples
Lecture 19 - norm balls and Matrix properties
Lecture 20 - Inverse of a Positive Definite Matrix
Lecture 21 - Example Problems
Lecture 22 - Problems on Convex Sets (Continued...)
Lecture 23 - Introduction to Convex and Concave Functions
Lecture 24 - Properties of Convex Functions with examples
Lecture 25 - Test for Convexity
Lecture 26 - Application
Lecture 27 - Jensen's Inequality and Practical Application
Lecture 28 - Jensen's Inequality application
Lecture 29 - Properties of Convex Functions

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Lecture 30 - Conjugate Function and Examples to prove Convexity of various Functions
Lecture 31 - Examples on Operations Preserving Convexity
Lecture 32 - Examples on Test for Convexity, Quasi-Convexity
Lecture 33 - Examples on Convex Functions
Lecture 34 - Practical Application
Lecture 35 - Practical Application
Lecture 36 - Practical Application
Lecture 37 - Practical Application
Lecture 38 - Practical Application
Lecture 39 - Practical Application
Lecture 40 - Practical Application
Lecture 41 - Linear modeling and Approximation Problems
Lecture 42 - Geometric Intuition for Least Squares
Lecture 43 - Practical Application
Lecture 44 - Practical Application
Lecture 45 - Least Norm Signal Estimation
Lecture 46 - Regularization
Lecture 47 - Convex Optimization Problem representation
Lecture 48 - Linear Program Practical Application
Lecture 49 - Stochastic Linear Program, Gaussian Uncertainty
Lecture 50 - Practical Application
Lecture 51 - Practical Application
Lecture 52 - Practical Application
Lecture 53 - Practical Application
Lecture 54 - Practical Application
Lecture 55 - Practical Application
Lecture 56 - Practical Application
Lecture 57 - Practical Application- Orthogonal Matching Pursuit (OMP) algorithm for Compressive Sensing
Lecture 58 - Example Problem
Lecture 59 - Practical Application
Lecture 60 - Practical Application of Machine Learning and Artificial Intelligence
Lecture 61 - Practical Application
Lecture 62 - Practical Application
Lecture 63 - Concept of Duality
Lecture 64 - Relation between optimal value of Primal and Dual Problems, concepts of Duality gap and Strong Duality
Lecture 65 - Example problem on Strong Duality
Lecture 66 - Karush-Kuhn-Tucker (KKT) conditions
Lecture 67 - Application of KKT condition
Lecture 68 - Optimal MIMO Power allocation (Waterfilling)-II
Lecture 69 - Example problem on Optimal MIMO Power allocation (Waterfilling)
Lecture 70 - Linear objective with box constraints, Linear Programming
Lecture 71 - Example Problems II
Lecture 72 - Examples on Quadratic Optimization
Lecture 73 - Examples on Duality
Lecture 74 - Examples on Duality
Lecture 75 - Semi Definite Program (SDP) and its application
Lecture 76 - Application
Lecture 77 - Introduction to big Data
Lecture 78 - Matrix Completion Problem in Big Data
Lecture 79 - Matrix Completion Problem in Big Data
NPTEL Video Course - Electrical Engineering - NOC:Fiber-Optic Communication Systems and Techniques

Subject Co-ordinator - Dr. Pradeep Kumar K

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of fiber-optic communication systems
Lecture 2 - Review of Maxwell's equations
Lecture 3 - Uniform plane waves (UWPs) in free-space
Lecture 4 - Properties of UWPs (propagation constant, polarization, and Poynting vector)
Lecture 5 - Boundary conditions and reflection from a PEC
Lecture 6 - Obliquely incident waves-I (TE and TM waves, Snell's laws)
Lecture 7 - Obliquely incident waves-II (Reflection and transmission coefficients, Brewster angle)
Lecture 8 - Total internal reflection
Lecture 9 - Ray theory of dielectric slab waveguides
Lecture 10 - Transverse resonance condition for slab waveguides
Lecture 11 - Introduction to optical fibers
Lecture 12 - Ray theory of light propagation in optical fibers
Lecture 13 - Concept of waveguide modes
Lecture 14 - Systematic procedure to obtain modes of a waveguide
Lecture 15 - Systematic analysis of parallel plate metallic waveguide
Lecture 16 - Systematic analysis of dielectric slab waveguides
Lecture 17 - Further discussion on slab waveguides
Lecture 18 - Modal analysis of step index optical fiber
Lecture 19 - Properties of modes of step-index optical fiber - I
Lecture 20 - Properties of modes of step-index optical fiber - II
Lecture 21 - Linearly polarized modes
Lecture 22 - Attenuation and power loss in fibers
Lecture 23 - Introduction to dispersion in fibers
Lecture 24 - Mathematical modelling of dispersion
Lecture 25 - Pulse propagation equation and its solution
Lecture 26 - Pre-chirped pulses and Inter and Intra-modal dispersion in optical fibers
Lecture 27 - Beam Propagation Method
Lecture 28 - Polarization Effects on Pulse Propagation
Lecture 29 - Modes in Optical Fibres and Pulse Propagation in Optical Fibres

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Lecture 30 - Graded Index Fibers
Lecture 31 - Light Sources, Detectors and Amplifiers
Lecture 32 - Basics of Lasers-I (Structure of Lasers, Process of Photon Emission)
Lecture 33 - Basics of Lasers-II (Einstein's Theory of Radiation)
Lecture 34 - Basics of Lasers-III (Population Inversion and Rate Equation for Lasers)
Lecture 35 - Basic Properties of Semiconductor Laser-I (Energy Gap, Intrinsic and Extrinsic Semiconductors)
Lecture 36 - Basic Properties of Semiconductor Laser-II (Fermi Level)
Lecture 37 - Optical Properties of Semiconductors-I (Direct Bandgap and Indirect Bandgap, Density of States)
Lecture 38 - Optical Properties of Semiconductors-II (Gain, Absorption, Recombination rate) Homojunction Lasers
Lecture 39 - Double Heterostructure Lasers, Introduction to Quantum Well Lasers
Lecture 40 - Semiconductor Optical Amplifier
Lecture 41 - Erbium-doped fiber amplifier
Lecture 42 - Photodetectors
Lecture 43 - Noise in Photodetectors
Lecture 44 - Introduction to WDM components
Lecture 45 - Couplers, Circulators, FRM and Filters
Lecture 46 - Filter, MUX/DEMUX, Diffraction grating (FBG and Long period grating)
Lecture 47 - Optical Modulators-I (Current modulation)
Lecture 48 - Optical Modulators-II (Electro-optic modulators)
Lecture 49 - Review of Communication Concepts-I (Deterministic and Random Signals, Baseband and Passband Signals)
Lecture 50 - Review of Communication Concepts-II (Signal and vectors, Signal energy, Orthonormal basis functions)
Lecture 51 - Intensity modulation/ Direct Detection
Lecture 52 - BER discussion for OOK systems
Lecture 53 - Higher order modulation and Coherent Receiver
Lecture 54 - Coherent receiver for BPSK systems and BER calculation
Lecture 55 - Recovering Polarization
Lecture 56 - DSP algorithms for Chromatic dispersion mitigation
Lecture 57 - DSP algorithms for Carrier phase estimation - I
Lecture 58 - DSP algorithms for Carrier phase estimation - II
Lecture 59 - Nonlinear effects in fiber
Lecture 60 - Four wave mixing, Loss measurement, Dispersion measurement
Lecture 61 - Lab Demonstration (Laser diode characteristics, Loss measurement, Optical Intensity Modulation)
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC: Electromagnetic Waves in Guided and Wireless Media

Subject Co-ordinator - Dr. Pradeep Kumar K
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Types of Transmission Lines
Lecture 2 - Distributed Circuit Model of Uniform Transmission Line
Lecture 3 - Voltage and Current Equation of the Transmission line
Lecture 4 - Sinusoidal Excitation of Transmission Line (Propagation constant, Characteristic Impedance)
Lecture 5 - Properties of Transmission Line (Reflection Coefficient, Input Impedance, Standing Wave Ratio)
Lecture 6 - Power Calculations and Introduction to Smith Chart
Lecture 7 - Smith Chart
Lecture 8 - Additional Applications of Smith Chart
Lecture 9 - Time domain Analysis of Transmission Line - I
Lecture 10 - Time domain Analysis of Transmission Line - II
Lecture 11 - Usage of Lattice Diagrams
Lecture 12 - TDR analysis of Transmission Lines
Lecture 13 - Introduction to Propagation of Electromagnetic Waves
Lecture 14 - Uniform Plane Waves - I
Lecture 15 - Uniform Plane Waves - II
Lecture 16 - Poynting Vector, Average Power, Polarization
Lecture 17 - Uniform Plane Waves in Lossy Medium
Lecture 18 - Normal Incidence of Plane Waves
Lecture 19 - Oblique Incidence of Plane Waves - I
Lecture 20 - Oblique Incidence of Plane Waves - II
Lecture 21 - Total Internal Reflection
Lecture 22 - Slab Waveguides
Lecture 23 - Optical Fibers
Lecture 24 - Parallel Plate Waveguides
Lecture 25 - Rectangular Waveguides
Lecture 26 - Modes of Rectangular Waveguides
Lecture 27 - Waveguides summary and Introduction to Radiation
Lecture 28 - Solution to Electric Scalar Potential and Magnetic Vector Potential Equations
Lecture 29 - Further discussion on Magnetic Vector Potential and Elementary Hertzian Dipole

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Lecture 30 - Near field and Far-field Antenna and Properties of Antennas
Lecture 31 - Linear antenna - I
Lecture 32 - Linear antenna - II and Properties of Transmitting and Receiving Antenna
Lecture 33 - Friis Transmission Formula
Lecture 34 - Antenna Array
Lecture 35 - Wireless Channel
Lecture 36 - Further discussion on Wireless Channel Modelling
Lecture 37 - Diffraction - I
Lecture 38 - Diffraction - II
Lecture 39 - Distribution of Laser Beam
Lecture 40 - Interference (Double slit experiment, Fabry Perot Interferometer)
Lecture 41 - Summary
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC: Basic Electric Circuits

Subject Co-ordinator - Prof. Ankush Sharma
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic Concepts
Lecture 2 - Sinusoids and Phasors
Lecture 3 - Circuit Elements - Part 1
Lecture 4 - Circuit Elements - Part 2
Lecture 5 - AC Power Analysis
Lecture 6 - RMS Voltage and Current
Lecture 7 - Topology
Lecture 8 - Star-Delta Transformation and Mesh Analysis
Lecture 9 - Mesh Analysis.
Lecture 10 - Nodal Analysis
Lecture 11 - Linearity Property and Superposition Theorem
Lecture 12 - Source Transformation
Lecture 13 - Duality
Lecture 14 - Thevenin's Theorem - 1
Lecture 15 - Thevenin's Theorem - 2
Lecture 16 - Norton's Theorem - 1
Lecture 17 - Norton's Theorem - 2
Lecture 18 - Maximum Power Transfer Theorem - 1
Lecture 19 - Maximum Power Transfer Theorem - 2
Lecture 20 - Reciprocity and Compensation Theorem
Lecture 21 - First Order RC Circuits
Lecture 22 - First Order RL Circuits
Lecture 23 - Singularity Functions
Lecture 24 - Step Response of RC and RL Circuits
Lecture 25 - Second Order Response
Lecture 26 - Step Response of Second Order Circuits - First Order and Second Order Circuits (Continued...)
Lecture 27 - Step Response of Parallel RLC Circuit - First Order and Second Order Circuits (Continued...)
Lecture 28 - Definition of the Laplace Transform
Lecture 29 - Properties of the Laplace Transform

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Lecture 30 - Inverse Laplace Transform
Lecture 31 - Laplace Transform of Circuit Elements
Lecture 32 - Transfer Function
Lecture 33 - Convolution Integral
Lecture 34 - Graphical Approach of Convolution Integral
Lecture 35 - Network Stability and Network Synthesis
Lecture 36 - Impedance Parameters
Lecture 37 - Admittance Parameters
Lecture 38 - Hybrid Parameters
Lecture 39 - Transmission Parameters
Lecture 40 - Interconnection of Networks
Lecture 41 - Nodal and Mesh Analysis
Lecture 42 - Superposition Theorem and Source Transformation
Lecture 43 - Thevenin's, Norton's and, Maximum Power Transfer Theorem
Lecture 44 - Magnetically Coupled Circuits
Lecture 45 - Energy in Coupled Circuits and Ideal Transformer
Lecture 46 - Ideal Transformer and Introduction to Three-Phase Circuits
Lecture 47 - Balanced Three-Phase Connections
Lecture 48 - Balanced Wye-Delta and Delta-Delta Connections
Lecture 49 - Balanced Delta-Wye Connection and Power in Balanced Three-Phase System
Lecture 50 - Unbalanced Three-Phase System and Three-Phase Power Measurement
Lecture 51 - Introduction to Graphical Models
Lecture 52 - State Equations
Lecture 53 - State Diagram
Lecture 54 - State Transition Matrix
Lecture 55 - State Variable Method to Circuit Analysis
Lecture 56 - Characteristic Equation, Eigenvalues, and Eigenvectors-State Variable Analysis (Continued...)
Lecture 57 - Modeling of Mechanical Systems
Lecture 58 - Modeling of The Rotational Motion of Mechanical Systems
Lecture 59 - Modeling of Electrical Systems
Lecture 60 - Solving Analogous Systems
NPTEL Video Course - Electrical Engineering - NOC: Fundamentals of Electric Drives

Subject Co-ordinator - Prof. Shyama Prasad Das

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Electric Drives
Lecture 2 - Dynamics of Electric Drives, Four Quadrant Operation, Equivalent Drive Parameters
Lecture 3 - Equivalent Drive Parameters, Friction Components, Nature of Load Torque
Lecture 4 - Steady State Stability, Load Equalization
Lecture 5 - Load Equalization, Characteristics of DC Motor
Lecture 6 - Speed Torque Characteristics of Separately Excited DC Motor and Series DC Motor
Lecture 7 - Field Control of Series Motor, Motoring and Braking of Separately Excited and Series DC motors
Lecture 8 - Speed Control of Separately Excited DC Motor Using Controlled Rectifiers
Lecture 9 - Analysis of Single Phase Full Controlled Converter-fed Separately Excited DC Motor
Lecture 10 - Speed Torque Characteristics of Full Controlled Converter-fed Separately Excited DC Motor, Analysis
Lecture 11 - Analysis of Single Phase Half Controlled Converter-fed Separately Excited DC Motor.
Lecture 12 - Three Phase Full Controlled Converter-fed Separately Excited DC Motor, Multi-quadrant Operation
Lecture 13 - Dual Converter-fed DC Motor, Multi-quadrant Operation Using Field Current Reversal
Lecture 14 - DC Chopper-fed Separately Excited DC Motor for Motoring and Braking
Lecture 15 - Two-quadrant DC Chopper, Four-quadrant DC Chopper
Lecture 16 - Dynamic Braking of DC Motor by Chopper Controlled Resistor, Closed-loop Operation of DC Drives, Multi-quadrant Operation
Lecture 17 - Speed Torque Characteristics of Induction Motor, Operation of Induction Motor from Non-sinusoidal Supply
Lecture 18 - Operation of Induction Motor from Non-sinusoidal Supply
Lecture 19 - Stator Current of Induction Motor with Non-sinusoidal Supply, Operation of Induction Motor with
Lecture 20 - Single Phasing of Induction Motor, Braking of Induction Motor
Lecture 21 - Dynamic braking of induction motor, AC dynamic braking, DC dynamic braking
Lecture 22 - Analysis of DC dynamic braking of induction motor
Lecture 23 - Self-excited dynamic braking of induction motor, Speed control of induction motor using stator voltage
Lecture 24 - Variable voltage variable frequency control of induction motor, Open loop V/F control
Lecture 25 - Slip speed control of induction motor, Constant Volt/Hz control with slip speed regulation
Lecture 26 - Closed-loop Volt/Hz control of induction motor with slip speed regulation, Multi-quadrant operation
Lecture 27 - Current Source Inverter (CSI) fed induction motor drive
Lecture 28 - Closed-loop operation of current source inverter (CSI) fed induction motor drive, Control of slip speed
Lecture 29 - Closed-loop operation of slip ring induction motor with static rotor resistance control, Slip power

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Lecture 30 - Static Kramer drive and its closed-loop control, Introduction to synchronous motor
Lecture 31 - Various types of synchronous motors, Equivalent circuit and phasor diagram of cylindrical synchronous motor
Lecture 32 - Phasor diagram of salient pole synchronous motor, Expression of power and torque for a salient pole synchronous motor
Lecture 33 - Open-loop V/f control, Torque-speed characteristics, Self controlled synchronous motor drive employing load commutated thyristor inverter
Lecture 34 - Detailed analysis of commutation of load commutated thyristor inverter, Derivation of overlap angle
Lecture 35 - Low cost brushless DC motor (BLDCM), Trapezoidal permanent magnet AC motor
Lecture 36 - Trapezoidal permanent magnet AC motor, Derivation of power and torque, Closed-loop control of trapezoidal BLDC motor
Lecture 37 - Construction and operating principle of switched reluctance motor
Lecture 38 - Current/voltage control for switched reluctance motor, Operating modes of switched reluctance motor
Lecture 39 - Current collector for mainline trains, Nature of traction load, Duty cycle of traction drives
Lecture 40 - Duty cycle of traction drives, Distance between two stops, Calculation of total tractive effort
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - Optimal Control

Subject Co-ordinator - Prof. G.D. Ray
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Optimization Problem
Lecture 2 - Introduction to Optimization Problem
Lecture 3 - Optimality Conditions for Function of Several Variables
Lecture 4 - Optimality Conditions for Function of Several Variables (Continued.)
Lecture 5 - Unconstrained Optimization Problem (Numerical Techniques)
Lecture 6 - Solution of Unconstrained Optimization Problem Using Conjugate Gradient Method and Networks Methods
Lecture 7 - Solution of Unconstrained Optimization Problem Using Conjugate Gradient Method and Networks Methods (Continued.)
Lecture 8 - Solution of Constraint Optimization Problem - Karush-Kuhn Tucker (KKT) Conditions
Lecture 9 - Solution of Constraint Optimization Problem - Karush-Kuhn Tucker (KKT) Conditions (Continued.)
Lecture 10 - Problem and Solution Session
Lecture 11 - Post Optimality Analysis, Convex Function and its Properties
Lecture 12 - Post Optimality Analysis, Convex Function and its Properties (Continued.)
Lecture 13 - Quadratic Optimization Problem Using Linear Programming
Lecture 14 - Matrix form of the Simplex Method
Lecture 15 - Matrix form of the Simplex Method (Continued.)
Lecture 16 - Solution of Linear Programming Using Simplex Method
Lecture 17 - Solution of Linear Programming Using Simplex Method
Lecture 18 - Solution of LP Problems with Two Phase Method
Lecture 19 - Solution of LP Problems with Two Phase Method (Continued.)
Lecture 20 - Standard Primal and Dual Problems
Lecture 21 - Relationship Between Primal and Dual Variables
Lecture 22 - Solution of Quadratic Programming Problem Using Simplex Method
Lecture 23 - Interior Point Method for Solving Optimization Problems
Lecture 24 - Interior Point Method for Solving Optimization Problems (Continued.)
Lecture 25 - Solution of Nonlinear Programming Problem Using Exterior Penalty Function Method
Lecture 26 - Solution of Nonlinear Programming Problem Using Exterior Penalty Function Method (Continued.)
Lecture 27 - Solution of Nonlinear Programming Problem Using Interior Penalty Function Method
Lecture 28 - Solution of Nonlinear Programming Problem Using Interior Penalty Function Method (Continued.)
Lecture 29 - Multiobjective Optimization Problem

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NPTEL Video Course - Electrical Engineering - Chaos, Fractals and Dynamic Systems

Subject Co-ordinator - Prof. S. Banerjee

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Representations of Dynamical Systems
Lecture 2 - Vector Fields of Nonlinear Systems
Lecture 3 - Limit Cycles
Lecture 4 - The Lorenz Equation - I
Lecture 5 - The Lorenz Equation - II
Lecture 6 - The Rossler Equation and Forced Pendulum
Lecture 7 - The Chua's Circuit
Lecture 8 - Discrete Time Dynamical Systems
Lecture 9 - The Logistic Map and Period doubling
Lecture 10 - Flip and Tangent Bifurcations
Lecture 11 - Intermittency Transcritical and pitchfork
Lecture 12 - Two Dimensional Maps
Lecture 13 - Bifurcations in Two Dimensional Maps
Lecture 14 - Introduction to Fractals
Lecture 15 - Mandelbrot Sets and Julia Sets
Lecture 16 - The Space Where Fractals Live
Lecture 17 - Interactive Function Systems
Lecture 18 - IFS Algorithms
Lecture 19 - Fractal Image Compression
Lecture 20 - Stable and Unstable Manifolds
Lecture 21 - Boundary Crisis and Interior Crisis
Lecture 22 - Statistics of Chaotic Attractors
Lecture 23 - Matrix Times Circle
Lecture 24 - Lyapunov Exponent
Lecture 25 - Frequency Spectra of Orbits
Lecture 26 - Dynamics on a Torus
Lecture 27 - Dynamics on a Torus
Lecture 28 - Analysis of Chaotic Time Series
Lecture 29 - Analysis of Chaotic Time Series

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Lecture 30 - Lyapunov Function and Centre Manifold Theory
Lecture 31 - Non-Smooth Bifurcations
Lecture 32 - Non-Smooth Bifurcations
Lecture 33 - Normal from for Piecewise Smooth 2D Maps
Lecture 34 - Bifurcations in Piecewise Linear 2D Maps
Lecture 35 - Bifurcations in Piecewise Linear 2D Maps
Lecture 36 - Multiple Attractor Bifurcation and Dangerous
Lecture 37 - Dynamics of Discontinuous Maps
Lecture 38 - Introduction to Floquet Theory
Lecture 39 - The Monodromy Matrix and the Saltation Matrix
Lecture 40 - Control of Chaos
Lecture 1 - Discrete Time Signal and System
Lecture 2 - Discrete Time Signal and System (Continued...)
Lecture 3 - Discrete Time Signal and System (Continued...)
Lecture 4 - Frequency Domain Representation of Discrete Signals
Lecture 5 - Z-Transform
Lecture 6 - Z-Transform (Continued...)
Lecture 7 - Solution of Difference Equation
Lecture 8 - Tutorial on Discrete Time Signals & Their Transforms
Lecture 9 - Relation Between Discrete Time and Continuous Signals
Lecture 10 - Discrete Fourier Transform (DFT)
Lecture 11 - Discrete Fourier Transform (DFT) (Continued...)
Lecture 12 - Discrete Fourier Transform (DFT) (Continued...)
Lecture 13 - State Space Representation
Lecture 14 - Filters Introduction
Lecture 15 - FIR Filters
Lecture 16 - FIR Filters (Continued...) Introduction to IIR Filters
Lecture 17 - IIR Filters (Continued...)
Lecture 18 - IIR Filters (Continued...)
Lecture 19 - IIR Filters (Continued...)
Lecture 20 - Tutorial & Introduction to Computer Aided Design of Filters
Lecture 21 - Computer Aided Design of Filters
Lecture 22 - FFT and Computer Aided Design of Filters
Lecture 23 - Introduction to Lattice Filter
Lecture 24 - Lattice Filter (Continued...)
Lecture 25 - Effects of Quantization
Lecture 26 - Effects of Quantization (Continued...)
Lecture 27 - Effects of Quantization (Continued...)
Lecture 28 - Effects of Quantization (Continued...)
Lecture 29 - Random Signals
NPTEL Video Course - Electrical Engineering - Dynamics of Physical Systems

Subject Co-ordinator - Prof. S. Banerjee

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to System Elements
Lecture 2 - Newton's Method and Constraints
Lecture 3 - Derivation of the Lagrangian Equation
Lecture 4 - Using the lagrangian Equation to Obtain Differential Equations (Part-I)
Lecture 5 - Using the lagrangian Equation to Obtain Differential Equations (Part-II)
Lecture 6 - Using the lagrangian Equation to Obtain Differential Equations (Part-III)
Lecture 7 - Using the lagrangian Equation to Obtain Differential Equations (Part-IV)
Lecture 8 - Obtaining First Order Equations
Lecture 9 - Application of the Hamiltonian Method
Lecture 10 - Obtaining Differential Equations Using Kirchoff's Laws
Lecture 11 - The Graph Theory Approach for Electrical Circuits (Part-I)
Lecture 12 - The Graph Theory Approach for Electrical Circuits (Part-II)
Lecture 13 - The Bond Graph Approach - I
Lecture 14 - The Bond Graph Approach - II
Lecture 15 - The Bond Graph Approach - III
Lecture 16 - The Bond Graph Approach - IV
Lecture 17 - The Bond Graph Approach - V
Lecture 18 - The Bond Graph Approach - VI
Lecture 19 - The Bond Graph Approach - VII
Lecture 20 - Numerical Solution of Differential Equations
Lecture 21 - Dynamics in the State Space
Lecture 22 - Vector Field Around Equilibrium Points - I
Lecture 23 - Vector Field Around Equilibrium Points - II
Lecture 24 - Vector Field Around Equilibrium Points - III
Lecture 25 - Vector Field Around Equilibrium Points - IV
Lecture 26 - High Dimensional Linear Systems
Lecture 27 - Linear Systems with External Input - I
Lecture 28 - Linear Systems with External Input - II
Lecture 29 - Linear Systems with External Input - III

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Lecture 30 - Dynamics of Nonlinear Systems - I
Lecture 31 - Dynamics of Nonlinear Systems - II
Lecture 32 - Dynamics of Nonlinear Systems - III
Lecture 33 - Discrete-Time Dynamical Systems - I
Lecture 34 - Discrete-Time Dynamical Systems - II
Lecture 30 - Tidal Energy  
Lecture 31 - Tidal Energy  
Lecture 32 - Tidal Energy  
Lecture 33 - Ocean Thermal Energy Conversion  
Lecture 34 - Solar Pond and Wave Power  
Lecture 35 - Geothermal Energy  
Lecture 36 - Solar Distillation and Biomass Energy  
Lecture 37 - Energy Storage  
Lecture 38 - Magneto hydrodynamic Power Generation  
Lecture 39 - Magneto hydrodynamic Power Generation  
Lecture 40 - Hydrogen Economy
NPTEL Video Course - Electrical Engineering - Estimation of Signals and Systems

Subject Co-ordinator - Prof. S. Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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Lecture 4 - Function of Random Variable Joint Density
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Lecture 7 - Random Processes and Linear Systems
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Lecture 9 - Miscellaneous Topics on Random Process
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NPTEL Video Course - Electrical Engineering - Illumination Engineering

Subject Co-ordinator - Prof. N.K. Kishore
Co-ordinating Institute - IIT - Kharagpur
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NPTEL Video Course - Electrical Engineering - Industrial Automation and Control

Subject Co-ordinator - Prof. S. Sen, Prof. S. Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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Lecture 5 - Pressure, Force and Torque Sensors
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**NPTEL Video Course - Electrical Engineering - Industrial Instrumentation**

Subject Co-ordinator - Prof. Alok Barua

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Electrical Engineering - Networks Signals and Systems

Subject Co-ordinator - Prof. T.K. Basu
Co-ordinating Institute - IIT - Kharagpur
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NPTEL Video Course - Electrical Engineering - Power System Analysis

Subject Co-ordinator - Prof. A.K. Sinha
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Subject Co-ordinator - Prof. S. Mukhopadhyay
Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Electrical Engineering - NOC: Medical Image Analysis

Subject Co-ordinator - Prof. Debdoott Sheet
Co-ordinating Institute - IIT - Kharagpur
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NPTEL Video Course - Electrical Engineering - NOC:Biomedical Signal Processing

Subject Co-ordinator - Prof. Sudipta Mukhopadhyay
Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Electrical Engineering - NOC:Microprocessors and Microcontrollers

Subject Co-ordinator - Prof. Santanu Chattopadhyay

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Electrical Engineering - NOC: Deep Learning For Visual Computing

Subject Co-ordinator - Prof. Debdooot Sheet
Co-ordinating Institute - IIT - Kharagpur

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Lecture 2 - Feature Extraction for Visual Computing
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NPTEL Video Course - Electrical Engineering - NOC: Power System Engineering

Subject Co-ordinator - Prof. Debapriya Das

Co-ordinating Institute - IIT - Kharagpur

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Lecture 46 - Load frequency control (Continued...)
Lecture 47 - Load frequency control (Continued...)
Lecture 48 - Load frequency control (Continued...)
Lecture 49 - Load frequency control (Continued...)
Lecture 50 - Load frequency control (Continued...)
Lecture 51 - Load frequency control (Continued...)
Lecture 52 - Load frequency control (Continued...)
Lecture 53 - Load frequency control (Continued...)
Lecture 54 - Load frequency control (Continued...)
Lecture 55 - Load frequency control (Continued...)
Lecture 56 - Load frequency control (Continued...)
Lecture 57 - Automatic generation control
Lecture 58 - Automatic generation control (Continued...)
Lecture 59 - Automatic generation control (Continued...), Unit commitment
Lecture 60 - Unit commitment (Continued...)
Lecture 61 - Live Session
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC: Fundamentals of Electrical Engineering

Subject Co-ordinator - Prof. Debapriya Das

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic Concepts, Examples
Lecture 2 - Basic Concepts, Examples (Continued...)
Lecture 3 - Basic Concepts, Examples (Continued...)
Lecture 4 - Basic Concepts, Examples (Continued...)
Lecture 5 - Basic Laws
Lecture 6 - Basic Laws (Continued...)
Lecture 7 - Basic Laws (Continued...)
Lecture 8 - Basic Laws (Continued...)
Lecture 9 - Basic Laws (Continued...)
Lecture 10 - Basic Laws (Continued...)
Lecture 11 - Methods of Circuit Analysis
Lecture 12 - Methods of Circuit Analysis (Continued...)
Lecture 13 - Methods of Circuit Analysis (Continued...)
Lecture 14 - Methods of Circuit Analysis (Continued...)
Lecture 15 - Methods of Circuit Analysis (Continued...)
Lecture 16 - Methods of Circuit Analysis (Continued...)
Lecture 17 - Mesh analysis with current sources, Examples
Lecture 18 - Methods of Circuit Analysis (Continued...) and Circuit Theorems
Lecture 19 - Circuit Theorems (Continued...)
Lecture 20 - Circuit Theorems (Continued...)
Lecture 21 - Circuit Theorems (Continued...)
Lecture 22 - Circuit Theorems (Continued...)
Lecture 23 - Circuit Theorems (Continued...)
Lecture 24 - Circuit Theorems (Continued...)
Lecture 25 - Circuit Theorems (Continued...) and Capacitors and Inductors
Lecture 26 - Capacitors and Inductors (Continued...)
Lecture 27 - Capacitors and Inductors (Continued...)
Lecture 28 - Capacitors and Inductors (Continued...)
Lecture 29 - First Order Circuits

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NPTEL Video Course - Electrical Engineering - NOC:Digital Circuits

Subject Co-ordinator - Prof. Santanu Chattopadhyay

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Introduction (Continued...)
Lecture 3 - Number System
Lecture 4 - Number System (Continued...)
Lecture 5 - Number System (Continued...)
Lecture 6 - Number System (Continued...)
Lecture 7 - Number System (Continued...)
Lecture 8 - Boolean Algebra
Lecture 9 - Boolean Algebra (Continued...)
Lecture 10 - Boolean Algebra (Continued...)
Lecture 11 - Boolean Algebra (Continued...)
Lecture 12 - Boolean Algebra (Continued...)
Lecture 13 - Boolean Algebra (Continued...)
Lecture 14 - Logic Gates
Lecture 15 - Logic Gates (Continued...)
Lecture 16 - Logic Gates (Continued...)
Lecture 17 - Logic Gates (Continued...)
Lecture 18 - Logic Gates (Continued...)
Lecture 19 - Logic Gates (Continued...)
Lecture 20 - Arithmetic Circuits
Lecture 21 - Arithmetic Circuits (Continued...)
Lecture 22 - Arithmetic Circuits (Continued...)
Lecture 23 - Decoders, Multiplexers, PLA
Lecture 24 - Decoders, Multiplexers, PLA (Continued...)
Lecture 25 - Decoders, Multiplexers, PLA (Continued...)
Lecture 26 - Decoders, Multiplexers, PLA (Continued...)
Lecture 27 - Decoders, Multiplexers, PLA (Continued...)
Lecture 28 - Sequential Circuits
Lecture 29 - Sequential Circuits (Continued...)
Lecture 30 - Sequential Circuits (Continued...)
Lecture 31 - Sequential Circuits (Continued...)
Lecture 32 - Sequential Circuits (Continued...)
Lecture 33 - Sequential Circuits (Continued...)
Lecture 34 - Sequential Circuits (Continued...)
Lecture 35 - Finite State Machine
Lecture 36 - Finite State Machine (Continued...)
Lecture 37 - Data Converters
Lecture 38 - Data Converters (Continued...)
Lecture 39 - Data Converters (Continued...)
Lecture 40 - Data Converters (Continued...)
Lecture 41 - Memory
Lecture 42 - Memory (Continued...)
Lecture 43 - Memory (Continued...)
Lecture 44 - FPGA
Lecture 45 - FPGA (Continued...)
Lecture 46 - VHDL
Lecture 47 - VHDL (Continued...)
Lecture 48 - 8085 Microprocessor
Lecture 49 - 8085 Microprocessor (Continued...)
Lecture 50 - 8085 Microprocessor (Continued...)
Lecture 51 - 8085 Microprocessor (Continued...)
Lecture 52 - 8085 Microprocessor (Continued...)
Lecture 53 - 8085 Microprocessor (Continued...)
Lecture 54 - 8085 Microprocessor (Continued...)
Lecture 55 - 8085 Microprocessor (Continued...)
Lecture 56 - 8085 Microprocessor (Continued...)
Lecture 57 - 8085 Microprocessor (Continued...)
Lecture 58 - 8085 Microprocessor (Continued...)
Lecture 59 - 8085 Microprocessor (Continued...)
Lecture 60 - 8085 Microprocessor (Continued...)
Lecture 61 - 8085 Microprocessor (Continued...)
Lecture 62 - 8085 Microprocessor (Continued...)
Lecture 63 - 8086 Microprocessor
Lecture 64 - 8086 Microprocessor (Continued...)
Lecture 65 - 8086 Microprocessor (Continued...)
Lecture 1 - Concept of Scalar and Vector Potentials
Lecture 2 - Radiation From a Current Element (Hertzian Dipole)
Lecture 3 - Specific Properties of the Radiated Fields from a Current Element
Lecture 4 - General Properties of Radiated Fields from an Antenna
Lecture 5 - Farfield and Radiation Pattern of an Antenna
Lecture 6 - Directivity and Gain of an Antenna
Lecture 7 - Idea of Efficiency, Beamwidth, Polarisation and Bandwidth
Lecture 8 - Polarization of Antenna
Lecture 9 - Impedance of Antenna
Lecture 10 - Effective Aperture of an Antenna
Lecture 11 - Friis Transmission Equation and Antenna Temperature
Lecture 12 - Dipole And Monopole Antena
Lecture 13 - Dipole And Monopole Antena (Continued...)
Lecture 14 - BALUN
Lecture 15 - Loop Antenna
Lecture 16 - Folded Dipole Antenna
Lecture 17 - Introduction to Antenna Array
Lecture 18 - Antenna Array Theory
Lecture 19 - Broadside Uniform Linear Array
Lecture 20 - Endfire Linear Uniform Array
Lecture 21 - Parasitic Array and Log Periodic Antenna
Lecture 22 - Analysis Procedures of Aperture Antennas
Lecture 23 - Analysis Procedures of Aperture Antenna (Continued...)
Lecture 24 - Horn Antenna
Lecture 25 - Horn Antenna (Continued...)
Lecture 26 - Reflector Antennas
Lecture 27 - Paraboloid Reflector Antenna (Continued...)
Lecture 28 - Paraboloid Reflector Antenna (Continued...)
Lecture 29 - Dual Reflector Antenna
Lecture 30 - Generalised Analysis of Antenna
Lecture 31 - Solution of Wave Equation for Electric and Magnetic Current Densities
Lecture 32 - Farfield Evaluation of Spherical Wave Radiation by Generalised Antenna
Lecture 33 - Slot Antenna
Lecture 34 - Open Ended Waveguide Antenna and Microstrip Antenna
Lecture 35 - Numerical Evaluation of Wire Antenna Currents
Lecture 36 - Solution of Integral Equation by Moment Method
Lecture 37 - Array Pattern Synthesis
Lecture 38 - Array Pattern Synthesis (Continued...)
Lecture 39 - Ultra Wideband Antennas
Lecture 40 - Antenna Measurements

Subject Co-ordinator - Prof. Indranil Hatai
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to VLSI Design Flow
Lecture 2 - Introduction to VLSI Design Flow
Lecture 3 - Introduction to VLSI Design Flow
Lecture 4 - Algorithm to Efficient Architecture Mapping
Lecture 5 - Algorithm to Efficient Architecture Mapping (Continued...)
Lecture 6 - Algorithm to Efficient Architecture Mapping (Continued...)
Lecture 7 - Tutorial on Algorithm to Efficient Architecture Mapping
Lecture 8 - Algorithm to Efficient Architecture Mapping (Continued...)
Lecture 9 - Algorithm to Efficient Architecture Mapping (Continued...)
Lecture 10 - Algorithm to Efficient Architecture Mapping (Continued...)
Lecture 11 - Algorithm to Efficient Architecture Mapping (Continued...)
Lecture 12 - Algorithm to Efficient Architecture Mapping (Continued...)
Lecture 13 - Algorithm to Efficient Architecture Mapping
Lecture 14 - Algorithm to Efficient Architecture Mapping (Continued...)
Lecture 15 - Efficient Adder Architecture
Lecture 16 - Efficient Adder Architecture (Continued...)
Lecture 17 - Efficient Adder Architecture (Continued...)
Lecture 18 - Efficient Adder Architecture
Lecture 19 - Efficient Adder Architecture
Lecture 20 - Efficient Adder Architecture
Lecture 21 - Efficient Adder Architecture
Lecture 22 - Efficient Adder Architecture
Lecture 23 - Efficient Adder Architecture
Lecture 24 - Efficient Adder Architecture
Lecture 25 - Pipelining and Parallel Processing
Lecture 26 - Pipelining and Parallel Processing
Lecture 27 - Multiplier Architecture
Lecture 28 - Multiplier Architecture
Lecture 29 - Multiplier Architecture

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Lecture 30 - Multiplier Architecture
Lecture 31 - Multiplier Architecture
Lecture 32 - Multiplier Architecture
Lecture 33 - Multiplier Architecture
Lecture 34 - Multiplier Architecture
Lecture 35 - Squaring Circuit Design
Lecture 36 - Reconfigurable Constant Multiplier Design
Lecture 37 - Reconfigurable Constant Multiplier Design
Lecture 38 - Reconfigurable Constant Multiplier Design
Lecture 39 - Fixed Point Number Representation
Lecture 40 - Fixed Point Number Representation
Lecture 41 - CORDIC Architecture
Lecture 42 - CORDIC Architecture
Lecture 43 - CORDIC Architecture
Lecture 44 - CORDIC Architecture
Lecture 45 - Timing Analysis
Lecture 46 - Timing Analysis
Lecture 47 - Timing Analysis
Lecture 48 - Logic Hazard
NPTEL Video Course - Electrical Engineering - NOC:Electrical Machines-II

Subject Co-ordinator - Prof. Tapas Kumar Bhattacharya

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Inductance, Self and Mutual
Lecture 2 - Relationship of Inductances in Transformer
Lecture 3 - Equivalent Circuit from Circuit KVL Equations
Lecture 4 - Co-efficient of Coupling, Energy Stored in Coupled Coils
Lecture 5 - A Single Conductor Generator and Motor
Lecture 6 - Analysis of Single Conductor Generator and Motor
Lecture 7 - Analysis of Single Conductor Generator and Motor (Continued...)
Lecture 8 - Flux Density Distribution in Space and Nature emf
Lecture 9 - Flux Density Distribution in Space and Nature emf (Continued...)
Lecture 10 - From Linear to Rotating Machine
Lecture 11 - From Linear to Rotating Machine (Continued...)
Lecture 12 - Basic Underlying Principle of Operation of Rotating Machine
Lecture 13 - Basic Underlying Principle of Operation of Rotating Machine (Continued...)
Lecture 14 - Flux Density Distribution along the Air Gap
Lecture 15 - Flux Density Distribution along the Air Gap (Continued...)
Lecture 16 - Induced Voltage in a Coil in a Rotating Machine
Lecture 17 - Induced Voltage in a Coil in a Rotating Machine (Continued...)
Lecture 18 - Induced Voltage in a Coil in a Rotating Machine (Continued...)
Lecture 19 - Induced Voltage due to Fundamental and Harmonic Components of Flux Density Distribution
Lecture 20 - Distributed Coils Connected in Series Resultant Voltage
Lecture 21 - Distribution Factor
Lecture 22 - Pitch Factor and Winding Factor
Lecture 23 - How to decide about Short Pitch Angle \( \epsilon \)
Lecture 24 - Double Layer 3-phase Winding - An Introduction
Lecture 25 - Winding Table for 3-phase Distributed Winding
Lecture 26 - Winding Table for 3-phase Distributed Winding with Examples
Lecture 27 - Winding Table for 3-phase Distributed Winding with Examples (Continued...)
Lecture 28 - 120 degree Phase Spread Winding with Examples
Lecture 29 - Winding Table of 120 degree Phase Spread Coils and Group Connection

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Lecture 30 - Introduction to Rotating Magnetic Field
Lecture 31 - Rotating Magnetic Field (Continued...), Mechanical and Electrical Speed
Lecture 32 - Speed and Direction of Rotating Field
Lecture 33 - Synchronous Speed and How to Calculate Induced Voltage in a Coil
Lecture 34 - Introduction to Induction Motor
Lecture 35 - Introduction to Induction Motor (Continued...)
Lecture 36 - General Expression of Torque in Terms of Stator and Rotor Fields
Lecture 37 - Torque Angle and Torque Expression
Lecture 38 - How to Fix Up Positions of Net Field, Rotor Field and Stator Field
Lecture 39 - Slip
Lecture 40 - Equivalent Circuit of 3-Phase Induction Motor
Lecture 41 - Equivalent Circuit of 3-Phase Induction Motor (Continued...)
Lecture 42 - Equivalent Circuit of 3-Phase Induction Motor (Continued...)
Lecture 43 - Expression for Electromagnetic Torque in terms of Equivalent Circuit Parameters
Lecture 44 - Maximum Electromagnetic Torque and Slip at Which it Occurs
Lecture 45 - Typical Torque Slip Characteristic and Operating Point
Lecture 46 - Change in Torque-slip Characteristic as Supply Voltage and Rotor Resistance are Varied
Lecture 47 - Types of Induction Motor - Slip Ring Type
Lecture 48 - Introduction to Cage Induction Motor
Lecture 49 - Cage Motor Can Operate for Different Stator Poles
Lecture 50 - Core Loss in Induction Motor and Simplified Equivalent Circuit
Lecture 51 - Torque Expression from Simplified Equivalent Circuit and Introduction to Circle Diagram
Lecture 52 - Circle Diagram (Continued...)
Lecture 53 - Exact Power Flow Diagram and Circle Diagram
Lecture 54 - Circle Diagram (Continued...)
Lecture 55 - Circle Diagram
Lecture 56 - Circle Diagram from Test Data
Lecture 57 - Starting of 3 Phase Induction Motor - Introduction
Lecture 58 - DOL and Reactor Starting
Lecture 59 - DOL and Auto Transformer Starting
Lecture 60 - Introduction to Speed Control
Lecture 61 - Idea of VVVF Speed Control of Induction Motor
Lecture 62 - Speed Control Using Two Motors
Lecture 63 - Electrical Braking of 3 Phase Induction Motor
Lecture 64 - Braking (Continued...)
Lecture 65 - Introduction to Single Phase Induction Motor - Sequence Currents
Lecture 66 - Development of Equivalent Circuit
Lecture 67 - Development of Equivalent Circuit (Continued...)
Lecture 68 - Torque-slip Ch. of 1 ph. I-M Running on Single Winding

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Lecture 69 - Introduction to Starting of 1ph. Induction Motor
Lecture 70 - Expression for Starting Torque and Need for Phase Splitting
Lecture 71 - Resistor Split 1 ph. Induction Motor
Lecture 72 - Capacitor Split 1 ph Induction Motor
Lecture 73 - Starting of 1 ph. Induction Motor (Continued...)
Lecture 74 - Synchronous Machine Construction
Lecture 75 - Synchronous Generator - Introduction
Lecture 76 - Synchronisation
Lecture 77 - Expression for Induced Voltage and O.C. Phasor Diagram
Lecture 78 - Loaded Synchronous Generator - Resultant Field
Lecture 79 - Armature Reaction and Synchronous Reactance. Basic Phasor Diagram
Lecture 80 - General Mode of Operation - Rotro Field, Stator Field and Resultant Field
Lecture 81 - Complete Phasor Diagram and Expression for Complex Power
Lecture 82 - Synchronous Motor Operation, Phasor Diagram and Power Expression
Lecture 83 - Effect of Variation of Field Current in Generator
Lecture 84 - Effect of Variation Field Current in Synchronous Motor, Introduction to Salient Pole Machine
Lecture 85 - Analysis of Salient Pole Synchronous Machine
Lecture 86 - Phasor Diagram of Salient Pole Synchronous Machine for Generator and Motor Mode
Lecture 87 - Expression for Load Angle and Expression for Power
Lecture 88 - Phasor Diagrams of Salient Pole Synchronous Generator under Various Conditions
Lecture 89 - Phasor Diagrams of Salient Pole Synchronous Motor under Various Conditions
Lecture 90 - O.C and S.C Test on Synchronous Generator

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NPTEL Video Course - Electrical Engineering - NOC:Digital Electronic Circuits

Subject Co-ordinator - Prof. Goutam Saha
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Transistor as a switch
Lecture 3 - Performance Issues and Introduction to TTL
Lecture 4 - Transistor Transistor Logic (TTL)
Lecture 5 - CMOS Logic
Lecture 6 - Basic Gates and their representations
Lecture 7 - Fundamentals of Boolean Algebra
Lecture 8 - Boolean Function to Truth Table and Implementation Issues
Lecture 9 - Truth Table to Boolean Function and Implementation Issues
Lecture 10 - Karnaugh Map and Digital Circuit Realization
Lecture 11 - Karnaugh Map to Entered Variable Map
Lecture 12 - Quine - McClusky (QM) Algorithm
Lecture 13 - Cost Criteria and Minimization of Multiple Output Functions
Lecture 14 - Static 1 Hazard
Lecture 15 - Static 0 Hazard and Dynamic Hazard
Lecture 16 - Multiplexer
Lecture 17 - Multiplexer
Lecture 18 - Demultiplexer / Decoder
Lecture 19 - Decoder with BCD Input and Encoder
Lecture 20 - Parity Generator and Checker
Lecture 21 - Number System
Lecture 22 - Negative Number and 2s Complement Arithmetic
Lecture 23 - Arithmetic Building Blocks - I
Lecture 24 - Arithmetic Building Blocks - II
Lecture 25 - Overflow Detection and BCD Arithmetic
Lecture 26 - Magnitude Comparator
Lecture 27 - Arithmetic Logic Unit (ALU)
Lecture 28 - Unweighted Code
Lecture 29 - Error Detection and Correction Code

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Lecture 30 - Multiplication and Division
Lecture 31 - SR Latch and Introduction to Clocked Flip-Flop
Lecture 32 - Edge-Triggered Flip-Flop
Lecture 33 - Representations of Flip-Flops
Lecture 34 - Analysis of Sequential Logic Circuit
Lecture 35 - Conversion of Flip-Flops and Flip-Flop Timing Parameters
Lecture 36 - Register and Shift Register
Lecture 37 - Shift Register
Lecture 38 - Application of Shift Register
Lecture 39 - Linear Feedback Shift Register
Lecture 40 - Serial Addition, Multiplication and Division
Lecture 41 - Asynchronous Counter
Lecture 42 - Decoding Logic and Synchronous Counter
Lecture 43 - Cascading
Lecture 44 - Counter Design with Asynchronous Reset and Preset
Lecture 45 - Counter Design as Synthesis Problem and Few Other Uses of Counter
Lecture 46 - Synthesis of Sequential Logic Circuit
Lecture 47 - Moore Model and Mealy Model
Lecture 48 - Algorithmic State Machine (ASM) Chart and Synthesis of Sequential Logic Circuit
Lecture 49 - Circuit Realization from ASM Chart and State Minimization
Lecture 50 - State Minimization by Implication Table and Partitioning Method
Lecture 51 - Digital to Analog Conversion - I
Lecture 52 - Digital to Analog Conversion - II
Lecture 53 - Analog to Digital Conversion - I
Lecture 54 - Analog to Digital Conversion - II
Lecture 55 - Certain Performance Issue of ADC and DAC
Lecture 56 - Introduction to Memory
Lecture 57 - Static Random Access Memory (SRAM)
Lecture 58 - Dynamic RAM (DRAM) and Memory Expansion
Lecture 59 - Read Only Memory (ROM)
Lecture 60 - PAL, PLA, CPLD, FPGA
Lecture 30 - Transient stability (Continued...)
Lecture 31 - Transient stability
Lecture 32 - Transient stability, Automatic generation control conventional scenario
Lecture 33 - Automatic generation control conventional scenario
Lecture 34 - Automatic generation control conventional scenario
Lecture 35 - Automatic generation control conventional scenario
Lecture 36 - Automatic generation control conventional scenario
Lecture 37 - Automatic generation control conventional scenario
Lecture 38 - Automatic generation control conventional scenario
Lecture 39 - Automatic generation control conventional scenario
Lecture 40 - Automatic generation control conventional scenario
Lecture 41 - AGC in deregulated system
Lecture 42 - AGC in deregulated system (Continued...)
Lecture 43 - AGC in deregulated system (Continued...)
Lecture 44 - AGC in deregulated system (Continued...)
Lecture 45 - AGC in deregulated system (Continued...)
Lecture 46 - AGC in deregulated system (Continued...)
Lecture 47 - AGC in deregulated system (Continued...)
Lecture 48 - AGC in deregulated system (Continued...)
Lecture 49 - AGC in deregulated system, Reactive power and voltage control
Lecture 50 - Reactive power and voltage control
Lecture 51 - Reactive power and voltage control, State estimation in power system
Lecture 52 - State estimation in power system
Lecture 53 - State estimation in power system (Continued...)
Lecture 54 - State estimation in power system (Continued...)
Lecture 55 - State estimation in power system (Continued...)
Lecture 56 - State estimation in power system (Continued...)
Lecture 57 - Hydraulic turbine modelling
Lecture 58 - Hydraulic turbine modelling (Continued...)
Lecture 59 - Subsynchronous oscillation
Lecture 60 - Subsynchronous oscillation, Windup and non windup limits
NPTEL Video Course - Electrical Engineering - NOC: Evolution of Air Interface towards 5G

Subject Co-ordinator - Prof. Suvra Sekhar Das
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Evolution of wireless Communication
Lecture 2 - Evolution of wireless Communication Standards From 2G to 5G
Lecture 3 - Evolution of wireless Communication Standards From 2G to 5G (Continued...)
Lecture 4 - Evolution of wireless Communication Standards From 2G to 5G (Continued...)
Lecture 5 - Evolution of wireless Communication Standards From 2G to 5G (Continued...)
Lecture 6 - Requirements and operating scenarios of 5G
Lecture 7 - Requirements and operating scenarios of 5G (Continued....)
Lecture 8 - 5G scenarios
Lecture 9 - Ultra reliable low latency communication
Lecture 10 - Designing 5G new radio
Lecture 11 - Fundamental Framework for waveform analysis
Lecture 12 - Fundamental Framework for waveform analysis (Continued...)
Lecture 13 - Waveform Design Aspects of 2G
Lecture 14 - Waveforms in 3G
Lecture 15 - Waveforms in 3G (Continued...)
Lecture 16 - Waveform in 4G and 5G (OFDM)
Lecture 17 - Waveform in 4G and 5G (OFDM) (Continued...)
Lecture 18 - Waveform in 4G and 5G (OFDM) (Continued...)
Lecture 19 - Waveform in 4G and 5G (OFDMA)
Lecture 20 - Waveform in 4G and 5G (OFDMA, SCFDMA, SCFDE)
Lecture 21 - Waveform in 4G and 5G (SCFDMA Continued...)
Lecture 22 - Waveform in 5G
Lecture 23 - Waveform in 5G Numerology
Lecture 24 - Frame Structure in 5G NR
Lecture 25 - Numerology in 5G and adaptive subcarrier bandwidth
Lecture 26 - Numerology in 5G (Continued...)
Lecture 27 - Waveforms beyond 5G
Lecture 28 - Waveforms beyond 5G (Continued...)
Lecture 29 - Waveforms beyond 5G (Continued...)

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Lecture 30 - Waveforms beyond 5G (Continued...)
Lecture 31 - Waveform beyond 5G (Precoded GFDM)
Lecture 32 - Comparison of waveforms
Lecture 33 - Channel models for performance evaluation - Part I
Lecture 34 - Channel models for performance evaluation - Part II
Lecture 35 - Channel models for performance evaluation - Part III
Lecture 36 - MIMO Signal Processing (Receive Diversity)
Lecture 37 - MIMO Signal Processing
Lecture 38 - MIMO Signal Processing (Capacity)
Lecture 39 - MIMO Signal Processing (Capacity and Massive MIMO)
Lecture 40 - Hybrid beamforming (mmWave)
NPTEL Video Course - Electrical Engineering - NOC:Electrical Measurement and Electronic Instruments

Subject Co-ordinator - Prof. Avishek Chatterjee

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - PMMC Instruments
Lecture 2 - Electrodynamic Instrument
Lecture 3 - Demonstration of PMMC and Electrodynamic Instruments
Lecture 4 - Features of PMMC and Electrodynamic Instruments
Lecture 5 - Moving Iron Instruments
Lecture 6 - Demonstration of Moving Iron Instrument
Lecture 7 - Electrostatic Instrument
Lecture 8 - Derivation of Deflecting Torque in Electrodynamic, Electrostatic and Moving Iron Instrument
Lecture 9 - Damping and Eddy Current Damping
Lecture 10 - Dynamics of the Moving Coil and Damping
Lecture 11 - Dynamics of the Moving Coil and Damping (Continued...)
Lecture 12 - Ballistic Galvanometer
Lecture 13 - Ammeter - I
Lecture 14 - Ammeter - II
Lecture 15 - Voltmeter
Lecture 16 - Ohmmeters - I
Lecture 17 - Ohmmeters - II
Lecture 18 - Rectifier based Voltmeters and Ammeter - I
Lecture 19 - Rectifier based Voltmeters and Ammeter - II
Lecture 20 - Resistance measurement with a Voltmeter and an Ammeter
Lecture 21 - Four-Terminal Resistance
Lecture 22 - Problems
Lecture 23 - Error Calculation
Lecture 24 - Sensitivity, Accuracy, and Resolution of Wheatstone Bridge
Lecture 25 - Kelvin Double Bridge
Lecture 26 - High Resistance Measurement
Lecture 27 - Wattmeter Connection and Compensated Wattmeter
Lecture 28 - Single Phase Energy Meter
Lecture 29 - Demonstration

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Lecture 30 - Single Phase Energy Meter (Continued...)
Lecture 31 - Connection of Energy Meter, Wattmeter, and Three Phase Supply
Lecture 32 - DC Potentiometer
Lecture 33 - AC Potentiometer
Lecture 34 - Polar potentiometer and phase shifter
Lecture 35 - Polar potentiometer
Lecture 36 - Co-ordinate potentiometer
Lecture 37 - Kelvin-Varley potential divider
Lecture 38 - Impedance measurement
Lecture 39 - AC bridges - I
Lecture 40 - AC bridges - II
Lecture 41 - AC bridges - III
Lecture 42 - Current transformer and potential transformer
Lecture 43 - Review of transformer and magnetic circuit
Lecture 44 - Errors in Instrument transformer
Lecture 45 - Flux density measurement with Ballistic Galvanometer
Lecture 46 - Flux density measurement with Ballistic Galvanometer (Continued...)
Lecture 47 - Background
Lecture 48 - Background
Lecture 49 - Background
Lecture 50 - Background
Lecture 51 - Background
Lecture 52 - Background
Lecture 53 - Inverting amplifier versus Schmitt Trigger
Lecture 54 - Non-inverting amplifier versus Schmitt Trigger
Lecture 55 - Difference amplifier - I
Lecture 56 - Difference amplifier - II
Lecture 57 - Difference amplifier - III
Lecture 58 - Digital frequency meter
Lecture 59 - Digital frequency meter and Schmitt Trigger
Lecture 60 - Schmitt Trigger
Lecture 61 - Schmitt Trigger
Lecture 62 - Digital frequency meter
Lecture 63 - Linear ramp type digital voltmeter
Lecture 64 - Dual slope digital voltmeter - I
Lecture 65 - Dual slope digital voltmeter - II
Lecture 66 - Dual slope digital voltmeter and Integrator circuit
Lecture 67 - Digital ramp type voltmeter
Lecture 68 - Digital ramp type voltmeter and Successive approximation type voltmeter
Lecture 69 - ADC and DAC - I
Lecture 70 - ADC and DAC - II
Lecture 71 - Why we need electronic Instruments
Lecture 72 - Instruments with op-amp based amplifiers - I
Lecture 73 - Instruments with op-amp based amplifiers - II
Lecture 74 - Instruments with op-amp based amplifiers - III
Lecture 75 - Instrumentation Amplifier
Lecture 76 - Function generator
Lecture 77 - 555-Timer circuit
Lecture 78 - Astable and monostable oscillator circuits
Lecture 79 - Pulse generator
Lecture 80 - Oscilloscope - I
Lecture 81 - Oscilloscope - II
Lecture 82 - Emitter follower voltmeter
Lecture 83 - Linear ohmmeter
Lecture 84 - Ramp generator
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC: Principles and Techniques of Modern Radar Systems

Subject Co-ordinator - Dr. Amitabha Bhattacharya
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Historical Development and Application
Lecture 2 - Radar Bands and System Modeling
Lecture 3 - Radar Equation
Lecture 4 - Some Basic Concepts of Pulsed Radar
Lecture 5 - Some Basic Concepts of Pulsed Radar (Continued...)
Lecture 6 - Some Basic Concepts of Pulsed Radar (Continued...)
Lecture 7 - Some Basic Concepts of Pulsed Radar (Continued...)
Lecture 8 - Tutorial Problems on Basic Concepts of Radar - Part I
Lecture 9 - Tutorial Problems on Basic Concepts of Radar - Part II
Lecture 10 - CW Radar
Lecture 11 - CW Radar Mathematical Model and Applications
Lecture 12 - FM-CW Radar
Lecture 13 - Double Frequency CW Radar
Lecture 14 - Pulsed Radar
Lecture 15 - MTI Filter
Lecture 16 - Clutter and Single DLC
Lecture 17 - Double DLC and Recursive MTI Filter
Lecture 18 - Multiple prf MTI Radar
Lecture 19 - Multiple prf MTI Radar and Clutter Attenuation
Lecture 20 - MTI Improvement Factor
Lecture 21 - Tutorial Problems on CW and Pulsed Radar - Part I
Lecture 22 - Tutorial Problems on CW and Pulsed Radar - Part II
Lecture 23 - Pulsed Doppler Radar
Lecture 24 - Pulsed Doppler Radar (Continued...) and Search Radar
Lecture 25 - Tracking Radar
Lecture 26 - Tracking Radar (Continued...)
Lecture 27 - Tracking Radar (Continued...)
Lecture 28 - Tracking Radar (Continued...)
Lecture 29 - Tracking Radar (Continued...)

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Lecture 30 - Tracking Radar (Continued...)
Lecture 31 - Tracking Radar (Continued...)
Lecture 32 - Tutorial Problems on Search and Tracking Radar
Lecture 33 - Detection in Radar Receiver
Lecture 34 - Detection in Radar Receiver (Continued...)
Lecture 35 - Detection in Radar Receiver (Continued...)
Lecture 36 - Detection in Radar Receiver (Continued...)
Lecture 37 - Detection in Radar Receiver (Continued...)
Lecture 38 - Detection in Radar Receiver (Continued...)
Lecture 39 - Detection in Radar Receiver (Continued...)
Lecture 40 - Detection in Radar Receiver (Continued...)
Lecture 41 - Detection in Radar Receiver (Continued...)
Lecture 42 - Detection in Radar Receiver (Continued...)
Lecture 43 - Detection in Radar Receiver (Continued...)
Lecture 44 - Detection in Radar Receiver (Continued...)
Lecture 45 - Detection in Radar Receiver (Continued...)
Lecture 46 - Detection in Radar Receiver (Continued...)
Lecture 47 - Tutorial Problems on Detection in Radar Receiver
Lecture 48 - SAR Processing
Lecture 49 - SAR Processing (Continued...)
Lecture 50 - SAR Processing (Continued...)
Lecture 51 - SAR Processor
Lecture 52 - Tutorial
Lecture 53 - Statistical Detection Theory
Lecture 54 - Statistical Detection Theory (Continued...)
Lecture 55 - Statistical Detection Theory (Continued...)
Lecture 56 - Statistical Detection Theory (Continued...)
Lecture 57 - Statistical Detection Theory (Continued...)
Lecture 58 - Tutorial
Lecture 59 - Ground Penetrating Radar
Lecture 60 - GPR Measurements and Microwave Tomography

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Get Digi-MAT (Digital Media Access Terminal) For High-Speed Video Streaming of NPTEL and Educational Video Courses in LAN
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Lecture 1 - Magnetic Circuit and Transformer
Lecture 2 - Magnetising Current from B-H Curve
Lecture 3 - Ideal Transformer, Dot Convention and Phasor Diagram
Lecture 4 - Operation of Ideal Operation with Load Connected
Lecture 5 - Equivalent Circuit of Ideal Transformer
Lecture 6 - Rating of Single Phase Transformer
Lecture 7 - Transformer with Multiple Coils
Lecture 8 - Modelling of Practical Transformer - I
Lecture 9 - Modelling of Practical Transformer - II
Lecture 10 - Modelling of Practical Transformer - III
Lecture 11 - Core Loss - Eddy Current Loss
Lecture 12 - Factors on Eddy Current Loss Depends
Lecture 13 - Hysteresis Loss
Lecture 14 - Exact Equivalent Circuit
Lecture 15 - Approximate Equivalent Circuit
Lecture 16 - Determination of Equivalent Circuit Parameters - No Load Test
Lecture 17 - Short Circuit Test
Lecture 18 - Choosing Sides to Carry Out O.C / S.C Test
Lecture 19 - Efficiency of Transformer - Losses
Lecture 20 - Efficiency (Continued...)
Lecture 21 - Condition for Maximum Efficiency When Load Power Factor Constant
Lecture 22 - Family of Efficiency Curve at Various Power Factor and Energy Efficiency
Lecture 23 - Load Description and Energy Efficiency
Lecture 24 - Regulation
Lecture 25 - Regulation
Lecture 26 - Auto Transformer - Introduction
Lecture 27 - AutoTransformer versus Two Winding Transformer
Lecture 28 - AutoTransformer versus Two Winding Transformer (Continued...)
Lecture 29 - Numerical Problems on Ideal Auto Transformer
Lecture 30 - Two Winding Transformer Connected as Auto Transformer
Lecture 31 - Practical Auto Transformer
Lecture 32 - Equivalent Circuit of an Auto Transformer
Lecture 33 - Polarity Test and Sumpner Test
Lecture 34 - 3 Phase Transformer Using 3 Single Phase Transformer
Lecture 35 - Various Connections of 3-Phase Transformer - I
Lecture 36 - Various Connections of 3-Phase Transformer - II
Lecture 37 - Vector Group of 3-Phase Transformer
Lecture 38 - Vector Group (Continued...)
Lecture 39 - Open Delta Connection
Lecture 40 - 3-Phase Cone Type and Shell Type Transformer
Lecture 41 - Zig Zag Connection
Lecture 42 - Effect 3rd Harmonic Exciting Current and Flux
Lecture 43 - Choosing Transformer Connection
Lecture 44 - Choosing Transformer Connection (Continued...)
Lecture 45 - Phase Conversion using Transformer
Lecture 46 - Scott Connection (Continued...)
Lecture 47 - 3 Phase to 6 Phase Conversion O.C / S.C Test on 3 Phase Transformer
Lecture 48 - Parallel Operation of Transformers - I
Lecture 49 - Parallel Operation of Transformers - II
Lecture 50 - Parallel Operation of Transformers - III
Lecture 51 - Specific Magnetic and Electric Loadings
Lecture 52 - ooling of Transformer and Fillings of Transformer
Lecture 53 - Output Equation of 3- Phase Transformer
Lecture 54 - Introduction to D.C Machine
Lecture 55 - Single Conductor D.C Generator / Motor Operation
Lecture 56 - Homopolar D.C Generator
Lecture 57 - Homopolar D.C Motor
Lecture 58 - Introduction to Rotating D.C Machines
Lecture 59 - Armature Winding of D.C Machine - I
Lecture 60 - Armature Winding of D.C Machine - II
Lecture 61 - Armature Winding of D.C Machine - III
Lecture 62 - Generated Voltage Across the Armature
Lecture 63 - Electromagnetic Troque in D.C Machine
Lecture 64 - Generator and Motor Operation - Basics
Lecture 65 - O.C.C and Load Characteristic of Separately Excited Generators
Lecture 66 - Voltage Build Up in Shunt Generator
Lecture 67 - Load Characteristic of Shunt Generator
Lecture 68 - Qualitative Discussion on Armature Reaction

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NPTEL Video Course - Electrical Engineering - Modelling and Analysis of Electric Machines

Subject Co-ordinator - Dr. Krishna Vasudevan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Magnetic Fields
Lecture 3 - Magnetic Circuit
Lecture 4 - Singly Excited Linear Motion System
Lecture 5 - Linear and Cylindrical Motion Systems
Lecture 6 - Systems with Multiple Excitations
Lecture 7 - Non-linear Magnetic Systems
Lecture 8 - Inductances in Constant Air gap Machines
Lecture 9 - Inductance in Salient Pole Machine - I
Lecture 10 - Inductance in Salient Pole Machine - II
Lecture 11 - Inductance in Salient Pole Machine - III
Lecture 12 - Inductance in Salient Pole Machine - IV
Lecture 13 - Inductance in Salient Pole Machine - V
Lecture 14 - Inductances of Distributed Winding - I
Lecture 15 - Inductances of Distributed Winding - II
Lecture 16 - Inductances of Distributed Winding - III
Lecture 17 - Dynamic Equations of Induction Machines
Lecture 18 - Dynamic Equations of Salient Pole Synchronous Machine
Lecture 19 - Three-to-Two Phase Transformation
Lecture 20 - Induction Machine in Two-Phase Reference Frame
Lecture 21 - The Pseudo-Stationary Reference Frame
Lecture 22 - Induction Machine in Pseudo-Stationary Reference Frame
Lecture 23 - The Primitive Machine Equations
Lecture 24 - Dynamic Equations of DC Machines
Lecture 25 - Small Signal Model of DC Machine
Lecture 26 - Small Signal Behaviour of DC Machine
Lecture 27 - The Arbitrary Reference Frame
Lecture 29 - Introduction to Field Oriented Control of Induction Machines

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - Analog ICs

Subject Co-ordinator - Prof. K. Radhakrishna Rao

Co-ordinating Institute - IIT - Madras | Texas Instruments - India

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic Building Blocks In Analog ICs
Lecture 2 - Current Mirrors
Lecture 3 - Translinear Networks
Lecture 4 - Differential Amplifier
Lecture 5 - Differential Amplifier Characteristics
Lecture 6 - Video Amplifier and RF/IF Amplifiers
Lecture 7 - Cascade Amplifier
Lecture 8 - IC Negative Feedback Wide Band Amplifiers
Lecture 9 - IC Negative Feedback Amplifiers
Lecture 10 - Voltage Sources And References
Lecture 11 - IC Voltage Regulator
Lecture 12 - Characteristics and Parameters Of Voltage
Lecture 13 - Protection Circuitry For Voltage Regulator
Lecture 14 - Switched Mode Regulator And Operational
Lecture 15 - IC Operational Voltage Amplifier
Lecture 16 - General Purpose Operational Amplifier-747
Lecture 17 - Transconductance Operational Amplifier
Lecture 18 - Audio Power Amplifier and Norton’s Amplifier
Lecture 19 - Analog Multipliers
Lecture 20 - Analog Multipliers
Lecture 21 - Voltage Controlled Oscillator
Lecture 22 - Voltage Controlled Oscillator
Lecture 23 - Self Tuned Filter
Lecture 24 - Phase Locked Loop
Lecture 25 - Phase Locked Loop
Lecture 26 - Phase Locked Loop
Lecture 27 - Phase Locked Loop
Lecture 28 - Current Mode ICs

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NPTEL Video Course - Electrical Engineering - Digital Integrated Circuits

Subject Co-ordinator - Prof. Amitava Dasgupta

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Semiconductors
Lecture 2 - Modelling of PN Junction Diodes
Lecture 3 - Modelling of BJTs
Lecture 4 - Diode and BJT Model Parameter Extraction
Lecture 5 - BJT Inverters DC and Switching Characteristics
Lecture 6 - Schottky Transistor
Lecture 7 - Specifications of Logic Circuits
Lecture 8 - Qualitative discussion on TTL Circuits
Lecture 9 - Standard TTL Circuits
Lecture 10 - Schottky (74s..) and Low power Schottky (74ls)
Lecture 11 - Advanced TTL Circuits
Lecture 12 - I2 L Technology
Lecture 13 - Edge triggered D-F/F
Lecture 14 - I2 L - Condition for Proper Operation
Lecture 15 - I2 L - Propagation delay Self aligned
Lecture 16 - Schottky Transistor Logic
Lecture 17 - Stacked I2 L
Lecture 18 - ECL Basic Operation
Lecture 19 - Quantitative analysis of ECL 10k Series gates
Lecture 20 - ECL 100k series; Stacked ECL gates; D-F/F
Lecture 21 - Emitter Function Logic; Low Power ECL
Lecture 22 - Polylemitter Bipolar Transistor In ECL; Propagation
Lecture 23 - Heterojunction Bipolar Transistor Based ECL; ECL
Lecture 24 - nMOS Logic Circuits
Lecture 25 - nMOS Logic Circuits (contd); CMOS
Lecture 26 - CMOS Inverter
Lecture 27 - CMOS NAND, NOR and Other Gates
Lecture 28 - Dynamic CMOS; Transmission Gates; Realization Of MUX, decoder, D-F/F
Lecture 29 - BiCMOS Gates

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Lecture 30 - BiCMOS Driver; BiCMOS 32-bit Adder
Lecture 31 - Digital Integrated Circuits
Lecture 32 - Digital Integrated Circuits
Lecture 33 - CMOS SRAM
Lecture 34 - BiCMOS SRAM
Lecture 35 - DRAM-CMOS and BiCMOS
Lecture 36 - ROM-EPROM, EEPROM and Flash EPROM
Lecture 37 - GaAs MESFET Characteristics and Equivalent Circuits
Lecture 38 - Direct Coupled FET Logic; Superbuffer FET Logic
Lecture 39 - Buffered FET Logic; Schottky Diode FET Logic
Lecture 40 - Transmission Line Effects
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - Electromagnetic Fields

Subject Co-ordinator - Prof. Harishankar Ramachandran

Co-ordinating Institute - IIT - Madras

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Lecture 1 - Introduction To Vector
Lecture 2 - Introduction To Vector (Continued...)
Lecture 3 - Coulomb's Law
Lecture 4 - Electric Field
Lecture 5 - Electro Static Potential
Lecture 6 - The Gradient
Lecture 7 - Gauss's Law
Lecture 8 - Poisson's Equation
Lecture 9 - Energy In The Field
Lecture 10 - Sample Problems In Electrostatics
Lecture 11 - Fields In Materials
Lecture 12 - Fields In Material Bodies
Lecture 13 - Displacement Vectors
Lecture 14 - Capacitors
Lecture 15 - Method Of Images
Lecture 16 - Poisson's Equation 2 Dimensions
Lecture 17 - Field Near Sharp Edges And Points
Lecture 18 - Magnetic Field 1
Lecture 19 - Magnetic Field 2
Lecture 20 - Stokes Theorems
Lecture 21 - The curl
Lecture 22 - Field due to current loop
Lecture 23 - Ampere's law
Lecture 24 - Examples of Ampere's law
Lecture 25 - Inductance
Lecture 26 - Mutual Inductance
Lecture 27 - Faraday's law
Lecture 28 - Magnetic Energy
Lecture 29 - Magnetic Energy (Continued...)

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Lecture 30 - Magnetic Energy (Continued...)
Lecture 31 - Generalised Ampere's Law
Lecture 32 - The Wave Equation
Lecture 33 - The Wave Equation
Lecture 34 - Poynting Theorem
Lecture 35 - Skin Effect
Lecture 36 - Skin Effect (Continued...)
Lecture 37 - Radiation And Circuits
Lecture 38 - Phasor Form Of Poynting Theorem
Lecture 39 - Reflection At Dielectric Boundaries
Lecture 40 - Reflection At Dielectric Boundaries (Continued...)
Lecture 41 - Transmission Lines
Lecture 42 - Transmission Lines (Continued... and Conclusion
NPTEL Video Course - Electrical Engineering - Networks and Systems

Subject Co-ordinator - Prof. V.G.K. Murti

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introductory Concepts - 1
Lecture 2 - Introductory Concepts - 2
Lecture 3 - Introductory Concepts - 3
Lecture 4 - Introductory Concepts - 4
Lecture 5 - Introductory Concepts - 5
Lecture 6 - Introductory Concepts - 6
Lecture 7 - Fourier Series - 1
Lecture 8 - Fourier Series - 2
Lecture 9 - Fourier Series - 3
Lecture 10 - Fourier Series - 4
Lecture 11 - Fourier Series - 5
Lecture 12 - Fourier Series - 6
Lecture 13 - Fourier Transforms - 1
Lecture 14 - Fourier Transforms - 2
Lecture 15 - Fourier Transforms - 3
Lecture 16 - Fourier Transforms - 4
Lecture 17 - Fourier Transforms - 5
Lecture 18 - Fourier Transforms - 6
Lecture 19 - Fourier Transforms - 7
Lecture 20 - Laplace Transforms - 1
Lecture 21 - Laplace Transforms - 2
Lecture 22 - Laplace Transforms - 3
Lecture 23 - Laplace Transforms - 4
Lecture 24 - Laplace Transforms - 5
Lecture 25 - Laplace Transforms - 6
Lecture 26 - Application of Laplace Transforms - 1
Lecture 27 - Application of Laplace Transforms - 2
Lecture 28 - Application of Laplace Transforms - 3
Lecture 29 - Application of Laplace Transforms - 4

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NPTEL Video Course - Electrical Engineering - Probability Foundation for Electrical Engineers

Subject Co-ordinator - Dr. Krishna Jagannathan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Cardinality and Countability - 1
Lecture 3 - Cardinality and Countability - 2
Lecture 4 - Probability Spaces - 1
Lecture 5 - Probability Spaces - 2
Lecture 6 - Properties of Probability Measures
Lecture 7 - Discrete Probability Spaces
Lecture 8 - Generated $\sigma$-Algebra, Borel Sets
Lecture 9 - Borel Sets and Lebesgue Measure - 1
Lecture 10 - Borel Sets and Lebesgue Measure - 2
Lecture 11 - The Infinite Coin Toss Model
Lecture 12 - Conditional Probability and Independence
Lecture 13 - Independence (Continued...)
Lecture 14 - The Borel-Cantelli Lemmas
Lecture 15 - Random Variables
Lecture 16 - Cumulative Distribution Function
Lecture 17 - Types of Random Variables
Lecture 18 - Continuous Random Variables
Lecture 19 - Continuous Random Variables (Continued...) And Singular Random Variables
Lecture 20 - Several Random Variables
Lecture 21 - Independent Random Variables - 1
Lecture 22 - Independent Random Variables - 2
Lecture 23 - Jointly Continuous Random Variables
Lecture 24 - Transformation of Random Variables - 1
Lecture 25 - Transformation of Random Variables - 2
Lecture 26 - Transformation of Random Variables - 3
Lecture 27 - Transformation of Random Variables - 4
Lecture 28 - Integration And Expectation - 1
Lecture 29 - Integration And Expectation - 2
Lecture 30 - Properties of Integrals
Lecture 31 - Monotone Convergence Theorem
Lecture 32 - Expectation of Discrete Random Variables, Expectation Over Different Spaces
Lecture 33 - Expectation of Discrete Random Variables
Lecture 34 - Fatou's Lemma and Dominated Convergence Theorem
Lecture 35 - Variance and Covariance
Lecture 36 - Covariance, Correlation Coefficient
Lecture 37 - Conditional Expectation
Lecture 38 - MMSE Estimator, Transforms
Lecture 39 - Moment Generating Function
Lecture 40 - Characteristic Function - 1
Lecture 41 - Characteristic Function - 2
Lecture 42 - Concentration Inequalities
Lecture 43 - Convergence of Random Variables - 1
Lecture 44 - Convergence of Random Variables - 2
Lecture 45 - Convergence of Random Variables - 3
Lecture 46 - Convergence of Characteristic Functions, Limit Theorems
Lecture 47 - The Laws of Large Numbers
Lecture 48 - The Central Limit Theorem
Lecture 49 - A Brief Overview of Multivariate Gaussians
Lecture 1 - Introduction to the course
Lecture 2 - Obtaining power gain
Lecture 3 - Obtaining power gain using a linear two port?
Lecture 4 - One port (two terminal) nonlinear element
Lecture 5 - Nonlinear circuit analysis
Lecture 6 - Small signal incremental analysis-graphical view
Lecture 7 - Small signal incremental analysis
Lecture 8 - Incremental equivalent circuit
Lecture 9 - Large signal characteristics of a diode
Lecture 10 - Analysis of diode circuits
Lecture 11 - Small signal model of a diode
Lecture 12 - Two port nonlinearity
Lecture 13 - Small signal equivalent of a two port network
Lecture 14 - Small signal equivalent circuit of a two port network
Lecture 15 - Gain of a two port network
Lecture 16 - Constraints on small signal parameters to maximize the gain
Lecture 17 - Constraints on large signal characteristics to maximize the gain
Lecture 18 - Implications of constraints in terms of the circuit equivalent
Lecture 19 - MOS transistor-description
Lecture 20 - MOS transistor large signal characteristics
Lecture 21 - MOS transistor large signal characteristics-graphical view
Lecture 22 - MOS transistor small signal characteristics
Lecture 23 - Linear (Triode) region of the MOS transistor
Lecture 24 - Small signal amplifier using the MOS transistor
Lecture 25 - Basic amplifier structure
Lecture 26 - Problems with the basic structure
Lecture 27 - Adding bias and signal-ac coupling
Lecture 28 - Common source amplifier with biasing
Lecture 29 - Common source amplifier
Lecture 30 - Common source amplifier analysis
Lecture 31 - Constraint on the input coupling capacitor
Lecture 32 - Constraint on the output coupling capacitor
Lecture 33 - Dependence of $I_d$ on $V_{ds}$
Lecture 34 - Small signal output conductance of a MOS TRANSISTOR
Lecture 35 - Effect of $g_{ds}$ on a common source amplifier, Inherent gain limit of a Transistor
Lecture 36 - Variation of $g_m$ with transistors parameters
Lecture 37 - Variation of $g_m$ with constant $V_{gs}$ and constant drain current bias
Lecture 38 - Negative feedback control for constant drain current bias
Lecture 39 - Types of feedback for constant drain current bias
Lecture 40 - Sense at the drain and feedback to the gate-Drain feedback
Lecture 41 - Intuitive explanation of low sensitivity with drain feedback
Lecture 42 - Common source amplifier with drain feedback bias
Lecture 43 - Constraint on the gate bias resistor
Lecture 44 - Constraint on the input coupling capacitor.
Lecture 45 - Constraint on the output coupling capacitor.
Lecture 46 - Input and output resistances of the common source amplifier with constant $V_{gs}$ bias
Lecture 47 - Current mirror
Lecture 48 - Common source amplifier with current mirror bias
Lecture 49 - Constraint on coupling capacitors and bias resistance
Lecture 50 - Diode connected transistor
Lecture 51 - Source feedback biasing
Lecture 52 - Common source amplifier with source feedback bias
Lecture 53 - Constraints on capacitor values
Lecture 54 - Sensing at the drain and feeding back to the source
Lecture 55 - Sensing at the source and feeding back to the gate
Lecture 56 - Ensuring that transistor is in saturation
Lecture 57 - Using a resistor instead of current source for biasing
Lecture 58 - Quick tour of amplifying devices
Lecture 59 - Controlled sources using a MOS transistor-Introduction
Lecture 60 - Voltage controlled voltage source
Lecture 61 - VCVS using a MOS transistor
Lecture 62 - VCVS using a MOS transistor-Small signal picture
Lecture 63 - VCVS using a MOS transistor-Complete circuit
Lecture 64 - Source follower
Lecture 65 - VCCS using a MOS transistor
Lecture 66 - VCCS using a MOS transistor
Lecture 67 - VCCS using a MOS transistor
Lecture 68 - VCCS using a MOS transistor
Lecture 69 - Source degenerated CS amplifier
Lecture 70 - CCCS using a MOS transistor
Lecture 71 - CCCS using a MOS transistor
Lecture 72 - CCCS using a MOS transistor
Lecture 73 - CCVS using a MOS transistor
Lecture 74 - CCVS using a MOS transistor
Lecture 75 - CCVS using a MOS transistor
Lecture 76 - CCVS using a MOS transistor
Lecture 77 - VCVS using an opamp
Lecture 78 - CCVS using an opamp
Lecture 79 - Negative feedback and virtual short in an opamp
Lecture 80 - Negative feedback and virtual short in a transistor
Lecture 81 - Constraints on controlled sources using opamps and transistors
Lecture 82 - Summary of basic amplifiers
Lecture 83 - Signal swing limits in amplifiers
Lecture 84 - Swing limit due to transistor entering triode region
Lecture 85 - Swing limit due to transistor entering cutoff region
Lecture 86 - Swing limit calculation example
Lecture 87 - Swing limits - more calculations
Lecture 88 - pMOS transistor
Lecture 89 - Small signal model of the pMOS transistor
Lecture 90 - Common source amplifier using the pMOS transistor
Lecture 91 - Swing limits of the pMOS common source amplifier
Lecture 92 - Biasing a pMOS transistor at a constant current; pMOS current mirror
Lecture 93 - Converting nMOS transistor circuits to pMOS
Lecture 94 - Bias current generation
Lecture 95 - Examples of more than one transistor in feedback
NPTEL Video Course - Electrical Engineering - NOC:Control Engineering

Subject Co-ordinator - Prof. Ramkrishna.P

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Systems and Control
Lecture 2 - Modelling of Systems
Lecture 3 - Elements of Modelling
Lecture 4 - Examples of Modelling
Lecture 5 - Solving Problems in Modelling of Systems
Lecture 6 - Laplace Transforms
Lecture 7 - Inverse Laplace Transforms
Lecture 8 - Transfer Function of Modelling Block Diagram Representation
Lecture 9 - Solving Problems on Laplace Transforms and Transfer Functions
Lecture 10 - Block Diagram Reduction, Signal Flow Graphs
Lecture 11 - Solving Problems on Block Diagram Reduction, Signal Flow Graphs
Lecture 12 - Time Response Analysis of systems
Lecture 13 - Time Response specifications
Lecture 14 - Solving Problems on Time Response Analysis and specifications
Lecture 15 - Stability
Lecture 16 - Routh Hurwitz Criterion
Lecture 17 - Routh Hurwitz Criterion T 1
Lecture 18 - Closed loop System and Stability
Lecture 19 - Root Locus Technique
Lecture 20 - Root Locus Plots
Lecture 21 - Root Locus Plots (Continued...)
Lecture 22 - Root Locus Plots (Continued...)
Lecture 23 - Root Locus Plots (Continued...)
Lecture 24 - Introduction to Frequency Response
Lecture 25 - Frequency Response Plots
Lecture 26 - Relative Stability
Lecture 27 - Bode plots
Lecture 28 - Basics of Control design Proportional, Integral and Derivative Actions
Lecture 29 - Basics of Control design Proportional, Integral and Derivative Actions

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Lecture 30 - Problems on PID Controllers
Lecture 31 - Basics of Control design Proportional, Integral and Derivative Actions
Lecture 32 - Control design in time domain and discusses the lead compensator
Lecture 33 - Improvement of the Transient Response using lead compensation
Lecture 34 - Design of control using lag compensators
Lecture 35 - The design of Lead-Lag compensators using root locus
Lecture 36 - Introduction design of control in frequency domain
Lecture 37 - Design of Lead Compensator using Bode Plots
Lecture 38 - Design of Lag Compensators using Bode Plots
Lecture 39 - Design of Lead-Lag Compensators using Bode plots
Lecture 40 - Experimental Determination of Transfer Function
Lecture 41 - Effect of Zeros on System Response
Lecture 42 - Navigation - Stories and Some Basics
Lecture 43 - Navigation - Dead Reckoning and Reference Frames
Lecture 44 - Inertial Sensors and Their Characteristics
Lecture 45 - Filter Design to Attenuate Inertial Sensor Noise
Lecture 46 - Complementary Filter
Lecture 47 - Complementary Filter - 1
Lecture 48 - Introduction to State Space Systems
Lecture 49 - Linearization of State Space Dynamics
Lecture 50 - Linearization of State Space Dynamics - 1
Lecture 51 - Controllability and Observability
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - NOC: Analog IC Design

Subject Co-ordinator - Prof. S. Aniruddhan
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to MOSFETs
Lecture 2 - Simple MOSFET Circuits
Lecture 3 - MOSFET Current Mirrors
Lecture 4 - Cascode Amplifiers
Lecture 5 - MOSFET in Integrated Circuits
Lecture 6 - MOSFET Capacitances
Lecture 7 - Noise
Lecture 8 - Noise of Simple Circuits
Lecture 9 - Systematic Mismatch
Lecture 10 - Random Mismatch
Lecture 11 - Differential Amplifiers
Lecture 12 - Negative Feedback
Lecture 13 - Stability of Negative Feedback Systems
Lecture 14 - Dominant Pole Compensation
Lecture 15 - Active Load
Lecture 16 - One Stage OpAmps - 1
Lecture 17 - One Stage OpAmps - 2
Lecture 18 - One Stage OpAmps - 3
Lecture 19 - Differential Amplifiers Offset
Lecture 20 - One Stage OpAmps - Noise and Offset
Lecture 21 - One Stage OpAmps - Slew Rate
Lecture 22 - One Stage OpAmps - Datasheet
Lecture 23 - One Stage OpAmps - Example 1
Lecture 24 - One Stage OpAmps - Example 2
Lecture 25 - Telescopic OpAmp - 1
Lecture 26 - Telescopic OpAmp - 2
Lecture 27 - Telescopic OpAmp - 3
Lecture 28 - Telescopic OpAmp - 4
Lecture 29 - Telescopic OpAmp - 5

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Lecture 30 - Telescopic OpAmp - Datasheet
Lecture 31 - Telescopic OpAmp - Design Example
Lecture 32 - Folded-Cascode OpAmp - 1
Lecture 33 - Folded-Cascode OpAmp - 2
Lecture 34 - Folded-Cascode OpAmp - 3
Lecture 35 - Folded-Cascode OpAmp - 4
Lecture 36 - Folded-Cascode OpAmp - 5
Lecture 37 - Negative feedback amplifier
Lecture 38 - Step response, sinusoidal steady state response
Lecture 39 - Loop gain and unity loop gain frequency; Opamp
Lecture 40 - Opamp realization using controlled sources; Delay in the loop
Lecture 41 - Negative feedback amplifier with ideal delay-small delays
Lecture 42 - Negative feedback amplifier with ideal delay-large delays
Lecture 43 - Negative feedback amplifier with parasitic poles and zeros
Lecture 44 - Negative feedback amplifier with parasitic poles and zeros; Nyquist criterion
Lecture 45 - Nyquist criterion; Phase margin
Lecture 46 - Phase margin
Lecture 47 - Single stage opamp realization
Lecture 48 - Two stage miller compensated opamp
Lecture 49 - Two stage miller compensated opamp.
Lecture 50 - Two and three stage miller compensated opamps; Feedforward compensated opamp
Lecture 51 - Two Stage Opamp
Lecture 52 - Two Stage Opamp; Three Stage and Triple Cascade Opamps
Lecture 53 - Common Mode Rejection Ratio; Example
Lecture 54 - Fully differential single stage opamp
Lecture 55 - Common mode feedback
Lecture 56 - Fully differential single stage opamp-2
Lecture 57 - Fully differential two stage opamp; Fully differential versus pseudo-differential
NPTEL Video Course - Electrical Engineering - NOC: Probability Foundations for Electrical Engineers

Subject Co-ordinator - Prof. R. Aravind, Dr. Andrew Thangaraj

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Experiments, Outcomes and Events
Lecture 2 - Examples
Lecture 3 - Operations on Events
Lecture 4 - Examples
Lecture 5 - Sigma Fields and Probability
Lecture 6 - Discrete Sample Spaces
Lecture 7 - Union and Partition
Lecture 8 - Examples
Lecture 9 - Definition and Basic Properties
Lecture 10 - Bayes' Rule for Partitions
Lecture 11 - Examples
Lecture 12 - Example of Detection
Lecture 13 - Example
Lecture 14 - Independence of Events
Lecture 15 - Examples
Lecture 16 - Combining Independent Experiments
Lecture 17 - Conditional Independence
Lecture 18 - Examples and Computations with Conditional Independence
Lecture 19 - Binomial and Geometric Models
Lecture 20 - Examples
Lecture 21 - Definition and Discrete Setting
Lecture 22 - Random Variables and Events
Lecture 23 - Examples
Lecture 24 - Important distributions
Lecture 25 - Examples
Lecture 26 - Real-life modeling example
Lecture 27 - More Distributions
Lecture 28 - Conditional PMFs, Conditioning on an event, Indicator random variables
Lecture 29 - Example

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Lecture 30 - Multiple random variables and joint distribution
Lecture 31 - Example
Lecture 32 - Marginal PMF
Lecture 33 - Trinomial joint PMF
Lecture 34 - Events and Conditioning with Two Random Variables
Lecture 35 - Example
Lecture 36 - Independent random variables
Lecture 37 - More on independence
Lecture 38 - Example
Lecture 39 - Addition of Random Variables
Lecture 40 - Sum, Difference and Max of Two Random Variables
Lecture 41 - More Computations
Lecture 42 - Example
Lecture 43 - Real line as sample space
Lecture 44 - Probability density function (pdf)
Lecture 45 - Cumulative distribution function (CDF)
Lecture 46 - Continuous random variables
Lecture 47 - pdf and CDF of continuous random variables
Lecture 48 - Spinning pointer example
Lecture 49 - Important continuous distributions
Lecture 50 - More continuous distributions
Lecture 51 - Two-dimensional real sample space
Lecture 52 - Joint pdf and joint CDF
Lecture 53 - More on assigning probability to regions of x-y plain
Lecture 54 - Darts example and marginal pdfs
Lecture 55 - Independence to two continuous random variables
Lecture 56 - Examples
Lecture 57 - Prob[ X > Y ]
Lecture 58 - Transformations of random variables
Lecture 59 - CDF method
Lecture 60 - pdf method
Lecture 61 - Examples
Lecture 62 - One-to-one transformations
Lecture 63 - Expected Value or Mean of a Random Variable
Lecture 64 - Properties of Expectation
Lecture 65 - Expectation Computations for Important Distributions
Lecture 66 - Variance
Lecture 67 - Examples of Variance
Lecture 68 - Expectations with Two Random Variables
Lecture 69 - Correlation and Covariance
Lecture 70 - Examples
Lecture 71 - Examples
Lecture 72 - Examples
Lecture 73 - Live Session
NPTEL Video Course - Electrical Engineering - NOC: Introduction to Photonics

Subject Co-ordinator - Prof. Balaji Srinivasan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Photonics
Lecture 2 - Diffraction and Interference
Lecture 3 - Tutorial on Ray Optics and Wave Optics
Lecture 4 - Lab Demonstration
Lecture 5 - Interferometers
Lecture 6 - Coherence
Lecture 7 - Spatial and Temporal Coherence
Lecture 8 - Tutorial on Wave Optics
Lecture 9 - Lab Demonstration
Lecture 10 - Electromagnetic Optics
Lecture 11 - Fiber Optics
Lecture 12 - Photon Properties
Lecture 13 - Lab Demonstration
Lecture 14 - Photon Optics
Lecture 15 - Tutorial on Photon optics
Lecture 16 - Photon interaction - 1
Lecture 17 - Photon interaction - 2
Lecture 18 - Lab Demonstration
Lecture 19 - Optical Amplification
Lecture 20 - Three Level systems
Lecture 21 - Four Level Systems
Lecture 22 - EDFA Introduction
Lecture 23 - EDFA Tutorial
Lecture 24 - Lasers Part - 1
Lecture 25 - Lab Demonstration
Lecture 26 - Lasers part- 2
Lecture 27 - Lasers part- 3
Lecture 28 - Lasers part- 4
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NPTEL Video Course - Electrical Engineering - NOC:Multirate DSP

Subject Co-ordinator - Prof. David Kovil Pillai
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Multirate DSP - Part 1
Lecture 2 - Introduction to Multirate DSP - Part 2
Lecture 3 - Sampling and Nyquist criterion - Part 1
Lecture 4 - Sampling and Nyquist criterion - Part 2
Lecture 5 - Signal Reconstruction - Part 1
Lecture 6 - Signal Reconstruction - Part 2
Lecture 7 - Reconstruction filter - Part 1
Lecture 8 - Reconstruction filter - Part 2
Lecture 9 - Discrete time processing of continuous time signal - Part 1
Lecture 10 - Discrete time processing of continuous time signal - Part 2
Lecture 11 - DT processing of CT signal example
Lecture 12 - Time scaling- upsampler and downsampler - Part 1
Lecture 13 - Time scaling- upsampler and downsampler - Part 2
Lecture 14 - Upsampler and downsampler - continued - Part 1
Lecture 15 - Upsampler and downsampler - continued - Part 2
Lecture 16 - Decimator properties
Lecture 17 - Properties of Upsampler and Downsampler
Lecture 18 - Fractional sampling rate change - Part 1
Lecture 19 - Fractional sampling rate change - Part 2
Lecture 20 - Multiplexer/ demultiplexer interpretation
Lecture 21 - Noble identities and polyphase decomposition - Part 1
Lecture 22 - Noble identities and polyphase decomposition - Part 2
Lecture 23 - Polyphase decomposition continued - Part 1
Lecture 24 - Polyphase decomposition continued - Part 2
Lecture 25 - Introduction to Multirate Filter Banks
Lecture 26 - Applications of Multirate - Part 1
Lecture 27 - Applications of Multirate - Part 2
Lecture 28 - Spectral Analysis of Filter Bank - Part 1
Lecture 29 - Spectral Analysis of Filter Bank - Part 2

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Lecture 69 - Some more applications of MDSP
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC:LDPC and Polar Codes in 5G Standard

Subject Co-ordinator - Dr. Andrew Thangaraj
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Additive White Gaussian Noise (AWGN) Channel and BPSK
Lecture 2 - Bit Error Rate (BER) and Signal to Noise Ratio (SNR)
Lecture 3 - Error Correction Coding in a Digital Communication System
Lecture 4 - Complementary Error Function
Lecture 5 - Simulation of Uncoded BPSK and BER v/s Eb/N0 plot Generation in MATLAB/Octave
Lecture 6 - n = 3 Repetition Code
Lecture 7 - Implementation of n = 3 Repetition Code in MATLAB
Lecture 8 - (7,4) Hamming Code
Lecture 9 - A Brief Introduction to Linear Block Codes
Lecture 10 - Simulation of (7,4) Hamming Code in MATLAB
Lecture 11 - Low Density Parity Check Codes
Lecture 12 - LDPC Codes in 5G
Lecture 13 - Encoding LDPC codes in 5G
Lecture 14 - MATLAB programs for encoding LDPC codes
Lecture 16 - Soft Input and Soft Output (SISO) Decoder for the Single Parity Check (SPC) Code
Lecture 17 - Illustration of SISO decoder for (3,2) SPC code and min-sum approximation
Lecture 18 - SISO decoder for a general (n,n-1) SPC code
Lecture 19 - Soft-Input Soft-Output Iterative Message Passing Decoder for LDPC Codes
Lecture 20 - A Toy Example Illustration of the SISO Minsum Iterative Message Passing Decoder
Lecture 21 - Modifications to the Decoder
Lecture 22 - Implementation of SISO Layered Minsum Iterative Message Passing Decoder in MATLAB
Lecture 23 - Debugging and Improvements to the MATLAB Implementation
Lecture 24 - Rate Matching in LDPC Codes using Puncturing and Shortening
Lecture 25 - Implementation of Fixed Point Quantization and Offset Minsum in the Decoder
Lecture 26 - Introduction to Polar Codes
Lecture 27 - Channel Polarization, Definition of (N,K) Polar Code and Encoding
Lecture 28 - MATLAB Implementation for Encoding Polar Codes
Lecture 29 - Successive Cancellation (SC) Decoder for Polar Codes

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Lecture 30 - Successive Cancellation (SC) Decoder for a General (N,K) Polar Code
Lecture 31 - MATLAB Implementation of Successive Cancellation Decoder - Part 1
Lecture 32 - MATLAB Implementation of Successive Cancellation Decoder - Part 2
Lecture 33 - Successive Cancellation List Decoding
Lecture 34 - Fixed Point Quantization for SC Decoder and LDPC Decoder
Lecture 35 - MATLAB Implementation of Successive Cancellation List Decoding
Lecture 36 - Rate Matching for LDPC codes
Lecture 37 - Performance Comparison of LDPC codes and Polar Codes in 5G
Lecture 1 - Introduction to EMC - Definitions
Lecture 2 - Introduction to EMC - Sources, units etc
Lecture 3 - Electromagnetic principles - Faraday's and Ampere's equations
Lecture 4 - Electromagnetic principles - Gauss's equation, boundary conditions
Lecture 5 - Electromagnetic principles - Uniform plane wave
Lecture 6 - Electromagnetic principles - Transmission lines
Lecture 7 - Electromagnetic principles - Dipoles
Lecture 8 - High-frequency behaviour of components - Conductors
Lecture 9 - High-frequency behaviour of components - Capacitors, inductors, resistors
Lecture 10 - High-frequency behaviour of components - Mechanical switches and transformers
Lecture 11 - Crosstalk or near-field coupling - Capacitive coupling, inductive coupling, common-impedance coupling
Lecture 12 - Crosstalk or near-field coupling - Crosstalk combinations
Lecture 13 - Crosstalk or near-field coupling - Coupling to shielded cables
Lecture 14 - Electromagnetic coupling in the far-field
Lecture 15 - Field Coupling - Exercises
Lecture 16 - Solutions to EMC problems - Lay out and control of interfaces
Lecture 17 - Solutions to EMC problems - Grounding or earthing
Lecture 18 - Solutions to EMC problems - Electromagnetic Shielding
Lecture 19 - Solutions to EMC problems - Electromagnetic Shielding (Continued...)
Lecture 20 - Solutions to EMC problems - Shielded cables
Lecture 21 - Solutions to EMC problems - Filters and Surge protectors
Lecture 22 - Lightning Protection - Introduction
Lecture 23 - Lightning protection - Currents, charges and fields
Lecture 24 - Lightning Protection - Buildings
Lecture 25 - Lightning Protection - Towers, Lightning safety
Lecture 26 - EMC Requirements and Standard, Testing and Difficulties - 1
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Lecture 28 - Intentional Electromagnetic Interference or IEMI - 1
Lecture 29 - Intentional Electromagnetic Interference or IEMI - 2
NPTEL Video Course - Electrical Engineering - NOC: Mapping Signal Processing Algorithms to Architectures

Subject Co-ordinator - Prof. Nitin Chandrachoodan
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Review of digital logic
Lecture 3 - Timing and Power in digital circuits
Lecture 4 - Implementation Costs and Metrics
Lecture 5 - Example
Lecture 6 - Example
Lecture 7 - Architecture cost components
Lecture 8 - Examples of Architectures
Lecture 9 - Multi-objective Optimization
Lecture 10 - Number representation
Lecture 11 - Scientific notation and Floating point
Lecture 12 - Basic FIR filter
Lecture 13 - Serial FIR filter architectures
Lecture 14 - Simple programmable architecture
Lecture 15 - Block diagrams and SFGs
Lecture 16 - Dataflow Graphs
Lecture 17 - Iteration period
Lecture 18 - FIR filter iteration period
Lecture 19 - IIR filter iteration period
Lecture 20 - Computation Model
Lecture 21 - Constraint analysis for IPB computation
Lecture 22 - Motivational examples for IPB
Lecture 23 - General IPB computation
Lecture 24 - Sample period calculation
Lecture 25 - Parallel architecture
Lecture 26 - Odd-even register reuse
Lecture 27 - Power consumption
Lecture 28 - Pipelining
Lecture 29 - Time-invariant systems

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Lecture 70 - Software Compilation
Lecture 71 - Optimization Examples
Lecture 72 - Loop optimizations - 1
Lecture 73 - Loop optimizations - 2
Lecture 74 - Loop optimizations - 3
Lecture 75 - Software pipelining - 1
Lecture 76 - Software pipelining - 2
Lecture 77 - FFT Optimization
Lecture 78 - Demo
Lecture 79 - Background
Lecture 80 - Demo
Lecture 81 - Demo
Lecture 82 - Demo
Lecture 83 - Demo
Lecture 84 - Background
Lecture 85 - On-chip communication basics
Lecture 86 - Many-to-Many communication
Lecture 87 - AXI bus handshaking
Lecture 88 - AXI bus (Continued...)
Lecture 89 - Demo
Lecture 90 - Demo
Lecture 91 - Demo
Lecture 92 - DMA and arbitration
Lecture 93 - Network-on-chip basics
Lecture 94 - NoC - Topologies and metrics
Lecture 95 - NoC - Routing
Lecture 96 - NoC - Switching and flow control
Lecture 97 - Systolic Arrays - Background
Lecture 98 - Systolic Arrays - Examples
Lecture 99 - CORDIC algorithm
Lecture 100 - Parallel implementation of FIR filters
Lecture 101 - Unfolding Transformation
Lecture 102 - Lookahead Transformation
Lecture 103 - Introduction to GPUs and Matrix multiplication
NPTEL Video Course - Electrical Engineering - NOC:Linear System Theory

Subject Co-ordinator - Prof. Ramakrishna Pasumarthi

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Linear Systems
Lecture 2 - System Models
Lecture 3 - System Models - Part 1
Lecture 4 - System Models - Part 2
Lecture 5 - General Representation
Lecture 6 - Sets, Functions and Fields
Lecture 7 - Linear Algebra - Vector Spaces and Metric Spaces
Lecture 8 - Linear Algebra - Span, Basis and Subspaces
Lecture 9 - Linear Algebra - Linear Maps and Matrices
Lecture 10 - Linear Algebra - Fundamental Subspaces and Rank-Nullity
Lecture 11 - Tutorial 1 on Linear Algebra
Lecture 12 - Linear Algebra - Change of Basis and Similarity Transformation
Lecture 13 - Linear Algebra - Invariant Subspaces, Eigen Values and Eigen Vectors
Lecture 14 - Linear Algebra - Diagonalization and Jordan Forms
Lecture 15 - Linear Algebra - Eigen Decomposition and Singular Value Decomposition
Lecture 16 - Tutorial 2 on Linear Algebra
Lecture 17 - Solutions to LTI Systems
Lecture 18 - State Transition Matrix for LTI systems
Lecture 19 - Forced Reponse of Continuous and Discrete LTI system
Lecture 20 - State Transition Matrix and Solutions to LTV systems
Lecture 21 - Equilibrium Points
Lecture 22 - Limit Cycles and Linearisation
Lecture 23 - Stability Analysis and Types of Stability
Lecture 24 - Lyapunov Stability
Lecture 25 - Stability of Discrete Time Systems
Lecture 26 - Supplementary Lecture
Lecture 27 - Controllability and Reachability
Lecture 28 - Controllability Matrix and Controllable Systems
Lecture 29 - Controllability Tests

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Lecture 30 - Controllability of Discrete Time Systems
Lecture 31 - Controllable Decomposition
Lecture 32 - Stabilizability
Lecture 33 - Observability
Lecture 34 - Gramians and Duality
Lecture 35 - Observability for Discrete Time Systems and Observability Tests
Lecture 36 - Observable Decomposition and Detectability
Lecture 37 - Kalman Decomposition and Minimal Realisation
Lecture 38 - Canonical Forms and State Feedback Control
Lecture 39 - Control Design using Pole Placement
Lecture 40 - Tutorial for Modules 9 and 10
Lecture 41 - State Estimation and Output Feedback
Lecture 42 - Design of Observer and Observer based Controller
Lecture 43 - Optimal Control and Linear Quadratic Regulator (LQR)
Lecture 44 - Feedback Invariant and Algebraic Ricatti Equation
Lecture 45 - Tutorial for Module 11
Lecture 46 - Linear Matrix Inequalities
Lecture 47 - Properties of LMIs and Delay LMIs
Lecture 1 - Signal Definition and Classification
Lecture 2 - Affine Transform
Lecture 3 - Recap of Affine Transform
Lecture 4 - Even and Odd Parts of a Signal
Lecture 5 - The Unit Step Sequence
Lecture 6 - The Unit Impulse
Lecture 7 - The Unit Impulse (Continued...)
Lecture 8 - Exponential Signals and Sinusoids
Lecture 9 - Sinusoids (Continued...)
Lecture 10 - When are two sinusoids independent?
Lecture 11 - Another Difference Between CT and DT Sinusoids
Lecture 12 - System definition and properties (linearity)
Lecture 13 - Time-invariance, memory, causality, and stability
Lecture 14 - LTI systems, impulse response, and convolution
Lecture 15 - Properties of convolution, system interconnections
Lecture 16 - Java applet demo of convolution
Lecture 17 - Systems governed by LCCDE
Lecture 18 - FIR and IIR systems
Lecture 19 - Karplus-Strong algorithm
Lecture 20 - Z-transform definition and RoC
Lecture 21 - Z-transform (Continued...)
Lecture 22 - Poles and zeros
Lecture 23 - Recursive implementation of FIR filters
Lecture 24 - Convergence criterion
Lecture 25 - Properties of the RoC
Lecture 26 - DTFT definition and absolute summability
Lecture 27 - Linearity
Lecture 28 - Delay
Lecture 29 - Exponential multiplication
Lecture 30 - Complex conjugation
Lecture 31 - Time reversal
Lecture 32 - Differentiation in the Z-domain
Lecture 33 - Convolution in the time domain
Lecture 34 - Relationship between x[n] and X(1)
Lecture 35 - Initial Value Theorem
Lecture 36 - Final Value Theorem
Lecture 37 - Multiplication in the time domain
Lecture 38 - Parseval's Theorem
Lecture 39 - Partial Fractions Method
Lecture 40 - Power series method
Lecture 41 - Contour Integral Method
Lecture 42 - Contour Integral Method (Continued...)
Lecture 43 - Inverse DTFT
Lecture 44 - DTFT of Sequences that are not absolutely summable
Lecture 45 - Response to cos(\omega_0 n+\phi)
Lecture 46 - Causality and Stability
Lecture 47 - Response to suddenly applied inputs
Lecture 48 - Introduction to frequency response
Lecture 49 - Magnitude response and its geometric interpretation
Lecture 50 - Magnitude Response (Continued...)
Lecture 51 - Response of a single complex zero/pole
Lecture 52 - Resonator and Improved Resonator
Lecture 53 - Notch filter
Lecture 54 - Moving Average Filter
Lecture 55 - Comb filter
Lecture 56 - Phase response of a single complex zero
Lecture 57 - Effect of crossing a unit circle zero, wrapped and unwrapped phase, resonator phase response
Lecture 58 - Allpass Filter
Lecture 59 - Group delay and its physical interpretation
Lecture 60 - Zero-phase filtering, effect on nonlinear phase on waveshape
Lecture 61 - Zero-Phase Filtering, Linear Phase - 1
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Lecture 81 - The Discrete Fourier Transform - 4
Lecture 82 - The Discrete Fourier Transform - 4

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NPTEL Video Course - Electrical Engineering - NOC: Computational Electromagnetics

Subject Co-ordinator - Prof. Uday Khankhoje

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Chain rule of differentiation
Lecture 2 - Gradient, Divergence, and Curl operators
Lecture 3 - Common theorems in vector calculus
Lecture 4 - Corollaries of these theorems
Lecture 5 - Mathematical History
Lecture 6 - Different regimes of Maxwell's equations
Lecture 7 - Different ways of solving them
Lecture 8 - Maxwell's Equations
Lecture 9 - Boundary Conditions
Lecture 10 - Uniqueness Theorem
Lecture 11 - Equivalence Theorem
Lecture 12 - Simple Numerical Integration
Lecture 13 - Interpolating a Function
Lecture 14 - Gauss Quadrature
Lecture 15 - Line Charge Problem
Lecture 16 - Solving the Integral Equation
Lecture 17 - Basis Functions
Lecture 18 - Helmholtz Equation
Lecture 19 - Solving Helmholtz Equation
Lecture 20 - Huygen's principle and the Extinction theorem
Lecture 21 - Formulating the integral equations
Lecture 22 - Conclusions of surface integral equations
Lecture 23 - Motivations for Green's functions
Lecture 24 - A one-dimensional example
Lecture 25 - 1-D example
Lecture 26 - 2-D wave example
Lecture 27 - 2-D wave example
Lecture 28 - 2-D example
Lecture 29 - 2-D example

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Lecture 30 - 3-D example
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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC: Optimal Control

Subject Co-ordinator - Prof. Barjeev Tyagi

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Performance Index
Lecture 2 - Basic Concepts of Calculus of Variation
Lecture 3 - The Basic Variational Problem
Lecture 4 - Fixed End Point Problem
Lecture 5 - Free End Point Problem
Lecture 6 - Free End Point Problem (Continued...)
Lecture 7 - Free End Point Problem (Continued...)
Lecture 8 - Free End Point Problem (Continued...)
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Lecture 13 - Variational Approach to Optimal Control Systems (Continued...)
Lecture 14 - Linear Quadratic Optimal Control Systems
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Lecture 23 - Analytical Solution of MDRE - Similarity Transformation Approach
Lecture 24 - Analytical Solution of MDRE - Similarity Transformation Approach (Continued...)
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Lecture 26 - Frequency Domain Interpretation of LQR - Linear Time Invariant System (Continued...)
Lecture 27 - LQR with a Specified Degree of Stability
Lecture 28 - Inverse Matrix Riccati Equation
Lecture 29 - Linear Quadratic Tracking System

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Lecture 32 - Discrete-Time Optimal Control Systems (Continued...)
Lecture 33 - Matrix Discrete Riccati Equation
Lecture 34 - Analytical Solution of Matrix Difference Riccati Equation
Lecture 35 - Analytical Solution of Matrix Difference Riccati Equation (Continued...)
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Lecture 37 - The Hamilton-Jacobi-Bellman (HJB) Equation
Lecture 38 - LQR System Using HJB Equation
Lecture 39 - Time Optimal Control System - Constrained Input
Lecture 40 - Time Optimal Control System (Continued...)
NPTEL Video Course - Electronics and Communication Engineering - NOC: Basics of Software Defined Radios and Practical Applications

Subject Co-ordinator - Dr. Meenakshi Rawat
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Foundation for software defined radio
Lecture 2 - Components of a software defined radio
Lecture 3 - Software defined radio architectures - Part I
Lecture 4 - Software defined radio architectures - Part II
Lecture 5 - Software defined radio architectures - Part III
Lecture 6 - Software defined radio architectures - Part IV
Lecture 7 - Distortion Parameters - Part I
Lecture 8 - Distortion Parameters - Part II
Lecture 9 - Distortion Parameters
Lecture 10 - Distortion Parameters
Lecture 11 - Power Amplifiers
Lecture 12 - Power Amplifiers
Lecture 13 - Case study-I
Lecture 14 - Case study-II
Lecture 15 - Behavioral models for representing nonlinear distortions
Lecture 16 - Linearization Techniques for nonlinear distortion
Lecture 17 - Predistortion Techniques for nonlinearity distortion in SDR
Lecture 18 - Basic Digital Predistortion Techniques for nonlinear distortion in SDR
Lecture 19 - State-of-the-art Digital Predistortion Techniques for Nonlinear Distortion in SDR
Lecture 20 - Digital Predistortion Techniques for Linear as well as Nonlinear Distortion in SDR

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NPTEL Video Course - Electrical Engineering - NOC:Electrical Distribution System Analysis
Subject Co-ordinator - Prof. G. B. Kumbhar
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Electrical Distribution System
Lecture 2 - Components of Distribution System Substation and Busbar Layouts
Lecture 3 - Components of Distribution System and Feeder Configurations
Lecture 4 - Nature of Loads in a Distribution System
Lecture 5 - Load Allocation in a Distribution System
Lecture 6 - K Factors and Their Applications
Lecture 7 - Analysis of Uniformly Distributed
Lecture 8 - Lumping Loads in Geometric Configurations Rectangular
Lecture 9 - Lumping Loads in Geometric Configurations Triangular
Lecture 10 - Impedance of Distribution Lines and Feeders - Part I
Lecture 11 - Series Impedance of Distribution Lines and Feeders - Part II
Lecture 12 - Models of Distribution Lines and Cables
Lecture 13 - Modelling of Single-Phase and Three-Phase Transformers
Lecture 14 - Modelling of Three-Phase Transformers - Part I
Lecture 15 - Modelling of Three-Phase Transformers - Part II
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Lecture 25 - Applications and Modeling of Capacitor Banks
Lecture 26 - Summary of Modelling of Distribution System Components
Lecture 27 - Backward/Forward Sweep Load Flow Analysis - Part I
Lecture 28 - Backward/Forward Sweep Load Flow Analysis - Part II
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Lecture 35 - Thevenin's Equivalent and Phase Variable Based Short Circuit Analysis
Lecture 36 - Direct Approach for Short-Circuit Analysis
Lecture 37 - Direct Approach for Short-Circuit Analysis
Lecture 38 - Direct Approach for Short-Circuit Analysis
Lecture 39 - Direct Approach for Short-Circuit Analysis
Lecture 40 - Applications of Distribution System Analysis
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NPTEL Video Course - Electrical Engineering - NOC:Introduction to Smart Grid

Subject Co-ordinator - Prof. Premalata Jena, Prof. N.P. Padhy

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Smart Grid - I
Lecture 2 - Introduction to Smart Grid - II
Lecture 3 - Architecture of smart grid system
Lecture 4 - Standards for smart grid system
Lecture 5 - Elements and Technologies of smart grid system - I
Lecture 6 - Elements and Technologies of smart grid system - II
Lecture 7 - Distributed Generation Resources - I
Lecture 8 - Distributed Generation Resources - II
Lecture 9 - Distributed Generation Resources - III
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Lecture 11 - Wide Area Monitoring System - I
Lecture 12 - Wide Area Monitoring System - II
Lecture 13 - Phasor Estimation - I
Lecture 14 - Phasor Estimation - II
Lecture 15 - Digital Relays for Smart Grid Protection
Lecture 16 - Islanding Detection Techniques - I
Lecture 17 - Islanding Detection Techniques - II
Lecture 18 - Islanding Detection Techniques - III
Lecture 19 - Smart Grid Protection - I
Lecture 20 - Smart Grid Protection - II
Lecture 21 - Smart Grid Protection - III
Lecture 22 - Smart Grid Protection - IV
Lecture 23 - Modelling of Storage Devices
Lecture 24 - Modelling of DC Smart Grid Components
Lecture 25 - Operation and Control of AC Microgrid - I
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Lecture 27 - Operation and Control of DC Microgrid - I
Lecture 28 - Operation and Control of DC Microgrid - II
Lecture 29 - Operation and Control of AC-DC hybrid Microgrid - I

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Lecture 32 - Simulation and Case Study of DC Microgrid
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Lecture 34 - Demand Side Management in Smart Grid
Lecture 35 - Demand Response Analysis of Smart Grid
Lecture 36 - Energy Management
Lecture 37 - Design of Smart Grid and Practical Smart Grid Case Study - I
Lecture 38 - Design of Smart Grid and Practical Smart Grid Case Study - II
Lecture 39 - System Analysis of AC/DC Smart Grid
Lecture 40 - Conclusions
NPTEL Video Course - Electrical Engineering - NOC:Facts Devices

Subject Co-ordinator - Prof. Avik Bhattacharya
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - I
Lecture 2 - Introduction - II
Lecture 3 - Switch Realization
Lecture 4 - PWM - I
Lecture 5 - PWM - II
Lecture 6 - Closed Loop Control
Lecture 7 - Multi Level Inverter - I
Lecture 8 - Multi Level Inverter - II
Lecture 9 - Multi Level Inverter - III
Lecture 10 - Shunt Compensator Analysis
Lecture 11 - Shunt Compensator TCR and TSC - I
Lecture 12 - Shunt Compensator TCR and TSC - II
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Lecture 14 - Static Var Compensator - II
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Lecture 16 - STATCOM - II
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Lecture 18 - External Control Design of Static Var Compensator
Lecture 19 - DSTATCOM
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Lecture 24 - SSSC - II
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Lecture 26 - TSSC - II and TCSC
Lecture 27 - TCSC Characteristics and Control
Lecture 28 - Voltage and Phase Angle Regulation
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| Lecture 37 | Comparison of UPFC with PAR and Series Compensators |
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NPTEL Video Course - Electrical Engineering - NOC: Advanced Linear Continuous Control Systems: Applications with MATLAB Programming and Simulink

Subject Co-ordinator - Prof. Yogesh Vijay Hote
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - State Space Representation
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Lecture 22 - Solution of State Equation
Lecture 23 - Solution of State Equation (Forced System)
Lecture 24 - Steady State Error for State Space System
Lecture 25 - State Transition Matrix - Part I
Lecture 26 - State Transition Matrix - Part II
Lecture 27 - State Transition Matrix using Cayley-Hamilton Theorem - Part III
Lecture 28 - MATLAB Programming with State Space
Lecture 29 - Controllability in State Space - Part I

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NPTEL Video Course - Electrical Engineering - NOC:CMOS Digital VLSI Design

Subject Co-ordinator - Prof. Sudeb Dasgupta
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Electrical Engineering - NOC:DC Microgrid

Subject Co-ordinator - Prof. Avik Bhattacharya
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of Microgrids
Lecture 2 - Concept of Microgrids
Lecture 3 - Microgrid and distributed generation
Lecture 4 - Microgrid vs Conventional Power System
Lecture 5 - AC and DC Microgrid with Distributed Energy Resources (AC Microgrid Part)
Lecture 6 - AC and DC Microgrid with Distributed Energy Resources (AC Microgrid Part) (Continued...)
Lecture 7 - Power Electronics for Microgrid
Lecture 8 - Power Electronic Converters in Microgrid Applications
Lecture 9 - Power Electronic Converters in Microgrid Applications (Power Electronic for Interfacing )
Lecture 10 - Power Electronic Converters in Microgrid Applications (Converter Modulation Techniques)
Lecture 11 - Modeling of converters in microgrid power system (AC/DC and DC/AC Converters Modeling)
Lecture 12 - Modeling of Power Converters in Microgrid Power System (DC/DC Converter Modeling and Control)
Lecture 13 - Modeling of Renewable Energy Resources (Modeling of Wind Energy System)
Lecture 14 - Modeling of Renewable Energy Resources (Modeling of Photovoltaic System)
Lecture 15 - Modeling of Energy Storage System
Lecture 16 - Microgrid Dynamics and Modeling
Lecture 17 - Microgrid Dynamics and Modeling (Continued...)
Lecture 18 - Microgrid Operation Modes and Standards - Part I
Lecture 19 - Microgrid Operation Modes and Standards - Part II
Lecture 20 - Microgrid Control Architectures
Lecture 21 - Microgrid Control Architectures (Continued...)
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Lecture 25 - Energy Management in Microgrid System (Continued...)
Lecture 26 - DC Microgrid System Architecture and AC Interface
Lecture 27 - DC Microgrid System Architecture and AC Interface (Continued...)
Lecture 28 - DC Microgrid System Architecture and AC Interface (Continued...)
Lecture 29 - DC Microgrid Dynamics and Modeling

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Lecture 31 - Control of DC Microgrid System
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Lecture 33 - Applications of DC Microgrids
Lecture 34 - Stability in Microgrid
Lecture 35 - Stability Analysis of DC Microgrid
Lecture 36 - Stability Analysis of DC Microgrid (Continued...)
Lecture 37 - DC Microgrid stabilization strategies (Passive damping method)
Lecture 38 - DC Microgrid Stabilization Strategies (Impedance/Admittance stability criteria)
Lecture 39 - DC microgrid stabilization using nonlinear Techniques
Lecture 40 - General Summary of DC Microgrids
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - Power Electronics and Distributed Generation

Subject Co-ordinator - Dr. Vinod John
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course introduction and overview
Lecture 2 - Distributed generation technologies
Lecture 3 - Distributed storage technologies
Lecture 4 - Distribution system protection
Lecture 5 - Circuit breaker coordination
Lecture 6 - Symmetrical component analysis and sequence excitation
Lecture 7 - Modeling of distribution system components
Lecture 8 - Protection components
Lecture 9 - Impact of distributed generation of distribution protection
Lecture 10 - Consumption and distribution grounding
Lecture 11 - Islanding of distribution systems
Lecture 12 - Modeling of islanded distribution systems
Lecture 13 - Distribution system problems and examples
Lecture 14 - Distribution system problems and examples continued
Lecture 15 - Anti-islanding methods
Lecture 16 - Solid state circuit switching
Lecture 17 - Relaying for distributed generation
Lecture 18 - Feeder voltage regulation
Lecture 19 - Grounding, distribution protection coordination problems and examples
Lecture 20 - Ring and network distribution
Lecture 21 - Economic evaluation of DG systems
Lecture 22 - Design for effective initial cost
Lecture 23 - Single phase inverters
Lecture 24 - DC bus design in voltage source inverter
Lecture 25 - Electrolytic capacitor reliability and lifetime
Lecture 26 - Inverter switching and average model
Lecture 27 - Common mode and differential mode model of inverters
Lecture 28 - Two leg single phase inverter
Lecture 29 - Distribution system problems, and examples

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Lecture 30 - DG evaluation problems and examples
Lecture 31 - Switch selection in two level voltage source inverters and loss evaluation
Lecture 32 - Thermal model, management and cycling failure of IGBT modules
Lecture 33 - Semiconductor switch design reliability considerations
Lecture 34 - AC filters for grid connected inverters
Lecture 35 - AC inductor design and need for LCL filter
Lecture 36 - LCL filter design
Lecture 37 - Examples in power electronic design for DG systems
Lecture 38 - Examples in power electronic design for DG systems continued
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Lecture 3 - Controlled Switches
Lecture 4 - Prior Art
Lecture 5 - Inductor
Lecture 6 - Transformer
Lecture 7 - Capacitor
Lecture 8 - Issues related to switches
Lecture 9 - Energy storage - Capacitor
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Lecture 11 - Primitive Converter
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Lecture 38 - Unity Power Factor Converter
Lecture 39 - Magnetic Design
Lecture 40 - DC-DC Converter Design
NPTEL Video Course - Electrical Engineering - Basic Electrical Technology

Subject Co-ordinator - Prof. L. Umanand
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic Electrical Technology
Lecture 2 - Passive Components
Lecture 3 - Sources
Lecture 4 - Kirchoff's Law
Lecture 5 - Modelling of Circuit - Part 1
Lecture 6 - Modelling of Circuit - Part 2
Lecture 7 - Analysis Using MatLab
Lecture 8 - Sinusoidal steady state
Lecture 9 - Transfer Function and Pole Zero domain
Lecture 10 - Transfer function & pole zero
Lecture 11 - The Sinusoid
Lecture 12 - Phasor Analysis - Part 1
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Lecture 14 - Power Factor
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Lecture 16 - Transformer Basics - Part 1
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Lecture 22 - DC Machines - Part 1
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Lecture 24 - DC Generators - Part 1
Lecture 25 - DC Generators - Part 2
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Lecture 27 - DC Motors - Part 2
Lecture 28 - DC Motors - Part 3
Lecture 29 - Three Phase System - Part 1

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NPTEL Video Course - Electrical Engineering - Industrial Drives - Power Electronics

Subject Co-ordinator - Prof. K. Gopakumar
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Electric Drive
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Lecture 3 - Controlled Rectifier - Part-2 (Three phase)
Lecture 4 - Controlled Rectifier - Part-3 (Three phase)
Lecture 5 - Controlled Rectifier - Part-4 (Three Phase)
Lecture 6 - Controlled Rectifier - Part-5 (Three Phase)
Lecture 7 - Power Electronics Improvements
Lecture 8 - Four Quadrant Dc to Dc Converter
Lecture 9 - Sine Triangle PWM Control of Converter
Lecture 10 - Front-end Ac-Dc Converter with harmonic control
Lecture 11 - Ac to Dc Converter Close Loop Control Schematic
Lecture 12 - Ac-Dc Converter Close loop Control Block Diagram
Lecture 13 - Design of the Converter Controller & AC to DC
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Lecture 25 - Inverter - Current Hysteresis Controlled PWM
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Lecture 27 - Space Vector PWM - Part-2
Lecture 28 - Space Vector PWM - Part-3
Lecture 29 - Space Vector PWM Signal Generation

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Lecture 35 - Vector Control of Induction Motor
Lecture 36 - Effect of Switching Time lag in Inverter
Lecture 37 - Power Switch Protection - Snubbers
Lecture 30 - Case Study 1 - Joule Jotter
Lecture 31 - Case Study 2 - Cloud Based Systems
NPTEL Video Course - Electrical Engineering - NOC: Advances in UHV Transmission and Distribution

Subject Co-ordinator - Prof Subba Reddy B

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Advantages of HVAC/DC Transmission, Introduction to Grid Management
Lecture 2 - Transmission system development, Important components of transmission system
Lecture 3 - Insulation coordination, over voltage in power systems
Lecture 4 - Design/selection of insulators, Importance of grading/cc rings
Lecture 5 - Non ceramic insulators performance-service experience
Lecture 6 - Failure of apparatus in the field, importance of reliability and testing
Lecture 7 - Pollution flashover phenomena, modeling etc
Lecture 8 - Planning of High Voltage laboratories
Lecture 9 - Importance of High Voltage testing and techniques employed
Lecture 10 - Basic philosophy of HV testing, tests for various HV apparatus
Lecture 11 - HV testing techniques for various apparatus
Lecture 12 - HV testing on Composite Insulators
Lecture 13 - Surface degradation studies on composite insulators
Lecture 14 - Surface morphological techniques for composite insulators
Lecture 15 - Conductors used for EHV/UHV transmission
Lecture 16 - Corona nad interference on transmission lines
Lecture 17 - Introduction of HTLS conductors and their advantages
Lecture 18 - Mechanical considerations for HV conductors
Lecture 19 - Introduction to Towers and importance of foundations
Lecture 20 - Selection/Design of clearances for HV towers
Lecture 21 - Design Optimization for UHV towers
Lecture 22 - Introduction to 1100kV HVDC
Lecture 23 - Introduction to HV Substations
Lecture 24 - Types of Substations, comparison
Lecture 25 - Insulation coordination, Components in a typical substation
Lecture 26 - Preventive maintenance of Substation
Lecture 27 - Electric and magnetic fields, mitigations techniques
Lecture 28 - Importance of Grounding, reducing Earthing resistance
Lecture 29 - Introduction to the use of Fiber optic cables, OPGW

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NPTEL Video Course - Electrical Engineering - NOC: Mathematical Methods and Techniques in Signal Processing

Subject Co-ordinator - Prof. Shayan Srinivasa Garani

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to signal processing
Lecture 2 - Basics of signals and systems
Lecture 3 - Linear time-invariant systems
Lecture 4 - Modes in a linear system
Lecture 5 - Introduction to state space representation
Lecture 6 - State space representation
Lecture 7 - Non-uniqueness of state space representation
Lecture 8 - Introduction to vector space
Lecture 9 - Linear independence and spanning set
Lecture 10 - Unique representation theorem
Lecture 11 - Basis and cardinality of basis
Lecture 12 - Norms and inner product spaces
Lecture 13 - Inner products and induced norm
Lecture 14 - Cauchy Schwartz inequality
Lecture 15 - Orthonormality
Lecture 16 - Problem on sum of subspaces
Lecture 17 - Linear independence of orthogonal vectors
Lecture 18 - Hilbert space and linear transformation
Lecture 19 - Gram Schmidt orthonormalization
Lecture 20 - Linear approximation of signal space
Lecture 21 - Gram Schmidt orthogonalization of signals
Lecture 22 - Problem on orthogonal complement
Lecture 23 - Problem on signal geometry (4-QAM)
Lecture 24 - Basics of probability and random variables
Lecture 25 - Mean and variance of a random variable
Lecture 26 - Introduction to random process
Lecture 27 - Statistical specification of random processes
Lecture 28 - Stationarity of random processes
Lecture 29 - Problem on mean and variance
Lecture 69 - Convergence of Fourier series for piecewise differentiable periodic functions
Lecture 70 - Uniform convergence of Fourier series of piecewise smooth periodic function
Lecture 71 - Convergence in norm of Fourier series
Lecture 72 - Convergence of Fourier series for all square integrable periodic functions
Lecture 73 - Problem on limits of integration of periodic functions
Lecture 74 - Matrix Calculus
Lecture 75 - KL transform
Lecture 76 - Applications of KL transform
Lecture 77 - Demo on KL Transform
Lecture 78 - Live Session
Lecture 79 - Live Session 2
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC: Electronics Enclosures Thermal Issues

Subject Co-ordinator - Prof. N. V Chalapathi Rao
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Electronic Equipment Thermal issues
Lecture 2 - Practical Examples - 1
Lecture 3 - Practical Examples - 2
Lecture 4 - CEDT worked examples - 1
Lecture 5 - CEDT worked examples - 2
Lecture 6 - Text book theory
Lecture 7 - Sample heat sinks
Lecture 8 - Published correlations - 1
Lecture 9 - Published correlations - 2
Lecture 10 - Parallel combined effects
Lecture 11 - Mounting of packages
Lecture 12 - Combined Rth of devices
Lecture 13 - Schonholzer moduls
Lecture 14 - 1972 model paper
Lecture 15 - Jensen model
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Lecture 18 - Round up of full model
Lecture 19 - Fan cooling
Lecture 20 - Thermo-electric cooling
Lecture 21 - On-the-net DIY work
Lecture 22 - Practical video
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Lecture 26 - Lecture 26
Lecture 27 - Real packages
Lecture 28 - Prior art
Lecture 29 - OTS standard profiles

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Lecture 30 - CAD detailed design of profiles
Lecture 31 - Round up
Lecture 32 - 4X Peltier Cooler
Lecture 33 - Manufacturing Video
Lecture 34 - Peltier heat sink
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Lecture 31 - Working of Crystal Oscillators
Lecture 32 - Construction and Operation of UJT Relaxation Oscillators
Lecture 33 - Introduction to Noise and its Types
Lecture 34 - Analysis of Data Sheets of an Op-Amp
Lecture 35 - Analysis of Data Sheets of an Op-Amp (Continued...)
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Lecture 48 - Experiment - To study the gain of instrumentation amplifier
Lecture 49 - Experiment - Summing amplifier using op-amp
Lecture 50 - Experiment - To study op-amp based comparator
Lecture 51 - Experiment - To study op-amp based integrator and differentiator
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Lecture 53 - Experiment - Op-amp based active low pass filter
Lecture 54 - Experiment - Passive and active high pass filter
Lecture 55 - Experiment - Introduction to experimental set-up of band pass filter
Lecture 56 - Experiment - Passive and active band pass filter
Lecture 57 - Experiment - Introduction to experimental set-up for band reject filter
Lecture 58 - Experiment - Active band reject filter
Lecture 59 - Experiment - Peak detector circuit using Op-Amp

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NPTEL Video Course - Electrical Engineering - NOC:Semiconductor Devices and Circuits

Subject Co-ordinator - Prof. Sanjiv Sambandan
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Quantum Mechanics
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Lecture 3 - Introduction to Microengineering Devices (Continued...)
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Lecture 17 - Op-amp as Colpitts Oscillator
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Lecture 24 - Measure of Unknown Resistance by Constant Current Drive Circuit Implemented using Op-amp
Lecture 25 - Design and Development of Temperature Controlled Circuit using Op-amp as ON-OFF, Proportional and Integral Controller
Lecture 26 - Implementation of Error Detector Circuit and Signal Conditioning Circuit for Temperature Control
Lecture 27 - Implementation of Plant/Heating Circuit and ON-OFF Controller
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Lecture 29 - Experiment on Controlling the Temperature on the Plant using different Controllers
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Lecture 31 - Introduction to ECG Experiment
Lecture 32 - Design and Implementation of ECG Preprocessing Stage - Part 1
Lecture 33 - Design and Implementation of ECG Preprocessing Stage - Part 2
Lecture 34 - Design and Implementation of ECG Preprocessing Stage - Part 3
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Lecture 36 - Design and Implementation of Peak Detector and Thresholding Circuit for ECG Signal Conditioning
Lecture 37 - Live Demonstration on ECG Signal Acquisition, Conditioning and Measurement of BPM
Lecture 38 - Understanding Analog Multipliers using Development Board
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Lecture 40 - Introduction to Data-Acquisition
Lecture 41 - Analog to Digital Conversion Circuits and Experiment on 2-bit Flash Type ADC
Lecture 42 - Digital to Analog Conversion Circuits and Experiment on 4-bit R-2R DAC
Lecture 43 - DAC Basics using Development Board - Introduction
Lecture 44 - Understanding DAC 7821 Data Sheet
Lecture 45 - Basic DAC Experiment on Variable Gain Amplifier
Lecture 46 - Understanding DAC
Lecture 47 - Introduction to CDAQ (Compact DAQ)
Lecture 48 - Software-in-Loop based Temperature Controller using CDAQ and LabVIEW
NPTEL Video Course - Electrical Engineering - NOC:Physical Modelling for Electronics Enclosures using Rapid prototyping

Subject Co-ordinator - Prof. N. V Chalapathi Rao
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Products prototyping
Lecture 2 - Prototype concepts
Lecture 3 - Physical simulation
Lecture 4 - Rapid Prototyping
Lecture 5 - Products detailing
Lecture 6 - Advantages of Design Modelling
Lecture 7 - Sample product concept
Lecture 8 - Product sample exercise 1
Lecture 9 - Exercise in product sample 2
Lecture 10 - Integration of components 1
Lecture 11 - Components integration in models
Lecture 12 - 3D printing detail 1
Lecture 13 - 3D printing detail 2
Lecture 14 - 3D print assembly design
Lecture 15 - Heat spreader to 3D print
Lecture 16 - Metallic, 3D, build up 1
Lecture 17 - 3D build up 2
Lecture 18 - 3D design 1 from Photo snap
Lecture 19 - 3D design 2 from Photo snap
Lecture 20 - 3D Laser cuts 1, prints
Lecture 21 - 3D Laser cuts 2, open source public prints
Lecture 22 - Demo of 3D Part print
Lecture 23 - Building a model 1
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Lecture 25 - Common place objects
Lecture 26 - Materials
Lecture 27 - Future 3D In biology
Lecture 28 - Product clamp variants
Lecture 29 - Product clamp build up

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Lecture 30 - Multi direction features
Lecture 31 - Multi direction features (Continued...)
Lecture 32 - Fastening detail
Lecture 33 - Flat objects
Lecture 34 - Modularity
Lecture 35 - Creative design work
Lecture 36 - Creative designs
Lecture 37 - Using flat features
Lecture 38 - Organic shapes
Lecture 39 - Simulation for alternate use
NPTEL Video Course - Electrical Engineering - NOC: Recent Advances in Transmission Insulators

Subject Co-ordinator - Prof Subba Reddy B
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Transmission and distribution Insulators
Lecture 2 - Manufacturing process for Ceramic/glass Insulators
Lecture 3 - Manufacturing process for Polymeric Insulators
Lecture 4 - Design Considerations of Transmission Insulators
Lecture 5 - Field experience of Ceramic/Glass and Polymeric Insulators
Lecture 6 - Comparison of Transmission Insulators
Lecture 7 - Environmental issues with transmission Insulators
Lecture 8 - Reliability and Philosophy of Testing
Lecture 9 - Testing of Ceramic, Glass and Composite Insulators
Lecture 10 - Cleaning methods adopted for Insulators
Lecture 11 - Cleaning methods adopted for Insulators (Continued...)
Lecture 12 - Coating techniques for Insulators
Lecture 13 - Introduction to Hybrid Insulators
NPTEL Video Course - Electrical Engineering - NOC: Fundamentals of Semiconductor Devices

Subject Co-ordinator - Prof. Digbijoy N. Nath
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to semiconductors
Lecture 2 - Introduction to energy bands
Lecture 3 - Fundamentals of band structure
Lecture 4 - Band structure (Continued...) and Fermi-Dirac distribution
Lecture 5 - Density of states
Lecture 6 - Doping and intrinsic carrier concentration
Lecture 7 - Equilibrium carrier concentration
Lecture 8 - Temperature-dependence of carrier concentration
Lecture 9 - High doping effects and incomplete ionization
Lecture 10 - Carrier scattering and mobility
Lecture 11 - Low-field and high-field transport, introduction to diffusion
Lecture 12 - Drift-diffusion and trap statistics
Lecture 13 - Current continuity equation
Lecture 14 - Continuity equation (Continued...) and introduction to p-n junction
Lecture 15 - p-n junction under equilibrium
Lecture 16 - p-n junction under equilibrium (Continued...)
Lecture 17 - p-n junction under bias
Lecture 18 - p-n junction under bias (Continued...)
Lecture 19 - p-n junction
Lecture 20 - Application of p-n junctions
Lecture 21 - Breakdown of junction and C-V profiling
Lecture 22 - Introduction to Schottky junction
Lecture 23 - Schottky junction under equilibrium
Lecture 24 - Schottky junction under bias
Lecture 25 - Introduction to transistors
Lecture 26 - Basics of BJT
Lecture 27 - Working of BJT
Lecture 28 - Working of BJT (Continued...)
Lecture 29 - Delays in BJT

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Lecture 30 - MOS
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Lecture 33 - MOS C-V in more details
Lecture 34 - MOSFET - An introduction
Lecture 35 - Gradual Channel Approximation
Lecture 36 - Substrate bias effect and subthreshold conduction in MOSFET
Lecture 37 - Short Channel Effects in MOSFET
Lecture 38 - Introduction to compound semiconductors
Lecture 39 - Basics of heterojunctions
Lecture 40 - Band diagram of heterojunctions
Lecture 41 - Heterojunctions (Continued...)
Lecture 42 - Heterojunction transistors
Lecture 43 - III-nitrides
Lecture 44 - Solar cell basics
Lecture 45 - Solar cell (Continued...)
Lecture 46 - Solar cell
Lecture 47 - Basics of photodetectors
Lecture 48 - Photodetectors
Lecture 49 - Junction photodetectors
Lecture 50 - Basics of recombination
Lecture 51 - Basics of LED
Lecture 52 - LED
Lecture 53 - Visible LED
Lecture 54 - Transistors for power electronics
Lecture 55 - Transistors for power electronics (Continued...) and for RF electronics
Lecture 56 - Transistors for RF (Continued...) and transistors for Memory
Lecture 57 - Basics of microelectronic fabrication
Lecture 58 - Microelectronic fabrication (Continued...)
Lecture 59 - Summary
NPTEL Video Course - Electrical Engineering - NOC: Advanced IOT Applications

Subject Co-ordinator - Prof. T V Prabhakar
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of localization using IoT sensors
Lecture 2 - Outdoor localization without GPS - I
Lecture 3 - Outdoor localization without GPS - II
Lecture 4 - Outdoor localization using elevation - pressure mapping
Lecture 5 - Localization using IMU sensors - I
Lecture 6 - Localization using IMU sensors - II
Lecture 7 - Localization using IMU sensors - III
Lecture 8 - RFID based localization - I
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Lecture 10 - Simulation of simple algorithms for object detection
Lecture 11 - Building smart vehicle for collision avoidance
Lecture 12 - Basic computer vision algorithms - Part 1
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Lecture 14 - Code walkthrough of computer vision algorithm
Lecture 15 - Introduction to LiDAR
Lecture 16 - Range estimation and Obstacle avoidance
Lecture 17 - Introduction to vehicle platooning
Lecture 18 - Building blocks for autonomous vehicles - 1
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Lecture 20 - On Board Diagnostics and protocols
Lecture 21 - Diagnostic services and fuel-injection ratio control unit
Lecture 22 - Real time event processing and Anomaly detection
Lecture 23 - OBD-II and stream processing demonstration
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Lecture 40 - Introduction to First Responder networks
Lecture 41 - First Responders - Applications - Part 1
Lecture 42 - First Responders - Applications - Part 2
Lecture 43 - Cargo monitoring for tamper detection - Part 1
Lecture 44 - Cargo monitoring for tamper detection - Part 2
NPTEL Video Course - Electrical Engineering - NOC:Electronic Systems for Cancer Diagnosis

Subject Co-ordinator - Prof. Hardik Jeetendra Pandya

Co-ordinating Institute - IISc - Bangalore

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Lecture 5 - Cleanroom Equipments (Continued...)
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Lecture 8 - Photolithography
Lecture 9 - Micromachining Techniques
Lecture 10 - Breast Cancer and Oral Cancer Statistics
Lecture 11 - Fabrication of MEMs-based Biochip for cancer diagnosis
Lecture 12 - Fabrication of MEMs-based Biochip for cancer diagnosis (Continued...)
Lecture 13 - Fabrication of Piezoresistive Sensor
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Lecture 17 - Mechanical Phenotyping of Breast Cancer using MEMS
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Lecture 23 - Understanding the methods and mechanism to study cell morphology
Lecture 24 - Cytology - A detail study on Spin Coater and Cytospin
Lecture 25 - Techniques in oral cytology studies
Lecture 26 - Techniques in cell morphology analysis
Lecture 27 - Comparative study on diagnostic tools for oral cancer screening
Lecture 28 - Basic building blocks of Electronics System
Lecture 29 - Basic building blocks of Electronics System

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Lecture 53 - Biosafety Cabinet and Ultrasonic bath
Lecture 54 - Incubator Shaker
Lecture 55 - Hotplate and Microcentrifuge
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Lecture 66 - Introduction to COMSOL Multiphysics
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Lecture 53 - Demonstration of Thermal Acutator and Understanding of Application Builder
NPTEL Video Course - Electrical Engineering - NOC:Sensors and Actuators

Subject Co-ordinator - Prof. Hardik Jeetendra Pandya

Co-ordinating Institute - IISc - Bangalore

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Lecture 2 - Sensors - Part 2
Lecture 3 - Sensors - Part 3
Lecture 4 - Sensors - Part 4
Lecture 5 - Sensors - Part 5
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Lecture 7 - Recent Microsensors based system
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Lecture 13 - Wafer Bonding and PDMS moulding
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Lecture 15 - Introduction to Cleanroom Equipments
Lecture 16 - Introduction to Cleanroom Equipments
Lecture 17 - Process Sensor Process Flow, Cell based Diagnosis Device
Lecture 18 - Basics of Patterning and Drug Screening Device
Lecture 19 - MEMS applications in automobile system
Lecture 20 - Arduino Interfacing for Sensors and Actuators
Lecture 21 - Demonstration of DC Motor as an actuator
Lecture 22 - Demonstration of peristaltic pump using Arduino
Lecture 23 - Demonstration of PDMS Patterning
Lecture 24 - Crystal Orientation and Si-SiO2 interface
Lecture 25 - Surface Profilometry and Physical Vapour Deposition Techniques
Lecture 26 - Introduction to COMSOL Multiphysics and Modelling Examples
Lecture 27 - Demonstration of Thermal Actuators using COMSOL
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Lecture 29 - Photolithography - Part 1
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Lecture 60 - MEMS based sensor for catheter contact force measurement
Lecture 61 - Microfluidics based Drug Screening
Lecture 62 - Basic aspects of 3D Printing
Lecture 63 - 3D Printing Materials and Demonstration of Remote 3D Printing

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electrical Engineering - NOC: Neural Networks for Signal Processing-I

Subject Co-ordinator - Prof. Shayan Srinivasa Garani

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Introduction to Neural Networks
Lecture 3 - Models of a neuron
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Lecture 15 - Logistic regression
Lecture 16 - Multi-layer perceptron - 1
Lecture 17 - Multi-layer perceptron - 2
Lecture 18 - Back propagation - 1
Lecture 19 - Back propagation - 2
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Lecture 21 - Universal approximation function
Lecture 22 - Complexity Regularization and Cross validation
Lecture 23 - Convolutional Neural Networks (CNN)
Lecture 24 - Coverâ’s Theorem
Lecture 25 - Multivariate interpolation problem
Lecture 26 - Radial basis functions (RBF)
Lecture 27 - Recursive least squares algorithm
Lecture 28 - Comparison of RBF with MLP
Lecture 29 - Kernel regression using RBFs

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Co-ordinating Institute - IIT - Bombay
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Lecture 1 - Introduction
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Lecture 3 - The Haar Multiresolution Analysis
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Lecture 13 - Conjugate Quadrature Filters - Daubechies Family of MRA
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Lecture 16 - Ideal Time Frequency Behaviour
Lecture 17 - The Uncertainty Principle
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Lecture 19 - Evaluating and Bounding squareroot t.s squareroot omega
Lecture 20 - The Time Frequency Plane & its Tilings
Lecture 21 - Short time Fourier Transform & Wavelet Transform in General
Lecture 22 - Reconstruction & Admissibility
Lecture 23 - Admissibility in Detail Discretization of Scale
Lecture 24 - Logarithmic Scale Discretization, Dyadic Discretization
Lecture 25 - The Theorem of (DYADIC) Multiresolution Analysis
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Lecture 27 - Introducing Variants of The Multiresolution Analysis Concept
Lecture 28 - JPEG 2000 5/3 FilterBank & Spline MRA
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Lecture 31 - The Wave Packet Transform
Lecture 32 - Nobel Identities & The Haar Wave Packet Transform
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Lecture 35 - The Lifting Structure & Polyphase Matrices
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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - Advanced Optical Communication

Subject Co-ordinator - Prof. R.K. Shevgaonkar

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 4 - Ray Model - II
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Lecture 6 - Wave Model - II
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Lecture 8 - Signal Distortion - I
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Lecture 11 - Practical issues in Implementation of Fiber link
Lecture 12 - Optical Sources
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Lecture 14 - Light Emitting Diodes - II
Lecture 15 - Laser - I
Lecture 16 - Laser - II
Lecture 17 - Laser - III
Lecture 18 - Laser - IV
Lecture 19 - Laser - V + Photon Detector
Lecture 20 - Photo Diodes and Detector Noise
Lecture 21 - Photo Detector
Lecture 22 - Optical Receivers - I
Lecture 23 - Optical Receivers - II
Lecture 24 - Receiver Sensitivity Degradation
Lecture 25 - Fiber Optic Link Design
Lecture 26 - Wavelength Division Multiplexed Systems
Lecture 27 - EDFA
Lecture 28 - Integrated Optics - I
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Lecture 32 - Introduction to Non-Linear Fiber Optics
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Lecture 34 - Group Velocity Dispersion (GVD)
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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - Advanced VLSI Design

Subject Co-ordinator - Prof. A.N. Chandorkar, Prof. D.K. Sharma, Prof. Sachin Patkar, Prof. Virendra Singh

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Historical Perspective and Future Trends in CMOS VLSI Circuit and System Design - Part II
Lecture 3 - Logical Effort - A way of Designing Fast CMOS Circuits - Part I
Lecture 4 - Logical Effort - A way of Designing Fast CMOS Circuits - Part II
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Lecture 18 - Managing concurrency and time in Hardware Description Languages
Lecture 19 - Introduction to VHDL
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Lecture 21 - Structural Description in VHDL
Lecture 22 - Behavioral Description in VHDL
Lecture 23 - Introduction to Verilog
Lecture 24 - FSM + datapath (GCD example)
Lecture 25 - FSM + datapath (Continued...)
Lecture 26 - Single Cycle MMIPS
Lecture 27 - Multicycle MMIPS
Lecture 28 - Multicycle MMIPS Â• FSM
Lecture 29 - Brief Overview of Basic VLSI Design Automation Concepts

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - Broadband Networks: Concepts and Technology

Subject Co-ordinator - Prof. Abhay Karandikar

Co-ordinating Institute - IIT - Bombay

Lecture 1 - Introduction to Broadband Networks
Lecture 2 - Qos in Packet Switching and ATM
Lecture 3 - ATM Networks
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Lecture 5 - Effective Bandwidth - II
Lecture 6 - Traffic Descriptor in ATM
Lecture 7 - Calculus for QOS - I
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Lecture 9 - Packet Scheduling Algorithm Introduction
Lecture 10 - Fluid Fair Queueing and Weighted Fair Queueing
Lecture 11 - Virtual Time In Scheduling
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Lecture 14 - Latency Rate Servers - I
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Lecture 28 - Differentiated Services Internet
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Lecture 32 - Metro Ethernet Access Networks

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NPTEL Video Course - Electronics and Communication Engineering - Digital Communication

Subject Co-ordinator - Prof. Bikash Kumar Dey

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 5 - Probability and Random Processes (Part-2)
Lecture 6 - Channels and their Models (Part-1)
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Lecture 31 - Fundamentals of OFDM
Lecture 32 - Conclusion
### NPTEL Video Course - Electronics and Communication Engineering - Information Theory and Coding

**Subject Co-ordinator** - Prof. S.N. Merchant  
**Co-ordinating Institute** - IIT - Bombay  
**Sub-Titles** - Available / Unavailable  
**MP3 Audio Lectures** - Available / Unavailable

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NPTEL Video Course - Electronics and Communication Engineering - Transmission Lines and EM Waves

Subject Co-ordinator - Prof. R.K. Shevgaonkar

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Equations of Voltage and Current on TX line
Lecture 3 - Propagation constant, Characteristic impedance and reflection coefficient
Lecture 4 - Impedance Transformation
Lecture 5 - Loss-less and Low loss Transmission line and VSWR
Lecture 6 - Power transfer on TX line
Lecture 7 - Smith Chart
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Lecture 9 - Experimental setup for transmission line measurements
Lecture 10 - Applications of transmission lines
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Lecture 18 - Basic laws of Electromagnetics
Lecture 19 - Maxwell's Equations
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Lecture 23 - Wave polarization
Lecture 24 - Pioncere's Sphere
Lecture 25 - Wave propagation in conducting medium
Lecture 26 - Wave propagation and phase velocity
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Lecture 28 - Surface current and power loss in a conductor
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NPTEL Video Course - Electronics and Communication Engineering - CMOS Analog VLSI Design

Subject Co-ordinator - Prof. A.N. Chandorkar

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Electronics and Communication Engineering - Analog Circuits

Subject Co-ordinator - Prof. A.N. Chandorkar
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Two Parts of Review of Analog Filter Approximation
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NPTEL Video Course - Electronics and Communication Engineering - NOC: Microwave Integrated Circuits

Subject Co-ordinator - Prof. Jayanta Mukherjee
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Reflection Coefficient, VSWR, Smith Chart
Lecture 3 - Reflection Coefficient, VSWR
Lecture 4 - Smith Chart
Lecture 5 - Application of the Smith Chart
Lecture 6 - Microwave Components
Lecture 7 - Broadband Impedance Matching
Lecture 8 - Multi-section transformer
Lecture 9 - Maximally flat (binomial) transformer, Chebyshev transformer
Lecture 10 - Non-uniform transmission line (Tapers)
Lecture 11 - Scattering Parameters
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Lecture 13 - Properties of Scattering Parameters (Continued...)
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NPTEL Video Course - Electronics and Communication Engineering - RF Integrated Circuits

Subject Co-ordinator - Dr. Shouribrata Chatterjee

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Transmission media reflection
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Lecture 4 - Parallel RLC tank
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Lecture 9 - Inductors and wires
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Lecture 32 - Charge pump
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NPTEL Video Lectures - Electronics and Communication Engineering - Communication Engineering

Subject Co-ordinator - Prof. Surendra Prasad
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Communication channel
Lecture 3 - Brief Review of Signal and Systems
Lecture 4 - The Hilbert Transform
Lecture 5 - Analytic Representation of band pass Signals
Lecture 6 - Fundamentals of Analog Signal Transmission
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Lecture 27 - Review of Probability Theory and Random Process
Lecture 28 - Review of Probability Theory and Random Variables
Lecture 29 - Random Processes

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Lecture 30 - Random Processes
Lecture 31 - Random Processes
Lecture 32 - Gaussian Random Processes
Lecture 33 - Behaviour of Communication System
Lecture 34 - Performance of AM Systems in Noise
Lecture 35 - Noise in AM and Angle Modulation Systems
Lecture 36 - Noise in Phase and Frequency Modulation systems
Lecture 37 - Noise in Angle Modulation
Lecture 38 - Pre emphasis - De emphasis
Lecture 39 - Pulse Modulation Schemes - PWM and PPM
Lecture 40 - Data Modulation
Lecture 41 - Pulse Code Modulation
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - Digital Signal Processing

Subject Co-ordinator - Prof. S.C. Dutta Roy
Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Digital Signal Processing Introduction
Lecture 2 - Digital Signal Processing Introduction (Continued.)
Lecture 3 - Digital Systems
Lecture 4 - Characterization Description, Testing of Digital Systems
Lecture 5 - LTI Systems Step & Impulse Responses, Convolution
Lecture 6 - Inverse Systems, Stability, FIR & IIR
Lecture 7 - FIR & IIR; Recursive & Non Recursive
Lecture 8 - Discrete Time Fourier Transform
Lecture 9 - Discrete Fourier Transform (DFT)
Lecture 10 - DFT (Continued.)
Lecture 11 - DFT (Continued.) Introduction to Z Transform
Lecture 12 - Z Transform
Lecture 13 - Z Transform (Continued.)
Lecture 14 - Discrete Time Systems in the Frequency Domain
Lecture 15 - Simple Digital Filters
Lecture 16 - All Pass Filters, Com.Filters
Lecture 17 - Linear Phase filters, Complementary Transfer Fn
Lecture 18 - Compensatory Transfer Functions, (Continued.)
Lecture 19 - Test for Stability using All Pass Functions
Lecture 20 - Digital Processing of Continuous Time Signals
Lecture 21 - Problem Solving Session
Lecture 22 - Problem Solving Session
Lecture 23 - Analog Filter Design
Lecture 24 - Analog Chebyshev LPF Design
Lecture 25 - Analog Filter Design (Continued.)
Lecture 26 - Analog frequency Transformation
Lecture 27 - Problem Solving Session on Discrete Time System
Lecture 28 - Digital Filter Structures
Lecture 29 - IIR Realizations

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Lecture 30 - All Pass Realizations
Lecture 31 - Lattice Synthesis (Continued.)
Lecture 32 - FIR Lattice Synthesis
Lecture 33 - FIR Lattice (Continued.) and Digital Filter Design
Lecture 34 - IIR Filter Design
Lecture 35 - IIR Design by Bilinear Transformation
Lecture 36 - IIR Design Examples
Lecture 37 - Digital to Digital Frequency Transformation
Lecture 38 - FIR Design
Lecture 39 - FIR Digital Filter Design by Windowing
Lecture 40 - FIR Design by Windowing & Frequency Sampling
Lecture 41 - Solving Problems on DSP Structures
Lecture 42 - FIR Design by Frequency Sampling
Lecture 43 - FIR Design by Frequency Sampling (Continued.)
NPTEL Video Course - Electronics and Communication Engineering - Wireless Communication

Subject Co-ordinator - Prof. Ranjan Bose
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Motivation and Introduction
Lecture 2 - Types of Wireless communication
Lecture 3 - The modern wireless Communication Systems
Lecture 4 - The cellular concept - System Design issues
Lecture 5 - Cell capacity and reuse
Lecture 6 - Interference and System capacity
Lecture 7 - Improving coverage and system capacity
Lecture 8 - Mobile Radio Propagation
Lecture 9 - Mobile Radio Propagation (Continued.)
Lecture 10 - Mobile Radio Propagation (Continued.)
Lecture 11 - Mobile Radio Propagation (Continued.)
Lecture 12 - Mobile Radio Propagation (Continued.)
Lecture 13 - Mobile Radio Propagation (Continued.)
Lecture 14 - Mobile Radio Propagation II
Lecture 15 - Mobile Radio Propagation II (Continued.)
Lecture 16 - Mobile Radio Propagation II (Continued.)
Lecture 17 - Mobile Radio Propagation II (Continued.)
Lecture 18 - Mobile Radio Propagation II (Continued.)
Lecture 19 - Mobile Radio Propagation II (Continued.)
Lecture 20 - Mobile Radio Propagation II (Continued.)
Lecture 21 - Modulation Techniques for Mobile Communication
Lecture 22 - Modulation Techniques (Continued.)
Lecture 23 - Modulation Techniques (Continued.)
Lecture 24 - Modulation Techniques (Continued.)
Lecture 25 - Modulation Techniques (Continued.)
Lecture 26 - Modulation Techniques (Continued.)
Lecture 27 - Modulation Techniques (Continued.)
Lecture 28 - Equalization and Diversity Techniques
Lecture 29 - Equalization and Diversity Techniques (Continued.)

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Lecture 30 - Equalization and Diversity Techniques (Continued.)
Lecture 31 - Equalization and Diversity Techniques (Continued.)
Lecture 32 - Coding Techniques for Mobile Communications
Lecture 33 - Coding Techniques for Mobile Communications (Continued.)
Lecture 34 - Coding Techniques for Mobile Communications (Continued.)
Lecture 35 - Coding Techniques for Mobile Communications (Continued.)
Lecture 36 - Wireless Networks
Lecture 37 - GSM and CDMA
Lecture 38 - GSM and CDMA (Continued.)
Lecture 30 - The practical Op-Amp
Lecture 31 - Positive feedback and oscillation
Lecture 32 - Comparator
Lecture 33 - Large Signal Amplifiers
Lecture 34 - Transformer Couple Power Amplifier
Lecture 35 - Class AB Operations of Power Amplifier
Lecture 36 - Power BJTs
Lecture 37 - Regulated Power Supply
Lecture 38 - Four Layered Diode
Lecture 39 - Silicon Control Rectifier
Lecture 40 - SCR Applications
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - NOC:VLSI Design Verification and Test

Subject Co-ordinator - Dr. Santosh Biswas, Jatindra Kumar Deka, Prof. Arnab Sarkar

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - Part 1
Lecture 2 - Introduction - Part 2
Lecture 3 - Overview of VLSI Design Flow
Lecture 4 - High Level Synthesis Overview - Part 1
Lecture 5 - High Level Synthesis Overview - Part 2
Lecture 6 - Scheduling in HLS - Part 1
Lecture 7 - Scheduling in HLS - Part 2
Lecture 8 - Scheduling in HLS - Part 3
Lecture 9 - Scheduling in HLS - Part 4
Lecture 10 - Scheduling in HLS - Part 5
Lecture 11 - Scheduling in HLS - Part 6
Lecture 12 - Scheduling in HLS - Part 7
Lecture 13 - Resource Sharing and Binding in HLS - Part 1
Lecture 14 - Resource Sharing and Binding in HLS - Part 2
Lecture 15 - Resource Sharing and Binding in HLS - Part 3
Lecture 16 - Resource Sharing and Binding in HLS - Part 4
Lecture 17 - Resource Sharing and Binding in HLS - Part 5
Lecture 18 - Resource Sharing and Binding in HLS - Part 6
Lecture 19 - Resource Sharing and Binding in HLS - Part 7
Lecture 20 - Logic Synthesis - Part 1
Lecture 21 - Logic Synthesis - Part 2
Lecture 22 - Logic Synthesis - Part 3
Lecture 23 - Physical Design - Part 1
Lecture 24 - Physical Design - Part 2
Lecture 25 - Physical Design - Part 3
Lecture 26 - Introduction to formal methods for design verification
Lecture 27 - Temporal Logic
Lecture 28 - Syntax and Semantics of CLT
Lecture 29 - Syntax and semantics of CTL (Continued...)

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Lecture 30 - Equivalences between CTL Formulas
Lecture 31 - Introduction to Model Checking
Lecture 32 - Model checking Algorithms
Lecture 33 - Model checking Algorithms (Continued...)
Lecture 34 - Model Checking with Fairness
Lecture 35 - Binary Decision Diagram
Lecture 36 - Ordered Binary Decision Diagram (OBDD)
Lecture 37 - Operation On OBDD
Lecture 38 - OBDD for State Transition Systems E
Lecture 39 - Symbolic Model Checking
Lecture 40 - Introduction to Digital VLSI Testing
Lecture 41 - Functional and Structural Testing
Lecture 42 - Fault Equivalence
Lecture 43 - Fault Simulation - I
Lecture 44 - Fault Simulation - II
Lecture 45 - Fault Simulation - III
Lecture 46 - Testability Measures (SCOAP)
Lecture 47 - Introduction to Automatic Test Pattern Generation (ATPG) and ATPG Algebras
Lecture 48 - D-Algorithm - I
Lecture 49 - D-Algorithm - II
Lecture 50 - ATPG for Synchronous Sequential Circuits
Lecture 51 - Scan Chain based Sequential Circuit Testing - I
Lecture 52 - Scan Chain based Sequential Circuit Testing - II
Lecture 53 - BIST - I
Lecture 54 - BIST - II
NPTEL Video Course - Electronics and Communication Engineering - Signals and Systems

Subject Co-ordinator - Prof. K.S. Venkatesh

Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Electronics and Communication Engineering - Advanced 3G and 4G Wireless Mobile Communications

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to 3G/4G Standards
Lecture 2 - Wireless Channel and Fading
Lecture 3 - Rayleigh Fading and BER of Wired Communication
Lecture 4 - BER for Wireless Communication
Lecture 5 - Introduction to Diversity
Lecture 6 - Multi-antenna Maximal Ratio Combiner
Lecture 7 - BER with Diversity
Lecture 8 - Spatial Diversity and Diversity Order
Lecture 9 - Wireless Channel and Delay Spread
Lecture 10 - Coherence Bandwidth of the Wireless Channel
Lecture 11 - ISI and Doppler in Wireless Communications
Lecture 12 - Doppler Spectrum and Jakes Model
Lecture 13 - Introduction to CDMA, Spread Spectrum and LFSR
Lecture 14 - Generation and Properties of PN Sequences
Lecture 15 - Correlation of PN Sequences and Jammer Margin
Lecture 16 - CDMA Advantages and RAKE Receiver
Lecture 17 - Multi-User CDMA Downlink Part I
Lecture 18 - Multi-User CDMA Downlink Part II
Lecture 19 - Multi-User CDMA Uplink and Asynchronous CDMA
Lecture 20 - CDMA Near-Far Problem and Introduction to MIMO
Lecture 21 - MIMO System Model and Zero-Forcing Receiver
Lecture 22 - MIMO MMSE Receiver and Introduction to SVD
Lecture 23 - SVD Based Optimal MIMO Transmission and Capacity
Lecture 24 - SVD Based Optimal MIMO Transmission and Capacity
Lecture 25 - OSTBCs and Introduction to V-BLAST Receiver
Lecture 26 - V-BLAST (Continued) and MIMO Beamforming
Lecture 27 - Introduction to OFDM and Multi-Carrier Modulation
Lecture 28 - IFFT Sampling for OFDM
Lecture 29 - OFDM Schematic and Cyclic Prefix

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Lecture 30 - OFDM Based Parallelization and OFDM Example
Lecture 31 - OFDM Example (Continued) and Introduction to MIMO-OFDM
Lecture 32 - MIMO-OFDM (Continued)
Lecture 33 - Impact of Carrier Frequency Offset (CFO) in OFDM
Lecture 34 - PAPR in OFDM Systems and Introduction to SC-FDMA
Lecture 35 - SC-FDMA (Continued) and Introduction of Wireless Propagation Models
Lecture 36 - Ground Reflection and Okumura Models
Lecture 37 - Hata Model and Log Normal Shadowing
Lecture 38 - Link Budget Analysis
Lecture 39 - Introduction to Teletraffic Theory
Lecture 40 - Cellular Traffic Modeling and Blocking Probability
NPTEL Video Course - Electronics and Communication Engineering - Digital Switching

Subject Co-ordinator - Prof. Yatindra N Singh

Co-ordinating Institute - IIT - Kanpur

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| Lecture 1 - Digital Switching |
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Lecture 37 - Digital Switching
Lecture 1 - Evolution of Wireless Communication Technologies
Lecture 2 - Modeling Wireless Channel
Lecture 3 - Wireless Fading Channel Model
Lecture 4 - Fading Channel Distribution
Lecture 5 - Rayleigh Fading Channel
Lecture 6 - Bit Error Rate (BER) Performance
Lecture 7 - Bit Error Rate (BER) of AWGN Channels
Lecture 8 - Bit Error Rate of Rayleigh Fading Wireless Channel
Lecture 9 - Exact BER Expression for Rayleigh Fading Wireless Channel
Lecture 10 - Deep Fade Analysis of Wireless Communication
Lecture 11 - Principle of Diversity
Lecture 12 - Multiple Antenna Diversity
Lecture 13 - Maximal-Ratio Combining
Lecture 14 - BER of Multiple Antenna Wireless Systems
Lecture 15 - Approximate BER for Multiple Antenna Wireless System
Lecture 16 - Examples for BER of Wireless Communication
Lecture 17 - Deep Fade in Multi Antenna Systems
Lecture 18 - Intuition for Deep Fade in Multi-Antenna System
Lecture 19 - Definition of Diversity Order
Lecture 20 - Max Delay Spread
Lecture 21 - RMS Delay Spread
Lecture 22 - Delay Spread and Inter Symbol Interference
Lecture 23 - Coherence Bandwidth of Wireless Channel
Lecture 24 - Mobility and Doppler Effect in Wireless Channels
Lecture 25 - Impact of Doppler Effect on Wireless Channel
Lecture 26 - Introduction to Code Division Multiple Access (CDMA)
Lecture 27 - Chip Time and Bandwidth Expansion in CDMA
Lecture 28 - Code Generation for CDMA
Lecture 29 - CDMA Codes
Lecture 30 - BER of CDMA Systems
Lecture 31 - Analysis of Multi-user CDMA
Lecture 32 - Multipath Diversity in CDMA Systems
Lecture 33 - Near-Far Problem in CDMA
Lecture 34 - Multiple Input Multiple Output (MIMO) Systems
Lecture 35 - Examples of MIMO Systems
Lecture 36 - MIMO Receivers
Lecture 37 - BER Performance of ZF Receiver
Lecture 38 - Transmit Beamforming in MISO Systems
Lecture 39 - Alamouti Code and Space-Time Block Codes
Lecture 40 - BER of Alamouti Coded System
Lecture 41 - Singular Value Decomposition (SVD)
Lecture 42 - SVD in MIMO
Lecture 43 - Capacity of MIMO Wireless Systems
Lecture 44 - SVD based MIMO Transmission
Lecture 45 - Orthogonal Frequency Division Multiplexing (OFDM)
Lecture 46 - Transmission in Multicarrier Systems
Lecture 47 - FFT/IFFT Processing in OFDM
Lecture 48 - Cyclic Prefix in OFDM Systems
Lecture 49 - Schematic Representation of OFDM Transmitter and Receiver
Lecture 50 - BER Performance of OFDM Systems
Lecture 1 - Basics - Sample Space and Events
Lecture 2 - Axioms of Probability
Lecture 3 - Conditional Probability - Mary-PAM Example
Lecture 4 - Independent Events - Mary-PAM Example
Lecture 5 - Independent Events - Block Transmission Example
Lecture 6 - Independent Events - Multiantenna Fading Example
Lecture 7 - Bayes Theorem and Aposteriori Probabilities
Lecture 8 - Maximum Aposteriori Probability (MAP) Receiver
Lecture 9 - Random Variables, Probability Density Function (PDF)
Lecture 10 - Application
Lecture 11 - Mean, Variance of Random Variables
Lecture 12 - Application
Lecture 13 - Transformation of Random Variables and Rayleigh Fading Wireless Channel
Lecture 14 - Gaussian Random Variable and Linear Transformation
Lecture 15 - Special Case
Lecture 16 - Application
Lecture 17 - Random Processes and Wide Sense Stationarity (WSS)
Lecture 18 - WSS Example Narrowband Wireless Signal with Random Phase
Lecture 19 - Power Spectral Density (PSD) for WSS Random Process
Lecture 20 - PSD Application in Wireless Bandwidth Required for Signal Transmission
Lecture 21 - Transmission of WSS Random Process Through LTI System
Lecture 22 - Special Random Processes Gaussian Process and White Noise AWGN Communication Channel
Lecture 23 - Gaussian Process Through LTI System Example
Lecture 1 - Basics - Sensor Network and Noisy Observation Model
Lecture 2 - Likelihood Function and Maximum Likelihood (ML) Estimate
Lecture 3 - Properties of Maximum Likelihood (ML) Estimate Â• Mean and Unbiasedness
Lecture 4 - Properties of Maximum Likelihood (ML) Estimate Â• Variance and Spread Around Mean
Lecture 5 - Reliability of the Maximum Likelihood (ML) Estimate Â• Number of Samples Required
Lecture 6 - Estimation of Complex Parameters Â• Symmetric Zero Mean Complex Gaussian Noise
Lecture 7 - Wireless Fading Channel Estimation Â• Pilot Symbols and Likelihood Function
Lecture 8 - Wireless Fading Channel Estimation Â• Pilot Training based Maximum Likelihood ML Estimate
Lecture 9 - Wireless Fading Channel Estimation Â• Mean and Variance of Pilot Training Based Maximum Likelihood
Lecture 10 - Example Â• Wireless Fading Channel Estimation for Downlink Mobile Communication
Lecture 11 - Cramer Rao Bound (CRB) for Parameter Estimation
Lecture 12 - Cramer Rao Bound CRB Example Â• Wireless Sensor Network
Lecture 13 - Vector Parameter Estimation Â• System Model for Multi Antenna Downlink Channel Estimation
Lecture 14 - Likelihood Function and Least Squares Cost Function for Vector Parameter Estimation
Lecture 15 - Least Squares Cost Function for Vector Parameter Estimation Vector Derivative Gradient
Lecture 16 - Least Squares Solution Maximum Likelihood ML Estimate Pseudo Inverse
Lecture 17 - Properties of Least Squares Estimate Â• Mean Covariance and Distribution
Lecture 18 - Least Squares Multi Antenna Downlink Maximum Likelihood Channel Estimation
Lecture 19 - Multiple Input Multiple Output MIMO Channel Estimation Â• Least Squares Maximum Likelihood ML
Lecture 20 - Example Â• Least Squares Multiple Input Multiple Output MIMO Channel Estimation
Lecture 21 - Channel Equalization and Inter Symbol Interference ISI Model
Lecture 22 - Least Squares based Zero Forcing Channel Equalizer
Lecture 23 - Example of ISI Channel and Least Squares based Zero Forcing
Lecture 24 - Equalization and Approximation Error for Zero Forcing Channel Equalizer
Lecture 25 - Example Equalization and Approximation Error for Zero Forcing Channel Equalizer
Lecture 26 - Introduction to Orthogonal Frequency Division Multiplexing OFDM Â• Cyclic Prefix CP and Circular Convolution
Lecture 27 - Introduction to Orthogonal Frequency Division Multiplexing OFDM Â• FFT at Receiver and Flat Fading
Lecture 28 - Channel Estimation Across Each Subcarrier in Orthogonal Frequency Division Multiplexing OFDM
Lecture 29 - Example Orthogonal Frequency Division Multiplexing OFDM Â• Transmission of Samples with Cyclic Prefix
Lecture 30 - Example Orthogonal Frequency Division Multiplexing OFDM Â• FFT at Receiver and Channel Estimation
Lecture 31 - Comb Type Pilot CTP Based Orthogonal Frequency Division Multiplexing OFDM Channel Estimation
Lecture 32 - Comb Type Pilot CTP Based Orthogonal Frequency Division Multiplexing OFDM Channel Estimation
Lecture 33 - Example Comb Type Pilot CTP Based Orthogonal Frequency Division Multiplexing OFDM Channel
Lecture 34 - Frequency Domain Equalization FDE for Inter Symbol Interference ISI Removal in Wireless System
Lecture 35 - Example Frequency Domain Equalization FDE for Inter Symbol Interference ISI Removal in Wireless
Lecture 36 - Example Frequency Domain Equalization FDE for Inter Symbol Interference ISI Removal in Wireless
Lecture 37 - Introduction to Sequential Estimation Â• Application in Wireless Channel Estimation
Lecture 38 - Sequential Estimation of Wireless Channel Coefficient Â• Estimate and Variance Update Equation
Lecture 39 - Example Sequential Estimation of Wireless Channel Coefficient
NPTEL Video Course - Electronics and Communication Engineering - NOC: Error Control Coding - An Introduction to Convolutional Codes

Subject Co-ordinator - Dr. Adrish Banerjee

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Error Coding - I
Lecture 2 - Introduction to Error Coding - II
Lecture 3 - Introduction to Error Control Coding - III
Lecture 4 - Introduction to Convolutional Codes - I
Lecture 5 - Introduction to Convolutional Codes - II
Lecture 6 - Convolutional Codes
Lecture 7 - Convolutional Codes
Lecture 8 - Decoding of Convolutional Codes - I
Lecture 9 - Decoding of Convolutional Codes - II
Lecture 10 - Problem Solving Session - I
Lecture 11 - Problem Solving Session - II
Lecture 12 - Performance Bounds for Convolutional Codes
Lecture 13 - Turbo Codes
Lecture 14 - Turbo Decoding
Lecture 15 - Convergence of Turbo Codes
Lecture 16 - Applications of Convolutional Codes
Lecture 17 - Problem Solving Sessions - III

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NPTEL Video Course - Electronics and Communication Engineering - NOC:Error Control Coding: An Introduction to Linear Block code

Subject Co-ordinator - Dr. Adrish Banerjee
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Error Control Coding - I
Lecture 2 - Introduction to Error Control Coding - II
Lecture 3 - Introduction to Error Control Coding - III
Lecture 4 - Introduction to Linear Block Codes, Generator Matrix and Parity Check Matrix
Lecture 5 - Syndrome, Error Correction and Error Detection
Lecture 6 - Problem Solving Session - I
Lecture 7 - Decoding of Linear Block Codes
Lecture 8 - Distance Properties of Linear Block Codes - I
Lecture 9 - Distance Properties of Linear Block Codes - II
Lecture 10 - Problem Solving Session - II
Lecture 11 - Some Simple Linear Block Codes - I
Lecture 12 - Some Simple Linear Block Codes - II
Lecture 13 - Bounds on the Size of a Code
Lecture 14 - Problem Solving Session - III
Lecture 15 - Low Density Parity Check Codes
Lecture 16 - Decoding of Low Density Parity Check Codes - I
Lecture 17 - Decoding of Low Density Parity Check Codes - II
Lecture 18 - Applications of Linear Block Codes

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Lecture 1 - Basics Â— Introduction to Bayesian Minimum Mean Squared Error
Lecture 2 - Optimal Bayesian Minimum Mean Squared Error (MMSE) Estimate
Lecture 3 - Derivation of Minimum Mean Squared Error MMSE Estimate for Gaussian Parameter Â— Part I
Lecture 4 - Derivation of Minimum Mean Squared Error MMSE Estimate for Gaussian Parameter Â— Part II
Lecture 5 - Derivation of Minimum Mean Squared Error (MMSE) Estimate for Gaussian Parameter Â— Non-Zero Mean
Lecture 6 - Minimum Mean Squared Error MMSE Estimation Application Â— Wireless Sensor Network
Lecture 7 - Simplification and Example of Minimum Mean Squared Error MMSE Estimate for Wireless Sensor Network
Lecture 8 - Minimum Mean Squared Error MMSE Estimation Application Â— Wireless Fading Channel Estimation
Lecture 9 - Simplification and Example of Minimum Mean Squared Error MMSE Estimate for Wireless Fading Channel
Lecture 10 - Minimum Mean Squared Error MMSE for Wireless Sensor Network WSN Â— Derivation and Example
Lecture 11 - Reliability of Minimum Mean Squared Error MMSE Estimate Â— Part I
Lecture 12 - Reliability of Minimum Mean Squared Error MMSE Estimate Â— Part II
Lecture 13 - Minimum Mean Squared Error MMSE for Wireless Fading Channel Estimation Â— Derivation
Lecture 14 - Minimum Mean Squared Error (MMSE) for Wireless Fading Channel Estimation Â— Example and Properties
Lecture 15 - Linear Minimum Mean Squared Error LMMSE Estimate Derivation Â— Part I
Lecture 16 - Linear Minimum Mean Squared Error LMMSE Estimate Derivation Â— Part II
Lecture 17 - Vector Parameter Estimation Â— System Model for Multi-Antenna Downlink Channel Estimation
Lecture 18 - Linear Minimum Mean Squared Error LMMSE Estimate for Multi Antenna Downlink Wireless Channel Â— Part I
Lecture 19 - Linear Minimum Mean Squared Error LMMSE Estimate for Multi Antenna Downlink Wireless Channel Â— Part II
Lecture 20 - Example of Linear Minimum Mean Squared Error LMMSE Estimation for Multi Antenna Downlink Wireless Channel
Lecture 21 - Derivation and Example of Error Covariance of Multi Antenna LMMSE Channel Estimation
Lecture 22 - System Model for Multiple Input Multiple Output MIMO Downlink Wireless Channel Estimation
Lecture 23 - Channel/ Noise Statistics for Multiple-Input Multiple-Output (MIMO) Downlink Wireless Channel Estimation
Lecture 24 - LMMSE/ MMSE Estimation for Multiple-Input Multiple-Output (MIMO) Downlink Wireless Channel Estimation
Lecture 25 - Example of LMMSE/ MMSE Estimation for Multiple-Input Multiple-Output (MIMO) Downlink Wireless Channel Estimation
Lecture 26 - Introduction and system model for equalization
Lecture 27 - Linear Minimum Mean Square Error (LMMSE) Channel Equalization
Lecture 28 - Error for LMMSE Channel Equalizer and Example of LMMSE Channel Equalization
Lecture 29 - Example of Linear Minimum Mean Square Error (LMMSE) Channel Equalization
Lecture 30 - Introduction and system model for OFDM
Lecture 31 - System model for OFDM, IFFT/FFT Operations
Lecture 32 - LMMSE Estimation for OFDM
Lecture 33 - Estimate and Error variance of LMMSE Estimate
Lecture 34 - Example of OFDM
Lecture 35 - Example of LMMSE estimate and Error variance for OFDM
NPTEL Video Course - Electronics and Communication Engineering - NOC:Optical communications

Subject Co-ordinator - Dr. Pradeep Kumar K
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of Fiber-optic communications
Lecture 2 - Optical Transmitter - I
Lecture 3 - Optical Transmitter - I (Continued...)
Lecture 4 - Optical Transmitter - II
Lecture 5 - Optical Transmitter - II (Continued...)
Lecture 6 - Intensity modulation
Lecture 7 - Review of Signals and Representations - I
Lecture 8 - Review of Signals and Representations - II
Lecture 9 - Digital Modulation - I
Lecture 10 - Review of Signals and Representations - III
Lecture 11 - Review of Signals and Representations - IV
Lecture 12 - Digital Modulation - II
Lecture 13 - Digital Modulation - II (Continued...)
Lecture 14 - Digital Modulation - III
Lecture 15 - Optical receivers - I
Lecture 16 - Optical receivers - II
Lecture 17 - Optical Modulator
Lecture 18 - Propagation of Electromagnetic wave
Lecture 19 - Review of EM Theory
Lecture 20 - Reflection of Waves
Lecture 21 - Optical fiber - I
Lecture 22 - Optical fiber - II
Lecture 23 - Modes in Optical fiber - I
Lecture 24 - Modes in Optical fiber - I (Continued...)
Lecture 25 - Modes in Optical fiber - II
Lecture 26 - Dispersion in Fibers
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Lecture 28 - Wrapping up fiber parameters
Lecture 29 - System Design - I

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NPTEL Video Course - Electronics and Communication Engineering - NOC: Digital Switching-I

Subject Co-ordinator - Prof. Yatindra N Singh

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Telephony and Networks
Lecture 2 - Strowger Automatic Exchange
Lecture 3 - Crossbar Switching
Lecture 4 - Logic Circuit for Crosspoint Operation
Lecture 5 - Introduction to Multistage Interconnection Networks
Lecture 6 - Blocking probability of crossbar switches
Lecture 7 - Call congestion and time congestion
Lecture 8 - Clos network
Lecture 9 - Lee's approximation
Lecture 10 - Karnaugh's approximation
Lecture 11 - Time switch
Lecture 12 - Time switch and Clos network
Lecture 13 - TST switch, Strictly Non-blocking network, Rearrangeably non-blocking network
Lecture 14 - Paull's Matrix
Lecture 15 - f-way multicasting
Lecture 16 - Strictly sense non blocking multicasting switch
Lecture 17 - Rearrangeable non blocking networks
Lecture 18 - Slepiain Duguid theorem, Paull's theorem
Lecture 19 - Paull's matrix for rearrangeably non blocking networks
Lecture 20 - Recursive construction; Crosspoint complexity for rearrangeably and strictly non-blocking networks
Lecture 21 - Cantor network
Lecture 22 - Wide-sense non blocking network
Lecture 23 - Example of wide-sense non-blocking switch
Lecture 24 - Packet Switching
Lecture 25 - Buffering strategies
Lecture 26 - Output Queued Switch
Lecture 27 - Input Queued Switch
Lecture 28 - Banyan Network, Delta Network
Lecture 29 - Shufflenet as Delta network

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Lecture 30 - Performance analysis of crossbar and delta network
Lecture 31 - Properties of Delta Network
Lecture 32 - Buffered and Unbuffered Delta network
Lecture 33 - Analysis of Buffered Delta Network - 1 of 3
Lecture 34 - Analysis of Buffered Delta Network - 2 of 3
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NPTEL Video Course - Electronics and Communication Engineering - NOC: An Introduction to Information Theory

Subject Co-ordinator - Dr. Adrish Banerjee
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Measure of Information
Lecture 3 - Information Inequalities
Lecture 4 - Problem solving session - I
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Lecture 7 - Block to Variable Length Coding - III
Lecture 8 - Variable to block length coding
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Lecture 14 - Coding of sources with memory
Lecture 15 - Channel Capacity
Lecture 16 - Joint typical sequences
Lecture 17 - Noisy channel coding theorem
Lecture 18 - Differential entropy
Lecture 19 - Gaussian channel
Lecture 20 - Parallel Gaussian channel
Lecture 21 - Problem solving session - III
Lecture 22 - Rate distortion theory
Lecture 23 - Blahut-Arimoto Algorithm
Lecture 24 - Problem solving session - IV

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NPTEL Video Course - Electronics and Communication Engineering - Adaptive Signal Processing

Subject Co-ordinator - Prof. Mrityunjoy Chakraborty
Co-ordinating Institute - IIT - Kharagpur

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Lecture 1 - Introduction to Adaptive Filters
Lecture 2 - Introduction to Stochastic Processes
Lecture 3 - Stochastic Processes
Lecture 4 - Correlation Structure
Lecture 5 - FIR Wiener Filter (Real)
Lecture 6 - Steepest Descent Technique
Lecture 7 - LMS Algorithm
Lecture 8 - Convergence Analysis
Lecture 9 - Convergence Analysis (Mean Square)
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Lecture 12 - Misadjustment and Excess MSE
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Lecture 23 - Lattice Recursions
Lecture 24 - Lattice as Optimal Filter
Lecture 25 - Linear Prediction and Autoregressive Modeling
Lecture 26 - Gradient Adaptive Lattice
Lecture 27 - Gradient Adaptive Lattice
Lecture 28 - Introduction to Recursive Least Squares
Lecture 29 - RLS Approach to Adaptive Filters

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NPTEL Video Course - Electronics and Communication Engineering - Digital Systems Design

Subject Co-ordinator - Prof. D. Roychoudhury

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 7 - Boolean Algebra
Lecture 8 - Boolean Function Minimization
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Lecture 12 - Combinational Circuit Design
Lecture 13 - Design of ADDER Circuits
Lecture 14 - Design of Subtractor Circuits
Lecture 15 - Digital of Common Digital Elements
Lecture 16 - Design of Complex Combinational Circuits
Lecture 17 - Design of Combinational Circuits
Lecture 18 - Combinational Logic Problem Design
Lecture 19 - Combinational Logic Design
Lecture 20 - Logic Design with PLA
Lecture 21 - Synchronous Sequential Circuit Design
Lecture 22 - Design of Sequential Modules
Lecture 23 - Design of Registers and Counter
Lecture 24 - Finite State Machine Design
Lecture 25 - Finite State Machine Design and Optimization
Lecture 26 - Programmable Logic Devices
Lecture 27 - Programmable Logic Devices
Lecture 28 - Programmable Logic Devices
Lecture 29 - Design of Arithmetic Circuits

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| Lecture 31 | Design of Memory Circuits |
| Lecture 32 | Algorithmic State Machines Chart |
| Lecture 33 | Design of Computer Instruction Set and the CPU |
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| Lecture 39 | Design of a Micro Programmed CPU |
| Lecture 40 | Digital System Design Current State of the Art |
NPTEL Video Course - Electronics and Communication Engineering - Digital Voice and Picture Communication

Subject Co-ordinator - Prof. Somnath Sengupta
Co-ordinating Institute - IIT - Kharagpur

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Lecture 3 - Speech Coding
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Lecture 6 - Adaptive Quantizer
Lecture 7 - Differential Quantization
Lecture 8 - LDM and ADM
Lecture 9 - Differential PCM and Adaptive Prediction
Lecture 10 - Linear Prediction of Speech
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Lecture 12 - Cholesky Decomposition
Lecture 13 - Lattice Formulation of LPC Coefficient
Lecture 14 - Linear Predictive Synthesizer
Lecture 15 - LPC Vocoder
Lecture 16 - Introduction to Image and Video Coding
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Lecture 31 - MPEG-1 Audio Coding
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Lecture 30 - Wafer Bonding & Packaging of MEMS
Lecture 31 - Interface Electronics for MEMS
Lecture 32 - MEMS for Biomedical Applications (Bio-MEMS)
NPTEL Video Course - Electronics and Communication Engineering - Neural Networks and Applications

Subject Co-ordinator - Prof. Somnath Sengupta

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 11 - Importance of V.C. Dimensions Structural Risk Minimization
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Subject Co-ordinator - Dr. Amitabha Bhattacharya

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Challenges of Microwave Design
Lecture 2 - Introduction to the 1st tool
Lecture 3 - Measurement of Unknown Impedance
Lecture 4 - Application of Smith Chart for finding unknown impedance in laboratory
Lecture 5 - Problem Solving using Smith Chart
Lecture 6 - Need of Impedance Matching at Microwave Frequency
Lecture 7 - Lumped Element Based Impedance Matching Network Design by Smith Chart
Lecture 8 - Distributed Impedance Matching Design by Smith Chart
Lecture 9 - Broadband Impedance Matching Network Design
Lecture 10 - Tutorial 2
Lecture 11 - Voltage and Current at Microwave Frequency
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Lecture 13 - Properties of Scattering Parameter
Lecture 14 - Network Analyser
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Lecture 17 - Scattering Parameters of Coupler and Magic Tee
Lecture 18 - Signal Flow Graph
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Subject Co-ordinator - Dr. Amitabha Bhattacharya
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Lecture 2 - Mathematical Model of Modes
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Lecture 4 - Mathematical Model of TE and TM Mode and Impedance Concept
Lecture 5 - Losses Associated with Microwave Transmission
Lecture 6 - Coaxial Line
Lecture 7 - Rectangular Waveguide
Lecture 8 - Circular Waveguide
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Lecture 10 - Coaxial Connectors
Lecture 11 - 3 Port Microwave Power Divider/Combiner - Part I
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Lecture 13 - 4 Port Microwave Power Divider/Combiner
Lecture 14 - Microwave Resonator
Lecture 15 - Microwave Attenuators
Lecture 16 - Microwave Detector and Switching Diodes
Lecture 17 - Microwave Tubes
Lecture 18 - Microwave Tubes
Lecture 19 - Microwave Solid State Diode Oscillator and Amplifier
Lecture 20 - Microwave Transistors

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Subject Co-ordinator - Prof. Kalyankumar Bandyopadhyay

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Subject Co-ordinator - Prof. Suvra Sekhar Das
Co-ordinating Institute - IIT - Kharagpur

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Subject Co-ordinator - Prof. S. Dasmandal

Co-ordinating Institute - IIT - Kharagpur

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Lecture 4 - Equivalent Electrical Circuits for Oscillation
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Subject Co-ordinator - Prof. Shyamal Kumar Das Mandal

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Subject Co-ordinator - Prof. Mrigank Sharad
Co-ordinating Institute - IIT - Kharagpur

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Subject Co-ordinator - Dr. Nagendra Krishnapura
Co-ordinating Institute - IIT - Madras

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Subject Co-ordinator - Prof. S. Srinivasan
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Lecture 30 - Encoders and Decoders
Lecture 31 - Programmable Logic Devices
Lecture 32 - Design using Programmable Logic Devices
Lecture 33 - Design using Programmable Logic Devices (Continued)
Lecture 34 - MSI and LSI based Implementation of Sequential Circuits
Lecture 35 - MSI and LSI based Implementation of Sequential Circuits (Continued)
Lecture 36 - Design of circuits using MSI sequential blocks
Lecture 37 - System Design Example
Lecture 38 - System Design Example (Continued)
Lecture 39 - System Design using the concept of controllers
Lecture 40 - System Design using the concept of controllers (Continued)
NPTEL Video Course - Electronics and Communication Engineering - Electronics for Analog Signal Processing - I

Subject Co-ordinator - Prof. K. Radhakrishna Rao
Co-ordinating Institute - IIT - Madras | Texas Instruments - India
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Diode
Lecture 3 - Diode characteristics
Lecture 4 - Rectifier
Lecture 5 - Voltage Multiplier
Lecture 6 - Full Wave Rectifier and Peak Detector
Lecture 7 - Diode as a GATE
Lecture 8 - Analog GATE
Lecture 9 - Small Signal Analysis of Diode Circuit
Lecture 10 - Zener Regulator and Voltage Regulator
Lecture 11 - Varactor Diode
Lecture 12 - Amplifiers
Lecture 13 - Cascading of Amplifiers
Lecture 14 - Cascading of Amplifiers
Lecture 15 - h and g Parameters
Lecture 16 - Two Port Analysis
Lecture 17 - Amplifier Applications
Lecture 18 - Frequency Limitations Of An Amplifier
Lecture 19 - Distortion In Amplifiers
Lecture 20 - Bipolar Junction Transistor
Lecture 21 - Transistor (BJT) Inverter
Lecture 22 - Transistor Biasing
Lecture 23 - Stable Way of Biasing
Lecture 24 - Common Emitter Amplifiers
Lecture 25 - Transistor Biasing Using Single Supply
Lecture 26 - Metal Oxide Semiconductor
Lecture 27 - Construction of a MOSFET
Lecture 28 - Varieties of MOSFETS and JFETS
Lecture 29 - Characteristics of MOSFET

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Lecture 30 - Cascading Amplifiers
Lecture 31 - Cascading (Direct Coupling)
Lecture 32 - The Differential Amplifiers
Lecture 33 - BJT Differential Amplifiers
Lecture 34 - MOSFET Differential Amplifiers
Lecture 35 - Cascading Differential Amplifiers
Lecture 36 - Current Source and Current Sink
Lecture 37 - NMOS Inverters and CMOS Inverters
Lecture 38 - Active Components used in Electronics
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - Electronics for Analog Signal Processing - II

Subject Co-ordinator - Prof. K. Radhakrishna Rao

Co-ordinating Institute - IIT - Madras | Texas Instruments - India

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Feedback Theory
Lecture 2 - Negative Feedback
Lecture 3 - Negative Feedback
Lecture 4 - Y-Feedback
Lecture 5 - h and g Negative Feedback
Lecture 6 - g Feedback with Mosfet
Lecture 7 - Operational Amplifier in Negative Feedback
Lecture 8 - Operational Amplifier in Negative Feedback
Lecture 9 - Positive Feedback (Regenerative)
Lecture 10 - Experimental Demonstration
Lecture 11 - Instrumentation Amplifiers
Lecture 12 - Active Filters
Lecture 13 - Simulation of Harmonic Oscillators
Lecture 14 - Oscillators
Lecture 15 - Oscillators
Lecture 16 - Frequency Compensation in Negative Feedback
Lecture 17 - Frequency Compensation
Lecture 18 - Wideband (video) Amplifiers
Lecture 19 - Wideband Amplifiers
Lecture 20 - ICs For Video And Tuned Amplifier Applications
Lecture 21 - Power Amplifier
Lecture 22 - Power Amplifier
Lecture 23 - Class B and C Power Amplifiers
Lecture 24 - Class-B Power Amplifier Load and Drive
Lecture 25 - Control Circuits
Lecture 26 - Voltage Regulators
Lecture 27 - Voltage Regulators
Lecture 28 - Voltage Regulators
Lecture 29 - Convertors

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Lecture 30 - Analog Multipliers (Modems & Mixers)
Lecture 31 - Log-Antilog Multipliers
Lecture 32 - Multipliers
Lecture 33 - Multipliers
Lecture 34 - AGC/AVC
Lecture 35 - AGC/AVC
Lecture 36 - Experimental Demonstration
Lecture 37 - PLL (Phase Locked Loop)
Lecture 38 - PLL (Phase Locked Loop)
Lecture 39 - Lock Range Capture Range and FSK and FM
NPTEL Video Course - Electronics and Communication Engineering - High Speed Devices and Circuits

Subject Co-ordinator - Prof. K.N. Bhat

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Basic concepts
Lecture 2 - Requirements for high speed circuits, devices and materials
Lecture 3 - Classification and properties of semiconductor devices
Lecture 4 - Ternary compound semiconductors and their applications
Lecture 5 - Ternary compound semiconductors and their applications (Continued.)
Lecture 6 - Crystal structures in GaAs
Lecture 7 - Dopants and impurities in GaAs and InP
Lecture 8 - Brief Overview of GaAs Technology for High Speed Devices
Lecture 9 - Epitaxial Techniques for GaAs and high speed devices
Lecture 10 - MBE and LPE for GaAs Epitaxy
Lecture 11 - GaAs and InP devices for Microelectronics
Lecture 12 - Metal Semiconductor contacts for MESFET
Lecture 13 - Metal Semiconductor contacts for MESFET (Continued.)
Lecture 14 - Metal Semiconductor contacts for MESFET (Continued.)
Lecture 15 - Ohmic contacts on semiconductors
Lecture 16 - Fermi level pinning, I V characteristics of Schottky Barrier Diodes
Lecture 17 - Schottky Barrier Diodes I V characteristics of Non idealities -1
Lecture 18 - Schottky Barrier Diodes I V characteristics of Non idealities -1
Lecture 19 - Causes of Non idealities in the Schottky Barrier Diodes (I V characteristics)
Lecture 20 - MESFET operations and I V characteristics
Lecture 21 - MESFET I V characteristics Shockley's Model
Lecture 22 - MESFET Shockley's Model and velocity saturation effect
Lecture 23 - MESFET velocity saturation effect on drain current saturation
Lecture 24 - MESFET
Lecture 25 - MESFET
Lecture 26 - MESFET
Lecture 27 - MESFET
Lecture 28 - MESFET
Lecture 29 - Self Aligned MESFET SAINT Threshold Voltage and Sub Threshold current

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Lecture 30 - Hetero junctions
Lecture 31 - Hetero junctions and high electron Mobility Transistor (HEMT)
Lecture 32 - Hetero junctions and high electron Mobility Transistor (HEMT) (Continued.)
Lecture 33 - High Electron Mobility Transistor
Lecture 34 - HEMT off voltage, I-V characteristics and trans conductance
Lecture 35 - I-V characteristics and trans conductance and optimization
Lecture 36 - Indium phosphide based HEMT
Lecture 37 - Pseudomorphic HEMT and Hetrojunction Bipolar Transistors
Lecture 38 - Hetero junction Bipolar Transistors (HBT)
Lecture 39 - Hetero junction Bipolar Transistors (HBT) (Continued.)
Lecture 40 - Hetero junction Bipolar Transistors (HBT) (Continued.)
Lecture 41 - Hetero junction Bipolar Transistors (HBT) (Continued.)
Lecture 1 - Introduction on Solid State Devices
Lecture 2 - Evolution and Uniqueness of Semiconductor
Lecture 3 - Equilibrium Carrier Concentration
Lecture 4 - Equilibrium Carrier Concentration
Lecture 5 - Equilibrium Carrier Concentration
Lecture 6 - Equilibrium Carrier Concentration
Lecture 7 - Equilibrium Carrier Concentration
Lecture 8 - Equilibrium Carrier Concentration
Lecture 9 - Equilibrium Carrier Concentration
Lecture 10 - Equilibrium Carrier Concentration
Lecture 11 - Equilibrium Carrier Concentration
Lecture 12 - Carrier Transport
Lecture 13 - Carrier Transport (Continued.)
Lecture 14 - Carrier Transport (Continued.)
Lecture 15 - Excess Carriers
Lecture 16 - Excess Carriers (Continued.)
Lecture 17 - Procedure for Device Analysis
Lecture 18 - Procedure for Device Analysis (Continued.)
Lecture 19 - PN Junction
Lecture 20 - PN Junction (Continued.)
Lecture 21 - PN Junction (Continued.)
Lecture 22 - PN Junction (Continued.)
Lecture 23 - PN Junction (Continued.)
Lecture 24 - PN Junction (Continued.)
Lecture 25 - PN Junction (Continued.)
Lecture 26 - Bipolar Junction Transistor
Lecture 27 - Bipolar Junction Transistor (Continued.)
Lecture 28 - Bipolar Junction Transistor (Continued.)
Lecture 29 - Bipolar Junction Transistor (Continued.)
Lecture 30 - Bipolar Junction Transistor (Continued.)
Lecture 31 - Bipolar Junction Transistor (Continued.)
Lecture 32 - Bipolar Junction Transistor (Continued.)
Lecture 33 - Metal-Oxide-Semiconductor (MOS) Junction
Lecture 34 - Metal-Oxide-Semiconductor (MOS) Junction (Continued.)
Lecture 35 - Metal-Oxide-Semiconductor (MOS) Junction (Continued.)
Lecture 36 - Metal-Oxide-Semiconductor (MOS) Junction (Continued.)
Lecture 37 - Metal-Oxide-Semiconductor (MOS) Junction (Continued.)
Lecture 38 - MOS Field Effect Transistor
Lecture 39 - MOS Field Effect Transistor (Continued.)
Lecture 40 - MOS Field Effect Transistor (Continued.)
Lecture 41 - MOS Field Effect Transistor (Continued.)
Lecture 42 - The Final Lecture - Conclusion
NPTEL Video Course - Electronics and Communication Engineering - VLSI Circuits

Subject Co-ordinator - Prof. S. Srinivasan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to VLSI Design
Lecture 2 - Combinational Circuit Design
Lecture 3 - Programmable Logic Devices
Lecture 4 - Programmable Array Logic
Lecture 5 - Review of Flip-Flops
Lecture 6 - Sequential Circuits
Lecture 7 - Sequential Circuit Design
Lecture 8 - MSI Implementation of Sequential Circuits
Lecture 9 - Design of Sequential Circuits using One Hot Controller
Lecture 10 - Verilog Modeling of Combinational Circuits
Lecture 11 - Modeling of Verilog Sequential Circuits - Core Statements
Lecture 12 - Modeling of Verilog Sequential Circuits - Core Statements (Continued.)
Lecture 13 - RTL Coding Guidelines
Lecture 14 - Coding Organization - Complete Realization
Lecture 15 - Coding Organization - Complete Realization (Continued.)
Lecture 16 - Writing a Test Bench
Lecture 17 - System Design using ASM Chart
Lecture 18 - Example of System Design using ASM Chart
Lecture 19 - Examples of System Design using Sequential Circuits
Lecture 20 - Examples of System Design using Sequential Circuits (Continued.)
Lecture 21 - Microprogrammed Design
Lecture 22 - Microprogrammed Design (Continued.)
Lecture 23 - Design Flow of VLSI Circuits
Lecture 24 - Simulation of Combinational Circuits
Lecture 25 - Simulation of Combinational and Sequential Circuits
Lecture 26 - Analysis of Waveforms using Modelsim
Lecture 27 - Analysis of Waveforms using Modelsim (Continued.)
Lecture 28 - ModelSim Simulation Tool
Lecture 29 - Synthesis Tool

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Lecture 30 - Synthesis Tool (Continued.)
Lecture 31 - Synplify Tool - Schematic Circuit Diagram View
Lecture 32 - Technology View using Synplify Tool
Lecture 33 - Synopsys Full and Parallel Cases
Lecture 34 - Xilinx Place & Route Tool
Lecture 35 - Xilinx Place & Route Tool (Continued.)
Lecture 36 - PCI Arbiter Design using ASM Chart
Lecture 37 - Design of Memories - ROM
Lecture 38 - Design of Memories - RAM
Lecture 39 - Design of External RAM
Lecture 40 - Design of Arithmetic Circuits
Lecture 41 - Design of Arithmetic Circuits (Continued.)
Lecture 42 - Design of Arithmetic Circuits (Continued.)
Lecture 43 - System Design Examples
Lecture 44 - System Design Examples (Continued.)
Lecture 45 - System Design Examples (Continued.)
Lecture 46 - System Design Examples (Continued.)
Lecture 47 - System Design Examples (Continued.)
Lecture 48 - System Design Examples using FPGA Board
Lecture 49 - System Design Examples using FPGA Board (Continued.)
Lecture 50 - Advanced Features of Xilinx Project Navigator
Lecture 51 - System Design Examples using FPGA Board (Continued.)
Lecture 52 - System Design Examples using FPGA Board (Continued.)
Lecture 53 - System Design Examples using FPGA Board (Continued.)
Lecture 54 - System Design Examples using FPGA Board (Continued.)
Lecture 55 - Project Design Suggested for FPGA/ASIC Implementations
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - VLSI Technology
Subject Co-ordinator - Dr. Nandita Dasgupta
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction on VLSI Design
Lecture 2 - Bipolar Junction Transistor Fabrication
Lecture 3 - MOSFET Fabrication for IC
Lecture 4 - Crystal Structure of Si
Lecture 5 - Crystal Structure (Continued.)
Lecture 6 - Defects in Crystal + Crystal growth
Lecture 7 - Crystal growth Contd + Epitaxy I
Lecture 8 - Epitaxy II - Vapour phase Epitaxy
Lecture 9 - Epitaxy III - Doping during Epitaxy
Lecture 10 - Molecular beam Epitaxy
Lecture 11 - Oxidation I - Kinetics of Oxidation
Lecture 12 - Oxidation II - Oxidation rate constants
Lecture 13 - Oxidation III - Dopant Redistribution
Lecture 14 - Oxidation IV - Oxide Charges
Lecture 15 - Diffusion I - Theory of Diffusion
Lecture 16 - Diffusion II - Infinite Source
Lecture 17 - Diffusion III - Actual Doping Profiles
Lecture 18 - Diffusion IV - Diffusion Systems
Lecture 19 - Ion - Implantation Process
Lecture 20 - Ion - Implantation Process
Lecture 21 - Annealing of Damages
Lecture 22 - Masking during Implantation
Lecture 23 - Lithography - I
Lecture 24 - Lithography - II
Lecture 25 - Wet Chemical Etching
Lecture 26 - Dry Etching
Lecture 27 - Plasma Etching Systems
Lecture 28 - Etching of Si,SiO2, SiN and other materials
Lecture 29 - Plasma Deposition Process

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Lecture 30 - Metallization - I
Lecture 31 - Problems in Aluminium Metal contacts
Lecture 32 - IC BJT - From junction isolation to LOCOS
Lecture 33 - Problems in LOCOS + Trench isolation
Lecture 34 - More about BJT Fabrication and Realization
Lecture 35 - Circuits + Transistors in ECL Circuits
Lecture 36 - MOSFET I - Metal gate vs. Self-aligned Poly-gate
Lecture 37 - MOSFET II Tailoring of Device Parameters
Lecture 38 - CMOS Technology
Lecture 39 - Latch - up in CMOS
Lecture 40 - BICMOS Technology
NPTEL Video Course - Electronics and Communication Engineering - NOC: Basic Electrical Circuits

Subject Co-ordinator - Dr. Nagendra Krishnapura

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

| Lecture 1 - Preliminaries |
| Lecture 2 - Current |
| Lecture 3 - Voltage |
| Lecture 4 - Electrical elements and circuits |
| Lecture 5 - Kirchhoff's current law (KCL) |
| Lecture 6 - Kirchhoff's Voltage law (KVL) |
| Lecture 7 - Voltage Source |
| Lecture 8 - Current Source |
| Lecture 9 - Resistor |
| Lecture 10 - Capacitor |
| Lecture 11 - Inductor |
| Lecture 12 - Mutual Inductor |
| Lecture 13 - Linearity of Elements |
| Lecture 14 - Solutions to the assignment on units 1 and 2 |
| Lecture 15 - Series connection - Voltage sources in series |
| Lecture 16 - Series connection of R, L, C, current source |
| Lecture 17 - Elements in parallel |
| Lecture 18 - Current source in series with an element; Voltage source in parallel with an element |
| Lecture 19 - Extreme cases |
| Lecture 20 - Summary |
| Lecture 21 - Voltage controlled voltage source (VCVS) |
| Lecture 22 - Voltage controlled current source (VCCS) |
| Lecture 23 - Current controlled voltage source (CCVS) |
| Lecture 24 - Current controlled current source (CCCS) |
| Lecture 25 - Realizing a resistance using a VCCS or CCCS |
| Lecture 26 - Scaling an element's value using controlled sources |
| Lecture 27 - Example calculation |
| Lecture 28 - Solution to the assignment on units 3 and 4 |
| Lecture 29 - Power and energy absorbed by electrical elements |

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Lecture 30 - Power and energy in a resistor
Lecture 31 - Power and energy in a capacitor
Lecture 32 - Power and energy in an inductor
Lecture 33 - Power and energy in a voltage source
Lecture 34 - Power and energy in a current source
Lecture 35 - Goals of circuit analysis
Lecture 36 - Number of independent KCL equations
Lecture 37 - Number of independent KVL equations and branch relationships
Lecture 38 - Analysis of circuits with a single independent source
Lecture 39 - Analysis of circuits with multiple independent sources using superposition
Lecture 40 - Superposition
Lecture 41 - Solution to the assignment on units 5 and 6
Lecture 42 - What is nodal analysis
Lecture 43 - Setting up nodal analysis equations
Lecture 44 - Structure of the conductance matrix
Lecture 45 - How elements appear in the nodal analysis formulation
Lecture 46 - Completely solving the circuit starting from nodal analysis
Lecture 47 - Nodal analysis example
Lecture 48 - Matrix inversion basics
Lecture 49 - Nodal analysis with independent voltage sources
Lecture 50 - Supernode for nodal analysis with independent voltage sources
Lecture 51 - Nodal analysis with VCCS
Lecture 52 - Nodal analysis with VCVS
Lecture 53 - Nodal analysis with CCVS
Lecture 54 - Nodal analysis with CCCS
Lecture 55 - Nodal analysis summary
Lecture 56 - Solution to the assignment on units 7 and 8
Lecture 57 - Planar circuits
Lecture 58 - Mesh currents and their relationship to branch currents
Lecture 59 - Mesh analysis
Lecture 60 - Mesh analysis with independent current sources-Supermesh
Lecture 61 - Mesh analysis with current controlled voltage sources
Lecture 62 - Mesh analysis with current controlled current sources
Lecture 63 - Mesh analysis using voltage controlled sources
Lecture 64 - Nodal analysis versus Mesh analysis
Lecture 65 - Superposition theorem
Lecture 66 - Pushing a voltage source through a node
Lecture 67 - Splitting a current source
Lecture 68 - Substitution theorem
Lecture 69 - Substitution theorem
Lecture 70 - Substituting a voltage or current source with a resistor
Lecture 71 - Solutions
Lecture 72 - Extensions to Superposition and Substitution theorem
Lecture 73 - Thevenin's theorem
Lecture 74 - Worked out example
Lecture 75 - Norton's theorem
Lecture 76 - Worked out example
Lecture 77 - Maximum power transfer theorem
Lecture 78 - Preliminaries.
Lecture 79 - Two port parameters
Lecture 80 - y parameters
Lecture 81 - y parameters
Lecture 82 - Solutions.
Lecture 83 - z parameters
Lecture 84 - z parameters
Lecture 85 - h parameters
Lecture 86 - h parameters
Lecture 87 - g parameters
Lecture 88 - g parameters
Lecture 89 - Calculations with a two-port element
Lecture 90 - Calculations with a two-port element.
Lecture 91 - Degenerate cases
Lecture 92 - Relationships between different two-port parameters
Lecture 93 - Equivalent circuit representation for two ports
Lecture 94 - Reciprocity
Lecture 95 - Proof of reciprocity of resistive two-ports
Lecture 96 - Proof for 4-terminal two-ports
Lecture 97 - Reciprocity in terms of different two-port parameters
Lecture 98 - Reciprocity in circuits containing controlled sources
Lecture 99 - Examples
Lecture 100 - Solutions..
Lecture 101 - Feedback amplifier using an opamp
Lecture 102 - Ideal opamp
Lecture 103 - Negative feedback around the opamp
Lecture 104 - Finding opamp signs for negative feedback
Lecture 105 - Example
Lecture 106 - Analysis of circuits with opamps
Lecture 107 - Inverting amplifier

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Lecture 147 - Phasors (Continued...)
Lecture 148 - Magnitude and Phase plots
Lecture 149 - Magnitude and phase plots of a second order system
Lecture 150 - Maximum power transfer and Conjugate matching
Lecture 30 - Clock and Exceptions
Lecture 31 - On Chip Variation
Lecture 32 - Introduction to Crosstalk
Lecture 33 - Gaussian / Normal Distribution
Lecture 34 - Equivalence Checking / Formal Verification
NPTEL Video Course - Electronics and Communication Engineering - ARM Based Development

Subject Co-ordinator - Mr. S. Chandramouleeswaran

Co-ordinating Institute - Independent Embedded SW Trainer

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Types of computer Architectures, ISA's and ARM History
Lecture 2 - Embedded System Software and Hardware, stack implementation in ARM, Endianness, condition codes
Lecture 3 - Processor core VS CPU core, ARM7TDMI Interface signals, Memory Interface, Bus Cycle types, Register set
Lecture 4 - Instruction Format, ARM Core Data Flow Model, ARM 3 stage Pipeline, ARM family attribute comparison
Lecture 5 - ARM 5 stage Pipeline, Pipeline Hazards, Data forwarding - a hardware solution
Lecture 6 - ARM ISA and Processor Variants, Different Types of Instructions, ARM Instruction set, data processing
Lecture 7 - Shift Operations, shift Operations using RS lower byte, Immediate value encoding
Lecture 8 - Dataprocessing Instructions
Lecture 9 - Addressing Mode-1, Addressing Mode-2
Lecture 10 - Addressing Mode-2, LDR/STR, Addressing mode-3 with examples
Lecture 11 - Instruction Timing, Addressing Mode-4 with Examples
Lecture 12 - Swap Instructions, Swap Register related Instructions, Loading Constants
Lecture 13 - Program Control Flow, Control Flow Instructions, B & BL instructions, BX instruction
Lecture 14 - Interrupts and Exceptions, Exception Handlers, Reset Handling
Lecture 15 - Aborts, software Interrupt instruction, undefined instruction exception
Lecture 16 - Interrupt Latency, Multiply Instructions, Instruction set examples
Lecture 17 - Thumb state, Thumb Programmers model, Thumb Implementation, Thumb Applications
Lecture 18 - Thumb Instructions, Interrupt processing
Lecture 19 - Interrupt Handling schemes, Examples of Interrupt Handlers
Lecture 20 - Coprocessors
Lecture 21 - Coprocessor Instructions, data Processing Instruction, data transfers, register transfers
Lecture 22 - Number representations, floating point representation
Lecture 23 - Flynn's Taxonomy, SIMD and Vector Processors, Vector Floating Point Processor (VFP), VFP and ARM interaction
Lecture 24 - Memory Technologies, Need for memory Hierarchy, Hierarchical Memory Organization, Virtual Memory
Lecture 25 - Cache Memory, Mapping Functions
Lecture 26 - Cache Design, Unified or split cache, multiple level of caches, ARM cache features, coprocessor
Lecture 27 - Processes, Memory Map, Protected Systems, ARM systems with MPU, memory Protection Unit (MPU)
Lecture 28 - Physical Vs Virtual Memory, Paging, Segmentation
Lecture 29 - MMU Advantage, virtual memory translation, Multitasking with MMU, MMU organization, Tightly coupled

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Lecture 30 - ARM Development Environment, Arm Procedure Call Standard (APCS),
Lecture 31 - Example C program
Lecture 32 - Embedded software Development, Image structure, linker inputs and outputs, memory map, application
Lecture 33 - AMBA Overview, Typical AMAB Based Microcontroller, AHB bus features, AHB Bus transfers, APB bus transfers
Lecture 34 - DMA, Peripherals, Programming Peripherals in ARM
Lecture 35 - DMA
Lecture 36 - Protocols (I2C, SPI), UART, GPIO
Lecture 37 - ARM ISAs, ARMv5, ARMv6, ARM v7, big.little technology, ARMv8
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - Embedded Software Testing

Subject Co-ordinator - Mr. Madhukeshwara H.M

Co-ordinating Institute - HCL

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Embedded Systems Basics Session 1
Lecture 2 - Embedded Systems Basics Session 1 (Continued...)
Lecture 3 - Prerequisites for Embedded Systems Testing
Lecture 4 - Test Case Design and procedures
Lecture 5 - Test Standards
Lecture 6 - Depicting Levels of Testing
Lecture 7 - Depicting Levels of Testing (Continued...)
Lecture 8 - Software Life Cycle
Lecture 9 - Embedded V-Model Life Cycle
Lecture 10 - Embedded V-Model Life Cycle (Continued...)
Lecture 11 - Master Test Planning
Lecture 12 - Black Box Testing (Continued...)
Lecture 13 - Black Box Testing (Continued...)
Lecture 14 - Dynamic Testing
Lecture 15 - Black Box Testing
Lecture 16 - (Lecture Missing)
Lecture 17 - Black Box Testing (Continued...)
Lecture 18 - Model Based Design Intro.
Lecture 19 - Dynamic Testing (Continued...)
Lecture 20 - White Box Testing
Lecture 21 - White Box Testing (Continued...)
Lecture 22 - Grey-box testing
Lecture 23 - Static Testing
Lecture 24 - Static Analysis
Lecture 25 - Static Analysis (Continued...)
Lecture 26 - Static Analysis (Continued...)
Lecture 27 - Test Metrics
Lecture 28 - Software Testing Metrics
Lecture 29 - Integration Test Strategy

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Lecture 30 - Integration Tests Environment
Lecture 31 - Use Case Diagram
Lecture 32 - Depicting Levels of Testing (Continued...)
Lecture 33 - Configure Management Elements
Lecture 34 - SCM Activities
Lecture 35 - Test Management Tool
Lecture 36 - SCM Activities (Continued...)
Lecture 37 - Overview Lecture 1
Lecture 38 - Unit Testing
Lecture 39 - Unit Testing (Continued...)
Lecture 40 - Understanding C++
Lecture 41 - Unit Testing (Continued...)
Lecture 42 - Level Testing
Lecture 43 - Identify Test Cases
Lecture 44 - Test Link Work Flow
NPTEL Video Course - Electronics and Communication Engineering - Linux Programming and Scripting

Subject Co-ordinator - Mr. Anand Iyer

Co-ordinating Institute - Calypto Design Systems

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Linux Basics - I
Lecture 2 - Linux Basics - II
Lecture 3 - Linux Basics - III
Lecture 4 - Linux Basics - IV
Lecture 5 - Linux Networking - I
Lecture 6 - Linux Networking - II
Lecture 7 - File Transfer Protocol
Lecture 8 - Domain Name System
Lecture 9 - DNS (Continued...)
Lecture 10 - DFS
Lecture 11 - AFS and NIS
Lecture 12 - PERL 1
Lecture 13 - PERL 2
Lecture 14 - PERL 3
Lecture 15 - PERL 4
Lecture 16 - PERL 5
Lecture 17 - PERL 6
Lecture 18 - PERL 7
Lecture 19 - PERL 8
Lecture 20 - PERL 9
Lecture 21 - Using sort
Lecture 22 - PERL 10
Lecture 23 - Programming Using Tcl/Tk - I
Lecture 24 - Programming Using Tcl/Tk - II
Lecture 25 - Programming Using Tcl/Tk - III
Lecture 26 - More about Procedures
Lecture 27 - TCP, Ports and Sockets
Lecture 28 - I/O and Processes
Lecture 29 - Bindings

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Lecture 30 - Programming Using Tcl/Tk - IV
Lecture 31 - Furniture Arranger
Lecture 32 - Bindtags
Lecture 33 - Tcl in Synopsys Tools
Lecture 34 - Python Programming
Lecture 35 - Scope
Lecture 36 - Iteration
Lecture 37 - More about Regexps
Lecture 38 - Advanced Functions
Lecture 39 - Exception Handling
Lecture 40 - Examples of file Parsing
Lecture 41 - Program on If Statement
Lecture 42 - Program on Lists
Lecture 43 - Makefiles
Lecture 30 - FSM Design Problems
Lecture 31 - State Minimization
Lecture 32 - State Assignment
Lecture 33 - Timing Sequential Circuits
Lecture 34 - Verilog Styles + Sequential Elements
Lecture 35 - GCD Algorithm
Lecture 36 - GCD Machines Datapath
Lecture 37 - GCD State Machine
Lecture 38 - GCD Top Level Module
Lecture 39 - Datapath in Verilog
Lecture 40 - Datapath Elements in Verilog
Lecture 41 - FSM in Verilog
Lecture 42 - Putting it all together
Lecture 43 - Pipelining
Lecture 44 - K-stage Pipeline
Lecture 45 - Interleaving and Parallelism
Lecture 46 - Blocking and Non-blocking Statements
Lecture 47 - Modeling Circuits with Pipelining
Lecture 48 - Signed Number Representation
Lecture 49 - Signed Number Addition
Lecture 50 - Adder/Subtractor
Lecture 51 - Fast Adders
Lecture 52 - Multiplication
Lecture 53 - Closing
Lecture 1 - Functions in circuits - constant and sinusoidal functions
Lecture 2 - Functions in circuits - Exponential function
Lecture 3 - Complex numbers and other topics
Lecture 4 - Systems, Signals, Networks
Lecture 5 - Representation and Classification of Systems
Lecture 6 - Linear systems
Lecture 7 - Time-invariance and causality
Lecture 8 - Signals, Elementary continuous signals
Lecture 9 - Complex frequencies of signals
Lecture 10 - Discontinuous signals - step, ramp
Lecture 11 - Unit impulse or delta function
Lecture 12 - Basic discrete-time signals
Lecture 13 - Examples of Signals
Lecture 14 - Introduction to Systems, Complementary Functions, Initial Conditions
Lecture 15 - Special initial conditions
Lecture 16 - Characterization of a linear system
Lecture 17 - Impulse Response
Lecture 18 - Evaluating the Convolution Integral
Lecture 19 - Worked-out Problems
Lecture 20 - Introduction and Motivation
Lecture 21 - Evaluating Fourier series coefficients
Lecture 22 - Symmetry conditions
Lecture 23 - Symmetry Condition Examples
Lecture 24 - Application to Network Analysis
Lecture 25 - Exponential Fourier Series
Lecture 26 - Frequency Spectrum
Lecture 27 - Examples
Lecture 28 - Signal Power and Related Ideas
Lecture 29 - Convergence of Fourier Series
Lecture 30 - Week 1 Solutions
Lecture 31 - Hints for Assignment 2
Lecture 32 - Hints for Assignment 3
Lecture 33 - Additional Properties of Fourier Series
Lecture 34 - Exercises on Fourier Series
Lecture 35 - Lab Demo
Lecture 36 - From Fourier Series to Fourier Transform
Lecture 37 - Continuous Time Fourier Transform
Lecture 38 - Fourier Transform Examples
Lecture 39 - Examples and Some Properties of Fourier Transform
Lecture 40 - Properties of Fourier Transform (contd.)
Lecture 41 - More Fourier Transform Properties
Lecture 42 - Energy Considerations
Lecture 43 - Energy Considerations II
Lecture 44 - Helpful Relationships for Inverse Fourier Transform
Lecture 45 - Fourier transform of signals that are not absolutely integrable
Lecture 46 - Fourier Transform of Periodic Signals, Unit Step and Signum Function
Lecture 47 - Truncated Sine wave and Convolution properties
Lecture 48 - Integration in Time domain
Lecture 49 - Application of continuous-time Fourier transform to system analysis
Lecture 50 - Comments about transient analysis
Lecture 51 - Sampling Theorem and Exercises on Fourier Transforms
Lecture 52 - Introduction to Laplace Transform
Lecture 53 - Laplace transforms of important functions
Lecture 54 - Recap, Poles / Zeros and Laplace Transform Notation
Lecture 55 - Properties
Lecture 56 - Application and properties of Laplace transform
Lecture 57 - More properties of Laplace transform
Lecture 58 - More properties of Laplace transform
Lecture 59 - Properties
Lecture 60 - Properties
Lecture 61 - Complex convolution and periodic functions
Lecture 62 - Examples of Laplace transform
Lecture 63 - Laplace transform examples
Lecture 64 - Inverse Laplace transform
Lecture 65 - Partial fractions
Lecture 66 - Inverse Laplace Transform and Contour Integration
Lecture 67 - Relating Fourier and Laplace Transform
Lecture 68 - Exercises
Lecture 69 - Applications of Laplace transform to network transients
Lecture 70 - Laplace transform for resistor and system analysis
Lecture 71 - Laplace transform method for mutual inductance
Lecture 72 - Mutual Inductance Continued
Lecture 73 - Examples and Advantages of L-transform
Lecture 74 - General LTI systems and more about H(s)
Lecture 75 - Many facets of the system function (contd)
Lecture 76 - Frequency response and stability
Lecture 77 - Full circuit example
Lecture 78 - Exercises
NPTEL Video Course – Electronics and Communication Engineering – Circuits for Analog System Design

Subject Co-ordinator – Prof. M.K. Gunasekaran

Co-ordinating Institute – IISc – Bangalore

Sub-Titles – Available / Unavailable | MP3 Audio Lectures – Available / Unavailable

Lecture 1 – Transistor Amplifier
Lecture 2 – Transistor Op-amp and Transistor Based Voltage Regulator
Lecture 3 – Some applications of transistor – I
Lecture 4 – Some applications of transistor – II
Lecture 5 – Transformer design & Heat sink design
Lecture 6 – Op-amp Based Linear Voltage Regulator
Lecture 7 – Short circuit protection for linear power supply
Lecture 8 – Temperature indicator design using Op-amp
Lecture 9 – On & off Temperature controller design
Lecture 10 – Proportional Temperature Controller Design
Lecture 11 – PID – Temperature Controller Design
Lecture 12 – Heater Drive for Various Temperature Controllers
Lecture 13 – Short Circuit Protection of Power MOSFET
Lecture 14 – Error budgeting for temperature Indicator
Lecture 15 – PID Temperature Controllers with Error Budgeting
Lecture 16 – Error Budgeting for Constant Current Sources
Lecture 17 – Error Budgeting for Thermo Couple Amplifier
Lecture 18 – Error Budgeting for Op amp Circuits
Lecture 19 – Gain Error Calculation in Op amp Circuits
Lecture 20 – Input Resistance Calculations for Op amp
Lecture 21 – Output Resistance Calculations for Op amp
Lecture 22 – Error Budgeting for Different Circuits
Lecture 23 – 4-20 mA current Transmitter design
Lecture 24 – Error budgeting for 4-20mA Current Transmitters
Lecture 25 – LVDT Based Current Transmitters
Lecture 26 – Constant Current Source Design
Lecture 27 – 4-20 MA Based Temperature Transmitter
Lecture 28 – 3-Wire Current Transmitter
Lecture 29 – Various Resistance Measurement Techniques

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Lecture 30 - Ratio Transformer Technique to Measure Resistance and capacitance
Lecture 31 - Capacitive Sensor Circuit Design Examples
Lecture 32 - Capacitive Sensor Circuit With High Impedance Amplifier
Lecture 33 - AC- applications of the Op-Amp and Lock in Amplifier Design
Lecture 34 - Design of lock in Amplifier Circuit with example
Lecture 35 - Dual Slopes ADC â design Examples
Lecture 36 - Dual Slope ADC and Successor approximation ADC
Lecture 37 - MC based ADC
Lecture 38 - Digital to analog Converter design and working, Flash ADC
Lecture 39 - Flash ADC and ADC Converter errors
Lecture 40 - Sigma delta ADC working Principle
NPTEL Video Course - Electronics and Communication Engineering - Digital System design with PLDs and FPGAs

Subject Co-ordinator - Prof. Kuruvilla Varghese

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Contents, Objective
Lecture 2 - Revision of Prerequisite
Lecture 3 - Design of Synchronous Sequential Circuits
Lecture 4 - Analysis of Synchronous Sequential Circuits
Lecture 5 - Top-down Design
Lecture 6 - Controller Design
Lecture 7 - Control algorithm and State diagram
Lecture 8 - Case study 1
Lecture 9 - FSM issues 1
Lecture 10 - FSM Issues 2
Lecture 11 - FSM Issues 3
Lecture 12 - FSM Issues 4
Lecture 13 - FSM Issues 5
Lecture 14 - Synchronization 1
Lecture 15 - Synchronization 2
Lecture 16 - Case study 2
Lecture 17 - Case study on FPGA Board
Lecture 18 - Entity, Architecture and Operators
Lecture 19 - Concurrency, Data flow and Behavioural models
Lecture 20 - Structural Model, Simulation
Lecture 21 - Simulating Concurrency
Lecture 22 - Classes and Data types
Lecture 23 - Concurrent statements and Sequential statements
Lecture 24 - Sequential statements and Loops
Lecture 25 - Modelling flip-flops, Registers
Lecture 26 - Synthesis of Sequential circuits
Lecture 27 - Libraries and Packages
Lecture 28 - Operators, Delay modelling
Lecture 29 - Delay modelling

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Lecture 30 - VHDL Examples
Lecture 31 - VHDL coding of FSM
Lecture 32 - VHDL Test bench
Lecture 33 - VHDL Examples, FSM Clock
Lecture 34 - Evolution of PLDs
Lecture 35 - Simple PLDs
Lecture 36 - Simple PLDs
Lecture 37 - Complex PLDs
Lecture 38 - FPGA Introduction
Lecture 39 - FPGA Interconnection, Design Methodology
Lecture 40 - Xilinx Virtex FPGA’s CLB
Lecture 41 - Xilinx Virtex Resource Mapping, IO Block
Lecture 42 - Xilinx Virtex Clock Tree
Lecture 43 - FPGA Configuration
Lecture 44 - Altera and Actel FPGAs
Lecture 30 - LDPC Code Terminology
Lecture 31 - Gallager Decoding Algorithm A
Lecture 32 - BP Decoding of LDPC Codes
Lecture 33 - BP Decoding (Continued)
Lecture 34 - Density Evolution under BP decoding
Lecture 35 - Convergence & Concentration Theorem - LDPC Codes
Lecture 36 - A Construction for Finite Fields
Lecture 37 - Finite Fields
Lecture 38 - Deductive Approach to Finite Fields
Lecture 39 - Subfields of a Finite field
Lecture 40 - Transform Approach to Cyclic Codes
Lecture 41 - Estimating the Parameters of a Cyclic Code
Lecture 42 - Decoding Cyclic Codes
NPTEL Video Course - Electronics and Communication Engineering - Nanoelectronics: Devices and Materials

Subject Co-ordinator - Dr. Navakanta Bhat, Prof. K.N. Bhat, Dr. S.A. Shivashankar

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Nanoelectronics
Lecture 2 - CMOS Scaling Theory
Lecture 3 - Short Channel Effects
Lecture 4 - Subthreshold Conduction
Lecture 5 - Drain Induced Barrier Lowering
Lecture 6 - Channel and Source / Drain Engineering
Lecture 7 - CMOS Process Flow
Lecture 8 - Gate oxide scaling and reliability
Lecture 9 - High-k gate dielectrics
Lecture 10 - Metal gate transistor
Lecture 11 - Industrial CMOS Technology
Lecture 12 - Ideal MOS C-V Characteristics
Lecture 13 - Effect of non idealities on C-V
Lecture 14 - MOS Parameter Extraction from C-V Characteristics
Lecture 15 - MOS Parameter Extraction from I-V Characteristics
Lecture 16 - MOSFET Analysis, sub-threshold swing Å SÅ
Lecture 17 - Interface state density effects on Å SÅ . Short Channel Effects (SCE) and Drain Induced Barrier Lowering (DIBL)
Lecture 18 - Velocity Saturation, Ballistic transport, and Velocity Overshoot Effects and Injection Velocity
Lecture 19 - SOI Technology and comparisons with Bulk Silicon CMOS technology
Lecture 20 - SOI MOSFET structures, Partially Depleted (PD)and Fully Depleted (FD) SOIMOSFETs
Lecture 21 - FD SOI MOSFET
Lecture 22 - Sub-threshold Slope & SCE suppression in FD SOI MOSFET, Volume Inversion and Ultra thin (UTFD) SOIMOSFETs
Lecture 23 - Need for MS contact Source/Drain Junction in Nano scale MOSFETs
Lecture 24 - Rectifying and Ohmic contacts and challenges in MS junction source drain MOSFET Technology
Lecture 25 - Effect of Interface states and Fermi level pinning on MS contacts on Si and passivation techniques
Lecture 26 - Germanium as an alternate to silicon for high performance MOSFETs and the challenges in Germanium technology
Lecture 27 - Germanium MOSFT technology and recent results on surface passivated Ge MOSFETs
Lecture 28 - Compound semiconductors and hetero junction FETs for high performance
Lecture 29 - GaAs MESFETs

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Lecture 30 - Hetero-junctions and High Electron Mobility Transistors (HEMT)
Lecture 31 - Introduction to Nanomaterials
Lecture 32 - Basic Principles of Quantum Mechanics
Lecture 33 - Basic Principles of Quantum Mechanics (Continued...)
Lecture 34 - Energy bands in crystalline solids
Lecture 35 - Quantum structures and devices
Lecture 36 - Crystal growth and nanocrystals
Lecture 37 - Nanocrystals and nanostructured thin films
Lecture 38 - Nanowires and other nanostructures
Lecture 39 - Carbon Nanostructures and CVD
Lecture 40 - Atomic layer deposition (ALD)
Lecture 41 - Characterisation of nanomaterials
Lecture 1 - Introduction to Statistical Pattern Recognition
Lecture 2 - Overview of Pattern Classifiers
Lecture 3 - The Bayes Classifier for minimizing Risk
Lecture 4 - Estimating Bayes Error; Minimax and Neymann-Pearson classifiers
Lecture 5 - Implementing Bayes Classifier; Estimation of Class Conditional Densities
Lecture 6 - Maximum Likelihood estimation of different densities
Lecture 7 - Bayesian estimation of parameters of density functions, MAP estimates
Lecture 8 - Bayesian Estimation examples; the exponential family of densities and ML estimates
Lecture 9 - Sufficient Statistics; Recursive formulation of ML and Bayesian estimates
Lecture 10 - Mixture Densities, ML estimation and EM algorithm
Lecture 11 - Convergence of EM algorithm; overview of Nonparametric density estimation
Lecture 12 - Convergence of EM algorithm, Overview of Nonparametric density estimation
Lecture 13 - Nonparametric estimation, Parzen Windows, nearest neighbour methods
Lecture 14 - Linear Discriminant Functions; Perceptron -- Learning Algorithm and convergence proof
Lecture 15 - Linear Least Squares Regression; LMS algorithm
Lecture 16 - AdaLinE and LMS algorithm; General nonliner least-squares regression
Lecture 17 - Logistic Regression; Statistics of least squares method; Regularized Least Squares
Lecture 18 - Fisher Linear Discriminant
Lecture 19 - Linear Discriminant functions for multi-class case; multi-class logistic regression
Lecture 20 - Learning and Generalization; PAC learning framework
Lecture 21 - Overview of Statistical Learning Theory; Empirical Risk Minimization
Lecture 22 - Consistency of Empirical Risk Minimization
Lecture 23 - Consistency of Empirical Risk Minimization; VC-Dimension
Lecture 24 - Complexity of Learning problems and VC-Dimension
Lecture 25 - VC-Dimension Examples; VC-Dimension of hyperplanes
Lecture 26 - Overview of Artificial Neural Networks
Lecture 27 - Multilayer Feedforward Neural networks with Sigmoidal activation functions;
Lecture 28 - Backpropagation Algorithm; Representational abilities of feedforward networks
Lecture 29 - Feedforward networks for Classification and Regression; Backpropagation in Practice
Lecture 30 - Radial Basis Function Networks; Gaussian RBF networks
Lecture 31 - Learning Weights in RBF networks; K-means clustering algorithm
Lecture 32 - Support Vector Machines -- Introduction, obtaining the optimal hyperplane
Lecture 33 - SVM formulation with slack variables; nonlinear SVM classifiers
Lecture 34 - Kernel Functions for nonlinear SVMs; Mercer and positive definite Kernels
Lecture 35 - Support Vector Regression and $\varepsilon$-insensitive Loss function, examples of SVM learning
Lecture 36 - Overview of SMO and other algorithms for SVM; $\varepsilon$-SVM and $\varepsilon$-SVR; SVM as a risk minimizer
Lecture 37 - Positive Definite Kernels; RKHS; Representer Theorem
Lecture 38 - Feature Selection and Dimensionality Reduction; Principal Component Analysis
Lecture 39 - No Free Lunch Theorem; Model selection and model estimation; Bias-variance trade-off
Lecture 40 - Assessing Learnt classifiers; Cross Validation;
Lecture 41 - Bootstrap, Bagging and Boosting; Classifier Ensembles; AdaBoost
Lecture 42 - Risk minimization view of AdaBoost
NPTEL Video Course - Electronics and Communication Engineering - Analog Circuits and Systems 1

Subject Co-ordinator - Prof. K. Radhakrishna Rao

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Sensors, Signals and Systems
Lecture 2 - Role of Analog Signal Processing in Electronic Products - Part I
Lecture 3 - Role of Analog Signal Processing in Electronic Products - Part II
Lecture 4 - Analog Signal Processing using One Port Networks
Lecture 5 - Synthesis of Amplifiers using Nullators and Norators
Lecture 6 - Passive Electronic Devices for Analog Signal Processing
Lecture 7 - Active Devices for Analog Signal Processing Systems
Lecture 8 - Electronic Devices for Analog Circuits - Part I
Lecture 9 - Electronic Devices for Analog Circuits - Part II
Lecture 10 - Feedback in Systems
Lecture 11 - Static Characteristic of Feedback Systems
Lecture 12 - Dynamic Behavior of Feedback Systems - Part I
Lecture 13 - Dynamic Behavior of Feedback Systems - Part II
Lecture 14 - Design of Feedback Amplifiers - Part I
Lecture 15 - Design of Feedback Amplifiers - Part II
Lecture 16 - Design of Feedback Amplifiers and Instrumentation Amplifiers
Lecture 17 - Non-linear Analog Signal Processing
Lecture 18 - DC Voltage Regulators
Lecture 19 - Filters - Approximations to ideal filter functions
Lecture 20 - Passive Filters - Part I
Lecture 21 - Active Filters - Part I
Lecture 22 - Passive Filters - Part II
Lecture 23 - Active Filters - Part II
Lecture 24 - Passive Filters
Lecture 25 - Active Filters
Lecture 26 - Active Filters
Lecture 27 - State Space Filters
Lecture 28 - Universal Active Filter - Effect of Active Device GB
Lecture 29 - State-Space Filters (Tuning of Filters)

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Lecture 30 - Automatic Tuning of Filters (PLL) and Review of Filter Design
Lecture 31 - Waveform Generation
Lecture 32 - LC Oscillator - Effect of Non-idealities
Lecture 33 - Transconductor based Oscillator
Lecture 34 - Regenerative Comparators and Non-Sinusoidal Oscillators
Lecture 35 - Non-Sinusoidal Oscillators and VCO (FM & FSK Generators)
Lecture 36 - Phase and Frequency Followers
Lecture 37 - Frequency Locked Loop (Popularly known as PLL)
Lecture 38 - Design of PLL and FLL
Lecture 39 - Analog System Design
NPTEL Video Course - Electronics and Communication Engineering - NOC: Design and Simulation of DC-DC converters

Subject Co-ordinator - Prof. L. Umanand
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - System Overview
Lecture 2 - Understanding Rectifier with C-filter
Lecture 3 - Setting up gEDA, ngSpice and Octave
Lecture 4 - Simulation walk-through
Lecture 5 - Designing the rectifier capacitor filter circuit
Lecture 6 - Startup surge limiting
Lecture 7 - DC-DC converter concepts
Lecture 8 - Buck, Boost and Buck-Boost Converters
Lecture 9 - Simulation Example of Buck Converter
Lecture 10 - Understanding Buck Converter
Lecture 11 - Understanding Boost and Buck-Boost
Lecture 12 - Forward Converter Topology
Lecture 13 - Waveforms and Design
Lecture 14 - Simulation of Forward Converter
Lecture 15 - Forward Converter with Lossless Core Reset
Lecture 16 - Transformer Design
Lecture 17 - Inductor Design
Lecture 18 - Flyback Converter Topology
Lecture 19 - Pushpull Converter
Lecture 20 - Half and Full Bridge Converters
Lecture 21 - Close Loop Operation of Converters
Lecture 22 - Simulation examples
Lecture 23 - Multi-Output Converters
Lecture 24 - Concluding Remarks

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NPTEL Video Course - Electronics and Communication Engineering - NOC: Enclosure Design of Electronics Equipment

Subject Co-ordinator - Prof. N. V Chalapathi Rao
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Enclosure design for Electronics Equipment Introduction
Lecture 2 - Aspects and features that are non electrical and are essential to Electronic Product Realisation
Lecture 3 - Enclosure Design in electronic equipment
Lecture 4 - Design as applied to small electronics products and projects
Lecture 5 - Sketching in design for communication
Lecture 6 - Sketching as a tool with example and exercise
Lecture 7 - Sketching Part 2
Lecture 8 - Enclosures to Product design
Lecture 9 - Examples of product enclosures ID_PD
Lecture 10 - Enclosures with detailing
Lecture 11 - Alternate Designs in an everyday item
Lecture 12 - Sheet metal in small equipment (PSU)
Lecture 13 - Layouts and Materials of small equipment
Lecture 14 - Materials used for construction
Lecture 15 - Materials choice
Lecture 16 - Aluminium for common equipment
Lecture 17 - Use of Aluminium extrusions
Lecture 18 - Application of Sheet metal
Lecture 19 - Sheet Metal bending
Lecture 20 - Development of enclosures for bending
Lecture 21 - Video of Fabrication
Lecture 22 - What can be done in the lab Bending
Lecture 23 - Issues in bending and folding
Lecture 24 - Making a quick model
Lecture 25 - Detailing in plastic
Lecture 26 - Fabricating with flat plastic
Lecture 27 - Video in ID Lab
Lecture 28 - Off the shelf enclosures
Lecture 29 - Ready made enclosures
Lecture 30 - Application documentation and Selection
Lecture 31 - Index of protection, Safety
Lecture 32 - NEMA and related
Lecture 33 - Testing for IP class
Lecture 34 - Sealed Enclosures Video
Lecture 35 - Public utility boxes
Lecture 36 - EMI Sealing
Lecture 37 - Sealed Enclosures 2
Lecture 38 - Gasketing practice
Lecture 39 - Gasketing Basics
Lecture 40 - Off the shelf Aluminum enclosures
Lecture 41 - Understanding
Lecture 42 - Heat sink enclosures
Lecture 43 - Detailing of Built in Heat sink boxes
Lecture 44 - Connector basics
Lecture 45 - Connectors - Part 2
Lecture 46 - Common connectors
Lecture 47 - Connectors (multi way) and CoAx
Lecture 48 - MIL C connectors
Lecture 49 - CAD in Layout Drawing
Lecture 50 - Types of CAD
Lecture 51 - CAD for enclosure Design
Lecture 52 - Egpt layout with CAD
Lecture 53 - CAD sample Example
Lecture 54 - CAD Layout
Lecture 55 - Detailing with CAD
Lecture 56 - Integrating Products with CAD
Lecture 57 - Product Detailing
Lecture 58 - Components CAD Physical Models
Lecture 59 - Sheet Metal and Plastic common details
Lecture 60 - Sample of Simple Organic Shapes
Lecture 61 - Conclusion
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - NOC: Design of Photovoltaic Systems

Subject Co-ordinator - Prof. L. Umanand
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - A historical perspective
Lecture 2 - PV cell characteristics and equivalent circuit
Lecture 3 - Model of PV cell
Lecture 4 - Short Circuit, Open Circuit and peak power parameters
Lecture 5 - Datasheet study
Lecture 6 - Cell efficiency
Lecture 7 - Effect of temperature
Lecture 8 - Temperature effect calculation example
Lecture 9 - Fill factor
Lecture 10 - PV cell simulation
Lecture 11 - Identical cells in series
Lecture 12 - Load line
Lecture 13 - Non-identical cells in series
Lecture 14 - Protecting cells in series
Lecture 15 - Interconnecting modules in series
Lecture 16 - Simulation of cells in series
Lecture 17 - Identical cells in parallel
Lecture 18 - Non-identical cells in parallel
Lecture 19 - Protecting cells in parallel
Lecture 20 - Interconnecting modules
Lecture 21 - Simulation of cells in parallel
Lecture 22 - Practicals - Measuring i-v characteristics
Lecture 23 - Practicals - PV source emulation
Lecture 24 - Introduction
Lecture 25 - Insolation and irradiance
Lecture 26 - Insolation variation with time of day
Lecture 27 - Earth centric viewpoint and declination
Lecture 28 - Solar geometry
Lecture 29 - Insolation on a horizontal flat plate

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Lecture 30 - Energy on a horizontal flat plate
Lecture 31 - Sunrise and sunset hour angles
Lecture 32 - Examples
Lecture 33 - Energy on a tilted flat plate
Lecture 34 - Energy plots in octave
Lecture 35 - Atmospheric effects
Lecture 36 - Airmass
Lecture 37 - Energy with atmospheric effects
Lecture 38 - Clearness index
Lecture 39 - Clearness index and energy scripts in Octave
Lecture 40 - Sizing PV for applications without batteries
Lecture 41 - Sizing PV Examples
Lecture 42 - Batteries - intro
Lecture 43 - Batteries - Capacity
Lecture 44 - Batteries - C-rate
Lecture 45 - Batteries - Efficiency
Lecture 46 - Batteries - Energy and power densities
Lecture 47 - Batteries - Comparison
Lecture 48 - Battery selection
Lecture 49 - Other energy storage methods
Lecture 50 - PV system design - Load profile
Lecture 51 - PV system design - Days of autonomy and recharge
Lecture 52 - PV system design - Battery size
Lecture 53 - PV system design - PV array size
Lecture 54 - Design toolbox in octave
Lecture 55 - MPPT concept>
Lecture 56 - Input impedance of DC-DC converters - Boost converter
Lecture 57 - Input impedance of DC-DC converters - Buck converter
Lecture 58 - Input impedance of DC-DC converters - Buck-Boost converter
Lecture 59 - Input impedance of DC-DC converters - PV module in SPICE
Lecture 60 - Input impedance of DC-DC converters -Simulation - PV and DC-DC interface
Lecture 61 - Impedance control methods
Lecture 62 - Impedance control methods- Reference cell - voltage scaling
Lecture 63 - Impedance control methods- Reference cell - current scaling
Lecture 64 - Impedance control methods- Reference cell - Sampling method
Lecture 65 - Impedance control methods- Reference cell - Power slope method 1
Lecture 66 - Impedance control methods- Reference cell - Power slope method 2
Lecture 67 - Impedance control methods- Reference cell - Hill climbing method
Lecture 68 - Practical points - Housekeeping power supply
Lecture 108 - 1ph d-q controlled grid connection
Lecture 109 - 3ph PV-Grid interface example
Lecture 110 - SVPWM - discrete implementation
Lecture 111 - SVPWM - analog implementation
Lecture 112 - Application of integrated magnetics
Lecture 113 - Life cycle Costing Growth models
Lecture 114 - Life cycle Costing Growth model examples
Lecture 115 - Life cycle Costing Annual payment and present worth factor
Lecture 116 - Life cycle Costing LCC with example - 1
Lecture 117 - Life cycle Costing LCC example - 2
Lecture 118 - Life cycle Costing LCC example - 3
NPTEL Video Course - Electronics and Communication Engineering - NOC: Photonic Integrated Circuits

Subject Co-ordinator - Dr. Srinivas Talabatulla

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Photonic Integrated Circuits
Lecture 2 - Optical Waveguide Theory - Symmetric Waveguides
Lecture 3 - Optical Waveguide Theory - Asymmetric Waveguides
Lecture 4 - Vector Modes
Lecture 5 - Channel Waveguide
Lecture 6 - Directional Coupler and Coupled Mode Theory
Lecture 7 - Passive Devices and Beam Propagation Method
Lecture 8 - Dynamic Devices
Lecture 9 - Integrated optical Systems and Applications
Lecture 10 - Fabrication and Characterisation
Lecture 11 - MOEMS
Lecture 12 - Ring Resonators
Lecture 13 - Photonic Band Gap Devices
Lecture 14 - Lecture Summary
NPTEL Video Course - Engineering Design - NOC: Innovation by Design

Subject Co-ordinator - Dr. B.K. Chakravarthy
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - The Seven Concerns
Lecture 2 - Design Thinking and Collaboration
Lecture 3 - Challenges to Innovation
Lecture 4 - Understanding Users
Lecture 5 - Arriving at Design Insights
Lecture 6 - Prototyping for User Feedback
Lecture 7 - 1st C The Cause
Lecture 8 - Crossing the First Pitfall
Lecture 9 - Trial and Error
Lecture 10 - User Feedback for Development
Lecture 11 - New users, new needs to meet
Lecture 12 - Knowing the Context
Lecture 13 - 2nd C The Context
Lecture 14 - The Basic Need
Lecture 15 - Ingenious Attempts
Lecture 16 - Further Insights
Lecture 17 - The Working Rig
Lecture 18 - Concepts generation
Lecture 19 - Experiencing the Product
Lecture 20 - Refinements
Lecture 21 - 3rd C - The Comprehension
Lecture 22 - Understanding Constraints
Lecture 23 - Positioning the Product
Lecture 24 - Exploring Possibilities
Lecture 25 - More Experiments
Lecture 26 - Understanding the Technology
Lecture 27 - At the 2nd Valley of Death
Lecture 28 - Finishing Touches
Lecture 29 - The Check

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Lecture 30 - The Cause
Lecture 31 - The Product, the Users and the Context
Lecture 32 - The Prototyping
Lecture 33 - User needs
Lecture 34 - The Crucial Step Missed
Lecture 35 - 5th C The Conception
Lecture 36 - Synchronic Studies
Lecture 37 - One product, many problems
Lecture 38 - Concept Clusters
Lecture 39 - From idea to product
Lecture 40 - Prototyping
Lecture 41 - Materials and Technologies
Lecture 42 - Collaborative Efforts
Lecture 43 - 6th C - The Crafting
Lecture 44 - Recap
Lecture 45 - The Manufacturing Challenge
Lecture 46 - The User Feedback
Lecture 47 - The Iterative Process
Lecture 48 - 7th C - The Connection
Lecture 49 - The Seed for Innovation
Lecture 50 - Pinnacle for Innovation
Lecture 51 - The Innovation Timeline
Lecture 52 - The Innovation Champions
Lecture 53 - The Innovation Domains
Lecture 54 - The Innovation Templates
Lecture 55 - The Serial Innovation
NPTEL Video Course - Engineering Design - NOC:Understanding Design

Subject Co-ordinator - Dr. B.K. Chakravarthy

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - An Introduction to Design
Lecture 2 - The many notions of design
Lecture 3 - Design as a process and a product
Lecture 4 - The evolution of design
Lecture 5 - Design engages with many disciplines
Lecture 6 - Design is concerned with the user
Lecture 7 - Good design, bad design
Lecture 8 - Users and Contexts
Lecture 9 - Multiple users, differing contexts
Lecture 10 - Understanding user experience
Lecture 11 - Design for a meaningful impact
Lecture 12 - Design and Society
Lecture 13 - Community and Collaboration
Lecture 14 - Understanding Contexts
Lecture 15 - Knowledge and Access
Lecture 16 - Meeting Needs
Lecture 17 - Function, Context and Consequences
Lecture 18 - Design and Sustainability
Lecture 19 - The cost of looking the other way
Lecture 20 - Sustainability practices in daily life
Lecture 21 - The perspective of engineering
Lecture 22 - Understanding embodied energy
Lecture 23 - The userâ€™s role in sustainability
Lecture 24 - Framing the worldâ€™s future
Lecture 25 - Design and industry
Lecture 26 - Understanding varied user needs
Lecture 27 - Success through new materials and manufacturing
Lecture 28 - Pushing the boundaries of mass production
Lecture 29 - A Classic chair for all times

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Lecture 30 - Breaking familiar assumptions
Lecture 31 - Design and Collaboration
Lecture 32 - Team work
Lecture 33 - Collaborating with unlikely partners
Lecture 34 - Principles of collaboration
Lecture 35 - Design thinking
Lecture 36 - Feedback and assessment
Lecture 37 - Innovation by Design
Lecture 38 - Facilitating the reach of a traditional craft
Lecture 39 - Pitfalls of innovation
Lecture 40 - The seven concerns of innovation
Lecture 41 - From a concern to a palki
Lecture 42 - A little design goes a long way
NPTEL Video Course - Engineering Design - Ergonomics for beginners: Industrial design perspective

Subject Co-ordinator - Prof. Debkumar Chakrabarti

Co-ordinating Institute - IIT - Guwahati

Lecture 1 - Introduction
Lecture 2 - Design today - human aid to lifestyle
Lecture 3 - Journey, fitting task to man
Lecture 4 - Domain, philosophy and objective
Lecture 5 - Mutual task comfort
Lecture 6 - Ergonomics/ human factors fundamentals
Lecture 7 - Physiology, (work physiology) and stress
Lecture 8 - Human body - structure and function, anthropometrics
Lecture 9 - Anthropometry
Lecture 10 - Static and dynamic anthropometry
Lecture 11 - Anthropometry landmark
Lecture 12 - Anthropometry
Lecture 13 - Measuring techniques
Lecture 14 - Statistical treatment of data and
Lecture 15 - Human body-structure and function
Lecture 16 - Posture and job relation
Lecture 17 - Posture and body supportive devices
Lecture 18 - Chair characteristics
Lecture 19 - Vertical work surface
Lecture 20 - Horizontal work surface
Lecture 21 - Movement
Lecture 22 - Work Counter
Lecture 23 - Communication and cognitive issues
Lecture 24 - Psycho-social behaviour aspects,
Lecture 25 - Information processing and perception
Lecture 26 - Cognitive aspects and mental workload
Lecture 27 - Human error and risk perception
Lecture 28 - Visual performance
Lecture 29 - Visual displays
Lecture 30 - Environmental factors influencing
Lecture 31 - Ergonomics design methodology
Lecture 32 - Ergonomics criteria/check
Lecture 33 - Design process involving

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Lecture 34 - Some checklist for task easiness
Lecture 35 - Occupational safety and stress at workplace
Lecture 36 - Workstation design
Lecture 37 - Furniture support
Lecture 38 - Vertical arm reach and relevant
Lecture 39 - Humanising design
Lecture 40 - Scope for exploration
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Engineering Design - NOC: System Design for Sustainability

Subject Co-ordinator - Prof. Sharmistha Banerjee
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Sustainability and Sustainable Development - Understanding Un-sustainability and need for Sustainability
Lecture 2 - Sustainability and Sustainable Development - Definitions
Lecture 3 - Sustainability and Sustainable Development - Pathway
Lecture 4 - Systems Approach to Design
Lecture 5 - Evolution of sustainability within Design
Lecture 6 - Diverse Approaches to Design for Sustainability - Part A
Lecture 7 - Diverse Approaches to Design for Sustainability - Part B
Lecture 8 - Relationship between approaches to Design for Sustainability and the application context
Lecture 9 - Product Life Cycle Design - Methods and Strategies
Lecture 10 - Product Life Cycle Assessment - Part A
Lecture 11 - Product Life Cycle Assessment - Part B
Lecture 12 - Life Cycle Assessment using Software
Lecture 13 - Design for Product Life Cycle
Lecture 14 - Product-Service System Design - Definition and Types
Lecture 15 - Sustainable Product-Service System Design - Definition and Examples
Lecture 16 - Sustainable Product-Service System Design - Examples
Lecture 17 - Khadi Movement as a precursor to PSS thinking
Lecture 18 - Sustainable Product-Service System Design - Transition Paths, Strategy and Challenges
Lecture 19 - Sustainable Product-Service System Design - Methods and Tools - Part A
Lecture 20 - Sustainable Product-Service System Design - Methods and Tools - Part B
Lecture 21 - Sustainable Product-Service System Design - Methods and Tools - Part C
Lecture 22 - Sustainable Product-Service System Design - Methods and Tools - Part D
Lecture 23 - Sustainable Product-Service System Design - Methods and Tools - Part E
Lecture 24 - Sustainable Product-Service System Design - Methods and Tools - Part F
Lecture 25 - Sustainable Product-Service System Design - Methods and Tools - Part G
Lecture 26 - Sustainable Product-Service System Design - Methods and Tools (Summary)
Lecture 27 - Sufficiency Economy Philosophy applied to Sustainable PSS Thinking
Lecture 28 - LCA of PSS
Lecture 29 - Sustainable Product-Service System Design Applied to Distributed Economy

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Lecture 30 - Other Design for Sustainability Tools and approaches - Architecture
Lecture 31 - Other Design for Sustainability Tools and approaches - Agriculture
Lecture 32 - Other Design for Sustainability Tools and approaches - Cities and communities
Lecture 33 - Other Design for Sustainability Tools and approaches - Carbon Footprint
Lecture 34 - Co-design Session
Lecture 35 - Design for Sustainability - Engineering Design Criteria and Guidelines
Lecture 36 - Design for Sustainability - Engineering Design Criteria and Guidelines (ICS Toolkit)
Lecture 37 - Design for Sustainability - Concluding Lecture - Part A
Lecture 38 - Design for Sustainability - Concluding Lecture - Part B
Lecture 1 - Introduction to Innovation
Lecture 2 - Design Inspired Innovation and User Innovation
Lecture 3 - Product Design - Part I
Lecture 4 - Product Design - Part II
Lecture 5 - Product Design - Part III
Lecture 6 - Introduction to User study and Problem and need Identification
Lecture 7 - Contextual Enquiry
Lecture 8 - Physical model
Lecture 9 - Creative Techniques and tools for concept generation, concept evaluation
Lecture 10 - Importance and Overview of Human Factors/Ergonomics in Product Design
Lecture 11 - Physical Ergonomics Principles and Issues (Part 1) - Anthropometry
Lecture 12 - Physical Ergonomics Principles and Issues (Part 2) - Biomechanics
Lecture 13 - Cognitive and Emotional aspects of Human Factors with respect to Product Design and Innovation
Lecture 14 - Tools and Techniques for Prototyping
Lecture 15 - Evaluation Tools and Techniques for User-Product Interaction
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Engineering Design - NOC: Interaction Design

Subject Co-ordinator - Prof. Abhishek Shrivastava
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic Definitions and Concepts in Interaction Design
Lecture 2 - Relevance of goals in Interaction Design
Lecture 3 - System model, mental model, and representation model
Lecture 4 - Interaction Models and Interaction Paradigms
Lecture 5 - Interaction paradigm
Lecture 6 - Overview of Goal Directed Design Process
Lecture 7 - The Research phase in Goal Directed Design Process - Part 1
Lecture 8 - The Research phase in Goal Directed Design Process - Part 2
Lecture 9 - The Research phase in Goal Directed Design Process - Part 3
Lecture 10 - The Modeling phase in Goal Directed Design Process
Lecture 11 - The Requirement definition phase in Goal Directed Design Process - Part 1
Lecture 12 - The Requirement definition phase in Goal Directed Design Process - Part 2
Lecture 13 - The Framework definition and refinement phase in Goal Directed Design Process - Interaction framework
Lecture 14 - The Framework definition and refinement phase in Goal Directed Design Process - Visual design and application framework
Lecture 15 - Design evaluation and testing

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NPTEL Video Course - Engineering Design - NOC:Ergonomics in Automotive Design

Subject Co-ordinator - Dr. Sougata Karmakar
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Automotive Ergonomics
Lecture 2 - Driver Information Acquisition and Processing
Lecture 3 - Anthropometric and Biomechanical Data in Automotive Design
Lecture 4 - Occupant Packaging
Lecture 5 - Principles of Control and Display Design
Lecture 6 - Usability evaluation of In-vehicle control and displays
Lecture 7 - Human Fields of View and Driver's Fields of View
Lecture 8 - Vehicle Entry and Exit
Lecture 9 - Driver Distraction and Driving Performance Measurement
Lecture 10 - Driver Workload Measurement
Lecture 11 - Virtual Ergonomics Evaluation Technique and its application in Automotive Design
Lecture 12 - Automotive Craftsmanship

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NPTEL Video Course - Engineering Design - NOC: Ergonomics Workplace Analysis

Subject Co-ordinator - Prof. Urmila R. Salve

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Ergonomics Workplace Assessment - I
Lecture 2 - Introduction to Ergonomics Workplace Assessment - II
Lecture 3 - Task Analysis
Lecture 4 - Physiological Fundamentals of Workplace Evaluation
Lecture 5 - Biomechanics in Workplace Evaluation
Lecture 6 - Assessment of Physical Job Demand
Lecture 7 - Assessment of Physical and Cognitive Work with Psychophysiological Methods
Lecture 8 - Assessment of Physical and Cognitive Work with Psychophysiological Methods
Lecture 9 - Assessment of Mental Workload
Lecture 10 - Neuroergonomics in Work Evaluation
Lecture 11 - Psychosocial Aspect of Workplace Analysis
Lecture 12 - Assessment of Thermal Environment
Lecture 13 - Assessment of Visual Environment
Lecture 14 - Analysis of Auditory Environment and Noise Pollution

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NPTEL Video Course - Engineering Design - Principles of Engineering System Design

Subject Co-ordinator - Dr. T. Asokan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to system Design
Lecture 2 - Engineering systems Classification & examples
Lecture 3 - Modern System design processes
Lecture 4 - Six functions of design process
Lecture 5 - Tools for enabling creative development
Lecture 6 - Team Development
Lecture 7 - System Requirement Analysis
Lecture 8 - Originating Requirements
Lecture 9 - Functional Architecture Development
Lecture 10 - Functional Decomposition
Lecture 11 - Functional Decomposition
Lecture 12 - Physical Architecture Development
Lecture 13 - Implementing Fault Tolerance in Physical Architecture
Lecture 14 - Operational Architecture Development - Part I
Lecture 15 - Operational Architecture Development - Part II
Lecture 16 - Interface architecture Development
Lecture 17 - Interface standards and Design process
Lecture 18 - Integration and qualification
Lecture 19 - Qualification planning and methods
Lecture 20 - System Design Example
Lecture 21 - System Design Examples
Lecture 22 - System Design Examples (Continued...)
Lecture 23 - Graphical Modelling Techniques
Lecture 24 - Process modeling
Lecture 25 - Behavior modeling
Lecture 26 - Graphical Modelling Techniques (Continued...)
Lecture 27 - System modeling and simulation
Lecture 28 - Bondgraph modeling of Dyanamic systems
Lecture 29 - Decision making in System Design

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Lecture 30 - Decision making in System Design (Continued...)

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NPTEL Video Course - Engineering Design - Vehicle Dynamics

Subject Co-ordinator - Dr. R. Krishnakumar
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Vehicle Dynamics
Lecture 2 - Longitudinal Dynamics
Lecture 3 - Vehicle Load Distribution - Acceleration and Braking
Lecture 4 - Brake Force Distribution, Braking Efficiency and Braking Distance
Lecture 5 - Tractor - Semi Trailer
Lecture 6 - Tire Mechanics - An Introduction
Lecture 7 - Mechanical Properties of Rubber
Lecture 8 - Slip, Grip and Rolling Resistance
Lecture 9 - Tire Construction and Force Development
Lecture 10 - Contact Patch and Contact Pressure Distribution
Lecture 11 - Tire Brush Model
Lecture 12 - Lateral Force Generation
Lecture 13 - Ply Steer and Conicity - Part 1
Lecture 14 - Ply Steer and Conicity - Part 2
Lecture 15 - Tire Models - Magic Formula
Lecture 16 - Classification of Tyre Models and Combined Slip
Lecture 17 - Lateral Dynamics - An Introduction
Lecture 18 - Lateral Dynamics - Bicycle Model
Lecture 19 - Lateral Dynamics - Stability and Steering Conditions
Lecture 20 - Understeer Gradient and State Space Approach
Lecture 21 - Handling Response of a Vehicle
Lecture 22 - Mimuro Plot for Lateral Transient Response - Part 1
Lecture 23 - Mimuro Plot for Lateral Transient Response - Part 2
Lecture 24 - Parameters affecting vehicle handling characteristics
Lecture 25 - Subjective and Objective Evaluation of Vehicle Handling - Part 1
Lecture 26 - Subjective and Objective Evaluation of Vehicle Handling - Part 2
Lecture 27 - Subjective and Objective Evaluation of Vehicle Handling and Rollover Protection
Lecture 28 - Rollover Prevention (Continued...) and Vertical Dynamics
Lecture 29 - Vertical Dynamics - An Introduction

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Lecture 30 - Vertical Dynamics - Quarter Car Model
Lecture 31 - Noise, Vibration and Harshness - Random Processes
Lecture 32 - Random Process and Conclusion (Continued...)
Lecture 1 - Introduction to Japanese scripts
Lecture 2 - Jiko shoukai (Self introduction)
Lecture 3 - Dochira kara desu ka (Where are you from?)
Lecture 4 - Senmon wa nan desu ka (What is your specialization?)
Lecture 5 - Kore wa hon desu (This is a book)
Lecture 6 - Ikura desu ka (How much is it?)
Lecture 7 - Ima nan-ji desu ka (What is the time now?)
Lecture 8 - Kaigi wa roku-ji-han kara desu (The meeting is from 6)
Lecture 9 - Ashita Tokyo e ikimasu. (I will go to Tokyo tomorrow)
Lecture 10 - Watashi wa mainichi roku-ji ni okimasu (I wake up at 6 oclock everyday)
Lecture 11 - Itsu Kanpur e kimashita ka (When did you come to Kanpur?)
Lecture 12 - Y?binkyoku wa asoko ni arimasu (The post office is over there)
Lecture 13 - Rao san wa doko ni imasu ka (Where is Mr. Rao?)
Lecture 14 - Pikuniku e ikimash? (Let`s go for a picnic)
Lecture 15 - Kesa pan to tamago o tabemashita (I ate eggs and bread for breakfast)
Lecture 16 - Depa-to no tonari no biru wa gink? desu (The building next to the department store is the bank)
Lecture 17 - Taj hoteru wa ookii hoteru desu (Hotel Taj is a big hotel)
Lecture 18 - Hoteru de nani o tabemashita ka (What did you eat at the hotel?)
Lecture 19 - Tokyo wa ?kikute kirei desu (Tokyo is big and beautiful)
Lecture 20 - Ko-hi- wa oishiku arimasen (Coffee is not tasty)
Lecture 21 - Hantai kotoba (Opposites)
Lecture 22 - Watashi wa mainichi miruku o nomimasu (I drink milk everyday)
Lecture 23 - Watashi wa oniisan ni kamera o moratta (I received a camera from my brother)
Lecture 24 - Nani o tabetai desu ka (What do you want to eat?)
Lecture 25 - Nani o sashigemasu ka (Giving and Receiving)
Lecture 26 - Sensei wa watashi ni hon o kuremashita (My teacher gave me a book)
Lecture 27 - Chotto matte kudasai (Just a minute please)
Lecture 28 - Ke-ki o tabete mite kudasai (Eat and see how is the cake)
Lecture 29 - Nani o shite imasu ka (What are you doing?)
Lecture 30 - Tokyo ni sunde imasu (I live in Tokyo)
Lecture 31 - Kanji ga kakemasu (I can write Kanji)
Lecture 32 - Im?to wa ningy? o hoshigatte imasu (My sister wants a doll)
Lecture 33 - Aisukuri-mu ga ke-ki yori suki desu (I like ice-cream more than cakes)
Lecture 34 - Kutsu o kai ni ikimasu (I am going to buy shoes)
Lecture 35 - Ashita motto atsuku narimasu (It is going to become very hot tomorrow)
Lecture 36 - Rainen Tokyo e iku to omoimasu (I think I will go to Tokyo next year)
Lecture 37 - Pen de kaite mo ii desu ka (Is it alright to write in pen?)
Lecture 38 - Comprehensions and Expressions
Lecture 39 - Basic Kanji
Lecture 40 - Basic Kanji
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - General - Astronomy in Ancient, Medieval and Early Telescopic Era of India
Subject Co-ordinator - Prof. Amitabha Ghosh
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Pre Siddhantic Astronomy
Lecture 3 - Siddhantic Astronomy
Lecture 4 - Astronomy in Medieval India
Lecture 5 - Introduction to Telescopic Astronomy and Concluding remarks
NPTEL Video Course - General - NOC: Stress Management

Subject Co-ordinator - Prof. Rajlakshmi Guha
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - What is Stress
Lecture 2 - Sources of stress
Lecture 3 - Types of Stress
Lecture 4 - Personality Factors and Stress
Lecture 5 - Stress and the College Student
Lecture 6 - Stress and Nervous System
Lecture 7 - Hypothalamic-Pituitary-Adrenal (HPA) Axis
Lecture 8 - Effect of Stress on Immune System
Lecture 9 - Health Risk Associated with Chronic Stress
Lecture 10 - Stress and Major Psychiatric Disorders
Lecture 11 - Understanding your stress level
Lecture 12 - Role of Personality Pattern, Self Esteem, Locus of Control
Lecture 13 - Role of Thoughts Beliefs and Emotions - I
Lecture 14 - Role of Thoughts Beliefs and Emotions - II
Lecture 15 - Life Situation Intrapersonal
Lecture 16 - Developing Cognitive Coping Skills
Lecture 17 - Autogenic Training, Imagery and Progressive Relaxation
Lecture 18 - Other Relaxation Techniques
Lecture 19 - Exercise and Health
Lecture 20 - DIY Strategies Stress Management
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - General - NOC: Outcome Based Pedagogic Principles for Effective Teaching

Subject Co-ordinator - Prof. Shyamal Kumar Das Mandal
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Need of 21st Century Education
Lecture 2 - Accreditation
Lecture 3 - Outcome based Learning
Lecture 4 - Approach to Design Outcome based Learning
Lecture 5 - Approach to Design Outcome based Learning (Continued...)
Lecture 6 - Instructional Design for Active Learning
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Lecture 19
Lecture 20

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NPTEL Video Course - General - Ayurvedic Inheritance of India

Subject Co-ordinator - Dr. M.S. Valiathan

Co-ordinating Institute - Manipal University

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Roots of Ayurveda
Lecture 2 - Traditional Medicine in Buddhist India
Lecture 3 - Period of Systematization
Lecture 4 - Philosophical ideas in Ayurveda
Lecture 5 - Human Body in Health
Lecture 6 - Human Body in Disease
Lecture 7 - Food and Drinks
Lecture 8 - Code for Healthy Living
Lecture 9 - Diseases
Lecture 10 - Diagnosis and Prognosis
Lecture 11 - Medical Treatment of Diseases
Lecture 12 - Materia Medica
Lecture 13 - Surgical Treatment of Diseases
Lecture 14 - Surgical Instruments
Lecture 15 - Treatment of fractures; some surgical procedures
Lecture 16 - Principles and methods of rejuvenation
Lecture 17 - Selection of Students
Lecture 18 - A Science Initiative in Ayurveda (ASIIA)
Lecture 19 - Ayurvedic Biology
Lecture 20 - Conclusion

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - General - NOC: Introduction to Research

Subject Co-ordinator - Dr. G. Phanikumar, Prof. C. Balaji, Dr. Arun K. Tangirala, Dr. Abhijit P. Deshpande, Prof. M.S. Ananth, Dr. Prathap Haridoss

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Insight into research
Lecture 2 - Role of Guide and Student
Lecture 3 - Art of Re-Search
Lecture 4 - Persistent small steps towards success
Lecture 5 - Overview of research
Lecture 6 - Overview of Literature Survey
Lecture 7 - Literature Survey using Web of Science
Lecture 8 - Literature Survey using Scopus
Lecture 9 - Writing Up
Lecture 10 - Tutorial on using BibTeX with LaTeX to add references to a document
Lecture 11 - Tutorial on using Microsoft Word with Bibliographic Sources
Lecture 12 - Tutorial on using Microsoft Word with endnote entries
Lecture 13 - Experimental skills
Lecture 14 - Data analysis - Part 1
Lecture 15 - Data analysis - Part 2
Lecture 16 - Modelling skills - Part 1
Lecture 17 - Modelling skills - Part 2
Lecture 18 - Safety in laboratory
Lecture 19 - How to make Technical presentation
Lecture 20 - Creativity in Research - Part 1
Lecture 21 - Creativity in research - Part 2
Lecture 22 - Creativity in research - Part 3
Lecture 23 - Technical Writing
Lecture 24 - Group discussion on Ethics in Research
Lecture 25 - Intellectual property - Part 1
Lecture 26 - Intellectual property - Part 2
Lecture 27 - DOE Part 1
Lecture 28 - DOE part 2
Lecture 29 - DOE part 3

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - General - NOC:Biology for engineers and other non-biologists

Subject Co-ordinator - Dr. Madhulika Dixit, Prof. G.K. Suraishkumar

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Origin of Life
Lecture 3 - Evolution
Lecture 4 - Cells
Lecture 5 - Biomolecules
Lecture 6 - Biomolecules
Lecture 7 - Biomolecules
Lecture 8 - Biomolecules
Lecture 9 - Biomolecules
Lecture 10 - Cell structure and function | Prokaryotes
Lecture 11 - Cell structure and function | Eukaryotes
Lecture 12 - Cell cycle
Lecture 13 - Cell division | mitosis
Lecture 14 - Cell division | meiosis
Lecture 15 - Culture growth
Lecture 16 - Mendelian genetics
Lecture 17 - Mendelian genetics
Lecture 18 - Mendelian genetics
Lecture 19 - Mendelian genetics
Lecture 20 - DNA replication
Lecture 21 - Transcription
Lecture 22 - Translation

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NPTEL Video Course - General - NOC:Digital and the Everyday - from Codes to Cloud

Subject Co-ordinator - Prof. Amit Prakash, Prof. Bidisha Chaudhuri

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the Course
Lecture 2 - Introduction to the Winter School
Lecture 3 - Socio-algorithmic processes and the Everyday - Part 1
Lecture 4 - Socio-algorithmic processes and the Everyday - Part 2
Lecture 5 - Socio-algorithmic processes and the Everyday - Part 3
Lecture 6 - Data Protection and Privacy Regulation in the Digital Era - Part 1
Lecture 7 - Data Protection and Privacy Regulation in the Digital Era - Part 2
Lecture 8 - Data Protection and Privacy Regulation in the Digital Era - Part 3
Lecture 9 - Data-driven Identities - Part 1
Lecture 10 - Data-driven Identities - Part 2
Lecture 11 - Data-driven Identities - Part 3
Lecture 12 - Promises and Challenges of e-Health - Part 1
Lecture 13 - Promises and Challenges of e-Health - Part 2
Lecture 14 - Promises and Challenges of e-Health - Part 3
Lecture 15 - Digital Finance - Part 1
Lecture 16 - Digital Finance - Part 2
Lecture 17 - Digital and our everyday interactions with the state - Part 1
Lecture 18 - Digital and our everyday interactions with the state - Part 2
Lecture 19 - Digital and our everyday interactions with the state - Part 3
Lecture 20 - Creating a Machine Zone through Affected Feedback
Lecture 21 - Creating a Machine Zone through Affected Feedback
Lecture 22 - Creating a Machine Zone through Affected Feedback

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - General - NOC: Effective Engineering Teaching in Practice
Subject Co-ordinator - Prof. G.K. Suraishkumar
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the course
Lecture 2 - An Inexperienced Engineering Teacher's View
Lecture 3 - From traditional lecturing to helping students learn - 1
Lecture 4 - From traditional lecturing to helping students learn - 2
Lecture 5 - Better learning (Bloom's Taxonomy)
Lecture 6 - Problem based learning (PBL) and Problem Solving - Part 1
Lecture 7 - Problem based learning (PBL) and Problem Solving - Part 2
Lecture 8 - Writing Learning Outcomes for a Course
Lecture 9 - Active Learning
Lecture 10 - Cooperative Group Learning
Lecture 11 - Flipped Classroom
Lecture 12 - Effective Laboratory Courses
Lecture 13 - Assessment - Part 1
Lecture 14 - Assessment - Part 2
Lecture 15 - How can we use research in education? - Part A1
Lecture 16 - How can we use research in education? - Part A2
Lecture 17 - The Class, as a Whole - Part A3
Lecture 18 - Psychological Type (Orientation) and Learning - Part B
Lecture 19 - Cognitive Development Theories â Two Main Examples - Part C
Lecture 20 - Learning Theories - Part D
Lecture 21 - Feedback and Reflection - Part 1
Lecture 22 - Feedback and Reflection - Part 2
Lecture 23 - Feedback and Reflection - Part 3
Lecture 24 - Live Session 1
Lecture 25 - Live Session 2

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Lecture 30 - Lens aberrations
Lecture 31 - Optical system of eyes
Lecture 32 - Photoreceptors
Lecture 33 - Sufficient resolution for VR
Lecture 34 - Light intensity
Lecture 35 - Eye movements
Lecture 36 - Eye movements (Continued...)
Lecture 37 - Eye movement issues for VR
Lecture 38 - Neuroscience of vision
Lecture 39 - Three Psychophysical Laws
Lecture 40 - Sensation and Perception
Lecture 41 - Psychophysics of Visual Perception
Lecture 42 - Gamma Encoding
Lecture 43 - Limiting Resolution
Lecture 44 - Depth perception
Lecture 45 - Depth perception (Continued...)
Lecture 46 - Motion perception from Visual System
Lecture 47 - Frame rates and displays
Lecture 48 - Frame rates and displays (Continued...)
Lecture 49 - Psychophysics of Depth Perception
Lecture 50 - Overview
Lecture 51 - Orientation tracking
Lecture 52 - Tilt drift correction
Lecture 53 - Yaw drift correction
Lecture 54 - Tracking with a camera
Lecture 55 - Perspective n-point problem
Lecture 56 - Filtering
Lecture 57 - Lighthouse approach
Lecture 58 - Visual Rendering-Overview
Lecture 59 - Visual Rendering-overview (Continued...)
Lecture 60 - Shading models
Lecture 61 - Rasterization
Lecture 62 - Pixel shading
Lecture 63 - VR-specific problems
Lecture 64 - Distortion shading
Lecture 65 - Post-rendering image warp
Lecture 66 - Why Haptics?
Lecture 67 - What is Haptics?
Lecture 68 - Branches of Haptics
Lecture 69 - Human Haptics - Tactile System
Lecture 70 - Kinesthetic System
Lecture 71 - Motor System
Lecture 72 - Haptic Devices and Interfaces - Kinesthetic Devices
Lecture 73 - Haptic Devices and Interfaces - Tactile Devices
Lecture 74 - Physics and Physiology
Lecture 75 - Auditory perception
Lecture 76 - Auditory localization
Lecture 77 - Rendering
Lecture 78 - Spatialization and display
Lecture 79 - Combining other senses
Lecture 80 - Interfaces - overview
Lecture 81 - Evaluation of VR Systems
Lecture 82 - Social interaction
Lecture 83 - System control
Lecture 84 - Manipulation
Lecture 85 - Locomotion
Lecture 86 - Principles of Perception
Lecture 87 - Introduction to Kalman Filter
Lecture 88 - Introduction to Extended Kalman Filter
Lecture 89 - Grand Challenges in VR/AR
Lecture 90 - Ultimate VR/AR System
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - General - NOC:Non-Conventional Energy Resources

Subject Co-ordinator - Dr. Prathap Haridoss

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Renewable Energy Technologies
Lecture 2 - Energy Usage by Humans - Estimate of Impact on Atmosphere
Lecture 3 - Conventional Sources of Energy
Lecture 4 - Non-Conventional Sources of Energy - An Overview
Lecture 5 - Energy consumption
Lecture 6 - Details of Energy usage in each sector
Lecture 7 - Consequences of Energy consumption
Lecture 8 - Solar Energy incident on Earth, Solar Spectrum
Lecture 9 - The Solar Energy Budget
Lecture 10 - Electromagnetic Radiation - The Solar Spectrum
Lecture 11 - Solar flat plate collector
Lecture 12 - Solar Radiator
Lecture 13 - Solar Energy - The Semiconductor
Lecture 14 - Solar energy - The p-n junction
Lecture 15 - Solar Cell - Growing the single crystal and making the p-n junction
Lecture 16 - Solar Energy - Interaction of p-n junction with radiation
Lecture 17 - Solar Energy - Solar cell characteristics and usage
Lecture 18 - Solar Energy - Solar cell construction
Lecture 19 - Solar Energy - Solar Photocatalysis
Lecture 20 - Wind Energy - Overview
Lecture 21 - Wind Energy - Energy Considerations
Lecture 22 - Wind Energy - Efficiency
Lecture 23 - Wind Energy - Parts and Materials
Lecture 24 - Wind Energy - Design Considerations
Lecture 25 - Ocean Thermal Energy - Conversion (OTEC)
Lecture 26 - Geothermal Energy
Lecture 27 - Geothermal Energy Technological aspects
Lecture 28 - Biomass Usage and Issues
Lecture 29 - Battery Basics

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Lecture 30 - Battery Testing and Performance
Lecture 31 - Lithium ion Batteries
Lecture 32 - Common Battery Structures and Types
Lecture 33 - Types of Fuel Cells
Lecture 34 - Fuel Processing for PEM Fuel Cells
Lecture 35 - Fuel Cells
Lecture 36 - Characterization of Electrochemical Devices
Lecture 37 - Fuel Cells
Lecture 38 - Supercapacitors
Lecture 39 - Flywheels
Lecture 40 - Magnetohydrodynamic Power Generation
NPTEL Video Course - General - NOC: Introduction to Remote Sensing

Subject Co-ordinator - Dr. Arun K. Saraf

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - What is satellite based remote sensing?
Lecture 2 - Development of remote sensing technology and advantages
Lecture 3 - Different platforms of remote sensing.
Lecture 4 - Electromagnetic Spectrum, solar reflection and thermal emission
Lecture 5 - Interaction of EM radiation with atmosphere including atmospheric scattering, absorption and emission
Lecture 6 - Interaction mechanism of EM radiation with ground and spectral response curve
Lecture 7 - Principles of image interpretation
Lecture 8 - Multi-spectral scanners and imaging devices
Lecture 9 - Salient characteristics of Landsat, IRS, Cartosat, Resourcesat sensors
Lecture 10 - Image characteristics and different resolutions in Remote Sensing
Lecture 11 - Image interpretation of different geological landforms, rock types and structures
Lecture 12 - Remote Sensing Integration with GIS and GPS
Lecture 13 - Geo-referencing Technique
Lecture 14 - Basic Image Enhancement Techniques
Lecture 15 - Spatial Filtering, Band ratio and Principal Component Analysis techniques
Lecture 16 - Image Classification Techniques
Lecture 17 - InSAR Techniques in its applications
Lecture 18 - Hyperspectral Remote Sensing
Lecture 19 - Integrated applications of RS and GIS in groundwater studies
Lecture 20 - Limitations of Remote Sensing Techniques

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NPTEL Video Course - Humanities and Social Sciences - Contemporary Issues in Philosophy of Mind and Cognition

Subject Co-ordinator - Dr. Rajakishore Nath, Dr. Ranjan K. Panda
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Transcendental Consciousness
Lecture 3 - Plato's Theory of Mind
Lecture 4 - Parable of Cave
Lecture 5 - Aristotle's Concept Mind
Lecture 6 - The Concept of Mind in Upanishadas
Lecture 7 - Dualism - I
Lecture 8 - Dualism - II
Lecture 9 - Dualism - III
Lecture 10 - Against Dualism
Lecture 11 - Property Dualism
Lecture 12 - Varieties of Materialism
Lecture 13 - Mind-Body Identity Theory
Lecture 14 - Functionalism
Lecture 15 - Different Models of Cognitive Mind
Lecture 16 - Connectionism and Folk Psychology
Lecture 17 - Representation - I
Lecture 18 - Representation - II
Lecture 19 - Artificial Intelligence - I
Lecture 20 - Artificial Intelligence - II
Lecture 21 - Artificial Intelligence - III
Lecture 22 - The Limit of Artificial Intelligence - I
Lecture 23 - The Limit of Artificial Intelligence - II
Lecture 24 - Biological Naturalism
Lecture 25 - The Concept of Intentionality
Lecture 26 - The Structure of Consciousness - I
Lecture 27 - The Structure of Consciousness - II
Lecture 28 - Phenomenal Consciousness - I

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| Lecture 29 | Phenomenal Consciousness - II |
| Lecture 30 | Language, Representation & Meaning - I |
| Lecture 31 | Language & Meaning - II |
| Lecture 32 | Language & Mind |
| Lecture 33 | Language & World - I |
| Lecture 34 | Language & World - II |
| Lecture 35 | Emergentism & Supervenience |
| Lecture 36 | Reduction & Realization - I |
| Lecture 37 | Reduction & Realization - II |
| Lecture 38 | The Cartesian Mind Revisited |
| Lecture 39 | Personal Identity - I |
| Lecture 40 | Personal Identity - II |
| Lecture 41 | Creativity |
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Lecture 30 - Interacting Continuum
Lecture 31 - From The Perspective of Playwriting
Lecture 32 - From The Playwright's Perspective - Part I
Lecture 33 - From The Playwright's Perspective - Part II
Lecture 34 - From The Perspective of Playwriting
Lecture 35 - Drama in the Classroom
Lecture 36 - Student Response - II
Lecture 37 - Performative Reading of the Cherry Orchard
Lecture 38 - Short Story as a Genre
Lecture 39 - Short Stories by Indian Women Writers
Lecture 40 - Modern Western Short Story
Lecture 41 - Varieties of Writing Processes
NPTEL Video Course - Humanities and Social Sciences - NOC: Text, Texuality and Digital Media

Subject Co-ordinator - Prof. Arjun Ghosh
Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the course
Lecture 2 - Marshall McLuhan
Lecture 3 - Marshall McLuhan
Lecture 4 - Marshall McLuhan
Lecture 5 - Walter Ong
Lecture 6 - Walter Ong
Lecture 7 - Walter Ong
Lecture 8 - Dastangoi
Lecture 9 - Dastangoi
Lecture 10 - Manuscript Culture
Lecture 11 - Manuscript Culture
Lecture 12 - Feudalism to Capitalism
Lecture 13 - Febre and Martin
Lecture 14 - Guteberg and Revolution 15th Century
Lecture 15 - Consequences of Print 16-17 Century
Lecture 16 - John Dryden
Lecture 17 - Robert Darnton
Lecture 18 - Benedict Anderson
Lecture 19 - Colonialism
Lecture 20 - Print in Bengal
Lecture 21 - Surveillance and Censorship
Lecture 22 - Rise of the Telugu Novel
Lecture 23 - Publishing in Hindi and Urdu
Lecture 24 - Walter Benjamin
Lecture 25 - Raymond Williams
Lecture 26 - Jay David Bolter
Lecture 27 - Robert Coover
Lecture 28 - Robert Coover
Lecture 29 - N. Katherine Hayles

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC: Positive Psychology

Subject Co-ordinator - Prof. Kamlesh Singh
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Psychology
Lecture 2 - Introduction to Positive Psychology
Lecture 3 - Research Methods
Lecture 4 - Character Strengths and Virtues/Positive Personality Traits - Part 1
Lecture 5 - Character Strengths and Virtues/Positive Personality Traits - Part 2
Lecture 6 - Character Strengths and Virtues/Positive Personality Traits - Part 3
Lecture 7 - Happiness and Well-Being - Part 1
Lecture 8 - Happiness and Well-Being - Part 2
Lecture 9 - Happiness and Well-Being - Part 3
Lecture 10 - Positive Emotional States and Processes - Part 1
Lecture 11 - Positive Emotional States and Processes - Part 2
Lecture 12 - Hope and Optimism
Lecture 13 - Self and related Concepts
Lecture 14 - Resilience
Lecture 15 - Flow
Lecture 16 - Mindfulness
Lecture 17 - Spirituality, Grit and Mindset
Lecture 18 - Minding and Compassion
Lecture 19 - Forgiveness, Humanity and Gratitude
Lecture 20 - Love, Empathy and Altruism
Lecture 21 - Recent Trends and Directions In Positive Psychology - Part 1
Lecture 22 - Recent Trends and Directions In Positive Psychology - Part 2
Lecture 23 - Recent Trends and Directions In Positive Psychology - Part 3

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Lecture 31 - Culture Industry
Lecture 32 - Commodity
Lecture 33 - Media
Lecture 34 - Television
Lecture 35 - New Media
Lecture 36 - Science, Technology and Culture
Lecture 37 - Cyberculture
Lecture 38 - Cultural Policy
Lecture 39 - Critiquing Cultural Studies
Lecture 40 - Conclusion
NPTEL Video Course - Humanities and Social Sciences - English Language and Literature

Subject Co-ordinator - Dr. Krishna Barua, Dr. Liza Das
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - The Scope of English Studies
Lecture 3 - The English Language
Lecture 4 - International English
Lecture 5 - The Globalization of English
Lecture 6 - World Englishes
Lecture 7 - The Rise of Cultural Studies
Lecture 8 - Old English
Lecture 9 - Middle English
Lecture 10 - Early Modern English
Lecture 11 - Modern English - 1
Lecture 12 - Modern English - 2
Lecture 13 - The Age of Chaucer
Lecture 14 - The Age of Shakespeare
Lecture 15 - Milton and his Times
Lecture 16 - The Augustans
Lecture 17 - The Romantics
Lecture 18 - The Victorians
Lecture 19 - Modern Literature
Lecture 20 - The Novel
Lecture 21 - Poetry
Lecture 22 - Drama
Lecture 23 - Essay
Lecture 24 - Short story
Lecture 25 - Biography
Lecture 26 - Autobiography
Lecture 27 - History Of English Language
Lecture 28 - Marxist Literary Criticism
Lecture 29 - Feminist Criticism

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Lecture 30 - Structuralist Criticism
Lecture 31 - Poststructuralism
Lecture 32 - Postcolonialism
Lecture 33 - Cognitive Approaches To Literature
Lecture 34 - Classical Criticism
Lecture 35 - Liberal Humanism
Lecture 36 - Reader-response Criticism
Lecture 37 - New Historicism
Lecture 38 - Ecocriticism
Lecture 1 - Definition of Game Theory and Rational Choice
Lecture 2 - Interacting Decision Makers
Lecture 3 - Strategic Games
Lecture 4 - Matching Pennies, Stag Hunt and Nash Equilibrium
Lecture 5 - Examples of Nash Equilibrium
Lecture 6 - Altruism and Prisoner's Dilemma
Lecture 7 - Variants Stag Hunt Game, Hawk Dove and Coordination Game
Lecture 8 - Public Good Provision, Strict Nash Equilibrium
Lecture 9 - Best Response Functions
Lecture 10 - Strictly and Weakly Dominated Action
Lecture 11 - Application of Weak Domination
Lecture 12 - Symmetric Games and Symmetric Equilibrium
Lecture 13 - Cournot Model of Oligopoly
Lecture 14 - Different Aspects of Cournot Model
Lecture 15 - Further Aspects of Cournot Model
Lecture 16 - Cournot & Bertrand Models
Lecture 17 - Different Aspects of Bertrand Model
Lecture 18 - Electoral Competition I
Lecture 19 - Different Aspects of Hotelling Model
Lecture 20 - Hotelling Model
Lecture 21 - War of Attrition
Lecture 22 - Second Price Sealed Bid Auction
Lecture 23 - Further Aspects of Second Price Auction
Lecture 24 - First Price Auction
Lecture 25 - All Pay Auction, Multi Unit Auction
Lecture 26 - Accident Laws
Lecture 27 - Mixed Strategy Nash Equilibrium
Lecture 28 - Mixed Strategy, Mixed Strategy Equilibrium
Lecture 29 - Mixed Strategy Equilibrium
Lecture 30 - Characterisation of Mixed Strategy Equilibrium
Lecture 31 - Dominated Actions and Iterated Elimination
Lecture 32 - Rationalisability and Beliefs
Lecture 33 - Extensive Games
Lecture 34 - Strategy and Equilibrium
Lecture 35 - Nash Equilibrium and Its Problems
Lecture 36 - Subgame Perfect Nash Equilibrium
Lecture 37 - Backward Induction
Lecture 38 - Backward Induction
Lecture 39 - Ultimatum Game
Lecture 40 - Stackelberg Duopoly Model
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NPTEL Video Course - Humanities and Social Sciences - NOC:Science, Technology and Society

Subject Co-ordinator - Dr. Sambit Mallick

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Cognitive Dimensions - I
Lecture 2 - Cognitive Dimensions - II
Lecture 3 - Ethical Dimensions
Lecture 4 - Inductivism and Hypothesism - I
Lecture 5 - Inductivism and Hypothesism - II
Lecture 6 - Positivism - I
Lecture 7 - Positivism - II
Lecture 8 - Karl Popper - I
Lecture 9 - Karl Popper - II
Lecture 10 - Thomas Kuhn
Lecture 11 - Popper versus Kuhn
Lecture 12 - Paul Feyerabend
Lecture 13 - Rewards and Recognitions - I
Lecture 14 - Rewards and Recognitions - II
Lecture 15 - Rewards and Recognitions - III
Lecture 16 - Cumulative Advantage and Symbolism of Intellectual Property - I
Lecture 17 - Cumulative Advantage and Symbolism of Intellectual Property - II
Lecture 18 - Cumulative Advantage and Symbolism of Intellectual Property - III
Lecture 19 - Max Weber
Lecture 20 - Preliminary Exercise and Explanation
Lecture 21 - Edwin Layton Jr.
Lecture 22 - Langdon Winner - I
Lecture 23 - Langdon Winner - II
Lecture 24 - Langdon Winner - III
Lecture 25 - Donald MacKenzie and Judy Wajcman - I
Lecture 26 - Donald MacKenzie and Judy Wajcman - II
Lecture 27 - Thomas Edison
Lecture 28 - Capitalism, class, gender, city, machine, workplace - I
Lecture 29 - Capitalism, class, gender, city, machine, workplace - II

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Lecture 30 - Capitalism, class, gender, city, machine, workplace - III
Lecture 31 - Alvin Toffler and Daniel Bell
Lecture 32 - Themes and Factors of Information Technology
Lecture 33 - Information Technology and Reconceptualization of Class
Lecture 34 - Reception of Modern Science in India
Lecture 35 - Science Policies in India
Lecture 36 - Summary of the Course
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC:Gender and Literature

Subject Co-ordinator - Prof. Avishek Parui

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - A Brief Overview of the Course
Lecture 2 - Performativity and Embodiment
Lecture 3 - The Chess Players - Part 1
Lecture 4 - The Chess Players - Part 2
Lecture 5 - Shooting an Elephant - Part 1
Lecture 6 - Shooting an Elephant - Part 2
Lecture 7 - Heart of Darkness - Part 1
Lecture 8 - Heart of Darkness - Part 2
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Lecture 10 - The Fly - Part 1
Lecture 11 - The Fly - Part 2
Lecture 12 - Look Back in Anger - Part 1
Lecture 13 - Look Back in Anger - Part 2
Lecture 14 - Look Back in Anger - Part 3
Lecture 15 - Look Back in Anger - Part 4
Lecture 16 - Look Back in Anger - Part 5
Lecture 17 - Look Back in Anger - Part 6
Lecture 18 - Gender and Popular Culture Lecture - 1
Lecture 19 - Gender and Popular Culture Lecture = 2
Lecture 20 - Gender and Popular Culture Lecture - 3
Lecture 21 - Gender and Popular Culture Final Lecture

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NPTEL Video Course - Humanities and Social Sciences - NOC: Ecology and Society

Subject Co-ordinator - Prof. Ngamjahao Kipgen

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Ecology and Society - 1
Lecture 2 - Ecology and Society - 2
Lecture 3 - Culture and Cultural Ecology
Lecture 4 - Cultural Ecology and Economic
Lecture 5 - Cultural Ecological Theory
Lecture 6 - Human Ecology
Lecture 7 - Human Ecology - Theoretical Approach
Lecture 8 - Ecological Anthropology
Lecture 9 - Ecosystem-based and Actor-based Model of Human Ecology
Lecture 10 - Nature and Culture Debate
Lecture 11 - Nature - A Contested Concept
Lecture 12 - Conceptions of Nature
Lecture 13 - Contested Domains and Boundaries of Culture
Lecture 14 - MCQs Discussion
Lecture 15 - Paradigms in Human Environmental Relations - Part I
Lecture 16 - Paradigms in Human Environmental Relations - Part II
Lecture 17 - Nature, Culture, Magic and Science
Lecture 18 - Religion, Nature and Environment
Lecture 19 - Religion, Nature and Environment Continue
Lecture 20 - The Historical Roots of our Ecological Crisis
Lecture 21 - Biodiversity Conservation Ethics in Buddhism
Lecture 22 - Hinduism and Nature Conservation, Christian Religion Response to Ecological Crisis
Lecture 23 - Hinduism and Nature Conservation, Christian Religion Response to Ecological Crisis
Lecture 24 - Deep Ecology
Lecture 25 - Social Ecology
Lecture 26 - Ecological Feminist Philosophies
Lecture 27 - Indigenous Knowledge
Lecture 28 - Ecological Journey
Lecture 29 - Kuki Jhumming Practices

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Lecture 30 – Debates on Shifting Cultivation
Lecture 31 – Course Summary
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NPTEL Video Course - Humanities and Social Sciences - NOC:Sociological Perspectives on Modernity

Subject Co-ordinator - Dr. Sambit Mallick
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Thematic Preliminaries - I
Lecture 2 - Thematic Preliminaries - II
Lecture 3 - Thematic Preliminaries - III
Lecture 4 - Sociological Modernism
Lecture 5 - Sociological Modernism
Lecture 6 - Sociological Modernism
Lecture 7 - Sociological Modernism
Lecture 8 - Sociological Modernism
Lecture 9 - Sociological Modernism
Lecture 10 - Sociological Modernism
Lecture 11 - Sociological Modernism
Lecture 12 - Structuralist Interpretation - I
Lecture 13 - Structuralist Interpretation - II
Lecture 14 - Structuralist Interpretation - III
Lecture 15 - Western Marxism - I
Lecture 16 - Western Marxism - II
Lecture 17 - Modernity and Social Theory - I
Lecture 18 - Modernity and Social Theory - II
Lecture 19 - Modernity and Social Theory - III
Lecture 20 - Modernity and Social Theory - IV
Lecture 21 - Deconstruction of Modernity
Lecture 22 - Deconstruction of Modernity
Lecture 23 - Deconstruction of Modernity
Lecture 24 - Deconstruction of Modernity
Lecture 25 - Deconstruction of Modernity
Lecture 26 - Deconstruction of Modernity
Lecture 27 - A New Totality - I
Lecture 28 - A New Totality - II
Lecture 29 - Modernity in India

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Lecture 30 - What have we discussed?
NPTEL Video Course - Humanities and Social Sciences - NOC: Introduction to Cognitive Psychology

Subject Co-ordinator - Prof. Naveen Kashyap
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - A Brief History of Cognitive Psychology - 1
Lecture 2 - A Brief History of Cognitive Psychology - 2
Lecture 3 - Studying Cognition
Lecture 4 - Perception
Lecture 5 - Models of Perception - 1
Lecture 6 - Models of Perception - 2
Lecture 7 - Basic Attention Processes
Lecture 8 - Models of Attention
Lecture 9 - Automization and Attention
Lecture 10 - Memory Introduction
Lecture 11 - Short Term Memory
Lecture 12 - Working Memory
Lecture 13 - Long-Term Memory Encoding
Lecture 14 - Retrieval from Long-Term Memory
Lecture 15 - Semantic Memory Basics
Lecture 16 - Models of Semantic Memory
Lecture 17 - Introducing Concepts and Categories - 1
Lecture 18 - Introducing Concepts and Categories - 2
Lecture 19 - Basics of Visual Memory
Lecture 20 - Object Transformation in Visual Memory
Lecture 21 - Basic Issues in Language
Lecture 22 - Comprehension and Understanding of Language
Lecture 23 - Introduction to Problem Solving
Lecture 24 - Factors Influencing Problem Solving
Lecture 25 - Insight and Creativity
Lecture 26 - Reasoning - 1
Lecture 27 - Reasoning - 2
Lecture 28 - Classical Theory of Decision Making
Lecture 29 - Prospect Theory of Decision Making

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NPTEL Video Course - Humanities and Social Sciences - NOC: Introduction to Modern Indian Political Thought

Subject Co-ordinator - Prof. Mithilesh Kumar Jha
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the course
Lecture 2 - Raja Rammohan Roy
Lecture 3 - Raja Rammohan Roy
Lecture 4 - Raja Rammohan Roy
Lecture 5 - Rabindranath Tagore
Lecture 6 - Rabindranath Tagore
Lecture 7 - Rabindranath Tagore
Lecture 8 - Aurobindo Ghosh
Lecture 9 - Aurobindo Ghosh
Lecture 10 - Vivekananda
Lecture 11 - Vivekananda
Lecture 12 - Mahatma Gandhi
Lecture 13 - Mahatma Gandhi
Lecture 14 - Mahatma Gandhi
Lecture 15 - Muhammad Iqbal
Lecture 16 - Muhammad Iqbal
Lecture 17 - Savarkar
Lecture 18 - Savarkar
Lecture 19 - Jawaharlal Nehru
Lecture 20 - Jawaharlal Nehru
Lecture 21 - Jawaharlal Nehru
Lecture 22 - B.R. Ambedkar
Lecture 23 - B.R. Ambedkar
Lecture 24 - B.R. Ambedkar
Lecture 25 - Pandita Ramabai
Lecture 26 - Pandita Ramabai
Lecture 27 - Rammanohar Lohia
Lecture 28 - Rammanohar Lohia
Lecture 29 - Rammanohar Lohia

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Lecture 30 - Conclusion
NPTEL Video Course - Humanities and Social Sciences - NOC:Consumer Psychology

Subject Co-ordinator - Prof. Naveen Kashyap

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Consumer Psychology - I
Lecture 2 - Introduction to Consumer Psychology - II
Lecture 3 - Problem Recognition - I
Lecture 4 - Problem Recognition - II
Lecture 5 - Alternate Evaluation - I
Lecture 6 - Alternate Evaluation - II
Lecture 7 - Alternate Evaluation - III
Lecture 8 - Post Purchase and Consumption - I
Lecture 9 - Post Purchase and Consumption - II
Lecture 10 - Perception and Cognition - I
Lecture 11 - Perception and Cognition - II
Lecture 12 - Memory and Learning - I
Lecture 13 - Memory and Learning - II
Lecture 14 - Emotion Motivation and Mood - I
Lecture 15 - Emotion Motivation and Mood - II
Lecture 16 - Attitude and Attitude Change - I
Lecture 17 - Attitude and Attitude Change - II
Lecture 18 - Communication and Persuassion - I
Lecture 19 - Communication and Persuassion - II
Lecture 20 - Summary

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NPTEL Video Course - Humanities and Social Sciences - NOC: Introduction to Modern Indian Drama

Subject Co-ordinator - Prof. Kiran Keshavamurthy

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Sanskrit and National Theatre
Lecture 2 - History of Parsi Theatre and Female Impersonation
Lecture 3 - Female Impersonation and Indian Folk Traditions
Lecture 4 - Early Indian Playwrights
Lecture 5 - Silence! The Court is in Session
Lecture 6 - A Friend's Story
Lecture 7 - Ghashiram Kotwal
Lecture 8 - Kanyadaan
Lecture 9 - Hayavadana
Lecture 10 - Tughlaq
Lecture 11 - The Dreams of Tipu Sultan
Lecture 12 - The Fire and the Rain
Lecture 13 - Broken Images
Lecture 14 - Summary
Lecture 15 - Introduction and Garbo
Lecture 16 - Old Stone Mansion
Lecture 17 - Desire in the Rocks
Lecture 18 - Sonata
Lecture 19 - Summary of Mahesh Elkunchwar
Lecture 20 - Introduction and Final Solutions
Lecture 21 - Bravely Fought the Queen
Lecture 22 - Dance Like a Man
Lecture 23 - Summary of Mahesh Dattani
Lecture 24 - Introduction and Procession
Lecture 25 - Bhoma
Lecture 26 - Stale News and Summary
Lecture 27 - Conclusion

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Lecture 30 - Revisiting some key themes and concepts
NPTEL Video Course - Humanities and Social Sciences - NOC: Human Behaviour

Subject Co-ordinator - Prof. Naveen Kashyap

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the Science of Human Behavior - I
Lecture 2 - Introduction to the Science of Human Behavior - II
Lecture 3 - Sensation - I
Lecture 4 - Sensation - II
Lecture 5 - Perception - I
Lecture 6 - Perception - II
Lecture 7 - Learning - I
Lecture 8 - Learning - II
Lecture 9 - Memory - I
Lecture 10 - Memory - II
Lecture 11 - Language - I
Lecture 12 - Language - II
Lecture 13 - Intelligence - I
Lecture 14 - Intelligence - II
Lecture 15 - Emotion - I
Lecture 16 - Emotion - II
Lecture 17 - Personality - I
Lecture 18 - Personality - II
Lecture 19 - Social Influence and Cognition - I
Lecture 20 - Social Influence and Cognition - II
Lecture 21 - Summary

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NPTEL Video Course - Humanities and Social Sciences - NOC: The Psychology of Language

Subject Co-ordinator - Prof. Naveen Kashyap
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Communication and Language - I
Lecture 2 - Communication and Language - II
Lecture 3 - Science of Language - I
Lecture 4 - Science of Language - II
Lecture 5 - Speech Perception - I
Lecture 6 - Speech Perception - II
Lecture 7 - Speech Production - I
Lecture 8 - Speech Production - II
Lecture 9 - Words - I
Lecture 10 - Words - II
Lecture 11 - Words - III
Lecture 12 - Sentences - I
Lecture 13 - Sentences - II
Lecture 14 - Discourse - I
Lecture 15 - Discourse - II
Lecture 16 - Reading and Writing - I
Lecture 17 - Reading and Writing - II
Lecture 18 - Bilingualism - I
Lecture 19 - Bilingualism - II
Lecture 20 - Overall Review
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NPTEL Video Course - Humanities and Social Sciences - NOC:Development Research Methods

Subject Co-ordinator - Prof. Rajshree Bedamatta
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Reflections on Development Studies and Development Research
Lecture 2 - Types, Forms, and Processes of Development Studies Research
Lecture 3 - The Rigour in Development Studies Research
Lecture 4 - Paradigms of Development Research
Lecture 5 - Development Research-Development Work Continuum and Action Research in Development Studies
Lecture 6 - Ethics in Development Studies and Development Research
Lecture 7 - Literature Study
Lecture 8 - A General Lecture based on M.N. Srinivas's The Fieldworker and the Field
Lecture 9 - Introducing Qualitative Research Methods
Lecture 10 - Introducing Qualitative Research Methods (Continued...)
Lecture 11 - Interviews and Focus Group Discussions
Lecture 12 - Participatory Methods and Approaches
Lecture 13 - Conducting Case Studies and Maintaining Field Diaries
Lecture 14 - Introducing Quantitative Research Methods
Lecture 15 - An Overview of Mixed Methods Research
Lecture 16 - Field Surveys and Inventories
Lecture 17 - Logical Framwork and SWOT Analysis
Lecture 18 - The importance of Census and other Secondary Data in Development Studies
Lecture 19 - Communicating Research
Lecture 20 - Operationalizing Rights-based Approaches to Development
Lecture 21 - Poverty Measures and Analysis
Lecture 22 - Gender-sensitive Indicators and Gender Analysis
Lecture 23 - Social Capital Assessment Tools
Lecture 24 - Moitoring and Evaluation
Lecture 25 - A Final Note

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NPTEL Video Course - Humanities and Social Sciences - Communication Skills

Subject Co-ordinator - Dr. T. Ravichandran

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Barriers to Communication - 1
Lecture 3 - Barriers to Communication - 2
Lecture 4 - Barriers to Communication - 3
Lecture 5 - Non-Verbal Communication - 1
Lecture 6 - Non-Verbal Communication - 2
Lecture 7 - Non-Verbal Communication - 3
Lecture 8 - Non-Verbal Communication - 4
Lecture 9 - Non-Verbal Communication - 5
Lecture 10 - Listening Skills - 1
Lecture 11 - Listening Skills - 2
Lecture 12 - Listening Skills - 3
Lecture 13 - Business Letters Writing - 1
Lecture 14 - Business Letters Writing - 2
Lecture 15 - Business Letters Writing - 3
Lecture 16 - Business Letters Writing - 4
Lecture 17 - Report Writing - 1
Lecture 18 - Report Writing - 2
Lecture 19 - Group Discussion - 1
Lecture 20 - Group Discussion - 2
Lecture 21 - Group Discussion - 3
Lecture 22 - Interview Skills - 1
Lecture 23 - Interview Skills - 2
Lecture 24 - Interview Skills - 3
Lecture 25 - Interview Skills - 4
Lecture 26 - Interview Skills - 5
Lecture 27 - Interview Skills - 6
Lecture 28 - Interview Skills - 7
Lecture 29 - Netiquette - 1

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NPTEL Video Course - Humanities and Social Sciences - Ethics

Subject Co-ordinator - Dr. Vineet Sahu
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Ethics - 'Crtio' A Socratic dialoguea
Lecture 2 - Introduction to Ethics - An assessment of Ethical relativism
Lecture 3 - Consequentialism - Introduction
Lecture 4 - Consequentialism Rule and Act
Lecture 5 - Hedonism
Lecture 6 - Utilitarianism
Lecture 7 - Deontological theories - Introduction
Lecture 8 - Deontological theories - Immanuel Kant
Lecture 9 - Ethical Rules (with reference to W D Ross)
Lecture 10 - Situation Ethics
Lecture 11 - Virtue Ethics
Lecture 12 - Metaethical Theories
Lecture 13 - Ethical Relativism
Lecture 14 - Ethical Naturalism
Lecture 15 - Ethical Naturalism (Continued...)
Lecture 16 - Ethical Naturalism - Emotivism
Lecture 17a - Ethical Non-naturalism
Lecture 17b - Ethical Non-naturalism - II
Lecture 18 - Non-cognitive or Nondescriptivist Theories - Intuitionism
Lecture 19 - Non-cognitive or Nondescriptivist Theories - Intuitionism Nihilism
Lecture 20 - Why be Moral?
Lecture 21 - Ethics in the Indian tradition
Lecture 22 - Theory of Karma - Part 1
Lecture 23 - Theory of Karma - Part 2
Lecture 24 - Nishkama Karma - Part 1
Lecture 25 - Nishkama Karma - Part 2
Lecture 26 - Gandhian Ethics - Part 1
Lecture 27 - Gandhian Ethics - Part 2
Lecture 28 - Gandhian Ethics - Part 3 (Satyagraha)

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Lecture 29 - Purusharthas
Lecture 30 - Buddhist Ethics - Part 1
Lecture 31 - Buddhist Ethics - Part 2 - Jaina Ethics
Lecture 32 - Some ethical issues (Applied Ethics) Discussing Peter Singer's 'Famine Affluence and Morality'
Lecture 33 - Some ethical issues (Applied Ethics) Discussing Peter Singer's 'Famine Affluence and Morality'
Lecture 34 - Discussing Thomas Pogge's 'Real World Justice' - Part 1
Lecture 35 - Discussing Thomas Pogge's 'Real World Justice' - Part 2
Lecture 36 - Discussing Thomas Pogge's 'Real World Justice' - Part 3
Lecture 37 - Sexuality
Lecture 38 - Sexuality
NPTEL Video Course - Humanities and Social Sciences - International Economics

Subject Co-ordinator - Dr. Somesh K. Mathur

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - International Economics
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NPTEL Video Course - Humanities and Social Sciences - Introduction to Logic

Subject Co-ordinator - Dr. A.V. Ravishankar Sarma
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Identification of Arguments
Lecture 2 - Non-arguments
Lecture 3 - Types of Arguments
Lecture 4 - Nature and Scope of Deductive and Inductive Arguments
Lecture 5 - Truth, Validity and Soundness
Lecture 6 - Strength of Inductive arguments, Counter example method
Lecture 7 - Toulmin’s Model of Argumentation
Lecture 8 - Identification of Formal and Informal Fallacies
Lecture 9 - Informal Fallacies
Lecture 10 - Fallacies of Weak Induction and Fallacies arising out of ambiguity in Language
Lecture 11 - Introduction and motivation for Syllogistic Logic
Lecture 12 - Aristotle theory of Syllogisms - 1
Lecture 13 - Syllogistic Poem, Reduction of Syllogisms
Lecture 14 - Syllogistic Poem, Reduction of Syllogisms
Lecture 15 - Nature and Scope of Propositional Logic
Lecture 16 - Syntax of Propositional Logic
Lecture 17 - Logical Connectives
Lecture 18 - Truth Table Method
Lecture 19 - Semantic Tableaux Method for Propositional Logic
Lecture 20 - Knights and Knaves Puzzles
Lecture 21 - Semantic Tableaux Method
Lecture 22 - Natural Deduction Method
Lecture 23 - Natural Deduction
Lecture 24 - Conjunctive and Disjunctive Normal Forms
Lecture 25 - CNF, DNF and satisfiability and Validity
Lecture 26 - Resolution and refutation method
Lecture 27 - Resolution and refutation method
Lecture 28 - Axiomatic Propositional Logic
Lecture 29 - Hilbert Ackermann Axiomatic system

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Lecture 30 - Proofs in the PM system
Lecture 31 - Hilbert and Ackermann System
Lecture 32 - Outlines of Predicate Logic
Lecture 33 - Outlines of Predicate Logic
Lecture 34 - Building blocks of Predicate Logic
Lecture 35 - Quantifiers, freedom, bondage
Lecture 36 - Translation in to predicate Logic
Lecture 37 - Semantics of Predicate Logic
Lecture 38 - Truth, satisfiability, validity in Predicate Logic
Lecture 39 - Formation Trees for wffâ□□s in predicate Logic
Lecture 40 - Semantic Tableaux Method for Predicate Logic
Lecture 41 - Semantic Tableaux method
Lecture 42 - Natural Deduction in Predicate Logic
Lecture 43 - Important theorems in First order Logic
Lecture 44 - Limitations of first order logic and Introduction to the course
Lecture 30 - Effectiveness Of population Policies
Lecture 31 - Family Planning Programme and Beyond
Lecture 32 - National Population Policy
Lecture 33 - The First Policy Statement
Lecture 34 - Subsequent Developments Leading To National Population Policy 2000
Lecture 35 - Ecological Degradation and Environmental Protection
Lecture 36 - Differences In Perception Between Developed and Developing Countries
Lecture 37 - Total Environment Impact and Beliefs
Lecture 38 - Emerging Issues In sociology Of Population
Lecture 39 - Population Issues In The framework of MDGs
Lecture 40 - Population Issues (Continued...)
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NPTEL Video Course - Humanities and Social Sciences - Macro Economics

Subject Co-ordinator - Prof. Surajit Sinha

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Humanities and Social Sciences - Introduction to Sociology

Subject Co-ordinator - Prof. A.K. Sharma
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - What is sociology?
Lecture 2 - Sociological approaches
Lecture 3 - Nature of society
Lecture 4 - Cooperation and conflict
Lecture 5 - Family-I
Lecture 6 - Family-II
Lecture 7 - State-I
Lecture 8 - State-II
Lecture 9 - State-III
Lecture 10 - State-IV
Lecture 11 - Sociology of work-I
Lecture 12 - Sociology of work-II
Lecture 13 - Sociology of work-III
Lecture 14 - Sociology of work-IV
Lecture 15 - Religion-I
Lecture 16 - Religion-II
Lecture 17 - Religion-III
Lecture 18 - What is sociology?
Lecture 19 - Religion-V
Lecture 20 - Religion-VI
Lecture 21 - Education-I
Lecture 22 - Education-II
Lecture 23 - Social stratification-I
Lecture 24 - Social stratification-II
Lecture 25 - Social stratification-III
Lecture 26 - Social stratification-IV
Lecture 27 - Deviance-I
Lecture 28 - Deviance-II
Lecture 29 - Deviance-III

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Lecture 30 - Social change-I
Lecture 31 - Social change-II
Lecture 32 - Social change-III
Lecture 33 - Social change-IV
Lecture 34 - Population-I
Lecture 35 - Population-II
Lecture 36 - Perspectives in Sociology-I
Lecture 37 - Perspectives in Sociology-II
Lecture 38 - Social Problems and Theory
Lecture 39 - Sociological methods-I
Lecture 40 - Sociological methods-II
Lecture 41 - Sociological methods-III

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NPTEL Video Course - Humanities and Social Sciences - Money and Banking

Subject Co-ordinator - Prof. Surajit Sinha

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Understanding Oneself
NPTEL Video Course - Humanities and Social Sciences - Selected Topics in Psychology

Subject Co-ordinator - Prof. Manas K Mandal, Prof. JBP Sinha, Prof. Alok Bajpai, Prof. Rakesh K. Gupta, Prof. Ramadhar Singh, Prof. Braj Bhushan, Prof. Vivek Benegal, Prof. Ajit Dalal, Prof. Girishwar Misra

Co-ordinating Institute - DRDO | ASSERT | Institute of Management Studies | Consultant Psychiatrist, Fortis Memorial Research Institute | IIM - Bangalore | IIT - Kanpur | NIMHANS | University of Allahabad | University of Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction Selected Topics in Psychology
Lecture 2 - Psychology
Lecture 3 - Psychology
Lecture 4 - Beginning, growth and decline of Western psychology in India
Lecture 5 - The core and context of Indian psychology
Lecture 6 - The indigenization of psychology in India
Lecture 7 - Weaving culture into psychology
Lecture 8 - Culture and Self
Lecture 9 - Cultural and organizational behaviour
Lecture 10 - How do similar attitudes determine attraction?
Lecture 11 - Why do similar attitudes determine attraction?
Lecture 12 - A beautiful mind? Perspective on brain, mind and it's challenges
Lecture 13 - Emotion and well-being
Lecture 14 - Mental health and illness - Part 1
Lecture 15 - Mental health and illness - Part 2
Lecture 16 - Folk Healing Traditions in India
Lecture 17 - To sleep or not
Lecture 18 - Issues and challenges in psychological assessment
Lecture 19 - Nontraditional research in behavioural sciences
Lecture 20 - What a surprise
Lecture 21 - Neuropsychology and cognitive neuroscience research
Lecture 22 - Functional MRI in psychology - Part 1
Lecture 23 - Functional MRI in psychology - Part 2
Lecture 24 - Side bias in human behaviour
Lecture 25 - Brain microstructural correlates of cognition in Cerebral Palsy
Lecture 26 - Brain microstructural correlates of cognition in vitamin B12 deficiency
Lecture 27 - The neuroscience of addictive behaviour
Lecture 28 - Who is at risk and why? The neurogenetics of vulnerability to addiction - Part 1
Lecture 29 - Who is at risk and why? The neurogenetics of vulnerability to addiction - Part 2
Lecture 30 - The gambler's lament
Lecture 31 - Art and the brain - Part 1
Lecture 32 - Art and the brain - Part 2
Lecture 33 - Technological advances in other areas and their impact on psychology
Lecture 34 - Positioning the state of psychology in India in the global scenario
Lecture 35 - Introduction Selected Topics in Psychology
NPTEL Video Course - Humanities and Social Sciences - NOC: Elements of Visual Representation

Subject Co-ordinator - Dr. Shatarupa Thakurta Roy

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Visual Literacy
Lecture 2 - What is Art? Visual styles
Lecture 3 - Principle of Visual Communication
Lecture 4 - Elements of Visual Representation
Lecture 5 - Need of Visual Harmony, Aerial Perspective in Visual Representation
Lecture 6 - Visual Mediums Method and Material
Lecture 7 - Visual Arrangement
Lecture 8 - Illusion of Space Overlapping and Vertical Location
Lecture 9 - Multiple point Perspective, Cubist form
Lecture 10 - Oriental Perspective, Isometric Projection
Lecture 11 - Unconventional Space, Visual Riddle
Lecture 12 - Perspective, Foreshortening and Amplification
Lecture 13 - Static Form
Lecture 14 - Impression of Movement
Lecture 15 - Movement by Repetition
Lecture 16 - Use of Multiple Image to Depict Motion
Lecture 17 - Principle of Op Art
Lecture 18 - Asymmetry in Visual Narration
Lecture 19 - Scale and Space in Composition
Lecture 20 - Choosing the Right Scale
Lecture 21 - Natural Proportion
Lecture 22 - Ideal Proportion
Lecture 23 - Arbitrary and Mandatory Proportion
Lecture 24 - Form of Visual Paradox
Lecture 25 - Line as Line and Line as Shape
Lecture 26 - Character Specific Use of Line in Visual Representation
Lecture 27 - Implied, Psychic, Contour Line and Gesture Line
Lecture 28 - Line as Building Block
Lecture 29 - Line for Rendering

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NPTEL Video Course - Humanities and Social Sciences - NOC: Practical English: Learning and Teaching

Subject Co-ordinator - Dr. Bhaskar Dasgupta

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Humanities and Social Sciences - NOC:Psychiatry:An overview

Subject Co-ordinator - Mr. Alok Bajpai
Co-ordinating Institute - Consultant Psychiatrist
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Neuroanatomy
Lecture 2 - Neurophysiology
Lecture 3 - Imaging
Lecture 4 - Electrophysiology
Lecture 5 - Psychology
Lecture 6 - Mental Status Examination 1 & 2
Lecture 7 - Classificatory Systems
Lecture 8 - Investigation and Psychological Testing
Lecture 9 - Organic Syndromes
Lecture 10 - Schizophrenia
Lecture 11 - Mood Disorders
Lecture 12 - Anxiety Disorders
Lecture 13 - Obsessive Compulsive Disorder
Lecture 14 - Childhood Disorder Introduction
Lecture 15 - Autism
Lecture 16 - Learning Disability
Lecture 17 - ADHD
Lecture 18 - Personality Disorder
Lecture 19 - Sleep Disorder 1
Lecture 20 - Sleep Disorder 2

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC: Introduction to Indian Art - An appreciation
Subject Co-ordinator - Prof. Soumik Nandy Majumdar
Co-ordinating Institute - Visva Bharati University, Santiniketan
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Geographical Expanse
Lecture 2 - Chronological Journey
Lecture 3 - Forms of Indian Architecture
Lecture 4 - Variations in Indian Sculpture
Lecture 5 - Formats of Indian Painting
Lecture 6 - Pre-historic art
Lecture 7 - Ancient Art
Lecture 8 - Early Buddhist Art
Lecture 9 - Art of the Royal Dynasty
Lecture 10 - Islamic Architecture
Lecture 11 - Wonder from Classical period
Lecture 12 - Narrative Art in Sculpture
Lecture 13 - Narrative Art in Miniature Painting
Lecture 14 - Indigenous Art
Lecture 15 - Indigenous Art
Lecture 16 - End of Traditional Art - Advent of the British
Lecture 17 - Art patronized by the Colonial Rulers
Lecture 18 - Art for National Cause
Lecture 19 - Art in the post-independent India
Lecture 20 - Art Now - Trends in contemporary art

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NPTEL Video Course - Humanities and Social Sciences - NOC: Basic Concepts of Modal Logic

Subject Co-ordinator - Dr. A.V. Ravishankar Sarma
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - What is logic? General Introduction
Lecture 2 - Propositional Logic
Lecture 3 - Propositional Logic
Lecture 4 - Semantic Tableaux Method for Propositional Logic
Lecture 5 - Semantic Tableaux Method
Lecture 6 - Semantic Tableaux Method-3
Lecture 7 - Limitations of Classical Logic
Lecture 8 - Origin of Modal Logic
Lecture 9 - Origin of Modal Logic
Lecture 10 - Strict Implication
Lecture 11 - Strict Implication
Lecture 12 - Language of Normal Modal Logic
Lecture 13 - Language of Modal Logic, Modal Sentences - 1
Lecture 14 - Language of Modal Logic 2
Lecture 15 - Axiomatic Modal Logic
Lecture 16 - Semantics of Modal Logic
Lecture 17 - Kripke semantics for Modal Logic systems
Lecture 18 - Kripke semantics for Modal Logic
Lecture 19 - Kripke Semantics for Modal Logic
Lecture 20 - Semantic Tableaux method - I
Lecture 21 - Semantic Tableaux method - II
Lecture 22 - Possible worlds and Modal realism
Lecture 23 - Conditional logic introduction
Lecture 24 - Conditional logic C
Lecture 25 - Conditional logics

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NPTEL Video Course - Humanities and Social Sciences - NOC: Probability and Stochastic for Finance II

Subject Co-ordinator - Dr. Joydeep Dutta

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Fundamentals of Interest Rates
Lecture 2 - Fixed Income Securities
Lecture 3 - Term Structure of Interest Rates - I
Lecture 4 - Optimization Models In Finance
Lecture 5 - Crash course on KKT Condition
Lecture 6 - Mean Variance Portfolio Optimization - I
Lecture 7 - Mean Variance Portfolio Optimization - II
Lecture 8 - Mean Variance Portfolio Optimization - III
Lecture 9 - Mean Variance Portfolio Optimization - IV
Lecture 10 - Last lecture on Portfolio Optimization
Lecture 11 - Capital Asset Pricing Model
Lecture 12 - The Binomial Model [Lox-Ross-Rubenstein Model]
Lecture 13 - The Binomial Method - II
Lecture 14 - Binomial Method - III (Multiperiod model)
Lecture 15 - Binomial model - IV
Lecture 16 - Girsanav's Theorem (Basic tool)
Lecture 17 - Girsanav's Theorem (Statement and proof)
Lecture 18 - Stock price under risk netral measure
Lecture 19 - The Black Scholes formula
Lecture 20 - Final Lecture
NPTEL Video Course - Humanities and Social Sciences - NOC:Introduction to Psychology

Subject Co-ordinator - Braj Bhushan

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Major Areas of Psychology
Lecture 2 - Major Milestones in Psychology
Lecture 3 - Methods in Psychology
Lecture 4 - Schools of thoughts in Psychology
Lecture 5 - Sensory Mechanisms
Lecture 6 - External Factors in Perception
Lecture 7 - Theory of Signal Detection
Lecture 8 - Gestalt Principles
Lecture 9 - Form Perception
Lecture 10 - Role of Culture in Perception
Lecture 11 - Basic Concepts of Learning
Lecture 12 - Classical Conditioning
Lecture 13 - Concepts and Applications of Classical Conditioning
Lecture 14 - Operant Conditioning
Lecture 15 - Observational Learning
Lecture 16 - Cognitive Learning
Lecture 17 - Models of Memory
Lecture 18 - Short Term Memory - Storage and Retention
Lecture 19 - Long Term Memory - Episodic Memory
Lecture 20 - Long Term Memory - Autobiographical and Semantic Memory
Lecture 21 - Long Term Memory - Procedural Memory
Lecture 22 - Forgetting
Lecture 23 - Theories of Emotion - 1
Lecture 24 - Theories of Emotion - 2
Lecture 25 - Basic Emotions
Lecture 26 - Culture and Emotions
Lecture 27 - Musculature Analysis of Facial Expressions
Lecture 28 - Biological Basis of Emotion
Lecture 29 - Nature vs Nurture

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Lecture 30 - Behavioural Genetics - I
Lecture 31 - Behavioural Genetics - II
Lecture 32 - Intelligence
Lecture 33 - Aptitude
Lecture 34 - Various Perspectives of Personality
Lecture 35 - Neo Freudian and Behaviourist Perspective
Lecture 36 - Behaviourist and Humanistic Perspective
Lecture 37 - Indian Perspective of Personality and Assessment of Personality
Lecture 38 - Psychometric tests of Personality Assessment
Lecture 39 - Lab Session 1
Lecture 40 - Lab Session 2
Lecture 41 - Lab Session 3
Lecture 42 - Lab Session 4
Lecture 43 - Lab Session 5
NPTEL Video Course - Humanities and Social Sciences - NOC:Folk and Minor Art in India

Subject Co-ordinator - Dr. Shatarupa Thakurta Roy

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Changing Definition of Folk and Minor Art
Lecture 2 - Timelines and Regions
Lecture 3 - Traditional Roots
Lecture 4 - Timelessness
Lecture 5 - Evolution in Purpose
Lecture 6 - Contemporary Practice
Lecture 7 - Classification and Connections
Lecture 8 - Early Literary Resources
Lecture 9 - Mythical Associations
Lecture 10 - Idea of Nationalism and Modernism in the Context of Folk Art-I and II
Lecture 11 - Relevance of the Art Practice
Lecture 12 - Contextualization and Decontextualization
Lecture 13 - Concept of Communication for Social Purpose
Lecture 14 - Aesthetic Perspective
Lecture 15 - Secularity and Religious Plurality
Lecture 16 - Ethnographic perspective on the study of Folk Art and Culture
Lecture 17 - About the Exponents who brought the culture under the Limelight
Lecture 18 - Commonality and Congruity in the Diverse Content of Art
Lecture 19 - School of Art in Madhubani Painting
Lecture 20 - Art as a Feminine Preserve vs the Male painters of Madhubani
Lecture 21 - Yamapata, Pytkar and other art practice of Jharkhand
Lecture 22 - Patachitra of Bengal
Lecture 23 - Patachitra of Odisha
Lecture 24 - Continuum of the Practice
Lecture 25 - Continuum of the Practice
Lecture 26 - Continuum of the Practice
Lecture 27 - Case study-1
Lecture 28 - Case study-2
Lecture 29 - Case study-3

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Lecture 30 - Characteristics of Contemporary Collection - Semiotic Analysis
Lecture 31 - Characteristics of Contemporary Collection - Thematic and Iconic Analysis
Lecture 32 - Characteristics of Contemporary Collection of Indian Folk and Minor Art
Lecture 33 - Thematic Change in Contemporary Collection of Indian Folk and Minor Art
Lecture 34 - Individual Expression in Contemporary Collection of Indian Folk and Minor Art
Lecture 35 - Cultural Condition
Lecture 36 - Cultural Condition
Lecture 37 - Contextualizing Folk idiom - Part I
Lecture 38 - Contextualizing Folk idiom - Part II
Lecture 39 - Contextualizing Folk idiom - Part III
Lecture 40 - Coexistence and Collaborations with Mainstream Art
Lecture 41 - Alternative Context
Lecture 42 - Need of Paradigm Shift - I
Lecture 43 - Need of Paradigm Shift - II
Lecture 44 - Endnote
Lecture 1 - Introduction
Lecture 2 - Planning and Goal-Setting
Lecture 3 - Human Perceptions
Lecture 4 - Types of Soft Skills
Lecture 5 - Aiming for Excellence
Lecture 6 - Need Achievement and Spiritual Intelligence
Lecture 7 - Conflict Resolution Skills
Lecture 8 - Inter-Personal Conflicts
Lecture 9 - Inter-Personal Conflicts
Lecture 10 - Types of Conflicts
Lecture 11 - Types of Stress
Lecture 12 - Regulating Stress
Lecture 13 - Habits
Lecture 14 - Habits
Lecture 15 - Habits
Lecture 16 - Breaking Bad Habits
Lecture 17 - Using the Zeigarnik Effect for Productivity and Personal Growth
Lecture 18 - Forming Habits of Success
Lecture 19 - Communication
Lecture 20 - Communication
Lecture 21 - Communication
Lecture 22 - Telephone Communication
Lecture 23 - Telephone Communication
Lecture 24 - Telephone Communication
Lecture 25 - Technology and Communication
Lecture 26 - Technology and Communication
Lecture 27 - Topic
Lecture 28 - Technology and Communication
Lecture 29 - Technology and Communication
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NPTEL Video Course - Humanities and Social Sciences - NOC: How the Brain Creates Mind

Subject Co-ordinator - Alok Bajpai

Co-ordinating Institute - Consultant Psychiatrist

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Brain - 1
Lecture 2 - Brain - 2
Lecture 3 - Brain - 3
Lecture 4 - Electrical Activity In Brain - 1
Lecture 5 - Electrical Activity In Brain - 2
Lecture 6 - EEG
Lecture 7 - Dynamics - 1
Lecture 8 - Dynamics - 2
Lecture 9 - Dynamics - 3
Lecture 10 - Dynamics - 4
Lecture 11 - Cognition and Emotions - 1
Lecture 12 - Cognition and Emotions - 2 Edit Lesson
Lecture 13 - Cognition and Emotions - 3
Lecture 14 - Cognition and Emotions - 4
Lecture 15 - Consciousness
Lecture 16 - Sleep - 1
Lecture 17 - Sleep - 2
Lecture 18 - Sleep - 3
Lecture 19 - Future of Brain - 1
Lecture 20 - Future of Brain - 2
Lecture 30 - Managing Money
Lecture 31 - Health and Personality
Lecture 32 - Managing Health-1 Importance of Exercise
Lecture 33 - Managing Health-2 Diet and Sleep
Lecture 34 - Love and Personality
Lecture 35 - Managing Love
Lecture 36 - Ethics and Etiquette
Lecture 37 - Business Etiquette
Lecture 38 - Managing Mind and Memory
Lecture 39 - Improving Memory
Lecture 40 - Care for Environment
NPTEL Video Course - Humanities and Social Sciences - NOC: Postcolonial Literature

Subject Co-ordinator - Prof. Sayan Chattopadhyay

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Commonwealth Literature
Lecture 3 - Colonial Discourse Analysis
Lecture 4 - Colonial Discourse Analysis
Lecture 5 - Joseph Conrad's Heart of Darkness
Lecture 6 - Colonialism
Lecture 7 - Chinua Achebe's Things Fall Apart - I
Lecture 8 - Chinua Achebe's Things Fall Apart - II
Lecture 9 - Decolonisation and the Discourse of Nationalism
Lecture 10 - Sonnets of Henry Derozio
Lecture 11 - Raja Rao's Kanthapura - I
Lecture 12 - Raja Rao's Kanthapura - II
Lecture 13 - Critics of Nationalism
Lecture 14 - Homi Bhabha and the concept of Cultural Hybridity
Lecture 15 - Caribbean Poetry
Lecture 16 - Diasporic Literature
Lecture 17 - Gayatri C. Spivak
Lecture 18 - Mahasweta Devi's Pterodactyl - I
Lecture 19 - Mahasweta Devi's Pterodactyl - II
Lecture 20 - Conclusion

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NPTEL Video Course - Humanities and Social Sciences - NOC: Introducing Modern Western Art: Movements and Artists

Subject Co-ordinator - Prof. Soumik Nandy Majumdar
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - What is Modern Art?
Lecture 2 - Pre-history of Modern Art
Lecture 3 - Chronology of Modern Western Art
Lecture 4 - Beginning(s) of Modern Art Â□ 1 (Romanticism and Realism)
Lecture 5 - Beginning(s) of Modern Art Â□ 2 (Impressionism and Post - Impressionism)
Lecture 6 - Fauvism and Matisse
Lecture 7 - Cubism and Picasso
Lecture 8 - Futurism and Dada-ism
Lecture 9 - Surrealism
Lecture 10 - German Expressionism
Lecture 11 - Rodin Â□ the precursor of Modern Sculpture
Lecture 12 - From Figuration to Abstract (Henry Moore and Brancusi)
Lecture 13 - Pure Abstract Sculpture (Constructivism and Minimalism)
Lecture 14 - Introspection and Innovations (Giacometti and Calder)
Lecture 15 - Outdoor Sculpture and Public Art
Lecture 16 - Abstract Painting (Picasso, Paul Klee, Mondrian)
Lecture 17 - Abstract Expressionism
Lecture 18 - Art and Optical Science: Op Art
Lecture 19 - Art and the Mass Culture: Pop Art
Lecture 20 - Contemporary Trends: Breaking the Barriers

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NPTEL Video Course - Humanities and Social Sciences - NOC:Cognition, Transformation and Lives

Subject Co-ordinator - Alok Bajpai
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Cognition, Emotion and Transformation
Lecture 2 - Self and Others
Lecture 3 - Human Cognition
Lecture 4 - Cognition and Human Behaviour
Lecture 5 - Human Emotions
Lecture 6 - Understanding Emotions
Lecture 7 - Stories from the Brain
Lecture 8 - Stories from the Brain (Continued...)
Lecture 9 - Humans and Madness
Lecture 10 - Humans and Madness (Continued...)
Lecture 11 - Vices and Virtues
Lecture 12 - Change and its Context
Lecture 13 - Can we transform?
Lecture 14 - Need for transformation
Lecture 15 - Process of Transformation
Lecture 16 - Biographical models of transformations
Lecture 17 - Biographical narrative of Gandhi
Lecture 18 - Gandhi's process of transformation
Lecture 19 - Transformation and Ethics
Lecture 20 - Transformation and Society

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NPTEL Video Course - Humanities and Social Sciences - NOC: Visual Perception and Art - A Survey Across the Cultures

Subject Co-ordinator - Prof. Soumik Nandy Majumdar
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introductory Lecture
Lecture 2 - What is Visual Perception?
Lecture 3 - Visual Perception and Visual Reality
Lecture 4 - Visual Perception and Creativity - 1
Lecture 5 - Visual Perception and Creativity - 2
Lecture 6 - Child art
Lecture 7 - Pre-historic art
Lecture 8 - Folk art
Lecture 9 - Primitive art
Lecture 10 - Photography
Lecture 11 - Popular visual culture
Lecture 12 - Mimetic and Non-mimetic art
Lecture 13 - Traditional art
Lecture 14 - Traditional art
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Lecture 16 - Alternative realism
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NPTEL Video Course - Humanities and Social Sciences - NOC:Calculus of One Real Variable

Subject Co-ordinator - Dr. Joydeep Dutta

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Numbers
Lecture 2 - Countability and Uncountability
Lecture 3 - Examples of Irrational numbers
Lecture 4 - Functions
Lecture 5 - Limits of Functions - I
Lecture 6 - Limits of Functions - II
Lecture 7 - Continuous Functions
Lecture 8 - Intermediate Value Theorem
Lecture 9 - Maximum Value Theorem
Lecture 10 - Supremum and Infimum
Lecture 11 - Derivative of a Function
Lecture 12 - Rules of Differentiation
Lecture 13 - Maxima and Minima
Lecture 14 - Rolles Theorem and Lagrange Mean Value Theorem (MVT)
Lecture 15 - Monotonic Functions and Inverse Functions
Lecture 16 - Newton’s Method for solving Equations
Lecture 17 - Optimization Problems
Lecture 18 - Integration-I
Lecture 19 - Integration-II
Lecture 20 - Integration-III
Lecture 21 - Integration theory of Riemann - I
Lecture 22 - Integration theory of Riemann - II
Lecture 23 - Integration Rule
Lecture 24 - Fundamental Theorem of Calculus (in Riemann style)
Lecture 25 - The Kurzweil-Henstock Integral (K-H Integral)
Lecture 26 - Calculating Indefinite Integrals
Lecture 27 - Improper Integral - I
Lecture 28 - Improper Integral - II
Lecture 29 - Application of Definite Integral - I
Lecture 30 - Application of definite Integral - II
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Lecture 33 - Numerical Integration - I
Lecture 34 - Numerical Integration - II
Lecture 35 - Sequences
Lecture 36 - Sequences (Continued...)
Lecture 37 - Infinite Series
Lecture 38 - infinite series (Continued...)
Lecture 39 - Taylors Theorem, other issues and end of the course - I
Lecture 40 - Taylors Theorem, other issues and end of the course - II
Lecture 30 - Incidence of Tax
Lecture 31 - Incidence of Tax
Lecture 32 - Incidence of Tax
Lecture 33 - Towards Consumer Theory
Lecture 34 - Budget Line and Budget Set
Lecture 35 - Factors Affecting the Budget Line
Lecture 36 - Few Examples of Changes in Budget Line
Lecture 37 - Consumption Set
Lecture 38 - Convexity of Consumption Set
Lecture 39 - Describing Utility
Lecture 40 - Some Axioms
Lecture 41 - Preferences as a Mathematical Construct
Lecture 42 - Rationality in Real Life Vs. Rationality in Economics
Lecture 43 - More on Three Axioms of Rationality
Lecture 44 - Defining Utility Function
Lecture 45 - Ordinal Vs. Cardinal Utility
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Lecture 56 - More on Utility Maximization
Lecture 57 - Utility Maximization
Lecture 58 - Example Revisited
Lecture 59 - Marginal Utility Vs. Marginal Rate of Substitution (MRS)
Lecture 60 - Perfect Substitutes
Lecture 61 - Perfect Complements
Lecture 62 - An Example with Quasi Linear Preferences
Lecture 63 - Demand Revisited
Lecture 64 - Effect of Income on Quantity Demanded
Lecture 65 - Effect of Change in Price
Lecture 66 - Substitution Effect and Income Effect
Lecture 67 - Giffen Good
Lecture 68 - Expenditure Minimization as a Dual Problem of Utility Maximization

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| Lecture 76  | Axioms/ Assumptions Continued             |
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| Lecture 79  | More on APL and MPL                       |
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| Lecture 90  | Diminishing Marginal Product Vs. DMRTS    |
| Lecture 91  | Returns to Scale through Graphs           |
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NPTEL Video Course - Humanities and Social Sciences - NOC: Introduction to Advanced Cognitive Processes

Subject Co-ordinator - Prof. ARK Verma

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Knowledge - I
Lecture 3 - Knowledge - II
Lecture 4 - Knowledge - III
Lecture 5 - Knowledge - IV
Lecture 6 - Knowledge - V
Lecture 7 - Visual Imagery - I
Lecture 8 - Visual Imagery - II
Lecture 9 - Cognitive Maps
Lecture 10 - Mental Imagery
Lecture 11 - Language
Lecture 12 - Language
Lecture 13 - Evolution of Language
Lecture 14 - Language Acquisition - I
Lecture 15 - Language Acquisition - II
Lecture 16 - Language Comprehension - I
Lecture 17 - Language Comprehension - II
Lecture 18 - Language Production
Lecture 19 - Reading - I
Lecture 20 - Reading - II
Lecture 21 - Aphasia
Lecture 22 - Bilingualism
Lecture 23 - Reasoning and Decision Making - I
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Lecture 27 - Problem Solving - II
Lecture 28 - Problem Solving - III
Lecture 29 - Problem Solving - IV

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Lecture 31 - Cognition and Emotion - I
Lecture 32 - Cognition and Emotion - II
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NPTEL Video Course - Humanities and Social Sciences - NOC: Development of Sociology in India

Subject Co-ordinator - Prof. Ashish Saxena
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 11 - Structural-functional perspective
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Lecture 15 - On Gender perspective
Lecture 16 - On Gender perspective
Lecture 17 - Subaltern perspective
Lecture 18 - Subaltern perspective
Lecture 19 - On Dalit Perspective
Lecture 20 - On Dalit Perspective

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NPTEL Video Course - Humanities and Social Sciences - NOC: Introduction to the Psychology of Language

Subject Co-ordinator - Prof. ARK Verma
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Language
Lecture 2 - Basic Concepts in Psycholinguistics
Lecture 3 - Animal Communication
Lecture 4 - Evolution of Language
Lecture 5 - Language and Thought
Lecture 6 - Do children talk? And How?
Lecture 7 - The First Steps in Language Acquisition
Lecture 8 - Segmenting the speech stream
Lecture 9 - Learning Word Meanings
Lecture 10 - Acquiring Morphological and Syntactic Knowledge
Lecture 11 - Speech Production - 1
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Lecture 13 - Speech Production - 3
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NPTEL Video Course - Humanities and Social Sciences - NOC: Population Studies

Subject Co-ordinator - Prof. A.K. Sharma

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Population Studies
Lecture 2 - Population Ecology / Geography
Lecture 3 - Population Growth
Lecture 4 - Population Growth and Development
Lecture 5 - Population Dynamics - 1
Lecture 6 - Population Dynamics - 2
Lecture 7 - Population Policies
Lecture 8 - Population Policy in India
Lecture 9 - Population and Family Welfare - 1
Lecture 10 - Population and Family Welfare - 2
Lecture 11 - Techniques of Population Analysis - 1
Lecture 12 - Techniques of Population Analysis - 2
Lecture 13 - Population and Society
Lecture 14 - Population and Society
Lecture 15 - Statistical Techniques in Population Studies - 1
Lecture 16 - Statistical Techniques in Population Studies - 2
Lecture 17 - Population Growth and Women - 1
Lecture 18 - Population Growth and Women - 2
Lecture 19 - Population Concepts and Aging - 1
Lecture 20 - Population Concepts and Aging - 2

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NPTEL Video Course - Humanities and Social Sciences - NOC:Technology Transfer through Joint Venture

Subject Co-ordinator - Prof. Indrajit Dube
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Forms of Strategic Alliance
Lecture 2 - Negotiations and Contractual Aspect
Lecture 3 - Risks and Opportunities
Lecture 4 - Regulatory Issues
Lecture 5 - Implication on Stakeholders
Lecture 6 - Joint Venture [JV] Options
Lecture 7 - Types of Joint Venture [JV]
Lecture 8 - Issues Frequently Arise During JV Negotiation
Lecture 9 - Key Compliance
Lecture 10 - Governing Laws in Cross-Border Transaction
Lecture 11 - Formation of Joint Venture Agreement
Lecture 12 - Governance Issues in Joint Venture
Lecture 13 - Business Plan in Joint Venture
Lecture 14 - Shareholder Agreement in Joint Venture
Lecture 15 - Specific Issues of Share Transfer in Joint Venture
Lecture 16 - Preparation for SPV
Lecture 17 - Formation of SPV
Lecture 18 - Disclosure to be made by SPV
Lecture 19 - Risk Management and SPV
Lecture 20 - Offset and SPV
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NPTEL Video Course - Humanities and Social Sciences - NOC: Legal Compliance for Incorporating Startup

Subject Co-ordinator - Prof. Indrajit Dube

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Why we need a business form for startup
Lecture 2 - How to choose appropriate business form for startup
Lecture 3 - Comparative Analysis of Incorporation Requirement
Lecture 4 - Comparative Analysis of Compliance Cost
Lecture 5 - Other Formalities to Comply
Lecture 6 - Law relating to Partnership and Deed
Lecture 7 - Law relating to LL.P
Lecture 8 - How to Incorporate LL.P
Lecture 9 - Law relating to Co-operative
Lecture 10 - How to Incorporate Co-operative
Lecture 11 - Law Relating to One Person Company
Lecture 12 - Law Relating to Pvt. Ltd. Company
Lecture 13 - Law Relating to Pub. Ltd. Company
Lecture 14 - Law Relating to Non-Profit Company
Lecture 15 - How to Incorporate these Companies
Lecture 16 - How to Capitalize the Business
Lecture 17 - Raising fund through Private Equity and Venture Capital
Lecture 18 - Raising fund from Financial Institution
Lecture 19 - Types of Instruments for raising the fund
Lecture 20 - Issue of the Instruments

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Lecture 30 - Creativity, Critical Thinking and Problem Solving
Lecture 31 - Motivating Oneself
Lecture 32 - The Art of Persuasion - I
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Lecture 34 - From Persuasion to Negotiation
Lecture 35 - Leadership and Motivating Others
Lecture 37 - Managing Stress
Lecture 38 - Resilience
Lecture 39 - Work - Life Balance
Lecture 40 - Applying Soft Skills to Workplace
NPTEL Video Course - Humanities and Social Sciences - NOC:Symbolic Logic

Subject Co-ordinator - Prof. Chhanda Chakraborti

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Propositions, Arguments, Components, Basic Characteristics
Lecture 3 - Recognizing arguments, Diagramming logic flow
Lecture 4 - Types of arguments, Deductive, Inductive, different norms to assess arguments
Lecture 5 - Concepts of Validity Soundness, Consistency
Lecture 6 - History of Symbolic Language
Lecture 7 - Propositional Logic
Lecture 8 - Connectives, Scope of Connectives
Lecture 9 - Truth-functional Connectives, Propositional Variables, Propositional Constants
Lecture 10 - Symbolization with Connectives
Lecture 11 - Propositional Logic
Lecture 12 - Using Truth Table
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Lecture 17 - Truth Tree Rules and their Application
Lecture 18 - More on Truth-Tree Recovery of Partial Truth - Values
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Lecture 23 - How to Apply the Rules of Inference in a Proof
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NPTEL Video Course - Humanities and Social Sciences - NOC: Globalization and Culture

Subject Co-ordinator - Prof. Anjali Gera Roy

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Globalization Definition
Lecture 2 - Global Flows and New Media and Technologies
Lecture 3 - Globalization and Nation
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Lecture 5 - Cultural Imperialism
Lecture 6 - Global Monocultures
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Lecture 14 - Is Chutney the New Rage
Lecture 15 - Bollywood Song and Dance
Lecture 16 - Planet Bollywood
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Lecture 21 - Travels of Dastan
Lecture 22 - Scripting the Nation
Lecture 23 - Cracking the Nation
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Lecture 26 - Orientalism
Lecture 27 - Yoga, Meditation, Gurus
Lecture 28 - Beatles, Ravi Shankar and Sitar
Lecture 29 - Orientalizing India

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Lecture 30 - Neoorientalism
Lecture 31 - The Birth of Indo-Chic
Lecture 32 - Henna, Bindi, Saris and Bangles
Lecture 33 - The Taste of Curry
Lecture 34 - Global News
Lecture 35 - News as Infortainment
Lecture 36 - Global Media Cultures
Lecture 37 - Cultural Imperialism
Lecture 38 - Contraflows in Global Media
Lecture 39 - Contraflows in News and Entertainment
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NPTEL Video Course – Humanities and Social Sciences – NOC: Qualitative Research Methods

Subject Co-ordinator - Prof. Aradhna Malik

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - The Qualitative Researcher
Lecture 3 - Quantitative vs. Qualitative Research
Lecture 4 - History of Qualitative Research
Lecture 5 - The Process of Qualitative Research
Lecture 6 - Dominant Paradigms of Qualitative Research
Lecture 7 - Interpretivist Thinking
Lecture 8 - Verstehen
Lecture 9 - Constructivism
Lecture 10 - Properties of Constructions
Lecture 11 - Constructivism-Sub Paradigms
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Lecture 14 - Characteristics of Critical Theory
Lecture 15 - Critiques of Critical Theory
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Lecture 17 - Qualitative Research Design
Lecture 18 - Qualitative Research Design (Continued...)
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Lecture 20 - Autoethnography
Lecture 21 - Case Studies
Lecture 22 - Case Studies (Continued...)
Lecture 23 - Analyzing Interpretive Practice
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Lecture 25 - Grounded Theory
Lecture 26 - Grounded Theory (Continued...)
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Lecture 28 - Participatory Action Research (Continued...)
Lecture 29 - Observation

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Lecture 31 - Interviewing (Continued...)
Lecture 32 - Interpretation of Documents and Material Culture
Lecture 33 - Autoethnography, Personal Narrative and Reflexivity
Lecture 34 - Analyzing Visual Data
Lecture 35 - Analyzing Talk and Text
Lecture 36 - Data Management and Analysis Methods
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Lecture 38 - Software and Qualitative Research
Lecture 39 - The Problem of Criteria
Lecture 40 - Interpretation
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Lecture 42 - Writing (Continued...)
Lecture 43 - Understanding Social Programs through Evaluation
Lecture 44 - Understanding Social Programs through Evaluation (Continued...)
Lecture 45 - Influencing the Policy Progress with Qualitative Research
Lecture 46 - Conclusion
NPTEL Video Course - Humanities and Social Sciences - NOC: Emotional Intelligence

Subject Co-ordinator - Prof. Rabindra Kumar Pradhan
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to EI and Related Concepts
Lecture 2 - Introduction to EI and Related Concepts (Continued...)
Lecture 3 - Introduction to EI and Related Concepts (Continued...)
Lecture 4 - Introduction to EI and Related Concepts (Continued...)
Lecture 5 - Introduction to Intelligence
Lecture 6 - Meaning, Nature, Scope, Types of Intelligence
Lecture 7 - Measurement of Intelligence
Lecture 8 - Applications
Lecture 9 - Discovery of Emotional Intelligence
Lecture 10 - Meaning, Nature Theory
Lecture 11 - Measurement of EI
Lecture 12 - Difference Between EQ and IQ
Lecture 13 - EQ Assessment
Lecture 14 - EQ and Empathy
Lecture 15 - EQ and Resilience
Lecture 16 - EQ and Health and Wellbeing
Lecture 17 - EQ Map
Lecture 18 - EQ Map (Continued...)
Lecture 19 - EQ Map (Continued...)
Lecture 20 - EQ Map (Continued...)
Lecture 21 - Emotional Intelligence in Education
Lecture 22 - Evaluation of EQ for Students
Lecture 23 - EI New Vision for Learning
Lecture 24 - EQ Skills for Students Success
Lecture 25 - EI in Health and Well Being
Lecture 26 - EI in Health and Well Being (Continued...)
Lecture 27 - EI and Cultural Adjustment
Lecture 28 - EI at Work
Lecture 29 - Emotional Intelligence and Happiness Positive Psychology

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Lecture 31 - Emotional Intelligence and Happiness Positive Psychology (Continued...)
Lecture 32 - Emotional Intelligence and Happiness Positive Psychology (Continued...)
Lecture 33 - Emotional Intelligence and Leadership
Lecture 34 - Emotional Intelligence an Leadership (Continued...)
Lecture 35 - Emotional Intelligence an Leadership (Continued...)
Lecture 36 - Emotional Intelligence an Leadership (Continued...)
Lecture 37 - Culture and Emotion
Lecture 38 - Role of EI
Lecture 39 - Cultural Intelligence
Lecture 40 - Emotional Intelligence for Cross Cultural Adaptability
NPTEL Video Course - Humanities and Social Sciences - NOC: Speaking Effectively

Subject Co-ordinator - Prof. Anjali Gera Roy

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction, The Art of Speaking
Lecture 2 - Encoding Meaning Using Verbal and Nonverbal Symbols
Lecture 3 - Encoding Meaning Using Verbal Symbols
Lecture 4 - The Power of words
Lecture 5 - Cross Cultural Factors in Communication Verbal and Nonverbal
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Lecture 7
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Lecture 11 - Phonetics
Lecture 12 - Sounds of English Vowels
Lecture 13 - Sounds of English Diphthongs and Consonants
Lecture 14 - Stress and Rhythm Intonation
Lecture 15 - Role plays and activities
Lecture 16 - Speaking Voice
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Lecture 18 - How to Improve Voice
Lecture 19 - How to Improve Delivery
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NPTEL Video Course - Humanities and Social Sciences - NOC: Educational Leadership

Subject Co-ordinator - Prof. Atasi Mohanty
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Educational Management and Leadership
Lecture 2 - Key Challenges for Educational Leaders
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Lecture 6 - Professional Development and The Reflective Practitioner
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Lecture 28 - Innovative Pedagogy and Technology for Learning
Lecture 29 - Innovative Pedagogy and Technology for Learning (Continued...)

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Lecture 1 - Introduction to Performance management
Lecture 2 - Aim and purpose of performance management
Lecture 3 - Characteristics of an effective PM system
Lecture 4 - Performance Management Process
Lecture 5 - Role of PM in employee development and identification of Key performance areas
Lecture 6 - Understanding performance planning
Lecture 7 - Strategic Planning and performance
Lecture 8 - Strategic planning and performance - 2
Lecture 9 - Strategic planning and performance - 3
Lecture 10 - Strategy and performance alignment
Lecture 11 - Performance dimensions
Lecture 12 - Behavior, result and trait approach system
Lecture 13 - Measuring behavior and results
Lecture 14 - Measurement system
Lecture 15 - Collecting information in performance management
Lecture 16 - Implementing PM System
Lecture 17 - Implementing PMS (2)
Lecture 18 - Self appraisal
Lecture 19 - Managing team performance
Lecture 20 - 360 degree appraisal
Lecture 21 - Performance Management Skill
Lecture 22 - Performance Management and Employee Development
Lecture 23 - Coaching for performance improvement
Lecture 24 - Coaching process, analysis and techniques
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Lecture 26 - Performance Review
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Lecture 32 - Potential Appraisal 2
Lecture 33 - Reward system 1
Lecture 34 - Reward system 2
Lecture 35 - Performance Management and Legal System
Lecture 36 - PMS in Indian Organisations
Lecture 37 - Culture and Performance Management
Lecture 38 - Technology and Performance Management
Lecture 39 - PMS in Select Indian Companies
Lecture 40 - Future of Performance Management
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC:Introduction to Basic Spoken Sanskrit

Subject Co-ordinator - Prof. Anuradha Choudry
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - The Sounds of Sanskrit
Lecture 3 - Sentence Construction and its underlying logic
Lecture 4 - Introduction of Self and Others
Lecture 5 - Basic Verbs and Some Conjugations
Lecture 6 - Introduction to the Genitive (6th) Case
Lecture 7 - Counting and Reading the Time
Lecture 8 - Plural of Pronouns and Nouns
Lecture 9 - Conjugation of Basic Verbs in the Plural
Lecture 10 - Introduction to the Locative (7th) Case
Lecture 11 - Days of the Week, Months, Future Tense
Lecture 12 - Past Tense and More Verbs
Lecture 13 - Introduction to the Accusative (2nd) Case
Lecture 14 - Continuation of the Accusative (2nd) Case
Lecture 15 - Introduction to the Instrumental (3rd) Case
Lecture 16 - Continuation of the Instrumental (3rd) Case
Lecture 17 - Introduction to the Ablative (5th) Case
Lecture 18 - Introduction to the Dative (4th) Case
Lecture 19 - Introduction to the Vocative (8th) Case
Lecture 20 - Overview and Conclusion

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NPTEL Video Course - Humanities and Social Sciences - NOC: Water, Society and Sustainability

Subject Co-ordinator - Prof. Jenia Mukherjee
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Setting the Context
Lecture 2 - Beyond Hydrology
Lecture 3 - Socio Hydrology
Lecture 4 - Political Ecology of Water
Lecture 5 - Hydrosocial
Lecture 6 - Critical Physical Geography (CPG)
Lecture 7 - The South Asian Context
Lecture 8 - Water Harvesting and Water Use Techniques in Ancient India - 1
Lecture 9 - Water Harvesting and Water Use Techniques in Ancient India - 2
Lecture 10 - Water Harvesting and Water Use Techniques in Ancient India - 3
Lecture 11 - Water Technology in Medieval India - 1
Lecture 12 - Water Technology in Medieval India - 2
Lecture 13 - Colonial Hydrology
Lecture 14 - Dams and Development in Contemporary India
Lecture 15 - The Farakka Barrage Project
Lecture 16 - The Farakka Barrage Project
Lecture 17 - Urban Waters
Lecture 18 - Peri-urban Water Justice in the Global South
Lecture 19 - Transforming Trajectories of Blue Infrastructures of Kolkata
Lecture 20 - Discussion and Conclusion
NPTEL Video Course - Humanities and Social Sciences - NOC:Employment Communication A Lab based course

Subject Co-ordinator - Prof. Seema Singh

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Employment Communication - A Lab based Course
Lecture 2 - Communication - An Introduction
Lecture 3 - Communication Skills at the Workplace
Lecture 4 - Verbal Communication - Introduction
Lecture 5 - Verbal Communication (Continued...)
Lecture 6 - Non-verbal Communication - Introduction
Lecture 7 - Non-verbal Communication - Conclusion
Lecture 8 - Inter Cultural Communication - Introduction
Lecture 9 - Inter Cultural Communication - Conclusion
Lecture 10 - Practice Session 0
Lecture 11 - Body Language - Introduction
Lecture 12 - Body Language - Conclusion
Lecture 13 - Listening Skills - Introduction
Lecture 14 - Listening Skills - Conclusion
Lecture 15 - Practice Session 1
Lecture 16 - Body Language
Lecture 17 - Introduction to the Employment Process
Lecture 18 - Listening Skills
Lecture 19 - Introduction to CV Writing
Lecture 20 - Samples of Good CVs and Cover Letter
Lecture 21 - The Cover Letter
Lecture 22 - CV Writing Lab Session - I
Lecture 23 - CV Writing Lab Session - II
Lecture 24 - Fundamentals of Group Discussions (GDs)
Lecture 25 - Strategies for Success in GDs
Lecture 26 - Group Discussions Lab - Practice Session I
Lecture 27 - Group Discussions Lab - Practice Session II
Lecture 28 - Group Discussions Lab - Practice Session III
Lecture 29 - Group Discussions Lab - Practice Session IV

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Lecture 30 - Interviewing for Employment
Lecture 31 - Preparing for the Personal Interview
Lecture 32 - PI Practice Session - I
Lecture 33 - PI Practice Session - II
Lecture 34 - PI Practice Session - III
Lecture 35 - PI Practice Session - IV
Lecture 36 - Tackling Questions during Personal Interviews (PIs)
Lecture 37 - Success in Personal Interviews (PIs)
Lecture 38 - Life Skills Lab and Student Speak
Lecture 39 - Life Skills
Lecture 40 - Course Wrap Up
NPTEL Video Course - Humanities and Social Sciences - NOC:Intermediate Level of Spoken Sanskrit

Subject Co-ordinator - Prof. Anuradha Choudry

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the devanāgarī script
Lecture 2 - Introduction to the devanāgarī script
Lecture 3 - Revision and practice of vibhakti - declension forms
Lecture 4 - Revision and practice of vibhakti - declension forms
Lecture 5 - Revision and practice of vibhakti - declension forms
Lecture 6 - Revision and practice of vibhakti - declension forms
Lecture 7 - Introduction to the first and second person pronouns in the plural forms - Part 1
Lecture 8 - Revision and practice of the first and second person pronouns in the plural - Part 2
Lecture 9 - Introduction of the first person pronoun in the dual form - Part 1
Lecture 10 - Introduction of the first person pronoun in the dual form - Part 2
Lecture 11 - Introduction of the second person pronoun in the dual form - Part 1
Lecture 12 - Introduction of the second person pronoun in the dual form - Part 2
Lecture 13 - Third person pronouns and nouns (m/f) in the plural - Part 1
Lecture 14 - Third person pronouns and nouns (m/f) in the plural - Part 2
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Lecture 16 - Third person pronouns and nouns (m/n/f) in the plural - Part 4
Lecture 17 - Third person pronouns and nouns (m/n/f) in the plural - Part 5
Lecture 18 - Revision and Exercises
Lecture 19 - Third person pronouns and nouns (m/n/f) in the dual - Part 1
Lecture 20 - Third person pronouns and nouns (m/n/f) in the dual - Part 2
Lecture 21 - Third person pronouns and nouns (m/n/f) in the dual - Part 3
Lecture 22 - Third person pronouns and nouns (m/n/f) in the dual - Part 4
Lecture 23 - Third person pronouns and nouns (m/n/f) in the dual - Part 5
Lecture 24 - Revision of the third person pronouns and nouns (m/n) in the dual - Part 1
Lecture 25 - Revision of the third person pronouns and nouns (f) in the dual - Part 2
Lecture 26 - Introduction to the verb conjugations in the kriyā•tipatti-lá¹√ (the conditional)
Lecture 27 - Introduction to the verb conjugations in the vidhi-liá¹√ (the optative)
Lecture 28 - Introduction to the conjugation of â asâ (to be) from the adá•digaá¹√ a (2nd group) in the various tenses and moods
Lecture 29 - Introduction to the conjugation of the verb â dÄ•â (to give) from the juhotyÄ•digaá¹√ a (3rd group) in the various tenses and moods
Lecture 30 - Introduction to the conjugation of the verb दिव (to shine, to sport) and विद (to know) from the divādiga (4th group)
Lecture 31 - Introduction to the conjugation of the verb रु (to hear) from the svādiga (5th group) in the various tenses and moods
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Lecture 34 - Introduction to the conjugation of the verb 'भुज' (to protect) from the rudhādiga (7th group) in the various tenses and moods
Lecture 35 - Introduction to the conjugation of the verb ज्ञान (to know) from the kryādiga (9th group) in the various tenses and moods
Lecture 36 - Introduction of nouns (m) ending with उ and इ in the three vacanas
Lecture 37 - Introduction of nouns (n) ending with उ and इ in the three vacanas
Lecture 38 - Introduction of nouns (f) ending with उ and इ in the three vacanas
Lecture 39 - Introduction of nouns (m) ending with आ in the three vacanas and of nouns (n/f) ending with आ in the three vacanas
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Lecture 41 - Introduction of nouns (m/f/n) ending with आ in the three vacanas
Lecture 42 - Introduction to the svarasandhi
Lecture 43 - Introduction to the visargasandhi
Lecture 44 - Introduction to the vyañjanasandhi
Lecture 45 - Summary and Conclusion

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NPTEL Video Course - Humanities and Social Sciences - Aspects of Western Philosophy

Subject Co-ordinator - Dr. Sreekumar Nellickappilly
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Greek Philosophy
Lecture 2 - Sophists, Socrates; philosophy of man; relativism and subjectivism; the idea of good
Lecture 3 - Platos idealism
Lecture 4 - Plato
Lecture 5 - Aristotles criticism of Platonic idealism and the concepts of Form and Matter
Lecture 6 - Aristotles theory of causation; potentiality and actuality
Lecture 7 - Medieval philosophy
Lecture 8 - Modern Philosophy
Lecture 9 - Descartes
Lecture 10 - Descartes
Lecture 11 - Spinoza
Lecture 12 - Spinozas pantheism-God and nature
Lecture 13 - Leibniz
Lecture 14 - The empiricism of John Locke
Lecture 15 - John Locke
Lecture 16 - Berkeley
Lecture 17 - Berkeleyys critique of abstract ideas, esse est percipi, the problem of solipsism; God and self
Lecture 18 - Hume
Lecture 19 - The external world and the self, personal identity, rejection of metaphysics, scepticism, reason and the passions.
Lecture 20 - Critical Philosophy
Lecture 21 - Kant
Lecture 22 - The Ideas of Reason-soul, God and world as a whole; antinomies; rejection of speculative metaphysics.
Lecture 23 - Kants ethics; freedom and immortality, problems with Kant.
Lecture 24 - Hegel
Lecture 25 - Absolute idealism; consciousness, self consciousness and reason.
Lecture 26 - Karl Marx

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Lecture 27 - Nietzsche
Lecture 28 - Linguistic turn in British philosophy
Lecture 29 - Wittgenstein
Lecture 30 - Later Wittgenstein's conception of language games and forms of life; meaning and use.
Lecture 31 - Logical positivism; against metaphysics and a scientific conception of philosophy; the limitation of logical positivism
Lecture 32 - Husserl
Lecture 33 - Phenomenological reduction, eidetic reduction and transcendental reduction; transcendental subjectivity; the pure subject.
Lecture 34 - Heidegger
Lecture 35 - Authentic and inauthentic existence; Truth as disclosure
Lecture 36 - Existentialism
Lecture 37 - Sartre's conception of human existence; man is condemned to be free; rejection of essentialism
Lecture 38 - The concept of being-in-itself, being-for-itself and being-for-others
Lecture 39 - Postmodernism
Lecture 40 - Deconstruction, feminism, discourse theory etc.
Lecture 30 - Kazuo Ishiguro - Remains of the Day
Lecture 31 - Kazuo Ishiguro - Remains of the Day
Lecture 34 - Michael Ondaatje - The English Patient
Lecture 35 - Asian-American Writing
Lecture 36 - Amy Tan's - The Joy Luck Club
Lecture 37 - Amy Tan's - The Joy Luck Club
Lecture 38 - Amy Tan's - The Joy Luck Club
Lecture 39 - Poetry
Lecture 40 - Poetry
Lecture 1 - The Socio-Economic Role of Scarcity and Uncertainty
Lecture 2 - The Process of Construction of Knowledge
Lecture 3 - The Roles of Faith and Experience
Lecture 4 - From Orphism to the Milesians in ancient Greece
Lecture 5 - Pythagoras and Heraclitus
Lecture 6 - From Parmenides to the atomists
Lecture 7 - From the ancient Greece to the emergence of Feudalism
Lecture 8 - Feudalism and the growth of the Church
Lecture 9 - The age of Faith
Lecture 10 - The beginnings of modernity
Lecture 11 - Scholasticism and St.Thomas
Lecture 12 - Transformation of Europe towards modernity
Lecture 13 - Birth of political economy
Lecture 14 - The debate over mercantilism
Lecture 15 - A postscript to mercantilism
Lecture 16 - â□□Natural Orderâ□□ and the market
Lecture 17 - Smith
Lecture 18 - Smith
Lecture 19 - Ricardo-Malthus debate
Lecture 20 - Ricardian economics and more
Lecture 21 - Equilibrium of the market
Lecture 22 - More on Equilibrium
Lecture 23 - Socialists and Marx
Lecture 24 - The economics of Marx
Lecture 25 - Marx as an ideologue of revolution
Lecture 26 - Arrival of modern universals in Economics
Lecture 27 - Economic Theory at the time arrival of Keynes
Lecture 28 - The centrality of the idea of efficiency in the study of market
Lecture 29 - Keynesian Revolution

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Lecture 30 - Keynesian economics
Lecture 31 - Economics of Institutions
Lecture 32 - Transaction cost and Economic Anthropology approaches
Lecture 33 - Evolutionary Economics
Lecture 34 - From Schumpeter to neo Schumpetarian evolutionism
Lecture 35 - The social construction of knowledge
Lecture 36 - The social construction of knowledge
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - Indian Philosophy
Subject Co-ordinator - Dr. Satya Sundar Sethy
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Indian Philosophy
Lecture 2 - A Brief Discussion on the Vedas & the Upanishads
Lecture 3 - The Cārvāka School - I
Lecture 4 - The Cārvāka School - II
Lecture 5 - The Sāā¹khya School - I
Lecture 6 - The Sāā¹khya School - II
Lecture 7 - The Sāā¹khya School - III
Lecture 8 - The Sāā¹khya School - IV
Lecture 9 - The Sāā¹khya School - V
Lecture 10 - The Sāā¹khya School - VI
Lecture 11 - The Yoga School - I
Lecture 12 - The Yoga School - II
Lecture 13 - The Yoga School - III
Lecture 14 - The Yoga School - IV
Lecture 15 - The Nyāya School - I
Lecture 16 - The Nyāya School - II
Lecture 17 - The Nyāya School - III
Lecture 18 - The Nyāya School - IV
Lecture 19 - The Nyāya School - V
Lecture 20 - The Nyāya School - VI
Lecture 21 - The Nyāya School - VII
Lecture 22 - The Nyāya School - VIII
Lecture 23 - The Nyāya School - IX
Lecture 24 - Buddhism - I
Lecture 25 - Buddhism - II
Lecture 26 - Buddhism - III
Lecture 27 - Buddhism - IV
Lecture 28 - Buddhism - V
Lecture 29 - Jainism - I

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NPTEL Video Course - Humanities and Social Sciences - Better Spoken English

Subject Co-ordinator - Prof. Shreesh Chaudhary

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Student Presentations - I
Lecture 3 - Feedback on Presentations - I
Lecture 4 - Stage Manners
Lecture 5 - Tempo of Speech
Lecture 6 - Some Reasons for Mishearing
Lecture 7 - Topics for Presentations - II
Lecture 8 - Message
Lecture 9 - Tables, Charts, Graphs
Lecture 10 - Power Point Slides
Lecture 11 - Criteria for Evaluation
Lecture 12 - Student Presentations - II
Lecture 13 - Feedback on Presentation - II
Lecture 14 - Topics for Presentation - III
Lecture 15 - On â□□Saying â□□Please!â□□ â□
Lecture 16 - English Rhythm - I
Lecture 17 - English Rhythm - II
Lecture 18 - Phrasal Pause in English - I
Lecture 19 - Phrasal Pause in English - II
Lecture 20 - Units of Time, Weight, Distance
Lecture 21 - Stress in English - I
Lecture 22 - Stress in English - II
Lecture 23 - Stress in English - III
Lecture 24 - Stress in English - IV
Lecture 25 - Stress in English - V
Lecture 26 - Stress in English - VI
Lecture 27 - Student Presentations - III
Lecture 28 - Student Presentations - III
Lecture 29 - Student Presentations - III (Continued...)

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Lecture 30 - Feedback on Presentations - III
Lecture 31 - Some Non-standard Sounds
Lecture 32 - Some Difficult Sounds in English
Lecture 33 - Some Vowel Sounds in English
Lecture 34 - Some Consonants in English
Lecture 35 - Student Presentations - IV
Lecture 36 - Student Presentations - IV
Lecture 37 - Student Presentations - IV (Continued...)
Lecture 38 - Final Tips
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - Introduction to Film Studies

Subject Co-ordinator - Dr. Aysha Iqbal Viswamohan
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Overview
Lecture 2 - Cinema & Semiotics
Lecture 3 - Cinema & Semiotics (Continued...)
Lecture 4 - Plot in Cinema
Lecture 5 - Plot in Cinema (Continued...)
Lecture 6 - Character as a plot element
Lecture 7 - Editing in Cinema
Lecture 8 - Realism in Cinema
Lecture 9 - Colour
Lecture 10 - Intertextuality
Lecture 11 - Intertextuality (Continued...)
Lecture 12 - Intertextuality (Continued...)
Lecture 13 - Cinema & Modernism
Lecture 14 - Cinema and Modernism (Continued...)
Lecture 15 - The French Masters
Lecture 16 - The French Masters (Continued...)
Lecture 17 - The French Masters (Continued...)
Lecture 18 - Canonical Text
Lecture 19 - Canonical Text (Continued...)
Lecture 20 - Canonical Text (Continued...)
Lecture 21 - The Academy Awards
Lecture 22 - Classic Hollywood
Lecture 23 - Classic Hollywood (Continued...)
Lecture 24 - Classic Hollywood (Continued...)
Lecture 25 - Case study
Lecture 26 - Stars as Icons
Lecture 27 - Cinema and the Counterculture Movement
Lecture 28 - Italian cinema
Lecture 29 - Japanese Cinema

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Lecture 30 - Auteur Theory in the USA
Lecture 31 - Auteur Theory in the USA (Continued...)
Lecture 32 - New Hollywood
Lecture 33 - New Hollywood (Continued...)
Lecture 34 - New Hollywood (Continued...)
Lecture 35 - New Hollywood (Continued...)
Lecture 36 - Cinema and Genres
Lecture 37 - Cinema and Genres (Continued...)
Lecture 38 - Postmodernism and Cinema
Lecture 39 - Postmodernism & Cinema (Continued...)
Lecture 40 - The Western
NPTEL Video Course - Humanities and Social Sciences - Introduction to Modern Linguistics

Subject Co-ordinator - Prof. Rajesh Kumar, Prof. Shreesh Chaudhary

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Design Features of Language - 1
Lecture 3 - Design Features of Language - 2
Lecture 4 - Design Features of Language - 3
Lecture 5 - Design Features of Language - 4
Lecture 6 - Design Features of Language - 5
Lecture 7 - Production of Speech Sounds
Lecture 8 - Organs of Articulation
Lecture 9 - Functions of Vocal Cords
Lecture 10 - Production of Speech Sounds, Cardinal Vowels
Lecture 11 - English Vowels
Lecture 12 - Diphthong
Lecture 13 - Production of Consonants
Lecture 14 - Consonants
Lecture 15 - Consonants-2
Lecture 16 - Review
Lecture 17 - What is Phonology
Lecture 18 - Phonemes & Allophones
Lecture 19 - Phonological Phenomena
Lecture 20 - Syllable Template
Lecture 21 - Syllable
Lecture 22 - Syllable - Based Generalization
Lecture 23 - Syllable - Based Generalization
Lecture 24 - Morphology
Lecture 25 - Units of Word Formation
Lecture 26 - Affixation
Lecture 27 - Syntax
Lecture 28 - Syntax
Lecture 29 - Syntax

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Lecture 30 - Movement
Lecture 31 - Motivations for Movement
Lecture 32 - Questions and Movement
Lecture 33 - Guest Lecture
Lecture 34 - Passives and NP Movement
Lecture 35 - NP Movement and Raising
Lecture 36 - Binding Theory and NP Interpretations
Lecture 37 - Principles of Binding Theory
Lecture 38 - Constraints on Movements
Lecture 39 - Structure of Language and Negation
Lecture 40 - Negation and Negative Polarity Items
Lecture 41 - Structure, Language, Cognition and Pragmatics
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC: Literary Criticism and Literary Theory

Subject Co-ordinator - Dr. Aysha Iqbal Viswamohan

Co-ordinating Institute - IIT - Madras

Lecture 1 - Introduction & Course Overview - Lecture 1 - Part A
Lecture 2 - Introduction & Course Overview - Lecture 1 - Part B
Lecture 3 - Key terms and Concepts - 1 - Lecture 2
Lecture 4 - Key terms and Concepts - 2 - Lecture 3
Lecture 5 - Key terms and Concepts - 3 - Lecture 4
Lecture 6 - Classical Theory - Lecture 5 - Part C
Lecture 7 - Classical Theory - Lecture 5 - Part A
Lecture 8 - Classical Theory - Lecture 5 - Part B
Lecture 9 - Classical Theory - Lecture 6 - Part A
Lecture 10 - Neoclassicism - Lecture 6 - Part B
Lecture 11 - Romanticism - Early Romanticism - Lecture 7 - Part A
Lecture 12 - Romanticism - Romanticism - Lecture 7 - Part C
Lecture 13 - Romanticism - Romanticism - Lecture 7 - Part D
Lecture 14 - Romanticism - Early Romanticism - Lecture 7 Part B
Lecture 15 - Late 19th Century - Lecture 9 - Late 19th century
Lecture 16 - Lecture 10 A - Marxism
Lecture 17 - Lecture 10 B - Marxism
Lecture 18 - Twentieth Century Criticism - Lecture 11 A - Formalism
Lecture 19 - Twentieth Century Criticism - Lecture 11 B - New criticism
Lecture 20 - Psychoanalysis and Psychoanalytic Criticism - PART A
Lecture 21 - Psychoanalysis and Psychoanalytic Criticism - PART B
Lecture 22 - Psychoanalysis and Psychoanalytic Criticism - PART C
Lecture 23 - Structuralism - Lecture 12 Part A structuralism
Lecture 24 - Structuralism - Lecture 12 Part B structuralism
Lecture 25 - Archetypal Criticism - Lecture 13 - Archetypal Criticism
Lecture 26 - Post Structuralism - Part A
Lecture 27 - Post Structuralism - Part B
Lecture 28 - Post Colonialism - Part A
Lecture 29 - New Historicism and Cultural Materialism - Part A
Lecture 30 - New Historicism and Cultural Materialism - Part B
Lecture 31 - Reader Response criticism
Lecture 32 - Semiotics theory - PART A
Lecture 33 - Semiotics theory - PART B

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Lecture 34 - Film studies - Part A
Lecture 35 - Film studies - Part B
Lecture 36 - Postmodernism - Part A
Lecture 37 - Postmodernism - Part B
Lecture 38 - Ecocriticism - Part A
Lecture 39 - Ecocriticism - Part B
Lecture 40 - Post theory - Part A
Lecture 41 - Post theory - Part B
Lecture 31 - Levels of Representation and Principles of Grammar - CP and displacement
Lecture 32 - Levels of Representation and Principles of Grammar - Sentence (CP in subject and object position)
Lecture 33 - Levels of Representation and Principles of Grammar - Sentence (passivization and NP movement)
Lecture 34 - Levels of Representation and Principles of Grammar - Sentence (referential expressions)
Lecture 35 - Levels of Representation and Principles of Grammar - Sentence (binding)
Lecture 36 - Language and Cognition - Sentence Dependencies
Lecture 37 - Language and Cognition - Language and cognition
Lecture 38 - Language and Cognition - Language, cognition and computers
Lecture 39 - Language and Cognition - Language and computers
Lecture 40 - Language and Cognition - Language and mind

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NPTEL Video Course - Humanities and Social Sciences - NOC: Film Appreciation

Subject Co-ordinator - Dr. Aysha Iqbal Viswamohan
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Key Concepts
Lecture 3 - Key Concepts
Lecture 4 - Lecture
Lecture 5 - Lecture
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Lecture 7 - Lecture
Lecture 8 - Lecture
Lecture 9 - Lecture
Lecture 10 - Lecture
Lecture 11 - Lecture
Lecture 12 - Action Cinema
Lecture 13 - Lecture
Lecture 14 - Melodrama
Lecture 15 - Formalism in Cinema
Lecture 16 - The Language of Cinema
Lecture 17 - Devdas
Lecture 18 - City Cinema
Lecture 19 - The Semiotics of Cinema
Lecture 20 - Raging Bull
Lecture 21 - Robert Bresson
Lecture 22 - Studio Cinema
Lecture 23 - Studio Cinema
Lecture 24 - New Hollywood Cinema
Lecture 25 - New Hollywood Cinema
Lecture 26 - History of Hindi Cinima
Lecture 27 - History of Hindi Cinima
Lecture 28 - History of Hindi Cinima
Lecture 29 - Ideology in Cinema

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Lecture 30 - Character in Cinema
Lecture 31 - Mythological Cinema in India
Lecture 32 - The Cinema of Satyajit Ray
Lecture 33 - Hindi Film Music
Lecture 34 - The Hollywood musicals
Lecture 35 - African cinema
Lecture 36 - Iranian cinema
Lecture 37 - Canadian Cinema
Lecture 38 - Eastern European Cinema
Lecture 39 - European Cinema Hungary, Sweden, Greece
Lecture 40 - Postmodernism and cinema
Lecture 41 - Mall towns in cinema
Lecture 42 - Film sequels, remakes and cult films
Lecture 43 - Parallel Cinema From India
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC: Appreciating Carnatic Music

Subject Co-ordinator - Dr. Lakshmi Sreeram
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - The Body of Music
Lecture 2 - Music everywhere finding the classical
Lecture 3 - Classical Music Art Music
Lecture 4 - Music through Melody & Music through Harmony
Lecture 5 - Musical Material A Hard Look
Lecture 6 - Musical material Mo2
Lecture 7 - Carnatic Music as Raga Music
Lecture 8 - Understanding Raga - Part I
Lecture 9 - Understanding Raga - Part II (Raga and Swara)
Lecture 10 - Understanding Raga - Part III A Glimpse into Gamaka (Ornamentation) and Phraseology
Lecture 11 - Swara in the Sanskrit Textual Tradition
Lecture 12 - Sruti in Sanskrit Textual tradition
Lecture 13 - Tambura
Lecture 14 - Gamaka I
Lecture 15 - Gamaka II
Lecture 16 - Gamaka III
Lecture 17 - Gamakas IV
Lecture 18 - Raga and Phraseology
Lecture 19 - Raga - some basic expectations
Lecture 20 - A string of Ragas and a teaser
Lecture 21 - Raga in the textual tradition
Lecture 22 - Classification of Ragas I
Lecture 23 - Classification of Ragas II
Lecture 24 - Mela system of classifying raga-s
Lecture 25 - Generating the 72 mela-s
Lecture 26 - Application of 72 mela
Lecture 27 - Katapayadi Naming the 72 melas
Lecture 28 - Vivadi I
Lecture 29 - Vivadi II

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Lecture 30 - Raga - Circles and Triangles
Lecture 31 - Laya
Lecture 32 - Tala an Introduction to the Concept
Lecture 33 - More on Tala and laya
Lecture 34 - Aspects of Tala - I
Lecture 35 - Aspects of Tala - II
Lecture 36 - Aspects of Tala - III
Lecture 37 - Aspects of IV
Lecture 38 - Composition in Carnatic Music
Lecture 39 - An Introduction
Lecture 40 - Varnam and laya intricacies
Lecture 41 - Kriti the premier compositional form in Carnatic music
Lecture 42 - Kriti some basic features
Lecture 43 - Precursors to the Kriti
Lecture 44 - Bhakti and Carnatic Music
Lecture 45 - Tanjavur and the Carnatic Trinity
Lecture 46 - Tyagaraja, the Vaggeyakara
Lecture 47 - Tyagaraja and His Many Moods - I
Lecture 48 - Tyagaraja and His Many Moods II
Lecture 49 - Muthuswami Dikshitar an overview
Lecture 50 - Muthuswami Dikshitar the Sanskrit Scholar and Advaitin
Lecture 51 - Muthuswami Dikshitar Some Other Aspects of his Work.
Lecture 52 - Syama Sastri
Lecture 53 - Tamil Composers before the trinity
Lecture 54 - Post trinity Composers
Lecture 55 - Swathi Tirunal - the Versatile Royal Composer
Lecture 56 - The Romance of Padam and Javali
Lecture 57 - Tillana
Lecture 58 - Improvisation in Carnatic Music - Alapana
Lecture 59 - ALAPANA
Lecture 60 - Neraval and Swaraprastara
Lecture 61 - TANAM
Lecture 62 - An expositon of Balagopala, a kriti in the rega Bhairavi with alapana, neraval and swaraprastara
Lecture 63 - Accompaniment in Carnatic Music - The Violin
Lecture 64 - Percussive Accompaniment - the Mridangam
Lecture 65 - Subsidiary Accompaniment - Interaction Among Accompanists
Lecture 66 - The Typical carnatic Concert And Ragam Tanam Pallavi - RTP

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NPTEL Video Course - Humanities and Social Sciences - NOC: Infrastructure Economics

Subject Co-ordinator - Prof. Nalin Bharti

Co-ordinating Institute - IIT - Patna

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1
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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC: Language and Society

Subject Co-ordinator - Prof. Rajesh Kumar
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable │ MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to language and society
Lecture 2 - Language and India
Lecture 3 - Language and a language
Lecture 4 - Language, dialect and variety
Lecture 5 - Dialect and standard language
Lecture 6 - How do children learn language?
Lecture 7 - First language acquisition
Lecture 8 - Critical period and SLA
Lecture 9 - Sounds and words
Lecture 10 - Sentence
Lecture 11 - India as a linguistic area
Lecture 12 - Language variation
Lecture 13 - Language and culture
Lecture 14 - Language and power-politics
Lecture 15 - Indian English
Lecture 16 - Fluidity and continuum
Lecture 17 - Language in education
Lecture 18 - Language and scholastic achievement
Lecture 19 - Language and language teaching
Lecture 20 - Concluding remarks

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC:Issues in Bioethics

Subject Co-ordinator - Dr. Sreekumar Nellickappilly
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Module 1 - Unit 1 - Overview of Bioethics
Lecture 2 - Module 1 - Unit 2 - Historical Evolution of Bioethics-I
Lecture 3 - Module 1 - Unit 3 - Historical Evolution of Bioethics-II
Lecture 4 - Module 1 - Unit 4 - Historical Evolution of Bioethics-III
Lecture 5 - Module 1 - Unit 5 - Bioethics Today
Lecture 6 - Module 2 - Unit 1 - Ethical theories and Bioethical Issues
Lecture 7 - Module 2 - Unit 2 - Other ethical theories
Lecture 8 - Module 2 - Unit 3 - Hedonistic Approaches in Ethical Theories
Lecture 9 - Module 2 - Unit 4 - Deontological Approach
Lecture 10 - Module 2 - Unit 5 - Principle-Based Theories
Lecture 11 - Module 3 - Unit 1 - Challenges to the Person of the Individual
Lecture 12 - Module 3 - Unit 2 - Challenges to Dignity and the Human Rights Approach in Bioethics
Lecture 13 - Module 3 - Unit 3 - Problems in Resource Allocation
Lecture 14 - Module 3 - Unit 4 - End of Life Issues
Lecture 15 - Module 3 - Unit 5 - Ethics of Care, Gender Concerns and Feminist Perspectives
Lecture 16 - Module 4 - Unit 1 - Technological Advancements and Bioethical concerns
Lecture 17 - Module 4 - Unit 2 - The challenges posed by Genetic Engineering and Gener Therapy Not Started
Lecture 18 - Module 4 - Unit 3 - The challenges posed by Epidemic Threats
Lecture 19 - Module 4 - Unit 4 - Religious Traditions and Contemporary Bioethics
Lecture 20 - Module 4 - Unit 5 - Towards a Phronetic Bioethics

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NPTEL Video Course - Humanities and Social Sciences - NOC: Technical English for Engineers

Subject Co-ordinator - Dr. Aysha Iqbal Viswamohan
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - An Introduction to the Course
Lecture 2 - Parts of Speech - Nouns
Lecture 3 - Parts of Speech - Preposition and Noun Phrases
Lecture 4 - Countable and Uncountable Nouns
Lecture 5 - Reading (Identifying main ideas) and Listening
Lecture 6 - What is a Sentence
Lecture 7 - What is a Sentence (Continued...)
Lecture 8 - Subject Verb Agreement
Lecture 9 - Articles
Lecture 10 - Verbs
Lecture 11 - Comparatives
Lecture 12 - Modals and Voices
Lecture 13 - Passive Voice (Continued...)
Lecture 14 - Tenses
Lecture 15 - Tenses (Continued...)
Lecture 16 - Effective Speaking
Lecture 17 - Formal Presentation
Lecture 18 - Punctuation
Lecture 19 - Punctuation (Continued...)
Lecture 20 - Reading A SQW3R Method and Note-taking
Lecture 21 - Phrasal Verbs
Lecture 22 - Collocation
Lecture 23 - Word Formation
Lecture 24 - Understanding the text organization
Lecture 25 - Writing Emails
Lecture 26 - Academic Writing and Linking Words
Lecture 27 - Paragraph Writing
Lecture 28 - Describing/Explaining Processes
Lecture 29 - Essay Writing

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Lecture 30 - Essay Writing and Formal Letters
Lecture 31 - Letter Writing and Usage
Lecture 32 - Understanding the Mechanics of Publishable Essays
Lecture 33 - Writing Publishable Essays and Usage
Lecture 34 - Report
Lecture 35 - Everyday Usage
Lecture 36 - Writing a Statement of Purpose
Lecture 37 - CV/Resume and Cover Letters
Lecture 38 - Conclusion
Lecture 1 - Introduction to Health Research
Lecture 2 - Formulating research question, hypothesis and objectives
Lecture 3 - Literature review
Lecture 4 - Measurement of disease frequency
Lecture 5 - Descriptive study designs
Lecture 6 - Analytical study designs
Lecture 7 - Experimental study designs
Lecture 8 - Validity of epidemiological studies
Lecture 9 - Qualitative research methods
Lecture 10 - Measurement of study variables
Lecture 11 - Sampling methods
Lecture 12 - Calculating sample size and power
Lecture 13 - Selection of study population
Lecture 14 - Study plan and project management
Lecture 15 - Designing data collection tools
Lecture 16 - Principles of data collection
Lecture 17 - Data management
Lecture 18 - Overview of data analysis
Lecture 19 - Ethical framework for health research
Lecture 20 - Conducting clinical trials
Lecture 21 - Preparing a concept paper for research projects
Lecture 22 - Elements of a protocol for research studies
Lecture 30 - Lecture 24 - Lillian Hellman
Lecture 31 - Lecture 25 - Lillian Hellman
Lecture 32 - Lecture 26 - Lillian Hellman
Lecture 33 - Lecture 27 - Lillian Hellman
Lecture 34 - Lecture 28 - Arthur Miller
Lecture 35 - Lecture 29 - Arthur Miller
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Lecture 37 - Lecture 31 - Arthur Miller
Lecture 38 - Lecture 32 - Eugene O'Neill
Lecture 39 - Lecture 33 - Eugene O'Neill
Lecture 40 - Lecture 34 - Edith Wharton
Lecture 41 - Lecture 35 - Edith Wharton
Lecture 42 - Lecture 36 - Edith Wharton
Lecture 43 - Lecture 37 - Edith Wharton
Lecture 44 - Lecture 38 - Christopher Hitchens
Lecture 45 - Lecture 39 - Hart Crane

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NPTEL Video Course - Humanities and Social Sciences - NOC: Economics of IPR

Subject Co-ordinator - Prof. Nalin Bharti
Co-ordinating Institute - IIT - Patna

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to IPR - Historical Overview from GATT to WTO
Lecture 2 - Why IPR Matters
Lecture 3 - Application of IPR in the Global World
Lecture 4 - Economic Perspective on IPR
Lecture 5 - Types of IPR Its introduction and objectives
Lecture 6 - Globalization of IPR
Lecture 7 - Economics of Copyright
Lecture 8 - Economics of Patent
Lecture 9 - Economics of Trademarks
Lecture 10 - Economics of Trade Secrets
Lecture 11 - Economics of Industrial Design
Lecture 12 - Issues in Contemporary Patent
Lecture 13 - Critical Issues in Copyright and Related Rights
Lecture 14 - Issues in Traditional Knowledge
Lecture 15 - Plant Varieties Protection and Biotechnology
Lecture 16 - Commercialization of Intellectual Property and Unfair Competition
Lecture 17 - Disputes related to Patent in WTO
Lecture 18 - Disputes related to copyright, etc. in WTO
Lecture 19 - IP and Development
Lecture 20 - Summarizing the course
# NPTEL Video Lecture Topic List

NPTEL Video Course - Humanities and Social Sciences - NOC: Applied Linguistics

Subject Co-ordinator - Prof. Rajesh Kumar

Co-ordinating Institute - IIT - Madras

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Lecture 30 - Language, Computers and Applications
Lecture 31 - Language and Education
Lecture 32 - Language and Application
NPTEL Video Course - Humanities and Social Sciences - NOC: English Language for Competitive Exams

Subject Co-ordinator - Dr. Aysha Iqbal Viswamohan
Co-ordinating Institute - IIT - Madras
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Lecture 1 - What is Reading Comprehension?
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Lecture 5 - Analyze a task - 2
Lecture 6 - Reading - Comprehending Scientific Passages
Lecture 7 - Comprehending Literary Passages - 1
Lecture 8 - Comprehending Literary Passages - 2
Lecture 9 - Academic writing
Lecture 10 - Text - Completion
Lecture 11 - Analogy
Lecture 12 - Writing
Lecture 13 - Writing
Lecture 14 - Listening
Lecture 15 - Writing
Lecture 16 - Listening for Specific Information
Lecture 17 - Reading Comprehension
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Lecture 19 - Reading Comprehension
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NPTEL Video Course - Humanities and Social Sciences - NOC: Ethics

Subject Co-ordinator - Dr. Sreekumar Nellickappilly
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Ethics and Morals
Lecture 2 - Different Approaches to Ethics
Lecture 3 - Historical Perspectives
Lecture 4 - Medieval and Modern Moral Theories
Lecture 5 - Socratic Framework in Moral Philosophy
Lecture 6 - Eudaimonism to Divine Command
Lecture 7 - Divine Command Theory and the Euthyphro Dilemma
Lecture 8 - Different Types of Ethical Theory
Lecture 9 - Thomas Hobbes
Lecture 10 - Contractarianism
Lecture 11 - Contractarianism and its Moral Implications
Lecture 12 - Introduction to Deontological Approaches
Lecture 13 - Kantian Deontologism
Lecture 14 - Egoism and its Ethical Implications
Lecture 15 - Motivational and Ethical Hedonism
Lecture 16 - Utilitarianism and its Moral Position
Lecture 17 - The Individual and the Whole
Lecture 18 - Critique of Moral Absolutism
Lecture 19 - Existentialism and Ethics
Lecture 20 - Ethics in the Present Age
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC:The Renaissance and Shakespeare

Subject Co-ordinator - Prof. Shormishtha Panja
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - The Renaissance An Introduction - Part-1
Lecture 2 - The Renaissance An Introduction - Part-2
Lecture 3 - Shakespeare's Life and Times
Lecture 4 - Shakespeare's, William Shakespeare The Merchant of Venice performance
Lecture 5 - Shakespeare's, William Shakespeare The Merchant of Venice Panel Discussion
Lecture 6 - Othello Part-1
Lecture 7 - Othello Part-2
Lecture 8 - Lecture on A Midsummer Night's Dream
Lecture 9 - A Midsummer Night's Dream Performance
Lecture 10 - A Midsummer Night's Dream Panel Discussion
Lecture 11 - Shakespeare's History Plays
Lecture 12 - Lecture on Macbeth
Lecture 13 - Shakespeare's Romances or The Last Plays
Lecture 14 - Twelfth Night
Lecture 15 - Whose Shakespeares?? Colonial Encounters/Post Colonial Negotiations
Lecture 16 - Global Shakespeare
Lecture 17 - Global Shakespeare (Continued...)
Lecture 30 - World Literature
Lecture 31 - World Literature (Continued...)
Lecture 32 - Goethe Faust
Lecture 33 - Goethe Faust (Continued...)
NPTEL Video Course - Humanities and Social Sciences - NOC: History of English Language and Literature

Subject Co-ordinator - Prof. Merin Simi Raj
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Locating the Starting Points
Lecture 3 - Old English period
Lecture 4 - Middle English Period
Lecture 5 - The Age of Chaucer
Lecture 6 - Middle English period after Chaucer
Lecture 7 - Middle English period after Chaucer
Lecture 8 - The Development of English Language - Tracing the Origins and Early Influences
Lecture 9 - The Development of English Language - Old English to Middle English
Lecture 10 - Introducing the Elizabethan Era - The English Reformation
Lecture 11 - The Elizabethan Age
Lecture 12 - Elizabethan Age
Lecture 13 - The Emergence of Elizabethan 'Romantic' Drama
Lecture 14 - The University Wits
Lecture 15 - The University Wits
Lecture 16 - William Shakespeare
Lecture 17 - William Shakespeare
Lecture 18 - Elizabethan Theatre
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Lecture 20 - The Jacobean Age
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Lecture 22 - Jacobean Drama
Lecture 23 - Did Women Have a Renaissance?
Lecture 24 - The Caroline Period / The Age of Milton and The Interregnum
Lecture 25 - The Caroline Period / The Age of Milton and The Interregnum (Continued...)
Lecture 26 - The Age of Milton
Lecture 27 - Changes in Language
Lecture 28 - Early Modern English (Continued...)
Lecture 29 - The Age of Restoration

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Lecture 30 - The Age of Dryden
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Lecture 32 - The Age of Pope / The Augustan Age
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Lecture 65 - Modernist Prose and Fiction
Lecture 66 - Post-1945
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NPTEL Video Course - Humanities and Social Sciences - NOC: Patent Drafting for Beginners

Subject Co-ordinator - Prof. Feroze Ali
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - PDB-What are Inventions?
Lecture 2 - Background
Lecture 3 - Field of Invention
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Lecture 5 - Patent Classification
Lecture 6 - Technical Advance
Lecture 7 - What are not inventions
Lecture 8 - Why People Invent
Lecture 9 - How Inventions Look
Lecture 10 - Where to Look for Inventions
Lecture 11 - How to Catch an Invention
Lecture 12 - Getting a working disclosure
Lecture 13 - Searching with the disclosure
Lecture 14 - Outcome of search
Lecture 15 - What is a Patentability Search
Lecture 16 - Reasons for Ordering a Patentability Search
Lecture 17 - When a Patentability Search is Not Required
Lecture 18 - How to Order a Patentability Search
Lecture 19 - Limits of Patentability Search
Lecture 20 - Patentability Search Report
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Lecture 22 - Identifying the inventive concept
Lecture 23 - Problem Solution Statement
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Lecture 25 - How to Search for a Granted Patent
Lecture 26 - Provisions relating to claim
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NPTEL Video Course - Humanities and Social Sciences - NOC:Business English Communication

Subject Co-ordinator - Dr. Aysha Iqbal Viswamohan
Co-ordinating Institute - IIT - Madras

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Lecture 12 - Grammar (Tenses)
Lecture 13 - Grammar (Clauses, Gerund and Infinitives, Coordinating conjunctions)
Lecture 14 - Grammar (Prepositions, Reported Speech, Active Voice and Passive Voice)
Lecture 15 - Grammar (Punctuations and Types of sentences)
Lecture 16 - Writing (Emails and Memos)
Lecture 17 - Writing (Official letters and Presentation scripts)
Lecture 18 - Writing (Different business writing genres)
Lecture 19 - Writing (Business writing and vocabulary for specific situations)
NPTEL Video Course - Humanities and Social Sciences - NOC: Postmodernism in Literature

Subject Co-ordinator - Prof. Merin Simi Raj
Co-ordinating Institute - IIT - Madras

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Lecture 28 - Is the Post-in Postmodernism the Post-in Postcolonial?
Lecture 29 - Can the Subaltern Speak?

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Lecture 30 - Reading Postmodern-Postcolonial Fiction
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Lecture 46 - Postcoloniality and its Challenges
Lecture 47 - Commonwealth literature does not exist
NPTEL Video Course - Humanities and Social Sciences - NOC: Introduction to Cultural Studies

Subject Co-ordinator - Prof. Avishek Parui
Co-ordinating Institute - IIT - Madras

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Lecture 76 - Government’s Role in Fostering IP System
Lecture 77 - Teaching Intellectual Property
Lecture 78 - Q and A - Discussion
NPTEL Video Course - Humanities and Social Sciences - NOC: Short Fiction in Indian Literature

Subject Co-ordinator - Prof. Divya.A
Co-ordinating Institute - IIT - Madras

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Lecture 1 - Plotting the Story world of In the Flood by Thakazhi Sivasankara Pillai
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Lecture 6 - Close reading Kamala Das Summer Vacation
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Lecture 9 - Plotting Tagore's Story Kabuliwala (1892)
Lecture 10 - Plotting Tagore's Story Kabuliwala
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Lecture 14 - How to write an Effective Paragraph
Lecture 15 - Plotting downfall in Khuswant Singh's Karma
Lecture 16 - Plotting downfall in Khuswant Singh's Karma
Lecture 17 - Narrative aspects in Khuswant Singh's Karma
Lecture 18 - Khuswant Singh's Karma Overview
Lecture 19 - Plotting Sundara Ramaswamy's Reflowering
Lecture 20 - Reading the Plot for themes in Sundara Ramaswamy's Reflowering
Lecture 21 - Reading the Plot for themes in Sundara Ramaswamy's Reflowering (Continued...)
Lecture 22 - Narrative Devices in Sundara Ramaswamy's Reflowering Overview
Lecture 23 - Plotting Sundara Ramaswamy's Reflowering Overview
Lecture 24 - Short Genre and Premchand's The Chess Players
Lecture 25 - Short Story Genre and Premchand's The Chess Players
Lecture 26 - Short Story Structure and Premchand's The Chess Players
Lecture 27 - The Chess Players Overview
Lecture 28 - Psychological Climax in Premchand's The Shroud
Lecture 29 - Psychological Climax in Premchand's The Shroud (Continued...)
Lecture 30 - Psychological Climax in Premchand's The Shroud (Continued...)
Lecture 31 - Premchand's The Shroud
Lecture 32 - The Shroud Overview
Lecture 33 - Patriarchal Culture in A Kitchen in the Corner of the House - I
Lecture 34 - Patriarchal Culture in A Kitchen in the Corner of the House - II
Lecture 35 - Patriarchal Culture in Ambai's A Kitchen in the Corner of the House - I
Lecture 36 - Patriarchal Culture in Ambai's A Kitchen in the Corner of the House - II
Lecture 37 - Patriarchal Culture in Ambai's A Kitchen in the Corner of the House - III
Lecture 38 - Catharsis in Mulk Raj Anand's The Price of Bananas - I
Lecture 39 - Catharsis in Mulk Raj Anand's The Price of Bananas - II
Lecture 40 - Catharsis in Mulk Raj Anand's The Price of Bananas - III
Lecture 41 - Catharsis in Mulk Raj Anand's The Price of Bananas - Overview
Lecture 42 - Short Fiction in Indian Literature - vignesh - 12
Lecture 43 - Hidden Fractures in Ruskin Bond's The Blue Umbrella - II
Lecture 44 - Hidden Fractures in Ruskin Bond's The Blue Umbrella - III
Lecture 45 - Hidden Fractures in Ruskin Bond's The Blue Umbrella - Overview
Lecture 46 - Plotting and Ideology in RK Narayan's A Horse and Two Goats - I
Lecture 47 - Plotting and Ideology in RK Narayan's A Horse and Two Goats - II
Lecture 48 - Plotting and Ideology in RK Narayan's A Horse and Two Goats - Overview
Lecture 49 - Childhood anxiety at Play in Anita Desai's Games at Twilight - I
Lecture 50 - Childhood anxiety at Play in Anita Desai's Games at Twilight - II
Lecture 51 - Childhood anxiety at Play in Anita Desai's Games at Twilight - III
Lecture 52 - Childhood anxiety at Play in Anita Desai's Games at Twilight - Overview
Lecture 53 - Short Fiction In Indian Literature - Overview I
Lecture 54 - Short Fiction In Indian Literature - Overview II
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC:The Nineteenth-Century English Novel

Subject Co-ordinator - Prof. Divya.A
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - The Nineteenth Century Novel
Lecture 2 - The Nineteenth Century Novel (Continued...)
Lecture 3 - The Nineteenth Century Novel (Continued...)
Lecture 4 - Jane Austen's Persuasion Chapters 1-6
Lecture 5 - Jane Austen's Persuasion
Lecture 6 - Persuasion, Chapter 7-12
Lecture 7 - Austen's Persuasion, Chapter 7-12
Lecture 8 - Austen's Persuasion, Chapter 7-12 (Continued...)
Lecture 9 - Persuasion Vol.II, Chapters 13-18
Lecture 10 - Persuasion Vol.II, Chapters 13-18 (Continued...)
Lecture 11 - Persuasion Vol.II, Chapters 13-18 (Continued...)
Lecture 12 - Persuasion Vol.II, Chapters 13-18 (Continued...)
Lecture 13 - Persuasion, Volume II, Chapters 19-24
Lecture 14 - Persuasion, Volume II, Chapters 19-24 (Continued...)
Lecture 15 - Persuasion, Volume II, Chapters 19-24 (Continued...)
Lecture 16 - Persuasion, Volume II, Chapters 19-24 (Continued...)
Lecture 17 - Jane Austen Seminar
Lecture 18 - Dicken's A Tale of Two Cities, Book I
Lecture 19 - A Tale of Two Cities Book I ; Chapters 4-6
Lecture 20 - Tale of Two Cities Book I
Lecture 21 - Dicken's A Tale of Two Cities Book II
Lecture 22 - Dicken's A Tale of Two Cities Book II
Lecture 23 - Dicken's A Tale of Two Cities Book II
Lecture 24 - Dicken's A Tale of Two Cities Book II
Lecture 25 - Dicken's A Tale of Two Cities Book II
Lecture 26 - Dicken's A Tale of Two Cities Book II
Lecture 27 - Dickens' A Tale of Two Cities Book II
Lecture 28 - Dickens' A Tale of Two Cities Book II
Lecture 29 - Dickens' A Tale of Two Cities Book II

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Lecture 30 - Dickens' A Tale of Two Cities Book II
Lecture 31 - Dickens' A Tale of Two Cities
Lecture 32 - Dickens' A Tale of Two Cities
Lecture 33 - Dickens' A tale of Two Cities Book II
Lecture 34 - Dickens' A tale of Two Cities Book II
Lecture 35 - Dickens' A tale of Two Cities Book III
Lecture 36 - Dickens' A tale of Two Cities Book III
Lecture 37 - Dickens' A Tale of Two cities Book III
Lecture 38 - Dickens' A Tale of Two cities Book III
Lecture 39 - Dickens' A Tale of Two cities Book III
Lecture 40 - Dickens' A Tale of Two cities Book III
Lecture 41 - Dickens' A Tale of Two cities Book III
Lecture 42 - Dickens' A Tale of Two cities Book III
Lecture 43 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapter 1
Lecture 44 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapter 2
Lecture 45 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapter 3
Lecture 46 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapter 4
Lecture 47 - R.L.Stevenson, The Strange Case of Dr. Jekyll and Mr Hyde key Themes and Incident, Chapters 1-4
Lecture 48 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapter 5
Lecture 49 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapter 5 (Continued...)
Lecture 50 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapter 6
Lecture 51 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapters 8-10
Lecture 52 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapters 8.
Lecture 53 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapters 9
Lecture 54 - The Strange Case of Dr. Jekyll and Mr Hyde, Chapters 10
Lecture 55 - Themes and Contexts in R.L.Stevenson, The Strange Case of Dr. Jekyll and Mr Hyde
Lecture 56 - Discussion on Narrative Points of View
Lecture 57 - Discussion on Gender, Class and History
NPTEL Video Course - Humanities and Social Sciences - NOC: Feminist Writings

Subject Co-ordinator - Prof. Avishek Parui
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Understanding Patriarchy - Part 1
Lecture 2 - Understanding Patriarchy - Part 2
Lecture 3 - Understanding Patriarchy - Part 3
Lecture 4 - Understanding Patriarchy - Part 4
Lecture 5 - Understanding Patriarchy - Part 5
Lecture 6 - The Fly - Part 1
Lecture 7 - The Fly - Part 2
Lecture 8 - The Fly - Part 3
Lecture 9 - Tickets, Please! - Part 1
Lecture 10 - Tickets, Please! - Part 2
Lecture 11 - Tickets, Please! - Part 3
Lecture 12 - The Cyborg Manifesto - Part 1
Lecture 13 - The Cyborg Manifesto - Part 2
Lecture 14 - The Cyborg Manifesto - Part 3
Lecture 15 - The Cyborg Manifesto - Part 4
Lecture 16 - The Cyborg Manifesto - Part 5
Lecture 17 - The Goblin Market - Part 1
Lecture 18 - The Goblin Market - Part 2
Lecture 19 - The Goblin Market - Part 3
Lecture 20 - The Goblin Market - Part 4
Lecture 21 - The Goblin Market - Part 5
Lecture 22 - Tulips - Part 1
Lecture 23 - Tulips - Part 2
Lecture 24 - The Yellow Wallpaper - Part 1
Lecture 25 - The Yellow Wallpaper - Part 2
Lecture 26 - The Yellow Wallpaper - Part 3
Lecture 27 - The Yellow Wallpaper - Part 4
Lecture 28 - The Second Sex - Part 1
Lecture 29 - The Second Sex - Part 2

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Lecture 30 - The Second Sex - Part 3
Lecture 31 - The Second Sex - Part 4
Lecture 32 - The Second Sex - Part 5
Lecture 33 - The Iraqi Nights
Lecture 34 - Gender Trouble - Part 1
Lecture 35 - Gender Trouble - Part 2
Lecture 36 - Gender Trouble - Part 3
Lecture 37 - Gender Trouble - Part 4
Lecture 38 - A Temporary Matter - Part 1
Lecture 39 - A Temporary Matter - Part 2
Lecture 40 - A Temporary Matter - Part 3
Lecture 41 - A Temporary Matter - Part 4
Lecture 42 - A Temporary Matter - Part 5
Lecture 43 - Remains of the Feast - Part 1
Lecture 44 - Remains of the Feast - Part 2
Lecture 45 - Remains of the Feast - Part 3
Lecture 46 - Feminist Theory and Criticism
Lecture 47 - The Narratology of the graphic
Lecture 48 - Angela Carter
Lecture 49 - Interactive Session - 1
Lecture 50 - Interactive Session - 2
Lecture 51 - Feminist Writings and Feminism Today
Lecture 30 - Balthazar's Marvellous Afternoon - I by Marquez
Lecture 31 - Balthazar's Marvellous Afternoon - II
Lecture 32 - The Wasteland - I
Lecture 33 - The Wasteland - II
Lecture 34 - The Wall by Sartre - I
Lecture 35 - The Wall by Sartre - II
Lecture 36 - The Applicant
Lecture 37 - Everyday Use
Lecture 38 - Catcher in the Rye - I
Lecture 39 - Catcher in the Rye - II
Lecture 40 - Stage'ing Protests
Lecture 41 - DR Faustus
Lecture 42 - In A Grove
Lecture 43 - Metamorphosis - I
Lecture 44 - Metamorphosis - II
Lecture 45 - Diary Of a Madman
Lecture 46 - Solid Objects
Lecture 47 - Dawn of the New Indian Novel in English
Lecture 48 - Bartleby The Scrivener
Lecture 49 - The Great Gatsby - I
Lecture 50 - The Great Gatsby - II
NPTEL Video Course - Humanities and Social Sciences - NOC: Managing Intellectual Property in Universities

Subject Co-ordinator - Prof. Feroze Ali
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - An Introduction to Intellectual Property
Lecture 2 - What are Rights?
Lecture 3 - What is Property in IPR?
Lecture 4 - Meaning of Intellectual in IPR
Lecture 5 - Characteristics of IP
Lecture 6 - Defining IPR
Lecture 7 - Kinds of IPRs and their Duration
Lecture 8 - Rights Granted by IP
Lecture 9 - The Origin of Intellectual Property - Part 1
Lecture 10 - The Origin of Intellectual Property - Part 2
Lecture 11 - Growth of Intellectual Property
Lecture 12 - Learning Intellectual Property
Lecture 13 - Patents in India
Lecture 14 - Who can Apply for a Patent
Lecture 15 - Requirements of a Patent Application
Lecture 16 - Types of Patent Application
Lecture 17 - Trade Marks
Lecture 18 - Trademarks in India
Lecture 19 - What can be Protected
Lecture 20 - Introduction to Copyrights
Lecture 21 - Origin and Evolution of Copyrights
Lecture 22 - Copyrights in India
Lecture 23 - Geographical Indications
Lecture 24 - Designs
Lecture 25 - The Enterpreneurial University
Lecture 26 - Universities and IP
Lecture 27 - Publish or Patent
Lecture 28 - Managing IP at Universities
Lecture 29 - Indian Universities and Patents

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Lecture 30 - Why People Invent
Lecture 31 - How Inventions Look
Lecture 32 - Where to Look for Inventions
Lecture 33 - How to Catch an Invention
Lecture 34 - Getting a working disclosure
Lecture 35 - Searching with the disclosure
Lecture 36 - Outcome of search
Lecture 37 - What is a Patentability Search
Lecture 38 - Reasons for Ordering a Patentability Search
Lecture 39 - When a Patentability Search is Not Required
Lecture 40 - How to Order a Patentability Search
Lecture 41 - Limits of Patentability Search
Lecture 42 - Patentability Search Report
Lecture 43 - Setting up IP Center - Part 1
Lecture 44 - Setting up IP Center - Part 2
NPTEL Video Course - Humanities and Social Sciences - NOC: English Literature of the Romantic Period, 1798-1832

Subject Co-ordinator - Prof. Pramod K Nayar
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Publishing, Literacy and Reading - I
Lecture 2 - Publishing, Literacy and Reading - II Literacy, Reading and the Audience
Lecture 3 - Empire
Lecture 4 - Empire - II
Lecture 5 - Science
Lecture 6 - European Romanticism Sensibility
Lecture 7 - Dissent and Revolution
Lecture 8 - The Debate on Rights
Lecture 9 - Nature and the Environment
Lecture 10 - The Self and Imagination
Lecture 11 - Fiction of the Romantic Period
Lecture 12 - Jane Austen
Lecture 13 - Criticism
Lecture 14 - The Historical Novel
Lecture 15 - The Gothic Novel
Lecture 16 - Romantic Poetry 1 - William Blake (1757-1827)
Lecture 17 - Romantic Poetry 1 - Romanticism and sentiment - Introduction
Lecture 18 - Romantic Poetry 1 - Sensibility and Passion
Lecture 19 - Romantic Poetry 2 - William Wordsworth (1770-1850)
Lecture 20 - English Romantic Poetry 1
Lecture 21 - Introduction
Lecture 22 - Wordsworth
Lecture 23 - Coleridge
Lecture 24 - Shelley
Lecture 25 - Keats and Byron
Lecture 26 - Romantic Poetry 3 - Aesthetics Introduction
Lecture 27 - Romantic Poetry 3 - Visual arts and the Romantics
Lecture 28 - Romantic Poetry 3 - Aesthetics Wordsworth
Lecture 29 - Romantic Poetry 3 - Aesthetics Blake

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Lecture 30 - Romantic Poetry 3 - Aesthetics Shelley
Lecture 31 - Romantic Poetry 4 - Politics Introduction Gender and Class
Lecture 32 - Romantic Poetry 4 - Politics
Lecture 33 - Romantic Poetry 4 - Politics Abolitionist Poetry
Lecture 34 - Romantic Poetry 4 - Politics Wordsworth and Shelley
Lecture 35 - Romantic Poetry 4 - Politics John Clare
Lecture 36 - Romantic Literature - Empire and Orientalism Introduction 1
Lecture 37 - Romantic Literature - Empire and Orientalism Introduction 2
Lecture 38 - Romantic Literature - Empire and Orientalism 3 Prose
Lecture 39 - Romantic Literature - Empire and Orientalism 4 Byron
Lecture 40 - Romantic Literature - Empire and Orientalism 5 Felicia Hemans
NPTEL Video Course - Humanities and Social Sciences - NOC: Inclusion and Technology Design

Subject Co-ordinator - Prof. Bidisha

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Missing Women in Tech
Lecture 3 - Are Technologies Gender Neutral?
Lecture 4 - ICTs and Gender
Lecture 5 - The Political Nature of Technology Design
Lecture 6 - Accessibility Fundamentals
Lecture 7 - Accessibility Fundamentals
Lecture 8 - Accessibility Fundamentals
Lecture 9 - Designing an Assistive Technology Ecosystem
Lecture 10 - Inclusion in Designing ICT for Development Projects
Lecture 11 - ICTs in Agricultural Markets
Lecture 12 - Inclusion in Designing ICT for Development Projects
Lecture 13 - Digital Labour, Platforms and the Future of Work
Lecture 14 - Assignment Video
Lecture 15 - Assignment Examples Video
NPTEL Video Course - Humanities and Social Sciences - NOC:Energy Economics and Policy

Subject Co-ordinator - Prof. Shyamasree Dasgupta

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Energy as an Economic Resource - Introduction
Lecture 2 - Energy as an Economic Resource - Classification of Energy Resource
Lecture 3 - Energy as an Economic Resource - Measurement of Energy
Lecture 4 - Energy as an Economic Resource - Energy Accounting
Lecture 5 - Energy as an Economic Resource - Problem Discussion on Module 1
Lecture 6 - Energy Demand - Part I - Basic concepts in Economics
Lecture 7 - Energy Demand - Part I - Descriptive Analysis of Energy Demand
Lecture 8 - Energy Demand - Part I - Decomposition Analysis and Parametric Approach
Lecture 9 - Energy Demand - Part II - Demand Side Management
Lecture 10 - Energy Demand - Part II - Load Management
Lecture 11 - Energy Demand - Part II - Demand Side Management - Energy Efficiency
Lecture 12 - Energy Demand - Part II - Rebound Effect
Lecture 13 - Energy Supply - Part I - Supply Behaviour of a Producer
Lecture 14 - Energy Supply - Part I - Energy Investment
Lecture 15 - Energy Supply - Part I - Economics of Non-renewable Resources
Lecture 16 - Energy Supply - Part II - Economics of Renewable Energy Supply Setting the context
Lecture 17 - Energy Supply - Part II - Economics of Renewable Energy Supply - Part 1
Lecture 18 - Energy Supply - Part II - Economics of Renewable Energy Supply - Part 2
Lecture 19 - Energy Supply - Part II - Economics of Electricity Supply
Lecture 20 - Energy Market - Prefect Competition as a Market Form
Lecture 21 - Energy Market - Why Energy Market is not Perfectly Competitive?
Lecture 22 - Energy Market - Market Failure and Monopoly
Lecture 23 - Energy Market - Oil Market
Lecture 24 - Energy Market - Oil Market
Lecture 25 - Energy Market - Oil Market
Lecture 26 - Special Topics on Energy - Energy Security
Lecture 27 - Special Topics on Energy - Energy Access
Lecture 28 - Special Topics on Energy - Energy, Environment and Climate Change

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NPTEL Video Course - Humanities and Social Sciences - NOC: The Victorian Gothic Short Story

Subject Co-ordinator - Prof. Divya.A

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - THE GOTHIC - Literary Genre
Lecture 2 - Charles Dickens 'THE SIGNAL - MAN' - I - Close reading and the anxieties of the age
Lecture 3 - Charles Dickens 'THE SIGNAL - MAN' - II - Close reading and the anxieties of the age
Lecture 4 - Charles Dickens 'THE SIGNAL - MAN' - III - Close reading and the anxieties of the age
Lecture 5 - Charles Dickens 'THE SIGNAL - MAN' - IV - Close Reading and the anxieties of the age
Lecture 6 - Charles Dickens 'THE HAUNTED SIGNAL MAN' Lecture Summary and Character Sketches
Lecture 7 - Rudyard Kipling - My own true ghost story
Lecture 8 - Imperial Gothic - Major Characteristics
Lecture 9 - Rudyard Kipling 'My own true ghost story' - Close reading for implications of the imperial Gothic
Lecture 10 - Rudyard Kipling 'My own true ghost story' - Close reading for implications of the imperial Gothic
Lecture 11 - My Own True Ghost Story - Lecture Summary and Comparison
Lecture 12 - Arthur Conan Doyle - The Red-Headed League - I
Lecture 13 - Arthur Conan Doyle - The Red-Headed League - II
Lecture 14 - Arthur Conan Doyle - The Red-Headed League - III
Lecture 16 - Arthur Conan Doyle 'The Red-Headed League' - Summary and Interview of the Author
Lecture 17 - H.G. WELLS 'THE RED ROOM' - Close Reading And Its Implications
Lecture 18 - H.G. WELLS 'THE RED ROOM' - Victorian Gothic
Lecture 19 - H.G. WELLS 'THE RED ROOM' - Close Reading And Its Ideological Implications
NPTEL Video Course - Humanities and Social Sciences - NOC:German-II

Subject Co-ordinator - Prof. Milind Brahme
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Was mochten Sie dieses Semester machen?
Lecture 2 - Wiederholung
Lecture 3 - Wir lernen das Perfekt
Lecture 4 - Wir üben das Perfekt
Lecture 5 - Was hast du in den Ferien gemacht?
Lecture 6 - Farben und Kleidung
Lecture 7 - Wir lernen Präpositionen
Lecture 8 - Wir üben Präpositionen
Lecture 9 - Präpositionen Akkusativ oder Dativ?
Lecture 10 - Was bringt mir der Postbote?
Lecture 11 - Gesundheit
Lecture 12 - Jeder für sich
Lecture 13 - Reflexiv - Akkusativ oder Dativ?
Lecture 14 - Lektion 1 und Witze und Faust
Lecture 15 - Lektion 2, Präteritum von Modalverben, Ordinalzahlen
Lecture 16 - Lektion 2; Detour -- Was ist Geschichte? | Basic Tenses
Lecture 17 - Was hast du nach der Schule gemacht?
Lecture 18 - Lektion 3
Lecture 19 - Komparativ und Superlativ
Lecture 20 - dass-Sätze
Lecture 21 - Wir wiederholen Komparativ und Superlativ
Lecture 22 - Imperativ mit 'du' und 'ihr'
Lecture 23 - Wir machen Lektion 5
Lecture 24 - Adjektivdeklation
Lecture 25 - Lektion 6 | Verkehr und Verkehrsmittel
Lecture 26 - Welche Verkehrsmittel benutzt du? | Indirekte Fragen-Sätze
Lecture 27 - Lektion 6 -- Aufgaben 4 und 6
Lecture 28 - Lektion 7 -- Es geht ums Lernen
Lecture 29 - Was hast du wann gelernt?

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Lecture 30 - Probleme beim Lernen | Verben mit dem Dativ
Lecture 31 - Welche Probleme hast du beim Lernen?
Lecture 32 - Perfekt von untrennbaren Verben | Wie lösse ich meine Probleme beim Lernen?
Lecture 33 - Ratschläge mit sollten | Sprache und Berufe | Wir lesen vor. (Lektion 7)
Lecture 34 - Exkurs ins Absurde! | Generationenprojekte (Lektion 7)
Lecture 35 - Generationenprojekte - wir hören die Texte
Lecture 36 - Welche Sportart möchtest du ausprobieren? | deshalb, trotzdem
Lecture 37 - Wiederholung Lektion 7 | Wir machen mit Lektion 8 weiter.
Lecture 38 - Wofür entscheiden sich Sandra und Conny? | Fragewort WO + Präposition
Lecture 39 - Alles über Fragewörter
Lecture 40 - Eine Stadt entdecken | Wir beginnen Lektion 9
Lecture 41 - Lektion 9 | Interessante Häuser und Wohnungen
Lecture 42 - Lektion 9 | Die lieben Nachbarn
Lecture 43 - Lektion 9 | Hilfevolle Bitte | wenn und als
Lecture 44 - Lektion 9 | Wir ähmen als und wenn. | Sätze und Wortgruppen
Lecture 45 - Die Deutschen und ihre Haustiere
Lecture 46 - Wir beginnen Lektion 10 | Der Superlativ
Lecture 47 - Welche/r/s und Was für ein/e...
Lecture 48 - Lektion 10 | etwas, man, niemand, jemand...
Lecture 49 - Der Relativsatz | Wir machen Lektion 10 zu Ende
Lecture 50 - Wir machen Lektion 11. | K 2 - Verben und W-Fragen mit Präpositionen
Lecture 51 - Lektion 12 | Wir sind mit unserem Kurs fertig!
NPTEL Video Course - Humanities and Social Sciences - NOC:German-I

Subject Co-ordinator - Prof. Milind Brahme

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Herzlich willkommen!
Lecture 2 - Wie ist dein Name ?
Lecture 3 - Ich trinke gern Kaffee
Lecture 4 - Wir konjugieren die Verben
Lecture 5 - A bit of history and ZAHLEN
Lecture 6 - Verben, W-Fragen, Ja-Nein Fragen, Imperativ
Lecture 7 - das Alphabet, die Woche, das Jahr
Lecture 8 - Was sind deine Hobbys ? Formular ausfullen
Lecture 9 - Mein Lehrbuch | Meine personlichen Daten
Lecture 10 - Mein Arbeitsbuch
Lecture 11 - Wir beginnen Lektion 3
Lecture 12 - Wir lesen Lektion 3
Lecture 13 - Kein | Unregelmabige Verben | Ein Lied
Lecture 14 - Wer ist das? | ich-mein; du-dein
Lecture 15 - Lektion 4 Guten Appetit!
Lecture 16 - Das Essen | Some revision
Lecture 17 - mag oder möchte | der Akkusativ
Lecture 18 - Ein Lesetext | die Uhr
Lecture 19 - die Uhrzeit | trennbare Verben
Lecture 20 - Familie und Possessiv
Lecture 21 - Wir machen Lektion 6 | Ordinalzahlen
Lecture 22 - Wie feierst du deinen Geburtstag?
Lecture 23 - der Akkusativ | ein Würfelspiel
Lecture 24 - das Kaffeehaus |die Kneipe |der Biergarten
Lecture 25 - Lektion 6
Lecture 26 - Sprache, Bundesländer, Städte | Wir beginnen Lektion 7
Lecture 27 - Akkusativ-Dativ | Annika im Büro | Wir machen Kaffee
Lecture 28 - Lektion 7 -- formeller Brief
Lecture 29 - Wie lernst du Deutsch ? Wir hören ein deutsches Lied

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Lecture 30 - Wir lernen die Präpositionen
Lecture 31 - Hörverständnis | Wir beginnen Lektion 8
Lecture 32 - Lektion 8 -- Haus-Wohnung-Möbel-Geräte
Lecture 33 - Extra Lektion on Modal Verbs
Lecture 34 - Eine E-Mail schreiben | Eine Wohnung beschreiben
Lecture 35 - Warum ist die Miete so hoch? | Vorteile und Nachteile
Lecture 36 - Die neue Wohnung -- Was ist wo? | Wechselpräpositionen
Lecture 37 - gefallen, gehören, passen, schmecken
Lecture 38 - Lektion 9 | Wir lernen das Perfekt
Lecture 39 - Lektion 9 | Wir üben das Perfekt
Lecture 40 - Was hast du in den Ferien gemacht?
Lecture 41 - Lektion 9 | Die Jobsuche
Lecture 42 - Lektion 9 | Telefonierensprache
Lecture 43 - Im Kaufhaus | Welche/Diese
Lecture 44 - Lektion 11 | Körper und Gesundheit
Lecture 45 - Gesund und munter | Wir machen Lektion 11 zu Ende
Lecture 46 - Ab in den Urlaub | Wir machen Lektion 12
Lecture 30 - What is Deaf Culture? An Interview with Dr. Michele Friedner
Lecture 31 - Disability and Life Writing
Lecture 32 - Disability and Metaphor
Lecture 33 - Conclusion
NPTEL Video Course - Humanities and Social Sciences - Introduction to Film Studies (2019)

Subject Co-ordinator - Dr. Aysha Iqbal Viswamohan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Overview - Part 1
Lecture 2 - Course Overview - Part 2
Lecture 3 - Cinema and Semiotics - Part 1
Lecture 4 - Cinema and Semiotics - Part 2
Lecture 5 - Cinema and Semiotics - Seven (1995) - Part 1
Lecture 6 - Cinema and Semiotics - Seven (1995) - Part 2
Lecture 7 - Plot in Cinema - Part 1
Lecture 8 - Plot in Cinema - Part 2
Lecture 9 - Plot in Cinema - 7 primary types of plot
Lecture 10 - Plot in Cinema - Conflict as a Plot Element
Lecture 11 - Character as a Plot Element - Part 1
Lecture 12 - Character as a Plot Element - Part 2
Lecture 13 - Editing in Cinema - (Montage, Jumpcut) - Part 1
Lecture 14 - Editing in Cinema - (Montage, Jumpcut) - Part 2
Lecture 15 - Realism in Cinema - Part 1
Lecture 16 - Realism in Cinema - Part 2
Lecture 17 - Colour
Lecture 18 - Colour
Lecture 19 - Intertextuality - Casablanca (1942) - Part 1
Lecture 20 - Intertextuality - Casablanca (1942) - Part 2
Lecture 21 - Intertextuality - Blade Runner (1982) - Part 1
Lecture 22 - Intertextuality - Blade Runner (1982) - Part 2
Lecture 23 - Intertextuality - The Matrix (1999) - Part 1
Lecture 24 - Intertextuality - The Matrix (1999) - Part 2
Lecture 25 - Cinema and Modernism - Part 1
Lecture 26 - Cinema and Modernism - Part 2
Lecture 27 - Cinema and Modernism - Part 3
Lecture 28 - Guest Lecture by Sudhish Kamath (Film Critic and Film Maker)
Lecture 29 - The French Masters - Jean Renoir - Part 1

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Lecture 30 - The French Masters - Jean Renoir - Part 2
Lecture 31 - The French Masters - Robert Bresson - Part 1
Lecture 32 - The French Masters - Robert Bresson - Part 2
Lecture 33 - The French Masters - Robert Bresson - Part 3
Lecture 34 - What is a Canon?
Lecture 35 - Canonical Text - Citizen Kane (1941) - Part 1
Lecture 36 - Canonical Text - Citizen Kane (1941) - Part 2
Lecture 41 - The Academy Awards Case Study - My Left Foot (1989) and Daniel Day-Lewis Method Acting - Part 1
Lecture 42 - The Academy Awards Case Study - My Left Foot (1989) and Daniel Day-Lewis Method Acting - Part 2
Lecture 43 - Classic Hollywood - Hayâˆšâ¬â€šâ© Code, Studio Years, Major Filmmakers - Part 1
Lecture 44 - Classic Hollywood - Hayâˆšâ¬â€šâ© Code, Studio Years, Major Filmmakers - Part 2
Lecture 45 - Classic Hollywood - Major Filmmakers, Melodrama - Part 1
Lecture 46 - Classic Hollywood - Major Filmmakers, Melodrama - Part 2
Lecture 47 - Classic Hollywood - Major Filmmakers, Melodrama - Part 3
Lecture 48 - Classic Hollywood - Major Filmmakers, Melodrama - Part 4
Lecture 49 - German Expressionism, Film Noir Case Study
Lecture 50 - German Expressionism, Film Noir Case Study
Lecture 51 - Stars as Icons, Case Study of the Stardom of James Dean and Fandoms - Part 1
Lecture 52 - Stars as Icons, Case Study of the Stardom of James Dean and Fandoms - Part 2
Lecture 53 - Cinema and the Counterculture Movement - Beat Generation, Woodstock Nation, Easy Rider (1968) - Part 1
Lecture 54 - Cinema and the Counterculture Movement - Beat Generation, Woodstock Nation, Easy Rider (1968) - Part 2
Lecture 55 - Italian Cinema - Part 1
Lecture 56 - Italian Cinema - Part 2
Lecture 57 - Japanese Cinema - Part 1
Lecture 58 - Japanese Cinema - Part 2
Lecture 59 - Auteur Theory in the USA - Part 1
Lecture 60 - Auteur Theory in the USA - Part 2
Lecture 61 - Auteur Theory in the USA - Part 3
Lecture 62 - Auteur Theory in the USA - Part 4
Lecture 63 - New Hollywood - Part 1
Lecture 64 - New Hollywood - Part 2
Lecture 65 - New Hollywood - Part 3
Lecture 66 - New Hollywood - Part 4
Lecture 67 - New Hollywood - Part 5
Lecture 68 - New Hollywood - Part 6
Lecture 69 - New Hollywood - Part 7
Lecture 70 - New Hollywood - Part 8
Lecture 71 - Cinema and Genres - Part 1
Lecture 72 - Cinema and Genres - Part 2
Lecture 73 - Cinema and Genres - Part 3
Lecture 74 - Cinema and Genres - Part 4
Lecture 75 - Postmodernism and Cinema - Part 1
Lecture 76 - Postmodernism and Cinema - Part 2
Lecture 77 - Postmodernism and Cinema - Part 3
Lecture 78 - Postmodernism and Cinema - Part 4
Lecture 79 - The Western - Part 1
Lecture 80 - The Western - Part 2
NPTEL Video Course - Humanities and Social Sciences - NOC: Time value of money - Concepts and Calculations

Subject Co-ordinator - Dr. Bikash Mohanty

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Interest Rate
Lecture 3 - Simple interest
Lecture 4 - Compounding techniques - I & II
Lecture 5 - Discrete annually compounding - I & II
Lecture 6 - Continuous compounding
Lecture 7 - Comparison of all compounding methods
Lecture 8 - Present value
Lecture 9 - Future Value
Lecture 10 - Annuities - I & II
Lecture 11 - Perpetuity
Lecture 12 - Amortization
Lecture 13 - Multiple cash flow - I & II
Lecture 14 - Valuation of bond - I & II
Lecture 15 - Valuation of ordinary shares

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NPTEL Video Course - Humanities and Social Sciences - NOC:Depreciation, Alternate Investment and Profitability Analysis

Subject Co-ordinator - Prof. Bikash Mohanty
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to course
Lecture 2 - Introduction to depreciation and Straight line method
Lecture 3 - Declining balance method
Lecture 4 - Double-declining balance method
Lecture 5 - Sum-of-the-digits method
Lecture 6 - Sinking fund method and Repair provision method
Lecture 7 - Accelerated cost recovery method - I
Lecture 8 - Accelerated cost recovery method - II
Lecture 9 - Introduction to alternate investment
Lecture 10 - Introduction to alternate investment
Lecture 11 - Present worth method
Lecture 12 - Rate of return method
Lecture 13 - Incremental rate of return
Lecture 14 - Perpetuity method
Lecture 15 - Minimum return as cost
Lecture 16 - Introduction to profitability analysis and Payback period
Lecture 17 - Return on investment
Lecture 18 - Net Return
Lecture 19 - Discounted cash flow - I
Lecture 20 - Discounted cash flow - II
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC:Soft Skills

Subject Co-ordinator - Prof. Binod Mishra

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Soft Skills
Lecture 2 - Aspects of Soft Skills
Lecture 3 - Effective Communication Skills
Lecture 4 - Classification of Communication
Lecture 5 - Personality Development
Lecture 6 - Positive Thinking
Lecture 7 - Telephonic Communication Skills - Part I
Lecture 8 - Telephonic Communication Skills - Part II
Lecture 9 - Communicating Without Words
Lecture 10 - Paralanguage
Lecture 11 - Proxemics
Lecture 12 - Haptics
Lecture 13 - Meta-communication
Lecture 14 - Listening Skills
Lecture 15 - Types of Listening
Lecture 16 - Negotiation Skills - I
Lecture 17 - Negotiation Skills - II
Lecture 18 - Culture as Communication
Lecture 19 - Communicating across Cultures
Lecture 20 - Organizational Communication
Lecture 21 - Communication Breakdown - Part I
Lecture 22 - Communication Breakdown - Part II
Lecture 23 - Advanced Writing Skills
Lecture 24 - Principles of Business Writing
Lecture 25 - Types of Business Writing - Part I
Lecture 26 - Types of Business Writing - Part II
Lecture 27 - Business Letters
Lecture 28 - Business Letters
Lecture 29 - Types of Business Letters - Part I
Lecture 30 - Types of Business Letters - Part II
Lecture 31 - Report Writing
Lecture 32 - Types of Reports
Lecture 33 - Strategies for Report Writing - Part I
Lecture 34 - Strategies for Report Writing - Part II
Lecture 35 - Evaluation and Organization of Data
Lecture 36 - Structure of Reports - Part I
Lecture 37 - Structure of Reports - Part II
Lecture 38 - Report Style - Part I
Lecture 39 - Report Style - Part II
Lecture 40 - Group Communication
Lecture 41 - Leadership Skills
Lecture 42 - Group Discussion - Part I
Lecture 43 - Group Discussion - Part II
Lecture 44 - Meeting Management
Lecture 45 - Adaptability and Work Ethics
Lecture 46 - Advanced Speaking Skills
Lecture 47 - Oral Presentations, Speeches, and Debates
Lecture 48 - Combating Nervousness
Lecture 49 - Patterns and Methods of Presentation
Lecture 50 - Oral Presentation
Lecture 51 - Making Effective Presentations
Lecture 52 - Speeches for Various Occasions
Lecture 53 - Interviews
Lecture 54 - Planning and Preparation - Part I
Lecture 55 - Planning and Preparation - Part II
Lecture 56 - Drafting an Effective Resume
Lecture 57 - Facing Job Interviews - Part I
Lecture 58 - Facing Job Interviews - Part II
Lecture 59 - Emotional Intelligence and Critical Thinking
Lecture 60 - Applied Grammar
NPTEL Video Course - Humanities and Social Sciences - NOC:Sociology of Science

Subject Co-ordinator - Dr. Aninday Jayant Mishra

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Sociology
Lecture 2 - Sociology
Lecture 3 - History of Science
Lecture 4 - HSS in Technology Institutes
Lecture 5 - HSS in Technology Institutes
Lecture 6 - Ethos of Science - I
Lecture 7 - Ethos of Science - II
Lecture 8 - Science and Economy of 17th Century England
Lecture 9 - Matthew Effect - Part 1
Lecture 10 - Matthew Effect - Part 2
Lecture 11 - Matthew Effect - Part 3
Lecture 12 - Thomas Kuhn - Part 1
Lecture 13 - Thomas Kuhn - Part 2
Lecture 14 - Karl Popper - Part 1
Lecture 15 - Karl Popper - Part 2
Lecture 16 - Scientist as Indexical Reasoner - Part 1
Lecture 17 - Scientist as Indexical Reasoner - Part 2
Lecture 18 - Science technology and Colonial Power - Part 1
Lecture 19 - Science Technology and Colonial Power - Part 2
Lecture 20 - Large Community but Few Peers

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NPTEL Video Course - Humanities and Social Sciences - NOC: Perspectives on Neurolinguistic Programming

Subject Co-ordinator - Prof. Smita Jha

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Scope of Neurolinguistic Programming
Lecture 3 - NLP Communicating Model
Lecture 4 - NLP Filters
Lecture 5 - Causes and Effect
Lecture 6 - Four Pillars of NLP
Lecture 7 - Sensory Acuity
Lecture 8 - Rapport
Lecture 9 - Flexibility
Lecture 10 - Useful NLP Techniques
Lecture 11 - Presuppositions of NLP
Lecture 12 - Four Stages of Competence
Lecture 13 - Metacognition
Lecture 14 - Outcome and Ecology
Lecture 15 - Introducing Frames
Lecture 16 - Negotiation
Lecture 17 - Persuasion
Lecture 18 - Emotionality
Lecture 19 - Stage Fear - I
Lecture 20 - Stage Fear - II

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NPTEL Video Course - Humanities and Social Sciences - NOC: Literature, Culture and Media

Subject Co-ordinator - Prof. Rashmi Gaur

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction Aims and Objectives
Lecture 2 - Defining Literature
Lecture 3 - Defining Culture
Lecture 4 - Relationship between Literature and Culture
Lecture 5 - Literature, Culture and Media
Lecture 6 - Introduction to Cultural Studies
Lecture 7 - Cultural Studies I
Lecture 8 - Cultural Studies II
Lecture 9 - High Culture and Popular Culture
Lecture 10 - Subculture and Counterculture
Lecture 11 - Modernism and Postmodernism - I
Lecture 12 - Modernism and Postmodernism - II
Lecture 13 - Lyotards The Postmodern Condition
Lecture 14 - Foucaultâ€™s Notion of Knowledge and Power
Lecture 15 - Poststructuralism and Deconstruction
Lecture 16 - Introduction to Feminism - I
Lecture 17 - Introduction to Feminism - II
Lecture 18 - Theories of Gender
Lecture 19 - Men's and Masculinity Studies
Lecture 20 - Queer Studies and Representations of Gender in Media
Lecture 21 - Intersectionality
Lecture 22 - Introduction to Postcolonial Theory
Lecture 23 - Key Concepts in Postcolonial theory
Lecture 24 - Said, Spivak and Bhabha
Lecture 25 - Postcolonial Reading of Achebe and Amitav Ghosh
Lecture 26 - Theories of Ideology
Lecture 27 - Adorno and Horkheimer on Culture
Lecture 28 - 1. Culture Industry and Mass Deception; 2. Walter Benjamin
Lecture 29 - Interconnections between Literature, Culture and Identity

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Lecture 30 - Interconnections between Literature, Culture and Identity
Lecture 31 - The Evolution of Media
Lecture 32 - Media and Culture - I
Lecture 33 - Media and Culture - II
Lecture 34 - Media, Culture and Technology
Lecture 35 - Harold Innis
Lecture 36 - Introduction to Marshall McLuhan
Lecture 37 - Media and the Electric Age
Lecture 38 - Hot and Cool Media
Lecture 39 - Postmodern Media - I
Lecture 40 - Postmodern Media - II and Formation of Public Opinion
Lecture 41 - Word and the Image
Lecture 42 - Film and Literature - I
Lecture 43 - Film and Literature - II
Lecture 44 - Language of Films
Lecture 45 - Reading of 12 Years a Slave
Lecture 46 - Development of Media
Lecture 47 - Development of Media
Lecture 48 - Film, Television and Literature
Lecture 49 - Impact of Technology on Literary Genres
Lecture 50 - Media in the 21st Century
Lecture 51 - Approaches to Digital Forms of Media
Lecture 52 - Literature, Internet and Culture
Lecture 53 - Digital Culture, Media, and Literature
Lecture 54 - Representation of Partition in Different Media
Lecture 55 - Representation of Partition in Different Media
Lecture 56 - Game Studies - I
Lecture 57 - Game Studies - II
Lecture 58 - Body Culture Studies and Representation of Women in the Media
Lecture 59 - Media and Gender
Lecture 60 - Media and Language, Glass Ceiling in Media
NPTEL Video Course - Humanities and Social Sciences - NOC: Body Language: Key to Professional Success

Subject Co-ordinator - Prof. Rashmi Gaur

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Defining Body Language, Scope and Relevance
Lecture 2 - Defining Proxemics, Four Zones
Lecture 3 - Proxemics
Lecture 4 - Oculesics - I
Lecture 5 - Oculesics - II
Lecture 6 - Haptics - I
Lecture 7 - Haptics - II
Lecture 8 - Kinesics
Lecture 9 - Facial Expressions
Lecture 10 - Macro and Micro Facial Expressions
Lecture 11 - Mouth and Smiles
Lecture 12 - Cultural Differences in Smiles; Head Nods
Lecture 13 - Hand Movements
Lecture 14 - Understanding Finger Movements
Lecture 15 - Movements of Feet and Legs
Lecture 16 - Paralanguage
Lecture 17 - Chronemics
Lecture 18 - Chromatics, Olfactics and Physical Appearance
Lecture 19 - Digital Body Language
Lecture 20 - Gustorics and Silence

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NPTEL Video Course - Humanities and Social Sciences - NOC: Interpersonal Skills

Subject Co-ordinator - Prof. Smita Jha

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Interpersonal Skills
Lecture 2 - What are the Important Interpersonal Skills
Lecture 3 - How Can I Develop Interpersonal Skills
Lecture 4 - Practice Makes Interview Perfect
Lecture 5 - Personal Attributes
Lecture 6 - Interpersonal Attributes
Lecture 7 - Technical Communication Skills
Lecture 8 - What is Technical Communication
Lecture 9 - Body Language - 1
Lecture 10 - Body Language - 2
Lecture 11 - Decision making - 1
Lecture 12 - Decision making - 2
Lecture 13 - Pronunciation - 1
Lecture 14 - Pronunciation - 2
Lecture 15 - Creative Problem Solving - 1
Lecture 16 - Creative problem solving - 2
Lecture 17 - Time Management - 1
Lecture 18 - Time Management - 2
Lecture 19 - Leadership skills - 1
Lecture 20 - Leadership skills - 2
Lecture 21 - Group Dynamics - 1
Lecture 22 - Group Dynamics - 2
Lecture 23 - Reducing Stage Fright - 1
Lecture 24 - Reducing Stage Fright - 2
Lecture 25 - Death by Power Point - 1
Lecture 26 - Death by Power Point - 2
Lecture 27 - Negotiation - 1
Lecture 28 - Negotiation - 2
Lecture 29 - Assertiveness - 1

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Lecture 30 - Assertiveness - 2
Lecture 31 - Emotional Intelligence - 1
Lecture 32 - Emotional Intelligence - 2
Lecture 33 - Brain Storming Technique - 1
Lecture 34 - Brain Storming Technique - 2
Lecture 35 - Group Discussion - 1
Lecture 36 - Group Discussion - 2
Lecture 37 - Persuasion - 1
Lecture 38 - Persuasion - 2
Lecture 39 - Glossophobia - 1
Lecture 40 - Glossophobia - 2

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Humanities and Social Sciences - NOC:Artistic Exploration in Scientific Research and Technology

Subject Co-ordinator - Prof. Bitasta Das

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Science and Humanities
Lecture 2 - Humanities and Art
Lecture 3 - Idea of Folk
Lecture 4 - Folk and Folk Art
Lecture 5 - Importance of Folklore
Lecture 6 - Folk Art Around the World
Lecture 7 - Indian Folk Art
Lecture 8 - Indian Schools of Painting
Lecture 9 - Indian Folk Paintings - 1
Lecture 10 - Indian Folk Paintings - 2
Lecture 11 - Madhubani
Lecture 12 - Gond
Lecture 13 - Warli
Lecture 14 - Chittara
Lecture 15 - Sohrai
Lecture 16 - Importance of Interdisciplinary Approach
Lecture 17 - Art vis-Ã –vis Science and Technology
Lecture 18 - When Art Meets Science and Technology
Lecture 19 - Folk Art A Potent Medium of Communication
Lecture 20 - Representation of Science and Technology with Indian Folk Art - 1
Lecture 21 - Representation of Science and Technology with Indian Folk Art - 2
Lecture 22 - Recapitulation
Lecture 23 - Conclusion

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NPTEL Video Course - Management - Managerial Accounting

Subject Co-ordinator - Dr. Varadraj Bapat

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Management Accounting
Lecture 2 - Double Entry System, Forms of Organisation
Lecture 3 - Financial Statements
Lecture 4 - Balance Sheet
Lecture 5 - Profit and Loss Account
Lecture 6 - Company Account
Lecture 7 - Accounting Concepts, Standards, IFRS
Lecture 8 - Depreciation, Inventory, Goodwill
Lecture 9 - Inventory Valuation, Cash Flow
Lecture 10 - Cash Flow Statement Cases
Lecture 11 - Cash Flow Statement Cases
Lecture 12 - Cash Flow Statement Cases-Part II
Lecture 13 - Fund Flow Statement Cases
Lecture 14 - Common-size, Comparative Statement Analysis
Lecture 15 - Ratio Analysis
Lecture 16 - Financial Statements Analysis
Lecture 17 - Comparative, Common-size and Ratio Analysis
Lecture 18 - Financial Statements Analysis - Colgate Palmolive Case
Lecture 19 - Financial Statements Analysis - Dabur India Case
Lecture 20 - Types of Costs
Lecture 21 - Accounting for Costs
Lecture 22 - Cost Allocation, Absorption
Lecture 23 - Job and Process Accounting
Lecture 24 - Job and Process Accounting including cost sheet and equivalent production
Lecture 25 - Equivalent production and Activity Based Costing
Lecture 26 - Activity Based Costing and Management
Lecture 27 - Cost Volume Profit Analysis
Lecture 28 - Relevant and Sunk Cost in Decision Making
Lecture 29 - New Product, Shut Down and Joint Products

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Lecture 30 - Budget and Budgetory control
Lecture 31 - Budgeting and Standard Costing
Lecture 32 - Standard Costing - Material, Labour and Overhead Variances
Lecture 33 - Standard Costing - Mix, Yeild, Sales and Fixed Overhead Variances
Lecture 34 - Standard Costing - Mix, Yeild and Fixed Overhead Variances
Lecture 35 - Cost Volume Profit and Break-Even Point Analysis
Lecture 36 - Cost Volume Profit Analysis - Cost Indifference Point and Leverage
Lecture 37 - Cash Flow Advanced Cases
Lecture 38 - Cash Flow Advanced Cases-Part II
Lecture 39 - Financial Statements Analysis Advanced
Lecture 40 - Financial Statement- Forcasting and Valuation - Dabur Case
Lecture 41 - Financial Statement- Forcasting and use of Adjusted data - Pfizer and Merck Case
NPTEL Video Course - Management - Managerial Economics

Subject Co-ordinator - Dr. Trupti Mishra

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Managerial Economics
Lecture 2 - Introduction to Managerial Economics (Continued...)
Lecture 3 - Introduction to Managerial Economics (Continued...)
Lecture 4 - Basic Tools of Economic Analysis and Optimization Techniques
Lecture 5 - Basic Tools of Economic Analysis and Optimization Techniques (Continued...)
Lecture 6 - Basic Tools of Economic Analysis and Optimization Techniques (Continued...)
Lecture 7 - Basic Tools of Economic Analysis and Optimization Techniques (Continued...)
Lecture 8 - Theory of Demand
Lecture 9 - Theory of Demand (Continued...)
Lecture 10 - Theory of Demand (Continued...)
Lecture 11 - Theory of Demand (Continued...)
Lecture 12 - Consumer Behaviour
Lecture 13 - Consumer Behaviour (Continued...)
Lecture 14 - Elasticity of Supply
Lecture 15 - Demand Forecasting
Lecture 16 - Demand Forecasting (Continued...)
Lecture 17 - Theory of Production
Lecture 18 - Theory of Production (Continued...)
Lecture 19 - Theory of Production (Continued...)
Lecture 20 - Theory of Cost
Lecture 21 - Theory of Cost (Continued...)
Lecture 22 - Theory of Cost (Continued...)
Lecture 23 - Theory of Cost (Continued...)
Lecture 24 - Theory of Market
Lecture 25 - Perfect Competition
Lecture 26 - Perfect Competition (Continued...)
Lecture 27 - Monopoly
Lecture 28 - Monopoly (Continued...)
Lecture 29 - Monopoly (Continued...)

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Lecture 30 - Monopolistic
Lecture 31 - Oligopoly
Lecture 32 - Oligopoly (Continued...)
Lecture 33 - Oligopoly (Continued...)
Lecture 34 - Oligopoly (Continued...)
Lecture 35 - Oligopoly and Game Theory
Lecture 36 - Oligopoly and Game Theory (Continued...)
Lecture 37 - Game Theory / Product Pricing
Lecture 38 - Product Pricing
Lecture 39 - Product Pricing (Continued...)
Lecture 40 - Summary
NPTEL Video Course - Management - NOC: Financial Accounting

Subject Co-ordinator - Dr. Varadraj Bapat

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Scope of Accounting
Lecture 2 - Financial Statements
Lecture 3 - Balance Sheet - 1
Lecture 4 - Balance Sheet - 2
Lecture 5 - Balance Sheet - 3
Lecture 6 - Balance Sheet - 4
Lecture 7 - Balance Sheet - 5
Lecture 8 - Profit and Loss Account - 1
Lecture 9 - Profit and Loss Account - 2
Lecture 10 - Profit and Loss Account - 3
Lecture 11 - Depreciation - 1
Lecture 12 - Depreciation - 2
Lecture 13 - Inventory Valuation
Lecture 14 - Cash Flow Statement - 1
Lecture 15 - Cash Flow Statement - 2
Lecture 16 - Cash Flow Statement - 3
Lecture 17 - Cash Flow Statement - 4
Lecture 18 - Cash Flow Statement - 5
Lecture 19 - Corporate Governance
Lecture 20 - Corporate Governance
Lecture 21 - Corporate Governance
Lecture 22 - Accounting Standards and Principles
Lecture 23 - Evolution of Accounting
Lecture 24 - Recording of Financial Transactions
Lecture 25 - Zee Case
Lecture 26 - Zee Case
Lecture 27 - Hindalco Case
Lecture 28 - Hindalco Case
Lecture 29 - Interpretation and Analysis of Financial Statements

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NPTEL Video Course - Management - NOC: Cost Accounting

Subject Co-ordinator - Dr. Varadraj Bapat

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Cost Accounting
Lecture 2 - Classification of Costs
Lecture 3 - Marginal Costing
Lecture 4 - Cost Volume Profit Analysis
Lecture 5 - Margin of Safety
Lecture 6 - Application of Breakeven Point Analysis
Lecture 7 - Sensitivity Analysis
Lecture 8 - Case of Ayur Pharma
Lecture 9 - Different Decision Scenarios and Profit Planning
Lecture 10 - Relevant Costs in Decision Making
Lecture 11 - Case Study
Lecture 12 - Case Study
Lecture 13 - Case Study on Projection
Lecture 14 - Case Study
Lecture 15 - Budgeting and Budgetary Control
Lecture 16 - Functional Budget
Lecture 17 - Cash Budget
Lecture 18 - Standard Costing And Variance Analysis
Lecture 19 - Material Cost Variances
Lecture 20 - Overhead Variance
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NPTEL Video Course - Management - NOC:Game Theory

Subject Co-ordinator - Prof. K.S. Mallikarjuna Rao

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Combinatorial Games
Lecture 2 - Combinatorial Games
Lecture 3 - Combinatorial Games
Lecture 4 - Combinatorial Games
Lecture 5 - Combinatorial Games
Lecture 6 - Combinatorial Games
Lecture 7 - Combinatorial Games
Lecture 8 - Combinatorial Games
Lecture 9 - Combinatorial Games
Lecture 10 - Zero-Sum Games
Lecture 11 - Zero-Sum Games
Lecture 12 - Zero-Sum Games
Lecture 13 - Zero-Sum Games
Lecture 14 - Zero-Sum Games
Lecture 15 - Zero-Sum Games
Lecture 16 - Zero-Sum Games
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Lecture 29 - Brown-Von Neumann-Nash Dynamics

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Lecture 30 - Potential Games
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NPTEL Video Course - Management - Organisation Management

Subject Co-ordinator - Prof. Vinayshil Gautam

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Organization Management, Nature, Scope and Complexity
Lecture 2 - Longitudinal thinking and legacy factor
Lecture 3 - Longitudinal thinking and legacy factor
Lecture 4 - Longitudinal thinking and legacy factor
Lecture 5 - Theory and majors schools of Thought and Framework of Organizational Analysis
Lecture 6 - Theory and majors schools of Thought and Framework of Organizational Analysis (Continued...)
Lecture 7 - Systems contingency approach to organization theory and practice; Techniques of Organizational Diagnosis
Lecture 8 - Systems contingency approach to organization theory and practice; Techniques of Organizational Diagnosis (Continued...)
Lecture 9 - Theory of organizational structures - nature and consequence of structure
Lecture 10 - Theory of organizational structures - nature and consequence of structure (Continued...)
Lecture 11 - Socio-culture dimension of work and behavior
Lecture 12 - Socio-culture dimension of work and behavior (Continued...)
Lecture 13 - Socio-culture dimension of work and behavior (Continued...)
Lecture 14 - Impact of environment and cultural variables on organization structure & style
Lecture 15 - Impact of environment and cultural variables on organization structure & style (Continued...)
Lecture 16 - Impact of environment and cultural variables on organization structure & style (Continued...)
Lecture 17 - Organization Change and Organisation Development
Lecture 18 - Organization Change and Organisation Development (Continued...)
Lecture 19 - Intervention strategies for organization development - individual, Group and Interpersonal Interventions
Lecture 20 - Intervention strategies for organization development - individual, Group and Interpersonal Interventions (Continued...)
Lecture 21 - Total System Intervention & Stabilizing Change Management by Objectives
Lecture 22 - Total System Intervention & Stabilizing Change Management by Objectives (Continued...)
Lecture 23 - Total System Intervention & Stabilizing Change Management by Objectives (Continued...)
Lecture 24 - Nature of Organisational Processes
Lecture 25 - Nature of Organisational Processes (Continued...)
Lecture 26 - Nature of Organisational Processes (Continued...)
Lecture 27 - Nature of Organisational Processes (Continued...)
Lecture 28 - Nature of Organisational Processes (Continued...)
Lecture 29 - Nature of Organisational Processes (Continued...)

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Lecture 2 - Understanding organizations
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Lecture 6 - Concerns of organising engineering business and systems (Continued...)
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Lecture 17 - Socio-technical systems (Continued...)
Lecture 18 - Socio-technical systems (Continued...)
Lecture 19 - Dealing with efficiency and excellence
Lecture 20 - Dealing with efficiency and excellence (Continued...)
Lecture 21 - Dealing with efficiency and excellence (Continued...)
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Lecture 23 - Man-machine relationship (Continued...)
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Lecture 26 - Concerns of recruitment, selection, skill formation and redeployment
Lecture 27 - Concerns of recruitment, selection, skill formation and redeployment (Continued...)
Lecture 28 - Concerns of recruitment, selection, skill formation and redeployment (Continued...)
Lecture 29 - Developing teams and leadership
NPTEL Video Course - Management - NOC: Economic Growth and Development

Subject Co-ordinator - Prof. Rajshree Bedamatta
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Concepts of Economic Growth and Development
Lecture 2 - Structural features of developed and underdeveloped countries
Lecture 3 - The Global North and the Global South
Lecture 4 - Growth versus Development - some indices of economic development
Lecture 5 - Modern Economic Growth
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Lecture 11 - Strategies of economic development and growth - VI
Lecture 12 - Growth and Inequality
Lecture 13 - Economic Growth and Public Support
Lecture 14 - Measures of Inequality
Lecture 15 - Introduction to Human Development - Putting People First
Lecture 16 - The Human Development and Capability Approach
Lecture 17 - Utilitarianism, Basic Needs Approach and the Capability Approach
Lecture 18 - Measuring Human Development - I
Lecture 19 - Measuring Human Development - II
Lecture 20 - Other Human Development Indices
Lecture 21 - Multidimensional Poverty, MDGs and SDGs
Lecture 22 - Gender mainstreaming and Gender budgeting
Lecture 23 - In Conclusion
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Lecture 35 - Strategic Marketing
Lecture 36 - Strategic Marketing
Lecture 37 - Strategic Marketing
NPTEL Video Course - Management - NOC:Strategy: An Introduction to game Theory

Subject Co-ordinator - Prof. Aditya K. Jagannatham, Dr. Vimal Kumar

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Prisonersâ□□ Dilemma
Lecture 3 - Best Response and Nash Equilibrium
Lecture 4 - Another Example
Lecture 5 - Dominant Strategies
Lecture 6 - Stag Hunt â□□ Coordination and Bank Runs
Lecture 7 - Battle of Sexes and Multiple Nash Equilibria
Lecture 8 - Tragedy of Commons
Lecture 9 - Tragedy of Commons
Lecture 10 - Cournot Duopoly
Lecture 11 - Cournot Duopoly
Lecture 12 - Mixed Strategies
Lecture 13 - Battle of Sexes
Lecture 14 - Battle of Sexes
Lecture 15 - Paying Taxes
Lecture 16 - Portfolio Management Game
Lecture 17 - Rationality, Choice and Common Knowledge
Lecture 18 - Iterated Elimination of Domination Strategies
Lecture 19 - Auction
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Lecture 21 - Traffic at Equilibrium and Braesss Paradox
Lecture 22 - Linear Markets
Lecture 23 - Extensive Form Games
Lecture 24 - Game Tree and Information Sets
Lecture 25 - Strategies in Extensive from Games
Lecture 26 - Extensive from Games with Simultaneous Moves and Their Normal From Representation
Lecture 27 - Sub Game Perfect Equilibrium Part-I
Lecture 28 - Sub Game Perfect Equilibrium Part-II
Lecture 29 - The Art of War

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Lecture 30 - Ultimatum Game
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Lecture 43 - Expected Revenue
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Lecture 46 - Evolutionary Biology
Lecture 47 - Evolutionary stable Strategy (ESS)
Lecture 48 - ESS and NE
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Lecture 56 - Introduction to perfect Bayesian Equilibrium
Lecture 57 - Obtaining PBE
Lecture 58 - Gift Game
NPTEL Video Course - Management - NOC: Managing Services

Subject Co-ordinator - Prof. Jayanta Chatterjee
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Evolving Service Markets
Lecture 3 - The Service Customers
Lecture 4 - Product Service Systems
Lecture 5 - The Service Act
Lecture 6 - Seamless Service
Lecture 7 - Service Management Elements
Lecture 8 - Core Vs. Supplementary Services
Lecture 9 - Intangibility of Services
Lecture 10 - Response to IHIP Challenges
Lecture 11 - Process & Promotion
Lecture 12 - Process Issues in Service
Lecture 13 - Challenges of Services-1
Lecture 14 - Service Uniqueness-2
Lecture 15 - Consumer in the Services Flow-1
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Lecture 19 - Current Service Map to New Service Design
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Lecture 21 - Case Study on Service Excellence-1
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Lecture 23 - Services Excellence - Culture
Lecture 24 - People in Services
Lecture 25 - Position - Value Proposition-1
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Lecture 40 - Service Complaints and Recovery Strategies
Lecture 41 - Loyalty - Relationship-I
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Lecture 43 - Strategy Canvas - Service Portfolio Analysis
Lecture 44 - Loyalty - Relationship
Lecture 45 - Managing Partner Relationships
Lecture 46 - Global Service Ecosystem - Contemporary Issues
Lecture 47 - Service Ecosystem - Service Innovation
Lecture 48 - Services as Systems
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Management - NOC: Quantitative Finance

Subject Co-ordinator - Dr. Raghu Nandan Sengupta

Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Management - NOC:Marketing Management-I

Subject Co-ordinator - Prof. Jayanta Chatterjee, Dr. Shashi Shekhar Mishra
Co-ordinating Institute - IIT - Kanpur

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Lecture 2 - Core Concepts in Marketing
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Lecture 6 - Contemporary Issues in Modern Marketing Practices
Lecture 7 - Introduction to Competitor Analysis
Lecture 8 - Marketing Objectives
Lecture 9 - Strategy and Core Competency
Lecture 10 - PESTEL Framework
Lecture 11 - Competitive Analysis
Lecture 12 - Case Study
Lecture 13 - Introduction To Marketing Information System
Lecture 14 - Components of a Marketing Information System
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Lecture 16 - MDP and MRP
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Lecture 19 - Causal Research
Lecture 20 - Measurement and Scaling
Lecture 21 - Questionnaire and Sampling
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Lecture 25 - Introduction to Consumer Behaviour and Need Recognition
Lecture 26 - Information Search
Lecture 27 - Socio-Cultural Influences on the Consumer Buying Process
Lecture 28 - Psychological Influences on Consumer Buying Process
Lecture 29 - Evaluation of Alternatives

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Lecture 30 - Purchase and Post Purchase Evaluation
Lecture 31 - Service Consumption
Lecture 32 - Structural Models of Attitude
Lecture 33 - Industrial Buyer Behaviour - I
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Lecture 36 - Three Dimension of Industrial Buyer Behaviour
Lecture 37 - Consumer Decision-Making Process Revisited
Lecture 38 - Identifying and Choosing Opportunities
Lecture 39 - Market Segmentation - I
Lecture 40 - Market Segmentation - II
Lecture 41 - Segmentation and Targeting
Lecture 42 - Segmentation and Post Segmentation Strategies
Lecture 43 - Introduction to Marketing Strategy
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Lecture 45 - Segmentation and Targeting in B2B Market
Lecture 46 - Crafting the Positioning and Branding Effectively
NPTEL Video Course - Management - NOC:Marketing Management-II

Subject Co-ordinator - Prof. Jayanta Chatterjee, Dr. Shashi Shekhar Mishra
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Brief Recap of Basic Concepts from Marketing Management 1 - I
Lecture 2 - Brief Recap of Basic Concepts from Marketing Management 1 - II
Lecture 3 - Product - An Important Component of the 4P
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Lecture 5 - New Product Development - II
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Lecture 7 - Screening New Product Ideas
Lecture 8 - Diffusion of Innovation
Lecture 9 - Product Life Cycle and Introduction to Strategy
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Lecture 13 - Introduction to Brand, Branding and Brand Equity
Lecture 14 - Strategic Brand Management Process
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Lecture 17 - Secondary Associations of a Brand and Advantages of Brand
Lecture 18 - Measuring Brand Equity and other Brand Related Constructs
Lecture 19 - Global Dimensions of Brands
Lecture 20 - Brand Message and Advantage of Brand
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Lecture 22 - Branding Strategies - II
Lecture 23 - Strategic Brand Management
Lecture 24 - Creating a Powerful Brand
Lecture 25 - Introduction to Pricing
Lecture 26 - Considerations for Setting the Price
Lecture 27 - Determining the Demand and Cost Estimation
Lecture 28 - Cost Estimation and Break Even Analysis
Lecture 29 - Different Methods of Pricing - I

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Lecture 31 - Introduction to Distribution
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Lecture 33 - Different Channel Options
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Lecture 38 - Choosing Retail Location and Layout
Lecture 39 - Introduction to Integrated Marketing Communications
Lecture 40 - Models of Communication
Lecture 41 - Designing and Implementing Marketing Communication
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Lecture 47 - Recap of Important Concepts - I
Lecture 48 - Recap of Important Concepts - II
NPTEL Video Course - Management - NOC:Project Management

Subject Co-ordinator - Prof. Raghunandan Sengupta

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Project Management
Lecture 2 - Introduction to Agile Project Management
Lecture 3 - Project Management Process for a Project - I
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Lecture 7 - Project Risk Management
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Lecture 13 - Decision Tree Analysis and Risk Management
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Lecture 17 - Application of Utility Theory in Project Management - IV
Lecture 18 - Other Criteria used for Project Selection
Lecture 19 - Work Breakdown Structure in Project Management
Lecture 20 - Activity Networks used in Project Management
Lecture 21 - Concept of Critical Path Method (CPM) and Introduction to PERT
Lecture 22 - Program Evaluation Review Technique (PERT) - I
Lecture 23 - Program Evaluation Review Technique (PERT) - II
Lecture 24 - Aspects and applications of CPM and PERT
Lecture 25 - Concepts of a Project Life Cycle
Lecture 26 - Discounting Rates and Project Pricing
Lecture 27 - Concept of Forward Rates and Payback Time
Lecture 28 - Important Example of PERT Network involving Probabilistic time and variance
Lecture 29 - Scheduling and Crashing of Jobs

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Lecture 30 - Resource levelling and resource constraint
Lecture 31 - Detailed Explanation on Crashing of Jobs
Lecture 32 - Project scheduling and Crashing Â– An Example
Lecture 33 - Earned Value Management
Lecture 34 - Key components of Earned Value Management
Lecture 35 - Introduction to Graphical Evaluation and Review Technique (GERT) – I
Lecture 36 - Graphical Evaluation and Review Technique (GERT) – II
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Lecture 39 - Graphical Evaluation and Review Technique (GERT) – V
Lecture 40 - Q-GERT
NPTEL Video Course - Management - NOC: Systems Engineering: Theory and Practice

Subject Co-ordinator - Dr. Deepu Philip

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Systems Engineering Â□ What is, origin and examples
Lecture 2 - Systems Engineering as a profession
Lecture 3 - Systems Engineering Management (SEM)
Lecture 4 - SEM - Lifecycle Integration
Lecture 5 - Systems Engineering - Modern Version
Lecture 6 - Overview of Systems Engineering Process
Lecture 7 - System Design Process
Lecture 8 - Systems View Point
Lecture 9 - Complex Systems and System Development Process
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Lecture 11 - System Interfaces and Interactions
Lecture 12 - System Development Process
Lecture 13 - System Engineering Life Cycle Stages
Lecture 14 - System Engineering Life Cycle Stages (Continued...)
Lecture 15 - Requirement Analysis
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Lecture 17 - Unmanned Aerial Systems - A Systems Engineering Case Study
Lecture 18 - Discussion about Systems Engineering and System Thinking with Professor Ian Angell
Lecture 19 - Demonstration of real life systems by the Indian Army
Lecture 20 - Need Analysis
Lecture 21 - Functional Analysis
Lecture 22 - Functional Flow Block Diagram
Lecture 23 - Quality Function Deployment
Lecture 24 - Timeline Analysis Sheet and Requirement Allocation Sheet
Lecture 25 - Design Synthesis
Lecture 26 - Design Synthesis (Continued...)
Lecture 27 - Design Synthesis Tools

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Subject Co-ordinator - Prof. Raghunandan Sengupta

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Quality and Variability
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Lecture 7 - Six Sigma Overview
Lecture 8 - DMAIC for Problem Solving
Lecture 9 - DMAIC exmaples and DMADV
Lecture 10 - Quality Improvement
Lecture 11 - 7 Old Tools for Quality Assurance
Lecture 12 - 7 New Tools for Quality Assurance
Lecture 13 - CPM, PDPC and Introduction To House of Quality
Lecture 14 - Building the House of Quality
Lecture 15 - Introduction to Acceptance Sampling
Lecture 16 - The Operating Characteristic Curve
Lecture 17 - The OC curve and Sampling Plans
Lecture 18 - Double Sampling
Lecture 19 - Sequential Sampling, Military Standard and Introduction to R
Lecture 20 - Basic Understanding of R and Introduction to Control Charts
Lecture 21 - Basics of X bar and R chart
Lecture 22 - Usage of X bar chart and R chart
Lecture 23 - Variable Sample Size in X bar and R chart
Lecture 24 - Patterns in Charts
Lecture 25 - S chart and OC curve
Lecture 26 - S square chart and MR chart
Lecture 27 - Attribute charts- The p chart
Lecture 28 - np control chart
Lecture 29 - Estimating control limits with varying sample size

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Lecture 30 - OC curve, c and u charts
Lecture 31 - u, g and h chart
Lecture 32 - Introduction to Process Capability Analysis
Lecture 33 - PCR calculation and Gauge Capability
Lecture 34 - Introduction to ISO 9000
NPTEL Video Course - Management - NOC: Management of New Products and Services

Subject Co-ordinator - Prof. Jayanta Chatterjee

Co-ordinating Institute - IIT - Kanpur

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Lecture 1 - Similarities and Differences
Lecture 2 - Theoretical Foundations I Competitive Strategy
Lecture 3 - Theoretical Foundations II Product Strategy
Lecture 4 - Theoretical Foundations III Understanding Customer Behaviour
Lecture 5 - Theoretical Foundations IV Product Life Cycle (PLC) and Chasm
Lecture 6 - Theoretical Foundations V Product Platforms and Portfolios
Lecture 7 - Theoretical Foundations VI Understanding Customers (STP)
Lecture 8 - STP continued
Lecture 9 - Understanding Product Platforms
Lecture 10 - The Idea Generation process
Lecture 11 - Creating Customer Value Proposition
Lecture 12 - Lean Product Process
Lecture 13 - Estimating Marketing and Sales Potential
Lecture 14 - Introduction to New Product Forecasting Techniques
Lecture 15 - Diffusion process and Product Life Cycle
Lecture 16 - Technology Adoption Life Cycle and Crossing the Chasm
Lecture 17 - Managing New Products in Large Organizations
Lecture 18 - Introduction to the Stage Gate model
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NPTEL Video Course - Management - NOC: Microeconomics: Theory and Applications

Subject Co-ordinator - Prof. Deep Mukerjee

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Management - NOC: Data Analysis and Decision Making-I

Subject Co-ordinator - Prof. Raghunandan Sengupta

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Data Representation and Frequency
Lecture 3 - Frequency Table and Mean
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Lecture 7 - Baye'S Theorem And Distributions
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| Lecture 49 | Population Composition and demographic Dividend |
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Subject Co-ordinator - Dr. Deepu Philip

Co-ordinating Institute - IIT - Kanpur

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Lecture 2 - Terminologies in Simulation
Lecture 3 - How to Built Simulation Model
Lecture 4 - Components of Discrete Event Simulation
Lecture 5 - A Simple Example
Lecture 6 - Terminologies and Like Approaches
Lecture 7 - Monte-Carlo Simulation
Lecture 8 - How to build Simulation? - Major considerations
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Lecture 10 - Steps in a Simulation Study
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NPTEL Video Course - Management - NOC: Management of Field Sales

Subject Co-ordinator - Prof. Jayanta Chatterjee
Co-ordinating Institute - IIT - Kanpur
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Lecture 3 - Value added selling and Non Verbal Messages
Lecture 4 - Communication Styles in Field Sales
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Lecture 7 - The Sales Process
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Lecture 10 - The Buying Process
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Lecture 12 - Interactive Sales Presentation
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NPTEL Video Course - Management - Econometric Modelling

Subject Co-ordinator - Dr. Rudra P. Pradhan

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Management - Security Analysis and Portfolio Management

Subject Co-ordinator - Dr. Jitendra Mahakud, Dr. Chandra Sekhar Mishra

Co-ordinating Institute - IIT - Kharagpur

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Lecture 2 - Markets for Investment
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NPTEL Video Course - Management - Six Sigma

Subject Co-ordinator - Prof. Tapan P. Bagchi
Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Management - Consumer Behaviour

Subject Co-ordinator - Dr. Sangeeta Sahney

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Management - Applied Multivariate Statistical Modeling

Subject Co-ordinator - Dr. J. Maiti

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to multivariate statistical modeling
Lecture 2 - Introduction to multivariate statistical modeling (Continued...)
Lecture 3 - Univariate descriptive statistics
Lecture 4 - Sampling distribution
Lecture 5 - Estimation
Lecture 6 - Estimation (Continued...)
Lecture 7 - Hypothesis testing
Lecture 8 - Multivariate descriptive statistics
Lecture 9 - Multivariate descriptive statistics (Continued...)
Lecture 10 - Multivariate normal distribution
Lecture 11 - Multivariate normal distribution (Continued...)
Lecture 12 - Multivariate Inferential Statistics
Lecture 13 - Multivariate Inferential Statistics (Continued...)
Lecture 14 - ANOVA (Analysis of Variance)
Lecture 15 - Analysis of Variance (Continued...)
Lecture 16 - Multivariate Analysis of Variance (MANOVA)
Lecture 17 - MANOVA (Continued...)
Lecture 18 - Tutorial - ANOVA
Lecture 19 - Tutorial ANOVA (Continued...)
Lecture 20 - MANOVA - Case Study
Lecture 21 - Multiple Regression à Introduction
Lecture 22 - MLR - Sampling distribution of regression coefficients
Lecture 23 - MLR - Model adequacy tests
Lecture 24 - MLR - Test of assumptions
Lecture 25 - MLR - Model diagnostics
Lecture 26 - MLR - Case Study
Lecture 27 - Multivariate Linear Regression
Lecture 28 - Multivariate Linear Regression - Estimation
Lecture 29 - Multivariate Linear Regression - Model Adequacy tests

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Lecture 30 - Principal Component Analysis (PCA)
Lecture 31 - PCA - Model Adequacy & Interpretation
Lecture 32 - Regression Modeling using SPSS
Lecture 33 - Factor Analysis
Lecture 34 - Factor Analysis - Estimation & Model Adequacy testing
Lecture 35 - Factor Analysis - Model Adequacy, rotation, factor scores & case study
Lecture 36 - Cluster Analysis
Lecture 37 - Cluster Analysis (Continued...)
Lecture 38 - Introduction to Structural Equation Modeling (SEM)
Lecture 39 - SEM - Measurement Model
Lecture 40 - SEM - Structural Model
Lecture 41 - Correspondence Analysis
Lecture 42 - Correspondence Analysis (Continued...)
NPTEL Video Course - Nanotechnology - Economics, Management, Entrepreneurship

Subject Co-ordinator - Prof. P.K.J. Mohapatra

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Market Equilibrium
Lecture 3 - Elasticity of Demand
Lecture 4 - Demand Forecasting
Lecture 5 - Production
Lecture 6 - Exercises on Economics
Lecture 7 - Cost - Volume - Profit Relationships
Lecture 8 - Cost Management Systems and Activity Costing Systems
Lecture 9 - Relevant Information and Decision Making
Lecture 10 - Cost Allocation
Lecture 11 - Exercises on Economics (Continued...)
Lecture 12 - Double - Entry Bookkeeping
Lecture 13 - Job Costing
Lecture 14 - Process Costing
Lecture 15 - The Master Budget
Lecture 16 - Flexible Budegst and Variance Analysis
Lecture 17 - Financial Statements
Lecture 18 - Financial Statements (Continued...)
Lecture 19 - Analysis of Financial Statements
Lecture 20 - Exercises (Continued...)
Lecture 21 - Time Value of Money
Lecture 22 - Comparison of Alternatives
Lecture 23 - Comparison of Alternatives (Continued...)
Lecture 24 - Comparison of Alternatives (Continued...)
Lecture 25 - Depreciation Accounting
Lecture 26 - Depreciation Accounting (Continued...)
Lecture 27 - Exercises
Lecture 28 - Evolution of Management Thoughts
Lecture 29 - Functions of Management

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Lecture 30 - Functions of Management (Continued...)
Lecture 31 - Functions of Management (Continued...)
Lecture 32 - Directing
Lecture 33 - Product Development
Lecture 34 - Forecasting Revisited
Lecture 35 - Forecasting Revisited (Continued...)
Lecture 36 - Forecasting Revisited (Continued...)
Lecture 37 - Capacity Planning
Lecture 38 - Capacity Planning (Continued...) and Plant Location
Lecture 39 - Product Service Strategies and Plant Layout
Lecture 40 - Plant Layout (Continued...) and Production Planning and Control
Lecture 41 - Production Planning and Control (Continued...)
Lecture 42 - Inventory Management
Lecture 43 - Inventory Management (Continued...)
Lecture 44 - Supply Chain Management
Lecture 45 - Supply Chain Management (Continued...) and Marketing Management
Lecture 46 - Marketing Management (Continued...)
Lecture 47 - Forms of Ownership
Lecture 48 - Starting a New Company and Small - scale Industrial Undertakings
Lecture 49 - Capital Financing
Lecture 50 - Entrepreneurship - Final Words

Subject Co-ordinator - Prof. A Malik
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to HRM
Lecture 2 - Job Analysis and Design
Lecture 3 - Employee testing and selection
Lecture 4 - Performance appraisal
Lecture 5 - Performance evaluation and feedback
Lecture 6 - The Training process
Lecture 7 - General and Specific Training and Evaluation of Training
Lecture 8 - Career Management and planning
Lecture 9 - Career Development
Lecture 10 - Compensation
Lecture 11 - Pay for performance systems
Lecture 12 - Pay and Reward systems
Lecture 13 - Benefits
Lecture 14 - Separation and Administration of Benefits
Lecture 15 - Business Ethics
Lecture 16 - Ethical Aspects of HRM Activities
Lecture 17 - Employee Health
Lecture 18 - Employee Wellbeing in the Workplace
Lecture 19 - Organized Labor
Lecture 20 - Managing the Labor Relations Process
Lecture 21 - International HRM
Lecture 22 - Global Employment Law, Industrial Relations and International Ethics
Lecture 23 - Challenges to International HRM
Lecture 24 - Strategic HRM
Lecture 25 - Multilevel Model of Strategic HRM
Lecture 26 - Strategic HRM in a Networked World
Lecture 27 - Sustainable HRM
Lecture 28 - HR Measurement and Accountability
Lecture 29 - Types of Score Cards

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Lecture 30 - Discipline in Organizations
Lecture 31 - Dealing with Difficult Employees
Lecture 32 - Using HRM to Prevent the Need for Discipline

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Lecture 30 - OTC Contracts on Gold and Gold Dehedge
Lecture 31 - Spot Trading of Electricity in India - Part I
Lecture 32 - Spot Trading of Electricity in India - Part II
Lecture 33 - Weather Derivatives - Part I
Lecture 34 - Weather Derivatives - Part II
Lecture 35 - Introduction to Carbon Credit Market
Lecture 36 - Carbon Derivatives
Lecture 37 - Physical Market for Freight, Freight Exchanges, Freight Indexes
Lecture 38 - Hedging Freight rate Risk with Freight Rate Derivatives
Lecture 39 - Metal Derivatives and London Metal Exchange (LME)
Lecture 40 - Real Estate Derivatives
NPTEL Video Course - Management - NOC: Strategic Communication for Sustainable Development

Subject Co-ordinator - Prof. A Malik

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Models for Public Participation in Sustainable Development
Lecture 3 - Role of Communication in Sustainable Development
Lecture 4 - Sustainability Communication
Lecture 5 - Approaches to Sustainability Communication
Lecture 6 - Approaches to Sustainability Communication
Lecture 7 - Sociological Perspectives on Sustainability Communication
Lecture 8 - Psychological Perspectives on Sustainability Communication
Lecture 9 - Psychological Perspectives on Sustainability Communication (Continued...)
Lecture 10 - Steyn and Puth's Model for Communication Strategy
Lecture 11 - Application of Steyn and Puth's Model to Development
Lecture 12 - Tools of Strategic Communication for Sustainable Development
Lecture 13 - Role of Strategic Communication for Sustainable Development
Lecture 14 - Role of Stakeholders in Strategic Communication for Sustainable Development
Lecture 15 - Systems Approach to Identifying Decisive Information
Lecture 16 - Adapting CSR Communication Strategies to Sustainable Development
Lecture 17 - Strategic Conversations
Lecture 18 - Creating a Strategic Communication Plan
Lecture 19 - Communication for Behavioral Impact (COMBI) for Sustainable Development
Lecture 20 - Media and Sustainability Communication
Lecture 21 - ICTs in Sustainable Development
Lecture 22 - Community Informatics
Lecture 23 - Challenges to the use of ICTs in Sustainable Development Efforts
Lecture 24 - Wrap up and Conclusion

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Lecture 30 - Diffusion of Innovations - II
Lecture 31 - Influencing Factors for Adoption and Opinion Leadership
Lecture 32 - Consumer Decision Making
Lecture 33 - Consumer Black Box Model
Lecture 34 - Models of Consumer Behaviour - I
Lecture 35 - Models of Consumer Behaviour - II
Lecture 36 - Models of Consumer Behaviour - III
Lecture 37 - Models of Consumer Behaviour - IV
Lecture 38 - Organisational Buying Behaviour - I
Lecture 39 - Organisational Buying Behaviour - II
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NPTEL Video Course - Management - NOC: Knowledge Management

Subject Co-ordinator - Prof. K. B. L. Srivastava
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to KM
Lecture 2 - Introduction to KM (Continued...)
Lecture 3 - Why KM?
Lecture 4 - KM System Life Cycle (KSLC)
Lecture 5 - Aligning KM and business strategy
Lecture 6 - Process and models of KM cycle
Lecture 7 - Process and models of KM cycle (Continued...)
Lecture 8 - Knowledge creation and architecture
Lecture 9 - Capturing tacit knowledge
Lecture 10 - Capturing tacit knowledge (Continued...)
Lecture 11 - Knowledge codification
Lecture 12 - Knowledge codification
Lecture 13 - System development
Lecture 14 - System development
Lecture 15 - Knowledge transfer and knowledge sharing
Lecture 16 - Knowledge infrastructure
Lecture 17 - Knowledge infrastructure (Continued...)
Lecture 18 - Knowledge audit
Lecture 19 - The knowledge team
Lecture 20 - The knowledge team (Continued...)
Lecture 21 - Analysis, design of KM system
Lecture 22 - Analysis, design of KM system
Lecture 23 - Developing the KM system
Lecture 24 - Prototyping and deployment
Lecture 25 - Prototyping and deployment
Lecture 26 - Inferences from data
Lecture 27 - Inferences from data
Lecture 28 - Data mining
Lecture 29 - Data Management

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Lecture 30 - Knowledge portals
Lecture 31 - Evaluation of KM effectiveness
Lecture 32 - Metrics
Lecture 33 - Legal issues
Lecture 34 - Ethical Issues
Lecture 35 - Managerial issues
Lecture 36 - KM. Experiences form Indian companies
Lecture 37 - KM practices of select industries
Lecture 38 - KM practices of select industries
Lecture 39 - Linking KM with innovation and learning organization
Lecture 40 - Future of KM
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NPTEL Video Course - Management - NOC: Services Marketing: A Practical Approach

Subject Co-ordinator - Dr. Biplab Datta
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Why Study Services Marketing Management?
Lecture 3 - The Service System
Lecture 4 - Characteristics of Services
Lecture 5 - Understanding the Macro-Environment - I
Lecture 6 - Understanding the Macro-Environment - II
Lecture 7 - Understanding the Macro-Environment - III and Understanding the Micro-Environment - I
Lecture 8 - Understanding the Micro-Environment - II
Lecture 9 - Services Marketing Process
Lecture 10 - Exploring Marketing Opportunities - I
Lecture 11 - Exploring Marketing Opportunities - II
Lecture 12 - Segmenting the Market, Targeting and Positioning
Lecture 13 - Services Marketing Research
Lecture 14 - Understanding Consumer Behaviour
Lecture 15 - New Service Development
Lecture 16 - The Service Product
Lecture 17 - Service Quality - I
Lecture 18 - Service Quality - II
Lecture 19 - Designing the Service Process - I
Lecture 20 - Designing the Service Process - II
Lecture 21 - Developing Service Personnel
Lecture 22 - Educating Customers
Lecture 23 - Managing Service Delivery Channels
Lecture 24 - Managing Channel Conflict
Lecture 25 - Managing Demand and Capacity - I
Lecture 26 - Managing Demand and Capacity - II
Lecture 27 - Designing the Physical Evidence
Lecture 28 - Managing Integrated Marketing Communications - I
Lecture 29 - Managing Integrated Marketing Communications - II

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Lecture 30 - Pricing the Service
Lecture 31 - Managing Customers
Lecture 32 - Managing Service Recovery
Lecture 33 - Providing Service Guarantees
Lecture 34 - Consumer Protection
Lecture 35 - Case Study - I
Lecture 36 - Case Study - II
Lecture 37 - Case Study - III
Lecture 38 - Case Study - IV
Lecture 39 - Case Study - V
Lecture 30 - Globalization and employment
Lecture 31 - Towards sustainable employment
Lecture 32 - Case Study 2
Lecture 33 - Consumers as stakeholders
Lecture 34 - Ethical issues, marketing and the consumer
Lecture 35 - Globalization and consumers
Lecture 36 - Consumers and corporate citizenship
Lecture 37 - Sustainable consumption
Lecture 38 - Suppliers and competitors as stakeholders
Lecture 39 - Ethical issues and competitors
Lecture 40 - Globalization, suppliers and competitors
Lecture 41 - The corporate citizen in the business community
Lecture 42 - Sustainability and business relationship
Lecture 43 - Civil society and business ethics
Lecture 44 - Ethical issues and CSOs
Lecture 45 - Globalization and CSOs
Lecture 46 - Corporate citizenship and civil society
Lecture 47 - Civil society, business and sustainability
Lecture 48 - Government, regulation and business ethics
Lecture 49 - Ethical issues in the relation between business and government
Lecture 50 - Globalization and business-government relations
Lecture 51 - Corporate citizenship and regulation
Lecture 52 - Governments, business and sustainability
Lecture 53 - Case Study 3
Lecture 54 - Environment and business ethics
Lecture 55 - Ethics of pollution control
Lecture 56 - Ethics of conserving depletable resources
Lecture 57 - Sustainability
Lecture 58 - Information technology and business ethics
Lecture 59 - Data identity and security
Lecture 60 - Computer crimes and IPR
Lecture 61 - TRIPS in India
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NPTEL Video Course - Management - NOC: Gender Justice and Workplace Security

Subject Co-ordinator - Prof. Dipa Dube

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Gender Justice
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Lecture 3 - Introduction to Gender Justice (Continued...)
Lecture 4 - Introduction to Gender Justice (Continued...)
Lecture 5 - International and Constitutional Perspectives
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Lecture 7 - Constitutional Perspectives
Lecture 8 - Constitutional Perspectives (Continued...)
Lecture 9 - Constitutional Perspectives (Continued...)
Lecture 10 - Women at workplace
Lecture 11 - Women at workplace (Continued...)
Lecture 12 - Women at workplace (Continued...)
Lecture 13 - Women at workplace (Continued...)
Lecture 14 - Gender Violence- Within and Beyond
Lecture 15 - Gender Violence- Within and Beyond (Continued...)
Lecture 16 - Gender Violence- Within and Beyond (Continued...)
Lecture 17 - Gender Violence- Within and Beyond (Continued...)
Lecture 18 - Gender Violence- Within and Beyond (Continued...)
Lecture 19 - Role of different agencies
Lecture 20 - Role of different agencies (Continued...)

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NPTEL Video Course - Management - NOC: Corporate Social Responsibility

Subject Co-ordinator - Prof. Aradhna Malik
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the Course
Lecture 2 - What is CSR?
Lecture 3 - Why CSR?
Lecture 4 - Theories of CSR
Lecture 5 - Theories of CSR (Continued...)
Lecture 6 - Theories of CSR (Continued...)
Lecture 7 - Evolution of CSR
Lecture 8 - Evolution of CSR (Continued...)
Lecture 9 - CSR - Global Timeline
Lecture 10 - CSR - Global Timeline (Continued...)
Lecture 11 - CSR in India
Lecture 12 - CSR in India (Continued...)
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Lecture 14 - The Stakeholder Approach
Lecture 15 - Stakeholders and CSR
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Lecture 17 - Stakeholder Theory in Action
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Lecture 27 - CSR Design and Implementation
Lecture 28 - CSR Activities
Lecture 29 - Bases for Evaluation of CSR Activities

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Lecture 30 - Measurement of CSR
Lecture 31 - An Example of CSR Evaluation
Lecture 32 - CSR in India
Lecture 33 - What is Corporate Governance?
Lecture 34 - Theories of Corporate Governance
Lecture 35 - Why Corporate Governance?
Lecture 36 - Models and Systems of Corporate Governance
Lecture 37 - Implementing Corporate Governance
Lecture 38 - Board of Directors
Lecture 39 - Board of Directors (Continued...)
Lecture 40 - Principles of Corporate Governance
Lecture 41 - Corporate Governance and Corporate Social Responsibility
Lecture 42 - Corporate Governance and Corporate Social Responsibility (Continued...)
Lecture 43 - What is Corporate Citizenship?
Lecture 44 - Stages of Corporate Citizenship
Lecture 45 - Why Corporate Citizenship?
Lecture 46 - Corporate Citizenship and CSR
Lecture 47 - What is Sustainable Development?
Lecture 48 - Corporate Sustainability and CSR
Lecture 49 - Integration of Corporate Sustainability with CSR
Lecture 50 - Integration of Corporate Sustainability with CSR (Continued...)
Lecture 51 - SDG Compass
Lecture 52 - SDG Compass (Continued...)
Lecture 53 - CSR Public Policies
Lecture 54 - CSR Public Policies
Lecture 55 - Consumer Social Responsibility (CnSR)
Lecture 56 - Corporate Social Irresponsibility (CSiR)
Lecture 57 - Future of CSR
Lecture 58 - Wrap-Up
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NPTEL Video Course - Management - NOC: Decision Modeling

Subject Co-ordinator - Prof. Biswajit Mahanty
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Decision Analysis
Lecture 2 - Payoff Matrix
Lecture 3 - Decision Making Under Risk
Lecture 4 - Value of Information
Lecture 5 - Probability Concepts
Lecture 6 - Bayes Theorem
Lecture 7 - Decision Tree
Lecture 8 - Decision Problem with Experimentation
Lecture 9 - Decision Problem with Experimentation (Continued...)
Lecture 10 - Decision Problem Example
Lecture 11 - Introduction to Waiting Lines
Lecture 12 - Poisson and Exponential Distribution
Lecture 13 - Birth and Death Process
Lecture 14 - M/M/1 Queuing Model
Lecture 15 - Queuing Examples
Lecture 16 - Queuing Examples (Continued...)
Lecture 17 - M/D/1 and M/M/s Queuing Models
Lecture 18 - M/M/s and M/M/infinity Models
Lecture 19 - Finite Queue Space and Queuing Cost Models
Lecture 20 - Queuing Cost, Priority and Networking Models
Lecture 21 - Introduction to Simulation
Lecture 22 - Discrete-Event and Monte-Carlo Simulation
Lecture 23 - Pseudo random Numbers
Lecture 24 - Simulation Examples
Lecture 25 - Generation of Random Variates
Lecture 26 - Simulation Examples (Continued...)
Lecture 27 - Monte-Carlo Simulation and Output Analysis
Lecture 28 - Variance Reduction and Simulation Software
Lecture 29 - Continuous Simulation and System Dynamics

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Lecture 30 - System Dynamics Example
Lecture 31 - Introduction to Graph Theory
Lecture 32 - Introduction (Continued...)
Lecture 33 - Operations on a Graph, Tree and Spanning Tree
Lecture 34 - Minimal Spanning Tree
Lecture 35 - Cutsets
Lecture 36 - Fundamental Circuits and Network Simplex Method
Lecture 37 - Maximal Flow Problems
Lecture 38 - Maximal Flow Problems (Continued...)
Lecture 39 - Shortest Path Problems
Lecture 40 - Shortest Path Problems (Continued...)
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NPTEL Video Course - Management - NOC:E-Business

Subject Co-ordinator - Prof. Mamata Jenamani
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Types of e-business transactions
Lecture 3 - Business Models on the web
Lecture 4 - Business Models on the web (Continued...)
Lecture 5 - Innovative E-Business models for Bricks and Mortar firms
Lecture 6 - Inter and Intra Organizational Business Processes
Lecture 7 - Information system foundations
Lecture 8 - Types of business information system
Lecture 9 - Decision support for the management
Lecture 10 - Enterprise Resource planning
Lecture 11 - Connecting with stakeholders
Lecture 12 - E-procurement - Reengineering the traditional procurement process
Lecture 13 - E-procurement - New paradigms in the procurement process
Lecture 14 - E-procurement - e-procurement Implementation issues and risks
Lecture 15 - Customer relationship management
Lecture 16 - E-Marketing
Lecture 17 - E-Marketing (Continued...)
Lecture 18 - Supply Chain Management - I - The Information flow
Lecture 19 - Supply Chain Management - II - Tntegration
Lecture 20 - Supply Chain Management - III - Interoperability
Lecture 21 - Supply Chain Management - IV - Logistics and distribution
Lecture 22 - Supply Chain Management - V - E-Commerce supply chain
Lecture 23 - Components of E-Business Infrastructure
Lecture 24 - Internet and the Web
Lecture 25 - Networking resources
Lecture 26 - Hardware and software resources
Lecture 27 - Data resources
Lecture 28 - Security categories
Lecture 29 - Security terminologies

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Lecture 30 - Digital signature
Lecture 31 - Protocols for security
Lecture 32 - Impact of security protocol on server performance
Lecture 33 - Digital Payment systems
Lecture 34 - Interoperability of information system
Lecture 35 - Electronic data interchange (EDI)
Lecture 36 - Fundamentals of web services
Lecture 37 - Fundamentals of cloud based systems
Lecture 38 - Automatic data capture using RFID
Lecture 39 - Automatic data capture using RFID and its applications
Lecture 40 - Automatic data capture using RFID and its applications (Continued...)
Lecture 41 - GPS and GIS in supply chain
Lecture 42 - Sensors and IOT
Lecture 43 - Business Analytics and Big data
Lecture 44 - Decision support Concepts
Lecture 45 - Understanding the web log - I
Lecture 46 - Understanding the web log - II
Lecture 47 - Using the Web log
Lecture 48 - User behaviour modelling from web log
Lecture 49 - User behaviour modelling from web log (Continued...)
Lecture 50 - E-Business Capacity Planning
Lecture 51 - E-Business Capacity Planning (Continued...)
Lecture 52 - Introduction to Recommender System
Lecture 53 - Content Based Recommender System
Lecture 54 - Collaborative Filtering Based Recommender System
Lecture 55 - Association and Demographics Based Recommended System
Lecture 56 - Dynamic Pricing
Lecture 57 - Introduction to Auction
Lecture 58 - Economic Considerations in Auction
Lecture 59 - Winner Determination Problem
Lecture 60 - Online auction issues
Lecture 30 - Introduction to Factorial Experiments
Lecture 31 - Statistical Analysis of Factorial Experiments
Lecture 32 - Estimation of parameters and model adequacy test for factorial experiment
Lecture 33 - Full_Factorial_Single_Replicate
Lecture 34 - General_Full_factorial_design
Lecture 35 - Blocking_Factorial_design
Lecture 36 - Two_level_Factorial_Experiment
Lecture 37 - Statistical analysis of 2^k factorial design
Lecture 38 - 2_k_Factorial_Design_Single_Replicate
Lecture 39 - 2_k_Factorial_Design_Centre_Points
Lecture 40 - 2_k_Factorial_Design_Optimality_Issues
Lecture 41 - 2_k_Factorial Design - Issues with Coded Design Variables
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Lecture 50 - Fractional factorial design
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Lecture 53 - Response Surface Methodology (RSM) - First Order Model (Continued...)
Lecture 54 - Experimental Design for Fitting Response Surfaces
Lecture 55 - Response Surface Methodology (RSM)
Lecture 56 - Analysis of Second Order Response Surface
Lecture 57 - ANOVA using MINITAB
Lecture 58 - Factorial Design using MINITAB
Lecture 59 - Fractional Factorial Design using MINITAB
Lecture 60 - Response Surface Methodology using MINITAB

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NPTEL Video Course - Management - NOC:Quality Design and Control

Subject Co-ordinator - Prof. Pradip Kumar Ray

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Management - NOC: Business Analytics for Management Decision

Subject Co-ordinator - Dr. Rudra P. Pradhan

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Management - NOC: Research Writing

Subject Co-ordinator - Prof. Aradhna Malik
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Management - NOC:Engineering Econometrics

Subject Co-ordinator - Dr. Rudra P. Pradhan

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Management - NOC: Industrial Safety Engineering

Subject Co-ordinator - Prof. Jhareswar Maiti

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Management - NOC:Selected Topics in Decision Modeling

Subject Co-ordinator - Prof. Biswajit Mahanty
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable   |   MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Management - NOC: Ethics in Engineering Practice
Subject Co-ordinator - Dr. Susmita Mukhopadhyay
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Management - NOC: Financial Institutions and Markets

Subject Co-ordinator - Dr. Jitendra Mahakud

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Management - NOC: Sales and Distribution Management

Subject Co-ordinator - Dr. Sangeeta Sahney

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Sales Management
Lecture 2 - Sales Management, Personal Selling, and Salesmanship
Lecture 3 - Functions of Sales Executive and Roles played by Sales Managers
Lecture 4 - Duties and Responsibilities of Sales Managers and the Effective Sales Executive
Lecture 5 - Skills required in Sales Managers and Qualities in a Sales Managers
Lecture 6 - Determining Sales related Marketing Policies
Lecture 7 - Determining Sales related Marketing Policies
Lecture 8 - Strategic Planning, Sales Objectives, Strategies and Tactics
Lecture 9 - The Sales Organization
Lecture 10 - The Sales Organization
Lecture 11 - The Sales Department Relations
Lecture 12 - The Sales Department Relations
Lecture 13 - Planning, Sales forecasting and Budgeting
Lecture 14 - Planning, Sales forecasting and Budgeting
Lecture 15 - Planning, Sales forecasting and Budgeting
Lecture 16 - Buyer-Seller Dyads
Lecture 17 - Diversity of Personal-Selling Situations
Lecture 18 - Theories of Selling
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Lecture 20 - The Selling Process
Lecture 21 - The Selling Process
Lecture 22 - Sales Force Management
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Lecture 31 - Sales Force Management
Lecture 32 - Sales Quotas
Lecture 33 - Sales Quotas
Lecture 34 - Sales Territory
Lecture 35 - Sales Territory
Lecture 36 - Distribution Channel Management
Lecture 37 - Distribution Channel Management
Lecture 38 - Channel Systems, Channel Management, Logistics and Marketing Channels - Part I
Lecture 39 - Channel Systems, Channel Management, Logistics and Marketing Channels - Part II
Lecture 40 - International Sales and Channel Management
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Management - NOC:Six Sigma

Subject Co-ordinator - Prof. Jitesh J Thakkar
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Brief overview of the course
Lecture 2 - Quality concepts and definition
Lecture 3 - History of continuous improvement
Lecture 4 - Six Sigma Principles and Focus Areas - Part 1
Lecture 5 - Six Sigma Principles and Focus Areas - Part 2
Lecture 6 - Six Sigma Applications
Lecture 7 - Quality Management
Lecture 8 - Fundamentals of Total Quality Management
Lecture 9 - Cost of quality
Lecture 10 - Voice of customer
Lecture 11 - Quality Function Deployment (QFD)
Lecture 12 - Management and Planning Tools - Part 1
Lecture 13 - Management and Planning Tools - Part 2
Lecture 14 - Six Sigma Project Identification, Selection and Definition
Lecture 15 - Process characteristics and Monitoring
Lecture 16 - Process characteristics and analysis
Lecture 17 - Process Mapping
Lecture 18 - Data Collection and Summarization - Part 1
Lecture 19 - Data Collection and Summarization - Part 2
Lecture 20 - Measurement systems
Lecture 21 - Measurement systems analysis
Lecture 22 - Fundamentals of statistics
Lecture 23 - Probability theory
Lecture 24 - Process capability analysis
Lecture 25 - Process capability analysis
Lecture 26 - Process capability analysis
Lecture 27 - Non-normal process capability analysis
Lecture 28 - Hypothesis testing
Lecture 29 - Hypothesis Testing

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Lecture 30 - Overview, reward system, understanding total, strategic and international reward (Continued...)
Lecture 31 - Understanding linkage between performance management and reward, an overview of various types of systems
Lecture 32 - Understanding linkage between performance management and reward, an overview of various types of systems
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Lecture 42 - Rewarding Special Groups, rewarding directors and senior executives, sales and customer service
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NPTEL Video Course - Management - NOC: The Ethical Corporation

Subject Co-ordinator - Prof. Chhanda Chakraborti

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - What is a Corporation
Lecture 2 - Ethical Corporation
Lecture 3 - What is Ethics
Lecture 4 - Law and Ethics, and Responsibilities
Lecture 5 - Why should a Corporation be Ethical
Lecture 6 - Normative Ethical Theories
Lecture 7 - Normative Ethical Theories
Lecture 8 - Normative Ethical Theories
Lecture 9 - Normative Ethical Theories
Lecture 10 - Normative Ethical Theories
Lecture 11 - Managing Ethics within the Corporation
Lecture 12 - Managing Ethics within the Organization
Lecture 13 - Managing Ethics within a Corporation
Lecture 14 - How to Manage Inter - Personal Ethical Misconduct at Workplace
Lecture 15 - How to Apply Ethics
Lecture 16 - Understanding Corporate Governance
Lecture 17 - Conflicts and Key Elements in Corporate Governance
Lecture 18 - Specific Areas of Concern in Corporate Governance and Countermeasures - I
Lecture 19 - Specific Areas of Concern in Corporate Governance and Countermeasures - II
Lecture 20 - Concluding Session on Corporate Governance
Lecture 21 - Investing in Human relations
Lecture 22 - Employer-employee
Lecture 23 - Organization model and employer-employee relation
Lecture 24 - Some specific issues in employer-employee relationship
Lecture 25 - Employees All Over the World
Lecture 26 - The Ethical Corporation
Lecture 27 - Corporate Obligations to Natural Environment through the Laws
Lecture 28 - Corporate Obligations to Natural Environment through Appeal to Business Sense and Strategy
Lecture 29 - Corporate Obligations to Natural Environment on Ethical Grounds
Lecture 30 - Environmental Obligations
Lecture 31 - Consumers as Stakeholders and Consumer Protection
Lecture 32 - Ethics of Consumer Protection
Lecture 33 - Consumer ethics
Lecture 34 - Consumer ethics
Lecture 35 - Consumer Ethics
Lecture 36 - Competitors as Stakeholders and Fair Competition
Lecture 37 - What is NOT Fair Competition
Lecture 38 - Competitors as Stakeholders; Global Competition
Lecture 39 - Suppliers as Stakeholders
Lecture 40 - Competitors and Suppliers
NPTEL Video Course - Management - NOC: Intellectual Property Rights and Competition Law

Subject Co-ordinator - Prof. Niharika Sahoo Bhattacharya

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Concept of Intellectual Property Law - Patents
Lecture 2 - Trademark
Lecture 3 - Geographical Indications
Lecture 4 - Copyright
Lecture 5 - Industrial Designs
Lecture 6 - Integrated Circuits Layout Designs
Lecture 7 - Trade Secrets or Undisclosed Information
Lecture 8 - Information Competition Law
Lecture 9 - Introduction to Competition Law (Continued...)
Lecture 10 - Introduction Competition Low Anti-Competitive Practices
Lecture 11 - Bid-Rigging
Lecture 12 - Introduction Competition Law - Vertical Agreements
Lecture 13 - Abuse of Dominance, Combinations
Lecture 14 - Regulation of Combinations
Lecture 15 - Economic Theory of Ip And Competition
Lecture 16 - Interface Between Ip And Competition
Lecture 17 - The United States Anti-Trust Law
Lecture 18 - Tying Arrangements And Intellectual Property Under Sharman Act
Lecture 19 - Unites States Jurisprudence
Lecture 20 - Price Fixing And Antitrust Law
Lecture 21 - Market Allocation And Ipr
Lecture 22 - Vertical Restraints
Lecture 23 - Vertical Restraints (Contd)
Lecture 24 - Enforcement of Anti-Trust Law in United States
Lecture 25 - Introduction To EU Competition Policy And IPR
Lecture 26 - IP Based Conduct under Article 101
Lecture 27 - IP Based Conduct under Article 102
Lecture 28 - IP Based Conduct under Article 102
Lecture 29 - Technology Transfer Agreements

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Lecture 30 - TTBER and safe harbor provisions
Lecture 31 - Standard Essential Patents and FRAND Terms
Lecture 32 - Introduction to Competition Law in India (Continued...)
Lecture 33 - Introduction to Competition Law in India (Continued...)
Lecture 34 - Introduction to Competition Law in India (Continued...)
Lecture 35 - IP Licensing and Indian Competition Law
Lecture 36 - IP Licensing and Indian Competition Law (Continued...)
Lecture 37 - IP Licensing and Indian Competition Law (Continued...)
Lecture 38 - IP Licensing and Indian Competition Law (Continued...)
Lecture 39 - Patent and Competition Law
Lecture 40 - Trademark, Copyright and Competition Law
Lecture 41 - TRIPS and Competition Law
Lecture 42 - TRIPS and Competition Law (Continued...)
Lecture 43 - Comparative analysis of IP and competition law across US, EU and India
NPTEL Video Course - Management - NOC: Patent Search for Engineers and Lawyers

Subject Co-ordinator - Prof. Shreya Matilal
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to IPR
Lecture 2 - IP-Economic Rationale
Lecture 3 - Patentability-Noveltly - I
Lecture 4 - Patentability-Noveltly - II
Lecture 5 - Non-Obviousness
Lecture 6 - How to read a patent document
Lecture 7 - How to read a patent document
Lecture 8 - Introduction to patent search
Lecture 9 - Introduction to patent search
Lecture 10 - Fundamentals of patent search
Lecture 11 - Fundamentals of patent search
Lecture 12 - Hands on Patent Search
Lecture 13 - Hands on Patent Search
Lecture 14 - Hands on Patent Search - Sequence Search
Lecture 15 - Hands on Patent Search - Emerging areas of Technology
Lecture 16 - Types of patent Search
Lecture 17 - Types of patent Search (Continued...)
Lecture 18 - Types of patent Search (Continued...)
Lecture 19 - Types of patent Search, Validity Search
Lecture 20 - Invalidity Search
Lecture 21 - Types of Patent Search FTO
Lecture 22 - Types of Patent Search
Lecture 23 - Introduction to patent landscape
Lecture 24 - Introduction to patent landscape (Continued...)
Lecture 25 - Introduction to patent landscape (Continued...)
Lecture 26 - Hands on Patent Landscape
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Lecture 37 - Administrative Enforcement
Lecture 38 - Judicial Enforcement
Lecture 39 - DOE
Lecture 40 - Patent Infringement
NPTEL Video Course - Management - Infrastructure Finance

Subject Co-ordinator - Dr. A. Thillai Rajan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Overview on Infrastructure Financing Sources
Lecture 3 - Basics of Financial Management - Part-1
Lecture 4 - Basics of Financial Management - Part-2
Lecture 5 - Basics of Financial Management - Part-3
Lecture 6 - Basics of Financial Management - Part-4
Lecture 7 - Analysis of company Performance - Part-1
Lecture 8 - Analysis of company Performance - Part-2
Lecture 9 - Analysis of Project Viability Time value of money
Lecture 10 - Analysis of Project Viability Cost of Capital
Lecture 11 - Analysis of Project Viability Capital Budgeting Techniques - I
Lecture 12 - Analysis of Project Viability Capital Budgeting Guidelines - II
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Lecture 15 - Overview and introduction to project finance
Lecture 16 - Project Financing Attributes and Motivations - I
Lecture 17 - Project Financing Attributes and Motivations - II
Lecture 18 - Project Finance Markets - I
Lecture 19 - Project Finance Markets - II
Lecture 20 - Project Finance Markets - III
Lecture 21 - Project Finance Markets Mezzanine / Sub-ordinated Debt
Lecture 22 - Project Finance Markets - Type of Dept and Leasing
Lecture 23 - Project Finance Markets - Financial Intermediation
Lecture 24 - Project Finance Markets - Loan Refinancing
Lecture 25 - Project Finance Markets - Project Bonds - I
Lecture 26 - Project Finance Markets - Project Bonds - II
Lecture 27 - Public Private Partnerships
Lecture 28 - Risk Management - I
Lecture 29 - Risk Management - II

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Lecture 30 - Risk Management - III
Lecture 31 - Risk Management - Market Risks
Lecture 32 - Risk Management - Country / Political risks - I
Lecture 33 - Risk Management - Country / Political risks - II
Lecture 34 - Risk Management - Country / Political risks - III
Lecture 35 - Risk Management - Country / Political risks - IV
Lecture 36 - Context of infrastructure development - I
Lecture 37 - Context of infrastructure development - II
Lecture 38 - Context of infrastructure development - III
Lecture 39 - Context of infrastructure development - IV
Lecture 40 - Context of infrastructure development - V

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NPTEL Video Course - Management - Manufacturing Systems Management

Subject Co-ordinator - Prof. G. Srinivasan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Manufacturing Systems Management
Lecture 2 - Different types of Manufacturing Systems
Lecture 3 - Introduction to Cellular Manufacturing
Lecture 4 - Cellular Manufacturing Applications, Production Flow Analysis
Lecture 5 - Production Flow Analysis
Lecture 6 - Cellular Manufacturing - Unidirectional flow, Capacity Planning, Layout
Lecture 7 - Exercise on Production Flow Analysis
Lecture 8 - Rank Order Clustering, Similarity Coefficient based algorithm
Lecture 9 - Similarity Coefficient based clustering algorithm
Lecture 10 - Hierarchical and Non hierarchical clustering algorithms
Lecture 11 - Optimization based algorithms
Lecture 12 - Optimization based algorithms, Assignment based algorithm
Lecture 13 - Assignment model, Algorithm considering sequence of visit of machines
Lecture 14 - Algorithm considering sequence of visit of machines
Lecture 15 - Algorithm considering cell load data, alternate process plans
Lecture 16 - Reducing Intercell moves
Lecture 17 - Part subcontracting, Incremental cell formation
Lecture 18 - Product based cells
Lecture 19 - Branching algorithm for product based cells, Operator and task assignment
Lecture 20 - Operator and task assignment
Lecture 21 - Operator and task assignment continued
Lecture 22 - Static and dynamic Operator allocation, Multiple products and incremental cells
Lecture 23 - Cell scheduling and sequencing
Lecture 24 - Cell scheduling and sequencing continued
Lecture 25 - Single piece transportation
Lecture 26 - Cell Layout, Introduction to Just-in-time manufacturing
Lecture 27 - Cell control and JIT
Lecture 28 - Basic elements of JIT, Kanban systems
Lecture 29 - Role of basic elements, Critical success factors

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Lecture 30 - Models in JIT
Lecture 31 - Models in JIT continued
Lecture 32 - CONWIP, Introduction to synchronous manufacturing
Lecture 33 - Theory of constraints, Product mix problem
Lecture 34 - Statistical Fluctuations, Random events, principles of SM
Lecture 35 - Scheduling in SM
Lecture 36 - Drum Buffer Rope system
Lecture 37 - Flexible Manufacturing System, Part selection problem
Lecture 38 - FMS Loading problem
Lecture 39 - FMS Loading, multiple batches and changeover times
Lecture 40 - FMS Loading and scheduling, Summary of the course contents
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Management - Operations and Supply Chain Management

Subject Co-ordinator - Prof. G. Srinivasan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - (Challenges, Methodologies)
Lecture 2 - Forecasting - Time series models - Simple Exponential smoothing
Lecture 3 - Forecasting - Linear Models, Regression, Holt’s seasonal
Lecture 4 - Forecasting - Winter’s model, causal models, Goodness of forecast, Aggregate Planning, Tabular
Lecture 5 - Aggregate Planning, Tabular method, Linear Programming
Lecture 6 - Aggregate Planning, Transportation model
Lecture 7 - Aggregate Planning, Dynamic Programming, backordering
Lecture 8 - Aggregate Planning, Quadratic model, Demand and capacity planning
Lecture 9 - Inventory Models - Costs, EOQ model
Lecture 10 - Inventory - EOQ model graphs, with backordering
Lecture 11 - Inventory - Models for all quantity and marginal quantity Discount
Lecture 12 - Multiple Quantity Discount, Multiple item inventory - Constraint on numbers of orders
Lecture 13 - Multiple item inventory - Constraint on money value, space, equal number of orders
Lecture 14 - Multiple item inventory - combining orders, production consumption model
Lecture 15 - Inventory - Production consumption model with backordering, Economic lot scheduling problem
Lecture 16 - Economic lot scheduling problem, Supply Chain inventory
Lecture 17 - Lot sizing
Lecture 18 - Lot sizing - heuristics
Lecture 19 - Disaggregation
Lecture 20 - Disaggregation - time varying demand, Safety stock - ROL for discrete demand distribution
Lecture 21 - Safety stock - ROL for normal distribution of lead time demand
Lecture 22 - Integrated model, ROL for normal distribution of LTD and given mean
Lecture 23 - Safety stock reduction â delayed Product differentiation, substitution. MOM
Lecture 24 - Sequencing and scheduling â Assumptions, objectives and shop settings
Lecture 25 - Single machine sequencing. Two machine flow shop â Johnson’s algorithm
Lecture 26 - Flow shop scheduling - Three machines, Johnson’s algorithm and Branch and bound algorithm
Lecture 27 - Flow shop scheduling - heuristics â Palmer, Campbell Dudek Smith algorithm
Lecture 28 - Job shop scheduling - Gantt chart, Different dispatching rules
Lecture 29 - Job shop scheduling - Shifting bottleneck heuristic

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Lecture 30 - Job shop scheduling - Shifting bottleneck heuristic. Line Balancing
Lecture 31 - Line Balancing
Lecture 32 - Location problems - p median problem, Fixed charge problem
Lecture 33 - Location allocation problems in supply chain. Layout
Lecture 34 - Quantitative models for layout, Summary
Lecture 35 - Introduction to Supply Chain Management
Lecture 36 - Location Problems
Lecture 37 - Transportation and Distribution Models
Lecture 38 - Transportation and Distribution Models (continued)
Lecture 39 - Bin Packing and Travelling Salesman Problems
Lecture 40 - Vehicle Routeing Problems
Lecture 41 - Value of Information
NPTEL Video Course - Management - Business Analysis for Engineers

Subject Co-ordinator - Dr. S. Vaidhyasubramaniam

Co-ordinating Institute - SASTRA University

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Business Analysis for Engineers
Lecture 2 - Introduction to Accounting
Lecture 3 - Accounting Principles - 1
Lecture 4 - Balance Sheet Fundamentals
Lecture 5 - Balance Sheet Fundamentals
Lecture 6 - Accounting Principles - 2
Lecture 7 - Introduction to Income Statement & Double Entry
Lecture 8 - Double Entry Examples - 1
Lecture 9 - Double Entry Examples - 2
Lecture 10 - Preparation of Financial Statement
Lecture 11 - Cash Flow Statement - 1
Lecture 12 - Cash Flow Statement - 2
Lecture 13 - Special Accounts Illustrations
Lecture 14 - Final Illustrative Example
Lecture 15 - Summary of Financial Accounting
Lecture 16 - Introduction to Management Accounting & Behaviour of Cost
Lecture 17 - Cost-Volume Relationship
Lecture 18 - Cost-Objects & Variance
Lecture 19 - Labour & Over Heads Variance Analysis
Lecture 20 - Cash Conversion Cycle
Lecture 21 - Inventory Management
Lecture 22 - What is Strategy?
Lecture 23 - Porter's Diamond Model
Lecture 24 - Industry Analysis
Lecture 25 - Industry Analysis & Sources of Strategy
Lecture 26 - The Need for Value
Lecture 27 - Value Chain Analysis
Lecture 28 - Corporate Portfolio Analysis
Lecture 29 - External & Internal Environ Analysis

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Lecture 30 - Models for Strategy, Ansoff matrix
Lecture 31 - Porter's Generic Strategy
Lecture 32 - Prahlad's Core Competency
Lecture 33 - Case study to understand strategy
Lecture 34 - Case study to understand strategy
Lecture 35 - Blue ocean and conclusion
Lecture 36 - Introduction to Economics
Lecture 37 - Introduction to GDP
Lecture 38 - Supply vs Demand
Lecture 39 - Price & Income Elasticity and Utility
Lecture 40 - Macroeconomic Variables
Lecture 41 - Fiscal & Monetary Policy
Lecture 42 - Union Budget & Conclusion
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Management - NOC: Introduction to Operations Research

Subject Co-ordinator - Prof. G. Srinivasan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Linear Programming Introduction and formulations - Product Mix problem and Notations
Lecture 2 - Linear Programming Introduction and formulations - Manpower and Production planning formulations
Lecture 3 - Linear Programming Introduction and formulations - Media selection problem and Bicycle problem
Lecture 4 - Linear Programming Introduction and formulations - Caterer problem
Lecture 5 - Linear Programming Introduction and formulations - Maximum flow and bin packing problems
Lecture 6 - Graphical and Algebraic methods - Graphical method (maximization)
Lecture 7 - Graphical and Algebraic methods - Graphical method (minimization)
Lecture 8 - Graphical and Algebraic methods - Algebraic method (maximization)
Lecture 9 - Graphical and Algebraic methods - Algebraic method (minimization)
Lecture 10 - Graphical and Algebraic methods - Comparing graphical and algebraic methods
Lecture 11 - Simplex Algorithm - Algebraic form of simplex algorithm
Lecture 12 - Simplex Algorithm - Tabular form of simplex (maximization)
Lecture 13 - Simplex Algorithm - Tabular form (minimization)
Lecture 14 - Simplex Algorithm - Unboundedness
Lecture 15 - Simplex Algorithm - Infeasibility
Lecture 16 - Dual - Motivation to the dual
Lecture 17 - Dual - Writing the dual for a general LP
Lecture 18 - Dual - Writing the dual for a general LP (Continued...)
Lecture 19 - Dual - Duality theorems
Lecture 20 - Dual - Complimentary slackness theorem
Lecture 21 - Primal dual relationships - Dual solution using complimentary slackness
Lecture 22 - Primal dual relationships - Dual solution from simplex table; economic interpretation of dual
Lecture 23 - Primal dual relationships - Economic Interpretation of the dual; Dual Simplex algorithm
Lecture 24 - Primal dual relationships - Solving LPs with mixed type of constraints
Lecture 25 - Primal dual relationships - Matrix method for LP problems
Lecture 26 - Introducing the transportation problem
Lecture 27 - North West corner Rule and minimum cost method
Lecture 28 - Penalty cost method
Lecture 29 - Stepping stone method and Modified Distribution method

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Lecture 30 - MODI method; Dual of the transportation problem and the optimality of the MODI method
Lecture 31 - Introducing the Assignment problem
Lecture 32 - Solving the Assignment problem
Lecture 33 - Hungarian algorithm; Alternate optimum
Lecture 34 - Unequal number of rows and columns; Dual of the assignment problem
Lecture 35 - Optimality of the Hungarian algorithm
Lecture 36 - Setting up the problem and solving simple LP problems
Lecture 37 - Unboundedness and infeasibility
Lecture 38 - Solving other formulations
Lecture 39 - Solving a transportation problem
Lecture 40 - Solving an assignment problem
NPTEL Video Course - Management - NOC: Introduction to Data Analytics

Subject Co-ordinator - Dr. Nandan Sudarsanam, Dr. Balaraman Ravindran

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Overview
Lecture 2 - Course Overview (Continued...)
Lecture 3 - Descriptive Statistics - Graphical Approaches
Lecture 4 - Descriptive Statistics - Measures of Central Tendency
Lecture 5 - Descriptive Statistics - Measures of Dispersion
Lecture 6 - Random Variables and Probability Distributions
Lecture 7 - Probability Distributions (Continued...)
Lecture 8 - Probability Distributions (Continued...)
Lecture 9 - Inferential Statistics - Motivation
Lecture 10 - Inferential Statistics - Single sample tests
Lecture 11 - Two Sample tests
Lecture 12 - Type 1 and Type 2 Errors
Lecture 13 - Confidence Intervals
Lecture 14 - ANOVA and Test of Independence
Lecture 15 - Short Introduction to Regression
Lecture 16 - Introduction to Machine Learning
Lecture 17 - Supervised Learning
Lecture 18 - Unsupervised Learning
Lecture 19 - Ordinary Least Squares Regression
Lecture 20 - Simple and Multiple Regression in Excel and Matlab
Lecture 21 - Regularization/ Coefficients Shrinkage
Lecture 22 - Data Modelling and Algorithmic Modelling Approaches
Lecture 23 - Logistic Regression
Lecture 24 - Training a Logistic Regression Classifier
Lecture 25 - Classification and Regression Trees
Lecture 26 - Classification and Regression Trees (Continued...)
Lecture 27 - Bias Variance Dichotomy
Lecture 28 - Model Assessment and Selection
Lecture 29 - Support Vector Machines

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| Lecture 30 | Support Vector Machines (Continued...) |
| Lecture 31 | Support Vector Machines for Non Linearly Separable Data |
| Lecture 32 | Support Vector Machines and Kernel Transformations |
| Lecture 33 | Ensemble Methods and Random Forests |
| Lecture 34 | Artificial Neural Networks |
| Lecture 35 | Artificial Neural Networks (Continued...) |
| Lecture 36 | Deep Learning |
| Lecture 37 | Associative Rule Mining |
| Lecture 38 | Association Rule Mining (Continued...) |
| Lecture 39 | Big Data - A small introduction |
| Lecture 40 | Big Data - A small introduction (Continued...) |
| Lecture 41 | Clustering Analysis |
| Lecture 42 | Clustering Analysis (Continued...) |
| Lecture 43 | Introduction to Experimentation and Active Learning |
| Lecture 44 | Introduction to Experimentation and Active Learning (Continued...) |
| Lecture 45 | An Introduction to Online Learning - Reinforcement Learning |
| Lecture 46 | An Introduction to Online Learning - Reinforcement Learning (Continued...) |
| Lecture 47 | Summary + Insights into the Final Exam |
| Lecture 48 | Tutorial on weka |
| Lecture 49 | Tutorial on Decision Trees |
| Lecture 50 | Big Data - A Small Introduction (Continued...) |
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NPTEL Video Course - Management - NOC:Introduction to Data analytics

Subject Co-ordinator - Dr. Nandan Sudarsanam, Dr. Balaraman Ravindran

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Overview
Lecture 2 - Course Overview (Continued...)
Lecture 3 - Descriptive Statistics - Graphical Approaches
Lecture 4 - Descriptive Statistics - Measures of Central Tendency
Lecture 5 - Descriptive Statistics - Measures of Dispersion
Lecture 6 - Random Variables and Probability Distributions
Lecture 7 - Probability Distributions (Continued...)
Lecture 8 - Probability Distributions (Continued...)
Lecture 9 - Inferential Statistics - Motivation
Lecture 10 - Inferential Statistics - Single sample tests
Lecture 11 - Two Sample tests
Lecture 12 - Type 1 and Type 2 Errors
Lecture 13 - Confidence Intervals
Lecture 14 - ANOVA and Test of Independence
Lecture 15 - Short Introduction to Regression
Lecture 16 - Introduction to Machine Learning
Lecture 17 - Supervised Learning
Lecture 18 - Unsupervised Learning
Lecture 19 - Ordinary Least Squares Regression
Lecture 20 - Simple and Multiple Regression in Excel and Matlab
Lecture 21 - Regularization/ Coefficients Shrinkage
Lecture 22 - Data Modelling and Algorithmic Modelling Approaches
Lecture 23 - Logistic Regression
Lecture 24 - Training a Logistic Regression Classifier
Lecture 25 - Classification and Regression Trees
Lecture 26 - Classification and Regression Trees (Continued...)
Lecture 27 - Bias Variance Dichotomy
Lecture 28 - Model Assessment and Selection
Lecture 29 - Support Vector Machines

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NPTEL Video Course - Management - NOC: Patent Law for Engineers and Scientists

Subject Co-ordinator - Prof. Feroze Ali

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Patent Law as Concepts
Lecture 2 - Understanding the Patents Act and the Rules
Lecture 3 - Preliminary Sections
Lecture 4 - Preliminary Rules
Lecture 5 - Patents (Amendment) Rules, 2016
Lecture 6 - Easy way to read the Patents Act and Rules
Lecture 7 - What can be Patented?
Lecture 8 - Inventions not Patentable
Lecture 9 - Novelty
Lecture 10 - Anticipation
Lecture 11 - Inventive Step
Lecture 12 - Capable of Industrial Application
Lecture 13 - Person Skilled in the Art
Lecture 14 - Complete and Provisional Specifications
Lecture 15 - Contents of Specifications
Lecture 16 - Structure of a Patent Specification
Lecture 17 - Reading a Patent Specification
Lecture 18 - Introduction to Patent Drafting
Lecture 19 - Introduction to Patent Drafting
Lecture 20 - Who Can Apply for a Patent?
Lecture 21 - Form of Application
Lecture 22 - Patent Application
Lecture 23 - Powers of Controller
Lecture 24 - Patents of Addition
Lecture 25 - Priority Dates
Lecture 26 - Professor's Interaction 01
Lecture 27 - Publication of Application
Lecture 28 - Request for Examination
Lecture 29 - Examination of Application

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Lecture 30 - Expedited Examination of Application
Lecture 31 - Search for Anticipation
Lecture 32 - Procedure in case of Anticipation
Lecture 33 - Consideration of Report of Examiner
Lecture 34 - Refuse, Require Amendment, and Division of Applications
Lecture 35 - Dating of Application and Anticipation
Lecture 36 - Potential Infringement
Lecture 37 - Orders Regarding Substitution of Applicants
Lecture 38 - Putting Applications in Order for Grant
Lecture 39 - Amendments during Prosecution
Lecture 40 - Introduction to Opposition to Grant of Patents
Lecture 41 - Pre-Grant Opposition
Lecture 42 - Post-Grant Opposition
Lecture 43 - Obtained Invention
Lecture 44 - Mention of Inventor
Lecture 45 - Opposition in General
Lecture 46 - Secrecy Provisions
Lecture 47 - Grant of Patents
Lecture 48 - Rights conferred by Grant
Lecture 49 - Rights of Co-Owners of Patents and Power of Controller to give directions
Lecture 50 - Patent obtained by Fraud of True and First Inventor
Lecture 51 - Term of Patent
Lecture 52 - Restoration of Lapsed Patents
Lecture 53 - Surrender of Patents
Lecture 54 - Revocation of Patents
Lecture 55 - Register of Patents
Lecture 56 - Patent Office and its Establishment
Lecture 57 - Patent Agents
Lecture 58 - Use and Acquisition by Government
Lecture 59 - Penalties
Lecture 60 - Introduction to Compulsory Licensing
Lecture 61 - Working of Patents
Lecture 62 - Compulsory Licenses
Lecture 63 - Revocation of Patents 1
Lecture 64 - Powers of Controller
Lecture 65 - Licensing of Related Patents
Lecture 66 - Compulsory License on Notification by Central Government
Lecture 67 - Compulsory License for Export of Pharma Products
Lecture 68 - Termination of Compulsory License, Related Rules
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Management - NOC:Design Thinking - A Primer

Subject Co-ordinator - Dr. Ashwin Mahalingam, Prof. Bala Ramadurai

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Design Thinking - A Primer Start - Part 1
Lecture 8 - Empathize - Lecture 1
Lecture 19 - Solve - Lecture 1
Lecture 2 - Design Thinking - A Primer Start - Part 2
Lecture 15 - Analyze - Lecture 2 Conflict of Interest
Lecture 3 - Design Thinking - A Primer Start - Part 3
Lecture 4 - Intro to Design Thinking
Lecture 5 - Case Study - Arcturus IV by John E. Arnold
Lecture 6 - Course Preview and History of Design Thinking
Lecture 7 - Discussion - Intro to Demo Problem
Lecture 8 - Empathize - Lecture 1
Lecture 9 - Empathize - Workshop 1
Lecture 10 - Empathize - Workshop 2
Lecture 11 - Empathize - Skit
Lecture 12 - Interviews
Lecture 13 - Analyze - Lecture-1 5 Whys
Lecture 14 - Analyze - 5ys - IIT Stadium levels
Lecture 15 - Analyze - Lecture 2 Conflict of Interest
Lecture 16 - Analyze - Workshop - Part 1
Lecture 17 - Analyze - Workshop - Part 2
Lecture 18 - Solve - Tea cup story
Lecture 19 - Solve - Lecture 1
Lecture 20 - Solve - Workshop 1
Lecture 21 - Elephant and blind men
Lecture 22 - Test - Lecture 1
Lecture 23 - Test - Workshop 1
Lecture 24 - Test - Customer reactions to prototype
Lecture 25 - The END - Part 1
Lecture 26 - The END - Part 2
Lecture 27 - Finale and Appeal for proposals

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NPTEL Video Course - Management - NOC: Decision-Making Under Uncertainty

Subject Co-ordinator - Prof. N. Gautam
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Tutorial - How to Install Octave and using Octave
Lecture 2 - Background and relevance
Lecture 3 - Examples of managing uncertainty and making decisions
Lecture 4 - Risk, uncertainty and variability
Lecture 5 - Probability
Lecture 6 - Discrete random variables
Lecture 7 - Continuous random variables
Lecture 8 - Expected Value
Lecture 9 - Multiple Random Variables
Lecture 10 - Criteria, Objectives and Settings for Decisions
Lecture 11 - Introduction to one-time decisions
Lecture 12 - Solving the secretary problem
Lecture 13 - Which option to gamble just once?
Lecture 14 - Utility Function
Lecture 15 - Nested one-time decisions
Lecture 16 - Decision Trees
Lecture 17 - Decisions in Game Shows
Lecture 18 - Decisions in Game Shows
Lecture 19 - Project Network and Analysis
Lecture 20 - Newsvendor Problem
Lecture 21 - Newsvendor Problem
Lecture 22 - Buffers to Cushion for Fluctuations
Lecture 23 - Safety Stock for Inventories
Lecture 24 - Safety Stock
Lecture 25 - Route Planning
Lecture 26 - Exploration and Exploitation
Lecture 27 - Introduction to sequential decision making
Lecture 28 - Costs, Ratings, Options and Choices for both Restaurants
Lecture 29 - Two Stage Stochastic Optimization

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Lecture 30 - Concluding Remarks and Simpson's Paradox
Lecture 31 - Markov Chains for Decisions
Lecture 32 - DTMC Modeling and Analysis
Lecture 33 - Markov Decision Process Set Up
Lecture 34 - Analyzing the four policies
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NPTEL Video Course - Management - NOC:Decision making using Financial Accounting

Subject Co-ordinator - Prof. G Arun Kumar
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Introduction (Continued...)
Lecture 3 - Two Financial Statements
Lecture 4 - Two Financial Statements (Continued...)
Lecture 5 - Two Financial Statements (Continued...)
Lecture 6 - Three Financial Statements
Lecture 7 - Three Financial Statements (Continued...)
Lecture 8 - Three Financial Statements (Continued...)
Lecture 9 - Transaction and Financial Statements
Lecture 10 - Transaction and Financial Statements (Continued...)
Lecture 11 - Transaction and Financial Statements (Continued...)
Lecture 12 - Lone Pine Cafe (Case)
Lecture 13 - Lone Pine Cafe (Case)
Lecture 14 - Journal - 1
Lecture 15 - Journal - 2
Lecture 16 - Journal - 3
Lecture 17 - Ledger Posting Part - 1
Lecture 18 - Ledger Posting Part - 2
Lecture 19 - Final Accounts
Lecture 20 - Cash Flow Statements - 1
Lecture 21 - Cash Flow Statements - 2
Lecture 22 - Cash Flow Statements - 3
Lecture 23 - Cash Flow Statements - 4
Lecture 24 - Cash Flow Statements - 5
Lecture 25 - Reading the Financial Statements of a Annual Report - 1
Lecture 26 - Reading the Financial Statements of a Annual Report - 2
Lecture 27 - Reading the Financial Statements of a Annual Report - 3
Lecture 28 - Financial Statement Analysis - 1
Lecture 29 - Financial Statement Analysis - 2

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Lecture 30 - Financial Statement Analysis - 3
Lecture 31 - Financial Statement Analysis - 4
Lecture 32 - Recap
Lecture 33 - Ratios Analysis
Lecture 34 - Ratios Analysis
NPTEL Video Course - Management - NOC: Financial Statement Analysis and Reporting

Subject Co-ordinator - Prof. Anil K. Sharma

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Accounting Process
Lecture 3 - Accounting Concepts
Lecture 4 - Trial Balance and its Relevance
Lecture 5 - Relevant Accounting Statements
Lecture 6 - Journal (Part-I) - The first and original book of accounting
Lecture 7 - Journal (Part-II) - The first and original book of accounting
Lecture 8 - Ledger - The second book of accounts
Lecture 9 - Financial Statements
Lecture 10 - Financial Statements - Income Statement
Lecture 11 - Financial Statements - Balance Sheet
Lecture 12 - Financial Statements with Adjustments (Part-1)
Lecture 13 - Financial Statements with Adjustments (Part-2)
Lecture 14 - Financial Statements with Adjustments (Part-3)
Lecture 15 - Financial Statements with Adjustments (Part-4)
Lecture 16 - Financial Statements with Adjustments (Part-5)
Lecture 17 - Financial Statements with Adjustments (Part-6)
Lecture 18 - Financial Statements with Adjustments (Part-7)
Lecture 19 - Financial Statements with Adjustments (Part-8)
Lecture 20 - Financial Statements with Adjustments (Part-9)
Lecture 21 - Financial Statements with Adjustments (Part-10)
Lecture 22 - Financial Statements with Adjustments (Part-11)
Lecture 23 - Financial Statements with Adjustments (Part-12)
Lecture 24 - Financial Statements with Adjustments (Part-13)
Lecture 25 - Corporate Financial Statements (Part-1)
Lecture 26 - Corporate Financial Statements (Part-2)
Lecture 27 - Corporate Financial Statements (Part-3)
Lecture 28 - Corporate Financial Statements (Part-4)
Lecture 29 - Corporate Financial Statements (Part-5)
Lecture 30 - Corporate Financial Statements (Part-6)
Lecture 31 - Corporate Financial Statements (Part-7)
Lecture 32 - Corporate Financial Statements (Part-8)
Lecture 33 - Corporate Financial Statements (Part-9)
Lecture 34 - Financial Statement Analysis
Lecture 35 - Ratio Analysis (Part-1)
Lecture 36 - Ratio Analysis (Part-2)
Lecture 37 - Ratio Analysis (Part-3)
Lecture 38 - Different Sets of Ratios (Part-1)
Lecture 39 - Different Sets of Ratios (Part-2)
Lecture 40 - Ratio Analysis - A case of Grasim Industries (Part-1)
Lecture 41 - Ratio Analysis - A case of Grasim Industries (Part-2)
Lecture 42 - Liquidity Ratios - Grasim Industries (Part-1)
Lecture 43 - Liquidity Ratios - Grasim Industries (Part-2)
Lecture 44 - Liquidity Ratios - Grasim Industries (Part-3)
Lecture 45 - Profitability Ratios - Grasim Industries (Part-1)
Lecture 46 - Profitability Ratios - Grasim Industries (Part-2)
Lecture 47 - Profitability Ratios - Grasim Industries (Part-3)
Lecture 48 - DuPont Ratios (Part-1)
Lecture 49 - DuPont Ratios (Part-2)
Lecture 50 - Valuation or Capital Market Ratios (Part-1)
Lecture 51 - Valuation or Capital Market Ratios (Part-2)
Lecture 52 - Cash Flow Statement - Introduction (Part-1)
Lecture 53 - Cash Flow Statement (Part-2)
Lecture 54 - Preparation of Cash Flow Statement - Basic Cash Flow Statement
Lecture 55 - Cash Flow Statement - Further Analysis (Part-1)
Lecture 56 - Cash Flow Statement - Further Analysis (Part-2)
Lecture 57 - Final Cash Flow Statement (Part-1)
Lecture 58 - Final Cash Flow Statement (Part-2)
Lecture 59 - Financial Reporting (Part-1)
Lecture 60 - Financial Reporting (Part-2)
NPTEL Video Course - Management - NOC: Supply Chain Analytics

Subject Co-ordinator - Prof. Rajat Agrawal

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Supply Chain Management
Lecture 2 - Evolution of Supply Chain Management
Lecture 3 - Analytics in Supply Chain Management
Lecture 4 - Supply Chain Planning
Lecture 5 - Different views of Supply Chain
Lecture 6 - Supply Chain Strategy
Lecture 7 - Supply Chain Drivers
Lecture 8 - Developing Supply Chain Strategy
Lecture 9 - Strategic Fit in Supply Chain
Lecture 10 - Demand Forecasting in Supply Chain
Lecture 11 - Bullwhip Effect and Time Series Analysis
Lecture 12 - Exponential Smoothing Method of Forecasting
Lecture 13 - Measures of Forecasting Errors
Lecture 14 - Tracking Signal and Seasonality Models
Lecture 15 - Forecasting using multiple characteristics in Demand Data and Inventory Management in Supply Chain
Lecture 16 - Inventory Management in Supply Chain
Lecture 17 - Multi echelon Inventory Management
Lecture 18 - Multi echelon Inventory Management (Continued...)
Lecture 19 - Multi echelon Inventory Management for four stations
Lecture 20 - Multi echelon Inventory Management for four stations (Numerical Example)
Lecture 21 - Multi echelon Inventory Management for four stations (Numerical Example) (Continued...)
Lecture 22 - Network Design in Supply Chain
Lecture 23 - Network Design of Global Supply Chain
Lecture 24 - Alternative channels of Distribution
Lecture 25 - Location Decisions in Supply Chain
Lecture 26 - Network Optimization Models
Lecture 27 - Using Excel Solver for Network Optimization
Lecture 28 - Uncertainty in Network Design
Lecture 29 - Network Design in Uncertain Environment and Flexibility

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Lecture 30 - Flexibility in Supply Chain
Lecture 31 - Optimal Level of Product Availability in Supply Chain
Lecture 32 - Time Value of money in Supply Chain
Lecture 33 - Different types of Analytics in Supply Chain
Lecture 34 - Predictive Modelling in Forecasting in Supply Chain
Lecture 35 - Representation on Uncertainty in Supply Chain
Lecture 36 - Using Decision Tree for handling Uncertainty
Lecture 37 - Example of using Decision Tree incorporating Uncertainty in Single Factor
Lecture 38 - Example of using Decision Tree incorporating Uncertainty in two Key Factors
Lecture 39 - Modelling Flexibility in Supply Chain
Lecture 40 - Trends, Challenges and Future of Supply Chain
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NPTEL Video Course - Management - NOC:Marketing Research and Analysis

Subject Co-ordinator - Dr. Jogendra Kumar Nayak
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Marketing Research
Lecture 2 - Defining Research Problem
Lecture 3 - Developing Research Approach and Developing Research Design
Lecture 4 - Research Design
Lecture 5 - Qualitative Research
Lecture 6 - Qualitative Research
Lecture 7 - Projective Technique, Case Study
Lecture 8 - Case Study, Descriptive Research Design and Research Errors
Lecture 9 - Primary and Secondary Data, Research Error
Lecture 10 - Measurement and Scaling
Lecture 11 - Scale Development Process
Lecture 12 - Questionnaire and Form Design
Lecture 13 - Causal Research and Types
Lecture 14 - Experimental Design and Sampling
Lecture 15 - Sampling Design and Procedure
Lecture 16 - Sampling and Sample Size Determination
Lecture 17 - Hypothesis Development
Lecture 18 - Data Preparation
Lecture 19 - Hypothesis Testing
Lecture 20 - T, Z and F Test
Lecture 21 - Hypothesis Testing
Lecture 22 - Cross Tabulation and Chi Square Test
Lecture 23 - Correlation and Regression
Lecture 24 - Regression
Lecture 25 - Factor Analysis
Lecture 26 - Factor Analysis
Lecture 27 - SEM and CFA - 1
Lecture 28 - SEM and CFA - 2
Lecture 29 - SEM and CFA - 3

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Lecture 30 - Cluster Analysis - I
Lecture 31 - Cluster Analysis - II
Lecture 32 - Discriminant Analysis
Lecture 33 - Discriminant Analysis - 1
Lecture 34 - Researching Rural Market
Lecture 35 - International Marketing Research
Lecture 36 - Ethics in Marketing Research
Lecture 37 - Ethics in Marketing Research - 1
Lecture 38 - Report Preparation and Presentation
Lecture 39 - Multi Dimensional Scaling
Lecture 40 - Conjoint Analysis
Lecture 1 - Introduction of Project Management
Lecture 2 - Project Success
Lecture 3 - Types of Structure Organizations
Lecture 4 - Project Management Office
Lecture 5 - Stakeholders Management
Lecture 6 - Types of Projects and Project Life Cycle
Lecture 7 - Project Life Cycle Phases and Project Appraisal
Lecture 8 - Methods of Project Selection - I
Lecture 9 - Methods of Project Selection - II
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Lecture 17 - Capital Budgeting Techniques - II
Lecture 18 - Financing of Projects
Lecture 19 - Risk Management - I
Lecture 20 - Risk Management - II
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Lecture 23 - Stand Alone Risk Analysis - II
Lecture 24 - Hillier Model
Lecture 25 - Simulation Analysis
Lecture 26 - Decision Tree Analysis - I
Lecture 27 - Decision Tree Analysis - II
Lecture 28 - Abandonment Analysis
Lecture 29 - Technical Analysis
NPTEL Video Course - Management - NOC: Business Analytics and Data Mining Modeling using R

Subject Co-ordinator - Dr. Gaurav Dixit
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Data Mining Process
Lecture 3 - Introduction To R
Lecture 4 - Basic Statistics
Lecture 5 - Basic Statistics - Part 2
Lecture 6 - Partitioning Process
Lecture 7 - Visualization Techniques
Lecture 8 - Visualization Techniques - Part 2
Lecture 9 - Visualization Techniques - Part 3
Lecture 10 - Visualization Techniques - Part 4
Lecture 11 - Visualization Techniques - Part 5
Lecture 12 - Visualization Techniques - Part 6
Lecture 13 - Dimension Reduction Techniques
Lecture 14 - Dimension Reduction Techniques - Part 2
Lecture 15 - Dimension Reduction Techniques - Part 3
Lecture 16 - Performance Metrics
Lecture 17 - Performance Metrics - Part 2
Lecture 18 - Performance Metrics - Part 3
Lecture 19 - Performance Metrics - Part 4
Lecture 20 - Performance Metrics - Part 5
Lecture 21 - Prediction Performance
Lecture 22 - Multiple Linear Regression
Lecture 23 - Multiple Linear Regression - Part 2
Lecture 24 - Multiple Linear Regression - Part 3
Lecture 25 - Multiple Linear Regression - Part 4
Lecture 26 - Multiple Linear Regression - Part 5
Lecture 27 - Multiple Linear Regression - Part 6
Lecture 28 - Machine Learning Technique K-Nn
Lecture 29 - Machine Learning Technique K-Nn - Part 2

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Lecture 30 - Machine Learning Technique K-Nn - Part 3
Lecture 31 - Naive Bayes
Lecture 32 - Naive Bayes - Part 2
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Lecture 34 - Naive Bayes - Part 4
Lecture 35 - Naive Bayes - Part 5
Lecture 36 - Classification And Regression Trees
Lecture 37 - Classification And Regression Trees - Part 2
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Lecture 42 - Pruning Process
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Lecture 45 - Regression Trees
Lecture 46 - Logistic Regression
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Lecture 49 - Logistic Regression - Part 4
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Lecture 55 - Artificial Neural Network - Part 3
Lecture 56 - Artificial Neural Network - Part 4
Lecture 57 - Artificial Neural Network - Part 5
Lecture 58 - Artificial Neural Network - Part 6
Lecture 59 - Discriminant Analysis
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Lecture 37 - Valuation of Receivables at Cost or Sales Value
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Lecture 43 - Credit Risk Analysis - II
Lecture 44 - Credit Risk Analysis - III
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Lecture 47 - Cash Flow Presentation
Lecture 48 - Models of Cash Management- Certainty Model by Baumol
Lecture 49 - Certainty Model by Baumol Continued
Lecture 50 - Uncertainty Model by Miller and Orr
Lecture 51 - Miller and Orr (Continued...) and Cash Management Techniques
Lecture 52 - Measures of Liquidity
Lecture 53 - Window Dressing and Management of Current Liabilities
Lecture 54 - Management of Accounts Payable
Lecture 55 - Cost of Stretching Accounts Payable - I
Lecture 56 - Cost of Stretching Accounts Payable - II
Lecture 57 - Other Accruals and Overtrading
Lecture 58 - Bank Finance - Introduction
Lecture 59 - Recommendations of Tondon and Chore Committees
Lecture 60 - Deciding a Suitable Mix
NPTEL Video Course - Management - NOC: Innovation, Business Models and Entrepreneurship

Subject Co-ordinator - Prof. Vinay Sharma, Prof. Rajat Agrawal

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Analyzing the Current Business Scenario
Lecture 2 - Innovation and Creativity - An Introduction
Lecture 3 - Innovation in Current Environment
Lecture 4 - Types of Innovation
Lecture 5 - School of Innovation
Lecture 6 - Challenges of Innovation
Lecture 7 - Steps of Innovation Management
Lecture 8 - Idea Management System
Lecture 9 - Divergent v/s Convergent Thinking
Lecture 10 - Design Thinking and Entrepreneurship
Lecture 11 - Experimentation in Innovation Management
Lecture 12 - Idea Championship
Lecture 13 - Participation for Innovation
Lecture 14 - Co-creation for Innovation
Lecture 15 - Prototyping to Incubation
Lecture 16 - What is Business Model?
Lecture 17 - Who is an Entrepreneur?
Lecture 18 - Social Entrepreneurship?
Lecture 19 - Blue Ocean Strategy - I
Lecture 20 - Blue Ocean Strategy - II
Lecture 21 - Marketing of Innovation
Lecture 22 - Technology Innovation Process
Lecture 23 - Technological Innovation Management Planning
Lecture 24 - Technological Innovation Management Strategies
Lecture 25 - Technology Forecasting
Lecture 26 - Sustainability Innovation and Entrepreneurship
Lecture 27 - Innovation Sustainable Conditions
Lecture 28 - Innovation
Lecture 29 - SMEs strategic involvement in sustainable development

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Management - NOC: Global Marketing Management

Subject Co-ordinator - Prof. Z. Rahman
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Globalization - Part 1
Lecture 2 - Globalization - Part 2
Lecture 3 - Global Economic Environment - Part 1
Lecture 4 - Global Economic Environment - Part 2
Lecture 5 - Global Economic Environment - Part 3
Lecture 6 - Financial Environment - Part 1
Lecture 7 - Financial Environment - Part 2
Lecture 8 - Cultural Issues and Buying Behavior - Part 1
Lecture 9 - Cultural Issues and Buying Behavior - Part 2
Lecture 10 - Political/ Legal Environment - Part 1
Lecture 11 - Political/ Legal Environment - Part 2
Lecture 12 - Global Marketing Research - Part 1
Lecture 13 - Global Marketing Research - Part 2
Lecture 14 - Global Segmentation and Positioning - Part 1
Lecture 15 - Global Segmentation and Positioning - Part 2
Lecture 16 - Global Marketing Strategies - Part 1
Lecture 17 - Global Marketing Strategies - Part 2
Lecture 18 - Global Market Entry Modes - Part 1
Lecture 19 - Global Market Entry Modes - Part 2
Lecture 20 - Global Product Development - Part 1
Lecture 21 - Global Product Development - Part 2
Lecture 22 - Marketing Products and Services - Part 1
Lecture 23 - Marketing Products and Services - Part 2
Lecture 24 - Global Pricing - Part 1
Lecture 25 - Global Pricing - Part 2
Lecture 26 - Communicating with the World Consumer - Part 1
Lecture 27 - Communicating with the World Consumer - Part 2
Lecture 28 - Sales Management - Part 1
Lecture 29 - Sales Management - Part 2

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Lecture 30 - Global Logistics and Distribution - Part 1
Lecture 31 - Global Logistics and Distribution - Part 2
Lecture 32 - Export/Import Management - Part 1
Lecture 33 - Export/Import Management - Part 2
Lecture 34 - Export/Import Management - Part 3
Lecture 35 - Planning, Organization and Control of Global Marketing Operations - Part 1
Lecture 36 - Planning, Organization and Control of Global Marketing Operations - Part 2
Lecture 37 - Marketing in Emerging Markets - Part 1
Lecture 38 - Marketing in Emerging Markets - Part 2
Lecture 39 - Global Marketing and the Internet - Part 1
Lecture 40 - Global Marketing and the Internet - Part 2
NPTEL Video Course - Management - NOC: Marketing Research and Analysis-II

Subject Co-ordinator - Dr. Jogendra Kumar Nayak
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Marketing Research - I
Lecture 2 - Introduction to Marketing Research - II
Lecture 3 - Marketing Research Process - I
Lecture 4 - Marketing Research Process - II
Lecture 5 - Marketing Research Process - III
Lecture 6 - Marketing Research Process - IV
Lecture 7 - Hypothesis and Research Question - I (with real life example)
Lecture 8 - Hypothesis and Research Question - II (with real life example)
Lecture 9 - Hypothesis Development - I (with a real life case)
Lecture 10 - Hypothesis Development - II (with a real life case)
Lecture 11 - Research Design - I
Lecture 12 - Research Design - II
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Lecture 14 - Research Design - IV
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Lecture 19 - Data Purification and handling - III
Lecture 20 - Data Purification and handling - IV
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Lecture 22 - Sample Size Calculation and Hypothesis Testing (Problem Solving)
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Lecture 24 - Hypothesis Testing - II (Problem Solving)
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Lecture 31 - Non-Parametric Test - VII
Lecture 32 - Non-Parametric Test - VIII
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Lecture 34 - Conducting one-way ANOVA
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Lecture 38 - MANOVA and ANCOVA in SPSS
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Lecture 57 - Structural Equation Modelling in SPSS
Lecture 58 - Mediation and Moderation Analysis in SPSS
Lecture 59 - Cluster Analysis in Practice - I
Lecture 60 - Cluster Analysis in Practice - II
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Management - NOC:Business Statistics

Subject Co-ordinator - Prof. Mukesh Kumar Barua

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Statistics and Data
Lecture 2 - Types of Statistics, types of Data and sources of Data, Population vs Sample
Lecture 3 - Scales of Measurement
Lecture 4 - Data representation techniques - Part 1
Lecture 5 - Data representation techniques - Part 2 and measures of central tendency - Part 1
Lecture 6 - Measures of Central Tendency - Part 2
Lecture 7 - Examples of introduction to data and data representation techniques
Lecture 8 - Measures of Variation
Lecture 9 - Applications of Measures of Central Tendency and Measures of Variation
Lecture 10 - Chapter concepts- Measures of central tendency and measures of variation, Outliers, and shape of data
Lecture 11 - Numerical Descriptive Measures
Lecture 12 - Covariance and Coefficient of Correlation, Introduction to Probability
Lecture 13 - Probability - Part 1
Lecture 14 - Probability - Part 2
Lecture 15 - Probability - Part 3
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Lecture 21 - Chapter Concepts - Probability Distributions
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Lecture 27 - Interval Estimation
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Lecture 30 - Types of Hypothesis Testing
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Lecture 58 - Assumption of Regression
Lecture 59 - Multiple Regression
Lecture 60 - Example of multiple Regression

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NPTEL Video Course - Management - NOC: MCDM Techniques Using R

Subject Co-ordinator - Dr. Gaurav Dixit

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to MCDM Techniques - Part I
Lecture 2 - Introduction to MCDM Techniques - Part II
Lecture 3 - Introduction to MCDM Techniques - Part III
Lecture 4 - Analytic Hierarchy Process (AHP) - Part I
Lecture 5 - Analytic Hierarchy Process (AHP) - Part II
Lecture 6 - Analytic Hierarchy Process (AHP) - Part III
Lecture 7 - Analytic Hierarchy Process (AHP) - Part IV
Lecture 8 - ELECTRE - Part I
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Lecture 13 - Introduction of TOPSIS - Part I
Lecture 14 - TOPSIS - Part II
Lecture 15 - VIKOR - Part I
Lecture 16 - VIKOR - Part II
Lecture 17 - Introduction of Fuzzy Sets
Lecture 18 - Fuzzy AHP - Part I
Lecture 19 - Fuzzy AHP - Part II
Lecture 20 - Sensitivity Analysis

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NPTEL Video Course - Management - NOC: Manufacturing Strategy

Subject Co-ordinator - Prof. Rajat Agarwal
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Output of Manufacturing
Lecture 2 - Operations Systems
Lecture 3 - Operations Strategy
Lecture 4 - Functional Strategy Within Context of a Firm
Lecture 5 - Functional Dominance within Corporate Strategy
Lecture 6 - World Class Manufacturing Organization
Lecture 7 - Ps of Manufacturing Strategy
Lecture 8 - Contribution of Skinner and Hayes and Wheelwright
Lecture 9 - Alternative Paradigm of Manufacturing Strategy
Lecture 10 - Some Generic Manufacturing Strategies - I
Lecture 11 - Developing Manufacturing Strategy
Lecture 12 - Understanding Markets
Lecture 13 - Concept of Order Winner and Qualifiers
Lecture 14 - Basic Characteristics and Specific Dimensions of Order Winners and Qualifiers
Lecture 15 - Some Specific Order Winners and Qualifiers - I
Lecture 16 - Some Specific Order Winners and Qualifiers - II
Lecture 17 - Some Specific Order Winners and Qualifiers - III
Lecture 18 - Some Specific Order Winners and Qualifiers (non operation related criteria)
Lecture 19 - Developing an Operations Strategy
Lecture 20 - Developing an Operations Strategy
Lecture 21 - Developing an Operations Strategy
Lecture 22 - Enlightened View of Manufacturing
Lecture 23 - Manufacturing Strategy Taxonomy
Lecture 24 - Quality Management and Manufacturing Excellence
Lecture 25 - Total Quality Management and Manufacturing Excellence
Lecture 26 - Deming's Approach to Quality
Lecture 27 - Business Excellence Awards
Lecture 28 - Process Choice
Lecture 29 - Process Choice

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Lecture 30 - Product Profiling
Lecture 31 - Critical Success Factor for World Class Manufacturing
Lecture 32 - Value Added Engineering
Lecture 33 - Total Employee Involvement
Lecture 34 - HR Theories for Operation Strategy
Lecture 35 - Flexible Manufacturing System
Lecture 36 - Concept of Focus
Lecture 37 - Toyota Production System - I
Lecture 38 - Toyota Production System - II
Lecture 39 - World Class Manufacturing and India
Lecture 40 - Achieving World Class Status
NPTEL Video Course - Management - NOC: Training of Trainees

Subject Co-ordinator - Prof. Santosh Rangnekar

Co-ordinating Institute - IIT - Roorkee

MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to training - 1
Lecture 2 - Introduction to training - 2
Lecture 3 - Introduction to training - 3
Lecture 4 - Introduction to training - 4
Lecture 5 - Training Needs Assessment
Lecture 6 - Methods of Training Needs Assessment - 1
Lecture 7 - Methods of Training Needs Assessment - 2
Lecture 8 - Methods of Training Needs Assessment - 3
Lecture 9 - Trainings Design and Types of Training - 1
Lecture 10 - Trainings Design and Types of Training - 2
Lecture 11 - Trainings Design and Types of Training - 3
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Lecture 13 - Design thinking in training
Lecture 14 - Role of Technology - 1
Lecture 15 - Role of Technology - 2
Lecture 16 - Digital Pedagogy in training
Lecture 17 - Introduction to Training Methods - 1
Lecture 18 - Introduction to Training Methods - 2
Lecture 19 - Choosing a Training Method
Lecture 20 - Examples of Training
Lecture 21 - Understanding training groups and its dynamics
Lecture 22 - Training Methods - Case Study - 1
Lecture 23 - Training Methods - Case Study - 2
Lecture 24 - Training Methods - Case Study - 3
Lecture 25 - Training Methods - Case Study - 4
Lecture 26 - Training Methods - Business Game - 1
Lecture 27 - Training Methods - Business Game - 2
Lecture 28 - Training Methods - Business Game - 3
Lecture 29 - Training Methods - Role Play - 1

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Lecture 30 - Training Methods - Role Play - 2
Lecture 31 - Training Methods - Role Play - 3
Lecture 32 - Training Methods - Behavior Modelling - 1
Lecture 33 - Training Methods - Behavior Modelling - 2
Lecture 34 - Training Methods - Behavior Modelling - 3
Lecture 35 - Cost benefit Analysis
Lecture 36 - Training Methods - Decision Making - 1
Lecture 37 - Training Methods - Decision Making - 2
Lecture 38 - Training Methods - Decision Making - 3
Lecture 39 - Training Methods - Exercise
Lecture 40 - Introduction to group training methods
Lecture 41 - Training Methods - Brainstorming
Lecture 42 - Training Methods - Group discussion
Lecture 43 - Training methods - Panel Discussion
Lecture 44 - A Research Approach in Training - 1
Lecture 45 - A Research Approach in Training - 2
Lecture 46 - Training evaluation - 1
Lecture 47 - Training evaluation - 2
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NPTEL Video Course - Management - NOC:Management Accounting

Subject Co-ordinator - Prof. Anil K. Sharma

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - An Introduction - I
Lecture 2 - An Introduction - II
Lecture 3 - Branches of Accounting and Cost Sheet
Lecture 4 - Statement of Cost - An introduction
Lecture 5 - Fundamentals of Management Accounting - I
Lecture 6 - Fundamentals of Management Accounting - II
Lecture 7 - Cost Sheet - Role and Relevance in Management Decision Making - I
Lecture 8 - Cost Sheet - Role and Relevance in Management Decision Making - II
Lecture 9 - Preparation and Analysis of Cost Sheet - I
Lecture 10 - Preparation and Analysis of Cost Sheet - II
Lecture 11 - Preparation and Analysis of Cost Sheet - III
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Lecture 13 - Budget and Budgetary Control - II
Lecture 14 - Preparation of Budgets
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Lecture 22 - Master Budget - A Mini Case - II
Lecture 23 - Master Budget - A Mini Case - III
Lecture 24 - Flexible Budget and Variance Analysis - I
Lecture 25 - Flexible Budget and Variance Analysis - II
Lecture 26 - Flexible Budget and Variance Analysis - III
Lecture 27 - Flexible Budget - A Mini Case - I
Lecture 28 - Flexible Budget - A Mini Case - II
Lecture 29 - Standard Costing and Variance Analysis

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NPTEL Video Course - Management - NOC: Financial Derivatives and Risk Management

Subject Co-ordinator - Prof. J. P. Singh
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of Derivatives
Lecture 2 - Forwards
Lecture 3 - Forwards
Lecture 4 - Forwards Pricing
Lecture 5 - Futures
Lecture 6 - Futures
Lecture 7 - Forwards and Futures Prices, Exposure
Lecture 8 - Exposure and Risk
Lecture 9 - Basics of Futures Hedging
Lecture 10 - Futures Hedging
Lecture 11 - Futures Hedging
Lecture 12 - Futures Hedging
Lecture 13 - Mean Variance Portfolio Theory
Lecture 14 - Capital Asset Pricing Model
Lecture 15 - Systematic and Unsystematic Risk
Lecture 16 - Index Futures
Lecture 17 - Hedging with Index Futures
Lecture 18 - Index Futures
Lecture 19 - Spot Interest Rates and YTM
Lecture 20 - YTM, Other Yield Measures
Lecture 21 - Interest Rate Risk
Lecture 22 - Duration and Price Sensitivities, Immunization
Lecture 23 - Interest Rate Futures
Lecture 24 - T-Bill Futures
Lecture 25 - T-Bill Futures
Lecture 26 - T-Bill Futures
Lecture 27 - Tailing the Hedge; Clean and Dirty Price
Lecture 28 - US T-Bond Futures
Lecture 29 - US T-Bond Futures

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Lecture 30 - Options
Lecture 31 - Options
Lecture 32 - Options
Lecture 33 - American Options
Lecture 34 - Basic Option Trading Strategies
Lecture 35 - Option Strategies (Continued...)
Lecture 36 - Option Spread Strategies
Lecture 37 - Stochastic Processes
Lecture 38 - Stochastic Processes
Lecture 39 - Stochastic Processes
Lecture 40 - Stochastic Processes
Lecture 41 - Stochastic Calculus
Lecture 42 - Stock Price Distributions; Fokker Planck Equation and Solution
Lecture 43 - Lognormal Distribution
Lecture 44 - Option Pricing
Lecture 45 - Option Pricing
Lecture 46 - Girsanov Theorem; Black Scholes Model
Lecture 47 - Black Scholes Model (Continued...)
Lecture 48 - Features of BS Model
Lecture 49 - Solution of BS PDE; Option Greeks
Lecture 50 - Option Greeks
Lecture 51 - Option Greeks
Lecture 52 - Option Greeks
Lecture 53 - Option Greeks
Lecture 54 - Option Greeks
Lecture 55 - Forward Rate Agreements; Swaps
Lecture 56 - Swaps
Lecture 57 - Swaps
Lecture 58 - Currency Swaps; Value at Risk
Lecture 59 - Value at Risk
Lecture 60 - Value at Risk
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Management - NOC: Business Analytics and Text Mining Modeling Using Python

Subject Co-ordinator - Dr. Gaurav Dixit
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - Part I
Lecture 2 - Introduction - Part II
Lecture 3 - Introduction - Part III
Lecture 4 - Python for Analytics - Part I
Lecture 5 - Python for Analytics - Part II
Lecture 6 - Python for Analytics - Part III
Lecture 7 - Python for Analytics - Part IV
Lecture 8 - Python for Analytics - Part V
Lecture 9 - Built in Capabilities of Python - Part I
Lecture 10 - Built in Capabilities of Python - Part II
Lecture 11 - Built in Capabilities of Python - Part III
Lecture 12 - Built in Capabilities of Python - Part IV
Lecture 13 - Built in Capabilities of Python - Part V
Lecture 14 - Built in Capabilities of Python - Part VI
Lecture 15 - Built in Capabilities of Python - Part VII
Lecture 16 - Built in Capabilities of Python - Part VIII
Lecture 17 - Built in Capabilities of Python - Part IX
Lecture 18 - Built in Capabilities of Python - Part X
Lecture 19 - Numerical Python - Part I
Lecture 20 - Numerical Python - Part II
Lecture 21 - Numerical Python - Part III
Lecture 22 - Numerical Python - Part IV
Lecture 23 - Numerical Python - Part V
Lecture 24 - Numerical Python - Part VI
Lecture 25 - Numerical Python - Part VII
Lecture 26 - Database Using Python Pandas - Part I
Lecture 27 - Database Using Python Pandas - Part II
Lecture 28 - Database Using Python Pandas - Part III
Lecture 29 - Pandas Data Frame Processing Functions

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Lecture 30 - Python Working with Data - Part I
Lecture 31 - Python Working with Data - Part II
Lecture 32 - Python Working with Data - Part III
Lecture 33 - String and Text Processing - Part I
Lecture 34 - String and Text Processing - Part II
Lecture 35 - Data Visualization Using Python
Lecture 36 - Text Collection and Transformation - Part I
Lecture 37 - Text Collection and Transformation - Part II
Lecture 38 - Text Mining and Modeling - Part I
Lecture 39 - Text Mining and Modeling - Part II
Lecture 40 - Text Mining and Modeling - Part III
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Management - NOC: Toyota Production System
Subject Co-ordinator - Prof. Rajat Agarwal
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Manufacturing Excellence
Lecture 2 - Global Environment
Lecture 3 - Production System
Lecture 4 - Operation Strategy
Lecture 5 - The Heart of the TPS
Lecture 6 - Principles of Toyota Way
Lecture 7 - Culture Behind Toyota Way
Lecture 8 - Toyota Way in Action
Lecture 9 - Long Term Philosophy
Lecture 10 - Create Continuous Flow
Lecture 11 - Pull System
Lecture 12 - Leveling Workload
Lecture 13 - Get Quality Right the First Time
Lecture 14 - Standardization of Task
Lecture 15 - Use of Visual Control
Lecture 16 - Use of Reliable Technology
Lecture 17 - Role of Leaders in Manufacturing Philosophy
Lecture 18 - Developing Exceptional Teams
Lecture 19 - Challenge and Respect Extended Networks
Lecture 20 - See Yourself to Understand the Situation
Lecture 21 - Developing Decisions with Consensus
Lecture 22 - Become a Learning Organization
Lecture 23 - Become a Learning Organization
Lecture 24 - Using Toyota Way for Other Organizations (Service and Technical)
Lecture 25 - Lean Manufacturing
Lecture 26 - Lean Vs Agile Manufacturing
Lecture 27 - Sustainable Manufacturing - I
Lecture 28 - Sustainable Manufacturing - II
Lecture 29 - Flexible Manufacturing System

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Lecture 30 - Benchmarking
Lecture 31 - Cultural Issues in Lean
Lecture 32 - Overview of Lean Implementation
Lecture 33 - The Significance of Lead Time
Lecture 34 - Techniques to Reduce Lead Time
Lecture 35 - Value Stream Mapping
Lecture 36 - Kanban Approach
Lecture 37 - Kanban Calculation - I
Lecture 38 - Kanban Calculation - II
Lecture 39 - Theory of Constraints
Lecture 40 - Different Business Excellence Models
NPTEL Video Course - Management - Strategic Management

Subject Co-ordinator - Prof. R. Srinivasan
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Strategic Management
Lecture 2 - Concept of Corporate Strategy
Lecture 3 - Strategic Management Process - 1
Lecture 4 - Strategic Management Process - 2
Lecture 5 - The 7-S Framework
Lecture 6 - Corporate Policy and Planning in India
Lecture 7 - Board of Directors - Role and Functions
Lecture 8 - Board of Directors - Role and Functions, Top Management - Role and Skills, Board Functioning - Indian Context
Lecture 9 - Board Functioning - Indian Context and Environmental Scanning
Lecture 10 - Environmental Scanning and Industry Analysis
Lecture 11 - The synthesis of External Factors and External Factors Analysis Summary (EFAS)
Lecture 12 - Internal Corporate Analysis and Impact Matrix
Lecture 13 - Value Chain Analysis
Lecture 14 - Synthesis of Internal Factors - 1
Lecture 15 - Synthesis of Internal Factors - 2
Lecture 16 - Internal Factors Analysis Summary (IFAS) and Case Study - 1
Lecture 17 - Case Analysis
Lecture 18 - Key Financial Ratios
Lecture 19 - Case Analysis - 2 and SFAS Matrix
Lecture 20 - Business Strategy
Lecture 21 - Corporate Strategy - 1
Lecture 22 - Corporate Strategy - 2
Lecture 23 - Corporate Strategy - 3 and Functional Strategy
Lecture 24 - Functional Strategy - 1
Lecture 25 - Functional Strategy - 2
Lecture 26 - Functional Strategy - 3 and Strategic Choice
Lecture 27 - Strategy Implementation - 1
Lecture 28 - Strategy Implementation - 2
Lecture 29 - Evaluation and Control

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Lecture 30 - Strategic Information Systems - 1
Lecture 31 - Strategic Information Systems - 2
Lecture 32 - Other Strategic Issues - 1
Lecture 33 - Other Strategic Issues - 2
Lecture 34 - Small and Medium Enterprises
Lecture 35 - Non-Profit Organizations
Lecture 36 - Summary - 1
Lecture 37 - Summary - 2
NPTEL Video Course - Management - Global Supply Chain Management

Subject Co-ordinator - Prof. N. Viswanadham

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Global Supply Chain Networks Part - 1
Lecture 2 - Introduction to Global Supply Chain Networks Part - 2
Lecture 3 - Zara - fast fashion
Lecture 4 - The Supply Chain Eco-System Framework
Lecture 5 - Supply Chain Eco-System Framework
Lecture 6 - Supply Chain Eco-System Framework
Lecture 7 - Metro Cash and Carry
Lecture 8 - Performance Analysis
Lecture 9 - Supply Chain Risk - Part-1
Lecture 10 - Supply Chain Risk - Part-2
Lecture 11 - Supply Chain Risk - Part-3
Lecture 12 - Mattel Toy Recalls and Supply Chain Management
Lecture 13 - Innovation in Emerging markets
Lecture 14 - Innovations in Supply Chain Ecosystem
Lecture 15 - Indian Telecom and Bharti Airtel
Lecture 16 - CEMEX - Part-1
Lecture 17 - CEMEX - Part-2
Lecture 18 - Governance
Lecture 19 - Governance of networked organizations
Lecture 20 - The Orchestration Governance Model
Lecture 21 - Orchestration-Examples
Lecture 22 - Li & Fung - Part-1
Lecture 23 - Li & Fung - Part-2
Lecture 24 - Supply Chain Design - Part-1
Lecture 25 - Supply Chain Design - Part-2
Lecture 26 - Green supply chain design - Part-1
Lecture 27 - Green supply chain design - Part-2
Lecture 28 - Green Supply Chain Ecosystem Analysis
Lecture 29 - GRIP Framework

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Lecture 30 - Tutorial 4
Lecture 31 - Initial Value Problem
Lecture 32 - Multi-step Methods
Lecture 33 - Predictor-Corrector Formulae
Lecture 34 - Boundary Value Problems
Lecture 35 - Eigenvalues and Eigenvectors
Lecture 36 - Spectral Theorem
Lecture 37 - Power Method
Lecture 38 - Inverse Power Method
Lecture 39 - Q R Decomposition
Lecture 40 - Q R Method
NPTEL Video Course - Mathematics - Measure and Integration

Subject Co-ordinator - Prof. Inder K Rana

Co-ordinating Institute - IIT - Bombay

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Lecture 1 - Introduction, Extended Real numbers
Lecture 2 - Algebra and Sigma Algebra of a subset of a set
Lecture 3 - Sigma Algebra generated by a class
Lecture 4 - Monotone Class
Lecture 5 - Set function
Lecture 6 - The Length function and its properties
Lecture 7 - Countably additive set functions on intervals
Lecture 8 - Uniqueness Problem for Measure
Lecture 9 - Extension of measure
Lecture 10 - Outer measure and its properties
Lecture 11 - Measurable sets
Lecture 12 - Lebesgue measure and its properties
Lecture 13 - Characterization of Lebesgue measurable sets
Lecture 14 - Measurable functions
Lecture 15 - Properties of measurable functions
Lecture 16 - Measurable functions on measure spaces
Lecture 17 - Integral of non negative simple measurable functions
Lecture 18 - Properties of non negative simple measurable functions
Lecture 19 - Monotone convergence theorem & Fatou's Lemma
Lecture 20 - Properties of Integral functions & Dominated Convergence Theorem
Lecture 21 - Dominated Convergence Theorem and applications
Lecture 22 - Lebesgue Integral and its properties
Lecture 23 - Denseness of continuous function
Lecture 24 - Product measures, an Introduction
Lecture 25 - Construction of Product Measure
Lecture 26 - Computation of Product Measure - I
Lecture 27 - Computation of Product Measure - II
Lecture 28 - Integration on Product spaces
Lecture 29 - Fubini's Theorems

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Lecture 30 - Lebesgue Measure and integral on R2
Lecture 31 - Properties of Lebesgue Measure and integral on Rn
Lecture 32 - Lebesgue integral on R2
Lecture 33 - Integrating complex-valued functions
Lecture 34 - Lp - spaces
Lecture 35 - L2(X, S, μ)
Lecture 36 - Fundamental Theorem of calculus for Lebesgue Integral - I
Lecture 37 - Fundamental Theorem of calculus for Lebesgue Integral - II
Lecture 38 - Absolutely continuous measures
Lecture 39 - Modes of convergence
Lecture 40 - Convergence in Measure
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mathematics - Mathematics in India - From Vedic Period to Modern Times

Subject Co-ordinator - Prof. M.D. Srinivas, Prof. K. Ramasubramanian, Prof. M.S. Sriram

Co-ordinating Institute - Centre for Policy Studies, Chennai | IIT - Bombay | University of Madras, Chennai

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Indian Mathematics
Lecture 2 - Vedas and Sulbasutras - Part 1
Lecture 3 - Vedas and Sulbasutras - Part 2
Lecture 4 - Panini's Astadhyayi
Lecture 5 - Pingala's Chandahsastra
Lecture 6 - Decimal place value system
Lecture 7 - Aryabhatiya of Aryabhata - Part 1
Lecture 8 - Aryabhatiya of Aryabhata - Part 2
Lecture 9 - Aryabhatiya of Aryabhata - Part 3
Lecture 10 - Aryabhatiya of Aryabhata - Part 4 and Introduction to Jaina Mathematics
Lecture 11 - Brahmasphutasiddhanta of Brahmagupta - Part 1
Lecture 12 - Brahmasphutasiddhanta of Brahmagupta - Part 2
Lecture 13 - Brahmasphutasiddhanta of Brahmagupta - Part 3
Lecture 14 - Brahmasphutasiddhanta of Brahmagupta - Part 4 and The Bakhshali Manuscript
Lecture 15 - Mahaviras Ganitasarasangraha - Part 1
Lecture 16 - Mahaviras Ganitasarasangraha - Part 2
Lecture 17 - Mahaviras Ganitasarasangraha - Part 3
Lecture 18 - Development of Combinatorics - Part 1
Lecture 19 - Development of Combinatorics - Part 2
Lecture 20 - Lilavati of Bhaskaracarya - Part 1
Lecture 21 - Lilavati of Bhaskaracarya - Part 2
Lecture 22 - Lilavati of Bhaskaracarya - Part 3
Lecture 23 - Bijaganita of Bhaskaracarya - Part 1
Lecture 24 - Bijaganita of Bhaskaracarya - Part 2
Lecture 25 - Ganitakaumudi of Narayana Pandita - Part 1
Lecture 26 - Ganitakaumudi of Narayana Pandita - Part 2
Lecture 27 - Ganitakaumudi of Narayana Pandita - Part 3
Lecture 28 - Magic Squares - Part 1
Lecture 29 - Magic Squares - Part 2

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Lecture 30 - Development of Calculus in India - Part 1
Lecture 31 - Development of Calculus in India - Part 2
Lecture 32 - Jyanayanam
Lecture 33 - Trigonometry and Spherical Trigonometry - Part 1
Lecture 34 - Trigonometry and Spherical Trigonometry - Part 2
Lecture 35 - Trigonometry and Spherical Trigonometry - Part 3
Lecture 36 - Proofs in Indian Mathematics - Part 1
Lecture 37 - Proofs in Indian Mathematics - Part 2
Lecture 38 - Proofs in Indian Mathematics - Part 3
Lecture 39 - Mathematics in Modern India - Part 1
Lecture 40 - Mathematics in Modern India - Part 2

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Lecture 30 - (15B) Properties of Measurable Functions
Lecture 31 - (16A) Measurable Functions on Measure Spaces
Lecture 32 - (16B) Measurable Functions on Measure Spaces
Lecture 33 - (17A) Integral of Nonnegative Simple Measurable Functions
Lecture 34 - (17B) Integral of Nonnegative Simple Measurable Functions
Lecture 35 - (18A) Properties of Nonnegative Simple Measurable Functions
Lecture 36 - (18B) Properties of Nonnegative Simple Measurable Functions
Lecture 37 - (19A) Monotone Convergence Theorem and Fatou's Lemma
Lecture 38 - (19B) Monotone Convergence Theorem and Fatou's Lemma
Lecture 39 - (20A) Properties of Integrable Functions and Dominated Convergence Theorem
Lecture 40 - (20B) Properties of Integrable Functions and Dominated Convergence Theorem
Lecture 41 - (21A) Dominated Convergence Theorem and Applications
Lecture 42 - (21B) Dominated Convergence Theorem and Applications
Lecture 43 - (22A) Lebesgue Integral and its Properties
Lecture 44 - (22B) Lebesgue Integral and its Properties
Lecture 45 - (23A) Product Measure, an Introduction
Lecture 46 - (23B) Product Measure, an Introduction
Lecture 47 - (24A) Construction of Product Measures
Lecture 48 - (24B) Construction of Product Measures
Lecture 49 - (25A) Computation of Product Measure - I
Lecture 50 - (25B) Computation of Product Measure - I
Lecture 51 - (26A) Computation of Product Measure - II
Lecture 52 - (26B) Computation of Product Measure - II
Lecture 53 - (27A) Integration on Product Spaces
Lecture 54 - (27B) Integration on Product Spaces
Lecture 55 - (28A) Fubini's Theorems
Lecture 56 - (28B) Fubini's Theorems
Lecture 57 - (29A) Lebesgue Measure and Integral on R2
Lecture 58 - (29B) Lebesgue Measure and Integral on R2
Lecture 59 - (30A) Properties of Lebesgue Measure on R2
Lecture 60 - (30B) Properties of Lebesgue Measure on R2
Lecture 61 - (31A) Lebesgue Integral on R2
Lecture 62 - (31B) Lebesgue Integral on R2
NPTEL Video Course - Mathematics - NOC: Calculus for Economics, Commerce and Management

Subject Co-ordinator - Prof. Inder Kumar Rana

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the Course
Lecture 2 - Concept of a Set, Ways of Representing Sets
Lecture 3 - Venn Diagrams, Operations on Sets
Lecture 4 - Operations on Sets, Cardinal Number, Real Numbers
Lecture 5 - Real Numbers, Sequences
Lecture 6 - Sequences, Convergent Sequences, Bounded Sequences
Lecture 7 - Limit Theorems, Sandwich Theorem, Monotone Sequences, Completeness of Real Numbers
Lecture 8 - Relations and Functions
Lecture 9 - Functions, Graph of a Functions, Function Formulas
Lecture 10 - Function Formulas, Linear Models
Lecture 11 - Linear Models, Elasticity, Linear Functions, Nonlinear Models, Quadratic Functions
Lecture 12 - Quadratic Functions, Quadratic Models, Power Function, Exponential Function
Lecture 13 - Exponential Function, Exponential Models, Logarithmic Function
Lecture 14 - Limit of a Function at a Point, Continuous Functions
Lecture 15 - Limit of a Function at a Point
Lecture 16 - Limit of a Function at a Point, Left and Right Limits
Lecture 17 - Computing Limits, Continuous Functions
Lecture 18 - Applications of Continuous Functions
Lecture 19 - Applications of Continuous Functions, Marginal of a Function
Lecture 20 - Rate of Change, Differentiation
Lecture 21 - Rules of Differentiation
Lecture 22 - Derivatives of Some Functions, Marginal, Elasticity
Lecture 23 - Elasticity, Increasing and Decreasing Functions, Optimization, Mean Value Theorem
Lecture 24 - Mean Value Theorem, Marginal Analysis, Local Maxima and Minima
Lecture 25 - Local Maxima and Minima
Lecture 26 - Local Maxima and Minima, Continuity Test, First Derivative Test, Successive Differentiation
Lecture 27 - Successive Differentiation, Second Derivative Test
Lecture 28 - Average and Marginal Product, Marginal of Revenue and Cost, Absolute Maximum and Minimum
Lecture 29 - Absolute Maximum and Minimum
Lecture 30 - Monopoly Market, Revenue and Elasticity
Lecture 31 - Property of Marginals, Monopoly Market, Publisher v/s Author Problem
Lecture 32 - Convex and Concave Functions
Lecture 33 - Derivative Tests for Convexity, Concavity and Points of Inflection, Higher Order Derivative Conditions
Lecture 34 - Convex and Concave Functions, Asymptotes
Lecture 35 - Asymptotes, Curve Sketching
Lecture 36 - Functions of Two Variables, Visualizing Graph, Level Curves, Contour Lines
Lecture 37 - Partial Derivatives and Application to Marginal Analysis
Lecture 38 - Marginals in Cobb-Douglas model, partial derivatives and elasticity, chain rules
Lecture 39 - Chain Rules, Higher Order Partial Derivatives, Local Maxima and Minima, Critical Points
Lecture 40 - Saddle Points, Derivative Tests, Absolute Maxima and Minima
Lecture 41 - Some Examples, Constrained Maxima and Minima
NPTEL Video Course - Mathematics - NOC: Basic Linear Algebra

Subject Co-ordinator - Prof. Inder Kumar Rana

Co-ordinating Institute - IIT - Bombay

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Lecture 1 - Introduction - I
Lecture 2 - Introduction - II
Lecture 3 - Introduction - III
Lecture 4 - Systems of Linear Equations - I
Lecture 5 - Systems of Linear Equations - II
Lecture 6 - Systems of Linear Equations - III
Lecture 7 - Reduced Row Echelon Form and Rank - I
Lecture 8 - Reduced Row Echelon Form and Rank - II
Lecture 9 - Reduced Row Echelon Form and Rank - III
Lecture 10 - Solvability of a Linear System, Linear Span, Basis - I
Lecture 11 - Solvability of a Linear System, Linear Span, Basis - II
Lecture 12 - Solvability of a Linear System, Linear Span, Basis - III
Lecture 13 - Linear Span, Linear Independence and Basis - I
Lecture 14 - Linear Span, Linear Independence and Basis - II
Lecture 15 - Linear Span, Linear Independence and Basis - III
Lecture 16 - Row Space, Column Space, Rank-Nullity Theorem - I
Lecture 17 - Row Space, Column Space, Rank-Nullity Theorem - II
Lecture 18 - Row Space, Column Space, Rank-Nullity Theorem - III
Lecture 19 - Determinants and their Properties - I
Lecture 20 - Determinants and their Properties - II
Lecture 21 - Determinants and their Properties - III
Lecture 22 - Linear Transformations - I
Lecture 23 - Linear Transformations - II
Lecture 24 - Linear Transformations - III
Lecture 25 - Orthonormal Basis, Geometry in R^2 - I
Lecture 26 - Orthonormal Basis, Geometry in R^2 - II
Lecture 27 - Orthonormal Basis, Geometry in R^2 - III
Lecture 28 - Isometries, Eigenvalues and Eigenvectors - I
Lecture 29 - Isometries, Eigenvalues and Eigenvectors - II

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Lecture 30 - Isometries, Eigenvalues and Eigenvectors - III
Lecture 31 - Diagonalization and Real Symmetric Matrices - I
Lecture 32 - Diagonalization and Real Symmetric Matrices - II
Lecture 33 - Diagonalization and Real Symmetric Matrices - III
Lecture 34 - Diagonalization and its Applications - I
Lecture 35 - Diagonalization and its Applications - II
Lecture 36 - Diagonalization and its Applications - III
Lecture 37 - Abstract Vector Spaces - I
Lecture 38 - Abstract Vector Spaces - II
Lecture 39 - Abstract Vector Spaces - III
Lecture 40 - Inner Product Spaces - I
Lecture 41 - Inner Product Spaces - II
Lecture 30 - Dimension Theorem (Continued...)  
Lecture 31 - Consequences of Dimension Theorem  
Lecture 32 - Generalized Krull’s Principal Ideal Theorem  
Lecture 33 - Second proof of Krull’s Principal Ideal Theorem  
Lecture 34 - The Spec Functor  
Lecture 35 - Prime ideals in Polynomial rings  
Lecture 36 - Characterization of Equidimensional Affine Algebra  
Lecture 37 - Connection between Regular local rings and associated graded rings  
Lecture 38 - Statement of the Jacobian Criterion for Regularity  
Lecture 39 - Hilbert function for Affine Algebra  
Lecture 40 - Hilbert Serre Theorem  
Lecture 41 - Jacobian Matrix and its Rank  
Lecture 42 - Jacobian Matrix and its Rank (Continued...)  
Lecture 43 - Proof of Jacobian Criterion  
Lecture 44 - Proof of Jacobian Criterion (Continued...)  
Lecture 45 - Preparation for Homological Dimension  
Lecture 46 - Complexes of Modules and Homology  
Lecture 47 - Projective Modules  
Lecture 48 - Homological Dimension and Projective module  
Lecture 49 - Global Dimension  
Lecture 50 - Homological characterization of Regular Local Rings (RLR)  
Lecture 51 - Homological characterization of Regular Local Rings (Continued...)  
Lecture 52 - Homological Characterization of Regular Local Rings (Continued...)  
Lecture 53 - Regular Local Rings are UFD  
Lecture 54 - RLR-Prime ideals of height 1  
Lecture 55 - Discrete Valuation Ring  
Lecture 56 - Discrete Valuation Ring (Continued...)  
Lecture 57 - Dedekind Domains  
Lecture 58 - Fractionary Ideals and Dedekind Domains  
Lecture 59 - Characterization of Dedekind Domain  
Lecture 60 - Dedekind Domains and prime factorization of ideals
NPTEL Video Course - Mathematics - NOC: Galois Theory

Subject Co-ordinator - Prof. Dilip P. Patil

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Historical Perspectives
Lecture 2 - Examples of Fields
Lecture 3 - Polynomials and Basic properties
Lecture 4 - Polynomial Rings
Lecture 5 - Unit and Unit Groups
Lecture 6 - Division with remainder and prime factorization
Lecture 7 - Zeros of Polynomials
Lecture 8 - Polynomial functions
Lecture 9 - Algebraically closed Fields and statement of FTA
Lecture 10 - Gauss' Theorem (Uniqueness of factorization)
Lecture 11 - Digression on Rings homomorphism, Algebras
Lecture 12 - Kernel of homomorphisms and ideals in K[X], Z
Lecture 13 - Algebraic elements
Lecture 14 - Examples
Lecture 15 - Minimal Polynomials
Lecture 16 - Characterization of Algebraic elements
Lecture 17 - Theorem of Kronecker
Lecture 18 - Examples
Lecture 19 - Digression on Groups
Lecture 20 - Some examples and Characteristic of a Ring
Lecture 21 - Finite subGroups of the Unit Group of a Field
Lecture 22 - Construction of Finite Fields
Lecture 23 - Digression on Group action - I
Lecture 24 - Automorphism Groups of a Field Extension
Lecture 25 - Dedekind-Artin Theorem
Lecture 26 - Galois Extension
Lecture 27 - Examples of Galois extension
Lecture 28 - Examples of Automorphism Groups
Lecture 29 - Digression on Linear Algebra
Lecture 30 - Minimal and Characteristic Polynomials, Norms, Trace of elements
Lecture 31 - Primitive Element Theorem for Galois Extension
Lecture 32 - Fundamental Theorem of Galois Theory
Lecture 33 - Fundamental Theorem of Galois Theory (Continued...)
Lecture 34 - Cyclotomic extensions
Lecture 35 - Cyclotomic Polynomials
Lecture 36 - Irreducibility of Cyclotomic Polynomials over $\mathbb{Q}$
Lecture 37 - Reducibility of Cyclotomic Polynomials over Finite Fields
Lecture 38 - Galois Group of Cyclotomic Polynomials
Lecture 39 - Extension over a fixed Field of a finite subGroup is Galois Extension
Lecture 40 - Digression on Group action - II
Lecture 41 - Correspondence of Normal SubGroups and Galois sub-extensions
Lecture 42 - Correspondence of Normal SubGroups and Galois sub-extensions (Continued...)
Lecture 43 - Inverse Galois problem for Abelian Groups
Lecture 44 - Elementary Symmetric Polynomials
Lecture 45 - Fundamental Theorem on Symmetric Polynomials
Lecture 46 - $\text{Gal}(K[X_1,X_2,\ldots,X_n]/K[S_1,S_2,\ldots,S_n])$
Lecture 47 - Digression on Symmetric and Alternating Group
Lecture 48 - Discriminant of a Polynomial
Lecture 49 - Zeroes and Embeddings
Lecture 50 - Normal Extensions
Lecture 51 - Existence of Algebraic Closure
Lecture 52 - Uniqueness of Algebraic Closure
Lecture 53 - Proof of The Fundamental Theorem of Algebra
Lecture 54 - Galois Group of a Polynomial
Lecture 55 - Perfect Fields
Lecture 56 - Embeddings
Lecture 57 - Characterization of finite Separable extension
Lecture 58 - Primitive Element Theorem
Lecture 59 - Equivalence of Galois extensions and Normal-Separable extensions
Lecture 60 - Operation of Galois Group of Polynomial on the set of zeroes
Lecture 61 - Discriminants
Lecture 62 - Examples for further study
NPTEL Video Course - Mathematics - Stochastic Processes

Subject Co-ordinator - Dr. S. Dharmaraja

Co-ordinating Institute - IIT - Delhi

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NPTEL Video Course - Mathematics - NOC:Stochastic Processes - 1

Subject Co-ordinator - Dr. S. Dharmaraja

Co-ordinating Institute - IIT - Delhi

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Lecture 2 - Probability space and conditional probability
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Lecture 5 - Joint Distribution of Random Variables
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### NPTEL Video Course - Mathematics - NOC: Stochastic Processes

Subject Co-ordinator - Dr. S. Dharmaraja

Co-ordinating Institute - IIT - Delhi

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NPTEL Video Course - Mathematics - NOC: Chaotic Dynamical Systems

Subject Co-ordinator - Dr. Anima Nagar
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NPTEL Video Course - Mathematics - NOC: Introduction to Probability Theory and Stochastic Processes

Subject Co-ordinator - Dr. S. Dharmaraja

Co-ordinating Institute - IIT - Delhi

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Subject Co-ordinator - Prof. Nilladri Chaterjee

Co-ordinating Institute - IIT - Delhi

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NPTEL Video Course - Mathematics - NOC: Introduction to Methods of Applied Mathematics

Subject Co-ordinator - Prof. Vivek Kumar Aggarwal

Co-ordinating Institute - IIT - Delhi

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Subject Co-ordinator - Prof. P.A.S. Sree Krishna

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Lecture 28 - Zeroes of Analytic Functions
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NPTEL Video Course - Mathematics - NOC: Mathematical Finance

Subject Co-ordinator - Prof. Siddhartha Pratim Chakrabarty
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Financial Markets and Bonds
Lecture 2 - Introduction to Stocks, Futures and Forwards and Swaps
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Lecture 4 - Interest Rates and Present Value
Lecture 5 - Present and Future Values, Annuities, Amortization and Bond Yield
Lecture 6 - Price Yield Curve and Term Structure of Interest Rates
Lecture 7 - Markowitz Theory, Return and Risk and Two Asset Portfolio
Lecture 8 - Minimum Variance Portfolio and Feasible Set
Lecture 9 - Multi Asset Portfolio, Minimum Variance Portfolio, Efficient Frontier and Minimum Variance Line
Lecture 10 - Minimum Variance Line (Continued), Market Portfolio
Lecture 11 - Capital Market Line, Capital Asset Pricing Model
Lecture 12 - Performance Analysis
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Lecture 14 - Futures, Options and Put-Call-Parity
Lecture 15 - Bounds on Options
Lecture 16 - Derivative Pricing in a Single Period Binomial Model
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Lecture 18 - Derivative Pricing in Binomial Model and Path Dependent Options
Lecture 19 - Discrete Probability Spaces
Lecture 20 - Filtrations and Conditional Expectations
Lecture 21 - Properties of Conditional Expectations
Lecture 22 - Examples of Conditional Expectations, Martingales
Lecture 23 - Risk-Neutral Pricing of European Derivatives in Binomial Model
Lecture 24 - Actual and Risk-Neutral Probabilities, Markov Process, American Options
Lecture 25 - General Probability Spaces, Expectations, Change of Measure
Lecture 26 - Filtrations, Independence, Conditional Expectations
Lecture 27 - Brownian Motion and its Properties
Lecture 28 - It\'s Integral and its Properties
Lecture 29 - It\'s Formula, It\'s Processes
Lecture 30 - Multivariable Stochastic Calculus, Stochastic Differential Equations
Lecture 31 - Black-Scholes-Merton (BSM) Model, BSM Equation, BSM Formula
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Lecture 33 - Girsanov Theorem, Risk-Neutral Pricing of Derivatives, BSM Formula
Lecture 34 - MRT and Hedging, Multidimensional Girsanov and MRT
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NPTEL Video Course - Mathematics - Calculus of Variations and Integral Equations

Subject Co-ordinator - Dr. Malay Banerjee, Prof. D. Bahuguna

Co-ordinating Institute - IIT - Kanpur

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Lecture 30 - Starting feasible solution, Lexicographic method for preventing cycling, strongly feasible solution
Lecture 31 - Assignment 6, Shortest path problem, Shortest Path between any two nodes, Detection of negative cycles
Lecture 32 - Min-cost-flow Sensitivity analysis Shortest path problem sensitivity analysis
Lecture 33 - Min-cost flow changes in arc capacities, Max-flow problem, assignment 7
Lecture 34 - Problem 3 (assignment 7), Min-cut Max-flow theorem, Labelling algorithm
Lecture 35 - Max-flow - Critical capacity of an arc, starting solution for min-cost flow problem
Lecture 36 - Improved Max-flow algorithm
Lecture 37 - Critical Path Method (CPM)
Lecture 38 - Programme Evaluation and Review Technique (PERT)
Lecture 39 - Simplex Algorithm is not polynomial time- An example
Lecture 40 - Interior Point Methods
NPTEL Video Course - Mathematics - Convex Optimization

Subject Co-ordinator - Dr. Joydeep Dutta

Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Mathematics - Foundations of Optimization

Subject Co-ordinator - Dr. Joydeep Dutta

Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Mathematics - Probability Theory and Applications

Subject Co-ordinator - Prof. Prabha Sharma
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic principles of counting
Lecture 2 - Sample space, events, axioms of probability
Lecture 3 - Conditional probability, Independence of events
Lecture 4 - Random variables, cumulative density function, expected value
Lecture 5 - Discrete random variables and their distributions
Lecture 6 - Discrete random variables and their distributions
Lecture 7 - Discrete random variables and their distributions
Lecture 8 - Continuous random variables and their distributions
Lecture 9 - Continuous random variables and their distributions
Lecture 10 - Continuous random variables and their distributions
Lecture 11 - Function of random variables, Moment generating function
Lecture 12 - Jointly distributed random variables, Independent r. v. and their sums
Lecture 13 - Independent r. v. and their sums
Lecture 14 - Chi square r. v., sums of independent normal r. v., Conditional distr
Lecture 15 - Conditional disti, Joint distr. of functions of r. v., Order statistics
Lecture 16 - Order statistics, Covariance and correlation
Lecture 17 - Covariance, Correlation, Cauchy- Schwarz inequalities, Conditional expectation
Lecture 18 - Conditional expectation, Best linear predictor
Lecture 19 - Inequalities and bounds
Lecture 20 - Convergence and limit theorems
Lecture 21 - Central limit theorem
Lecture 22 - Applications of central limit theorem
Lecture 23 - Strong law of large numbers, Joint mgf
Lecture 24 - Convolutions
Lecture 25 - Stochastic processes
Lecture 26 - Transition and state probabilities
Lecture 27 - State prob., First passage and First return prob
Lecture 28 - First passage and First return prob. Classification of states
Lecture 29 - Random walk, periodic and null states

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Lecture 30 - Reducible Markov chains
Lecture 31 - Time reversible Markov chains
Lecture 32 - Poisson Processes
Lecture 33 - Inter-arrival times, Properties of Poisson processes
Lecture 34 - Queuing Models
Lecture 35 - Analysis of L, Lq , W and Wq , M/M/S model
Lecture 36 - M/M/S , M/M/I/K models
Lecture 37 - M/M/I/K and M/M/S/K models
Lecture 38 - Application to reliability theory failure law
Lecture 39 - Exponential failure law, Weibull law
Lecture 40 - Reliability of systems
Subject Co-ordinator - Dr. Joydeep Dutta
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Numbers
Lecture 2 - Functions-1
Lecture 3 - Sequence-1
Lecture 4 - Sequence-2
Lecture 5 - Limits and Continuity-1
Lecture 6 - Limits and Continuity-2
Lecture 7 - Limits And Continuity-3
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Lecture 9 - Derivative-2
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Lecture 11 - Mean-Value Theorem And Taylors Expansion-1
Lecture 12 - Mean-Value Theorem And Taylors Expansion-2
Lecture 13 - Integration-1
Lecture 14 - Integration-2
Lecture 15 - Integration By Parts
Lecture 16 - Definite Integral
Lecture 17 - Riemann Integration-1
Lecture 18 - Riemann Integration-2
Lecture 19 - Functions Of Two Or More Variables
Lecture 20 - Limits And Continuity Of Functions Of Two Variable
Lecture 21 - Differentiation Of Functions Of Two Variables-1
Lecture 22 - Differentiation Of Functions Of Two Variables-2
Lecture 23 - Unconstrained Minimization Of Functions Of Two Variables
Lecture 24 - Constrained Minimization And Lagrange Multiplier Rules
Lecture 25 - Infinite Series-1
Lecture 26 - Infinite Series-2
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Lecture 28 - Multiple Integrals-1
Lecture 29 - Multiple Integrals-2
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NPTEL Video Course - Mathematics - NOC: Probability and Stochastics for finance

Subject Co-ordinator - Dr. Joydeep Dutta

Co-ordinating Institute - IIT - Kanpur

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Lecture 1 - Basic Probability
Lecture 2 - Interesting Problems In Probability
Lecture 3 - Random variables, distribution function and independence
Lecture 4 - Chebyshev inequality, Borel-Cantelli Lemmas and related issues
Lecture 5 - Law of Large Number and Central Limit Theorem
Lecture 6 - Conditional Expectation - I
Lecture 7 - Conditional Expectation - II
Lecture 8 - Martingales
Lecture 9 - Brownian Motion - I
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Lecture 13 - Ito Integral - II
Lecture 14 - Ito Calculus - I
Lecture 15 - Ito Calculus - II
Lecture 16 - Ito Integral In Higher Dimension
Lecture 17 - Application to Ito Integral - I
Lecture 18 - Application to Ito Integral - II
Lecture 19 - Black Scholes Formula - I
Lecture 20 - Black Scholes Formula - II

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NPTEL Video Course - Mathematics - NOC:Differential Calculus in Several Variables

Subject Co-ordinator - Prof. Sudipta Dutta

Co-ordinating Institute - IIT - Kanpur

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Lecture 1 - Introduction to Several Variables and Notion Of distance in Rn
Lecture 2 - Continuity And Compactness
Lecture 3 - Continuity And Connectedness
Lecture 4 - Derivatives
Lecture 5 - Matrix Of Linear Transformation
Lecture 6 - Examples for Differentiable function
Lecture 7 - Sufficient condition of differentiability
Lecture 8 - Chain Rule
Lecture 9 - Mean Value Theorem
Lecture 10 - Higher Order Derivatives
Lecture 11 - Taylor's Formula
Lecture 12 - Maximum And Minimum
Lecture 13 - Second derivative test for maximum, minimum and saddle point
Lecture 14 - We formalise the second derivative test discussed in Lecture 2 and do examples
Lecture 15 - Specialisation to functions of two variables
Lecture 16 - Implicit Function Theorem
Lecture 17 - Implicit Function Theorem -a
Lecture 18 - Application of IFT
Lecture 19 - Application of IFT
Lecture 20 - Application of IFT
Lecture 21 - Application of IFT
NPTEL Video Course - Mathematics - NOC: Curves and Surfaces

Subject Co-ordinator - Prof. Sudipta Dutta

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Level curves and locus, definition of parametric curves, tangent, arc length, arc length parameterisation
Lecture 2 - How much a curve is 'curved', signed unit normal and signed curvature, rigid motions, constant curvature
Lecture 3 - Curves in R^3, principal normal and binormal, torsion
Lecture 4 - Frenet-Serret formula
Lecture 5 - Simple closed curve and isoperimetric inequality
Lecture 6 - Surfaces and parametric surfaces, examples, regular surface and non-example of regular surface, transition maps
Lecture 7 - Transition maps of smooth surfaces, smooth function between surfaces, diffeomorphism
Lecture 8 - Reparameterization
Lecture 9 - Tangent, Normal
Lecture 10 - Orientable surfaces
Lecture 11 - Examples of Surfaces
Lecture 12 - First Fundamental Form
Lecture 13 - Conformal Mapping
Lecture 14 - Curvature of Surfaces
Lecture 15 - Euler's Theorem
Lecture 16 - Regular Surfaces locally as Quadratic Surfaces
Lecture 17 - Geodesics
Lecture 18 - Existence of Geodesics, Geodesics on Surfaces of revolution
Lecture 19 - Geodesics on surfaces of revolution; Clairaut's Theorem
Lecture 20 - Pseudosphere
Lecture 21 - Classification of Quadratic Surface
Lecture 22 - Surface Area and Equiareal Map

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NPTEL Video Course - Mathematics - NOC: Linear Regression Analysis and Forecasting

Subject Co-ordinator - Prof. Shalabh
Co-ordinating Institute - IIT - Kanpur

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Lecture 1 - Basic Fundamental Concepts Of Modelling
Lecture 2 - Regression Model - A Statistical Tool
Lecture 3 - Simple Linear Regression Analysis
Lecture 4 - Estimation Of Parameters In Simple Linear Regression Model
Lecture 5 - Estimation Of Parameters In Simple Linear Regression Model (Continued...)
Lecture 6 - Estimation Of Parameters In Simple Linear Regression Model (Continued...)
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Lecture 8 - Testing of Hypothesis and Confidence Interval Estimation in Simple Linear Regression Model
Lecture 9 - Testing of Hypothesis and Confidence Interval Estimation in Simple Linear Regression Model (Continued...)
Lecture 10 - Software Implementation in Simple Linear Regression Model using MINITAB
Lecture 11 - Multiple Linear Regression Model
Lecture 12 - Estimation of Model Parameters in Multiple Linear Regression Model
Lecture 13 - Estimation of Model Parameters in Multiple Linear Regression Model (Continued...)
Lecture 14 - Standardized Regression Coefficients and Testing of Hypothesis
Lecture 15 - Testing of Hypothesis (Continued...) and Goodness of Fit of the Model
Lecture 16 - Diagnostics in Multiple Linear Regression Model
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Lecture 21 - Forecasting in Multiple Linear Regression Model
Lecture 22 - Within Sample Forecasting
Lecture 23 - Outside Sample Forecasting
Lecture 24 - Software Implementation of Forecasting using MINITAB

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NPTEL Video Course - Mathematics - NOC: Introduction to R Software

Subject Co-ordinator - Prof. Shalabh

Co-ordinating Institute - IIT - Kanpur

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Lecture 1 - How to Learn and Follow the Course
Lecture 2 - Why R and Installation Procedure
Lecture 3 - Introduction _Help_ Demo examples_ packages_ libraries
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Lecture 5 - Basics in Calculations
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Lecture 28 - Strings - Display and Formatting, Splitting
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Lecture 30 - Strings - Display and Formatting, Replacement and Evaluation of Strings
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Lecture 41 - Statistical Functions - Correlation and Examples of Programming
Lecture 42 - Examples of Programming
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Subject Co-ordinator - Prof. Shalabh
Co-ordinating Institute - IIT - Kanpur

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Lecture 1 - Introduction to R Software
Lecture 2 - Basics and R as a Calculator
Lecture 3 - Calculations with Data Vectors
Lecture 4 - Built-in Commands and Missing Data Handling
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Lecture 20 - Mean Squared Error, Variance and Standard Deviation
Lecture 21 - Coefficient of Variation and Boxplots
Lecture 22 - Raw and Central Moments
Lecture 23 - Sheppard's Correction, Absolute Moments and Computation of Moments
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NPTEL Video Course - Mathematics - NOC: Calculus of Several Real Variables

Subject Co-ordinator - Dr. Joydeep Dutta

Co-ordinating Institute - IIT - Kanpur

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Lecture 1 - Vectors in plane and space
Lecture 2 - Inner product and distance
Lecture 3 - Application to real world problems
Lecture 4 - Matrices and determinants
Lecture 5 - Cross product of two vectors
Lecture 6 - Higher dimensional Euclidean space
Lecture 7 - Functions of more than one real-variable
Lecture 8 - Partial derivatives and Continuity
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Lecture 28 - Line Integral - II
Lecture 29 - Parametrized Surfaces

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Lecture 31 - Area of parametrized surface
Lecture 32 - Surface Integrals
Lecture 33 - Green's Theorem
Lecture 34 - Stoke's Theorem
Lecture 35 - Examples of Stoke's Theorem
Lecture 36 - Gauss Divergence Theorem
Lecture 37 - Facts about vector fields
NPTEL Video Course - Mathematics - Advanced Engineering Mathematics

Subject Co-ordinator - Dr. P. Panigrahi, Prof. J. Kumar, Prof. P.D. Srivastava, Prof. Somesh Kumar

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Review Groups, Fields and Matrices
Lecture 2 - Vector Spaces, Subspaces, Linearly Dependent/Independent of Vectors
Lecture 3 - Basis, Dimension, Rank and Matrix Inverse
Lecture 4 - Linear Transformation, Isomorphism and Matrix Representation
Lecture 5 - System of Linear Equations, Eigenvalues and Eigenvectors
Lecture 6 - Method to Find Eigenvalues and Eigenvectors, Diagonalization of Matrices
Lecture 7 - Jordan Canonical Form, Cayley Hamilton Theorem
Lecture 8 - Inner Product Spaces, Cauchy-Schwarz Inequality
Lecture 9 - Orthogonality, Gram-Schmidt Orthogonalization Process
Lecture 10 - Spectrum of special matrices, positive/negative definite matrices
Lecture 11 - Concept of Domain, Limit, Continuity and Differentiability
Lecture 12 - Analytic Functions, C-R Equations
Lecture 13 - Harmonic Functions
Lecture 14 - Line Integral in the Complex
Lecture 15 - Cauchy Integral Theorem
Lecture 16 - Cauchy Integral Theorem (Continued.)
Lecture 17 - Cauchy Integral Formula
Lecture 18 - Power and Taylor's Series of Complex Numbers
Lecture 19 - Power and Taylor's Series of Complex Numbers (Continued.)
Lecture 20 - Taylor's, Laurent Series of f(z) and Singularities
Lecture 21 - Classification of Singularities, Residue and Residue Theorem
Lecture 22 - Laplace Transform and its Existence
Lecture 23 - Properties of Laplace Transform
Lecture 24 - Evaluation of Laplace and Inverse Laplace Transform
Lecture 25 - Applications of Laplace Transform to Integral Equations and ODEs
Lecture 26 - Applications of Laplace Transform to PDEs
Lecture 27 - Fourier Series
Lecture 28 - Fourier Series (Continued.)
Lecture 29 - Fourier Integral Representation of a Function

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Lecture 30 - Introduction to Fourier Transform
Lecture 31 - Applications of Fourier Transform to PDEs
Lecture 32 - Laws of Probability - I
Lecture 33 - Laws of Probability - II
Lecture 34 - Problems in Probability
Lecture 35 - Random Variables
Lecture 36 - Special Discrete Distributions
Lecture 37 - Special Continuous Distributions
Lecture 38 - Joint Distributions and Sampling Distributions
Lecture 39 - Point Estimation
Lecture 40 - Interval Estimation
Lecture 41 - Basic Concepts of Testing of Hypothesis
Lecture 42 - Tests for Normal Populations
NPTEL Video Course - Mathematics - Functional Analysis

Subject Co-ordinator - Prof. P.D. Srivastava
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Metric Spaces with Examples
Lecture 2 - Holder Inequality and Minkowski Inequality
Lecture 3 - Various Concepts in a Metric Space
Lecture 4 - Separable Metrics Spaces with Examples
Lecture 5 - Convergence, Cauchy Sequence, Completeness
Lecture 6 - Examples of Complete and Incomplete Metric Spaces
Lecture 7 - Completion of Metric Spaces + Tutorial
Lecture 8 - Vector Spaces with Examples
Lecture 9 - Normed Spaces with Examples
Lecture 10 - Banach Spaces and Schauder Basic
Lecture 11 - Finite Dimensional Normed Spaces and Subspaces
Lecture 12 - Compactness of Metric/Normed Spaces
Lecture 13 - Linear Operators-definition and Examples
Lecture 14 - Bounded Linear Operators in a Normed Space
Lecture 15 - Bounded Linear Functionals in a Normed Space
Lecture 16 - Concept of Algebraic Dual and Reflexive Space
Lecture 17 - Dual Basis & Algebraic Reflexive Space
Lecture 18 - Dual Spaces with Examples
Lecture 19 - Tutorial - I
Lecture 20 - Tutorial - II
Lecture 21 - Inner Product & Hilbert Space
Lecture 22 - Further Properties of Inner Product Spaces
Lecture 23 - Projection Theorem, Orthonormal Sets and Sequences
Lecture 24 - Representation of Functionals on a Hilbert Spaces
Lecture 25 - Hilbert Adjoint Operator
Lecture 26 - Self Adjoint, Unitary & Normal Operators
Lecture 27 - Tutorial - III
Lecture 28 - Annihilator in an IPS
Lecture 29 - Total Orthonormal Sets And Sequences

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Lecture 30 - Partially Ordered Set and Zorns Lemma
Lecture 31 - Hahn Banach Theorem for Real Vector Spaces
Lecture 32 - Hahn Banach Theorem for Complex V.S. & Normed Spaces
Lecture 33 - Baires Category & Uniform Boundedness Theorems
Lecture 34 - Open Mapping Theorem
Lecture 35 - Closed Graph Theorem
Lecture 36 - Adjoint Operator
Lecture 37 - Strong and Weak Convergence
Lecture 38 - Convergence of Sequence of Operators and Functionals
Lecture 39 - LP - Space
Lecture 40 - LP - Space (Continued.)
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NPTEL Video Course - Mathematics - Numerical methods of Ordinary and Partial Differential Equations

Subject Co-ordinator - Dr. G.P. Raja Sekhar
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Motivation with few Examples
Lecture 2 - Single - Step Methods for IVPs
Lecture 3 - Analysis of Single Step Methods
Lecture 4 - Runge - Kutta Methods for IVPs
Lecture 5 - Higher Order Methods/Equations
Lecture 6 - Error - Stability - Convergence of Single Step Methods
Lecture 7 - Tutorial - I
Lecture 8 - Tutorial - II
Lecture 9 - Multi-Step Methods (Explicit)
Lecture 10 - Multi-Step Methods (Implicit)
Lecture 11 - Convergence and Stability of multi step methods
Lecture 12 - General methods for absolute stability
Lecture 13 - Stability Analysis of Multi Step Methods
Lecture 14 - Predictor - Corrector Methods
Lecture 15 - Some Comments on Multi - Step Methods
Lecture 16 - Finite Difference Methods - Linear BVPs
Lecture 17 - Linear/Non - Linear Second Order BVPs
Lecture 18 - BVPS - Derivative Boundary Conditions
Lecture 19 - Higher Order BVPs
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Lecture 21 - Tutorial - III
Lecture 22 - Introduction to First Order PDE
Lecture 23 - Introduction to Second Order PDE
Lecture 24 - Finite Difference Approximations to Parabolic PDEs
Lecture 25 - Implicit Methods for Parabolic PDEs
Lecture 26 - Consistency, Stability and Convergence
Lecture 27 - Other Numerical Methods for Parabolic PDEs
Lecture 28 - Tutorial - IV
Lecture 29 - Matrix Stability Analysis of Finite Difference Scheme

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Lecture 30 - Fourier Series Stability Analysis of Finite Difference Scheme
Lecture 31 - Finite Difference Approximations to Elliptic PDEs - I
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Lecture 33 - Finite Difference Approximations to Elliptic PDEs - III
Lecture 34 - Finite Difference Approximations to Elliptic PDEs - IV
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Lecture 36 - Finite Difference Approximations to Hyperbolic PDEs - II
Lecture 37 - Method of characteristics for Hyperbolic PDEs - I
Lecture 38 - Method of characteristics for Hyperbolic PDEs - II
Lecture 39 - Finite Difference Approximations to 1st order Hyperbolic PDEs
Lecture 40 - Summary, Appendices, Remarks
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NPTEL Video Course - Mathematics - Optimization

Subject Co-ordinator - Prof. A. Goswami, Dr. Debjani Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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Lecture 1 - Optimization - Introduction
Lecture 2 - Formulation of LPP
Lecture 3 - Geometry of LPP and Graphical Solution of LPP
Lecture 4 - Solution of LPP
Lecture 5 - Big - M Method
Lecture 6 - Two - Phase Method
Lecture 7 - Special Cases in Simple Applications
Lecture 8 - Introduction to Duality Theory
Lecture 9 - Dual Simplex Method
Lecture 10 - Post Optimaility Analysis
Lecture 11 - Integer Programming - I
Lecture 12 - Integer Programming - II
Lecture 13 - Introduction to Transportation Problems
Lecture 14 - Solving Various types of Transportation Problems
Lecture 15 - Assignment Problems
Lecture 16 - Project Management
Lecture 17 - Critical Path Analysis
Lecture 18 - PERT
Lecture 19 - Shortest Path Algorithm
Lecture 20 - Travelling Salesman Problem
Lecture 21 - Classical optimization techniques
Lecture 22 - Unconstraining multivariable optimization
Lecture 23 - Nonlinear programming with equality constraint
Lecture 24 - Nonlinear programming KKT conditions
Lecture 25 - Numerical optimization
Lecture 26 - Numerical optimization
Lecture 27 - Fibonacci Method
Lecture 28 - Golden Section Methods
Lecture 29 - Interpolation Methods

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Lecture 30 - Unconstarined optimization techniques
Lecture 31 - Unconstarined optimization techniques
Lecture 32 - Nonlinear programming
Lecture 33 - Interior and Exterior penalty Function Method
Lecture 34 - Separable Programming Problem
Lecture 35 - Introduction to Geometric Programming
Lecture 36 - Constrained Geometric Programming Problem
Lecture 37 - Dynamic Programming Problem
Lecture 38 - Dynamic Programming Problem (Continued.)
Lecture 39 - Multi Objective Decision Making
Lecture 40 - Multi attribute decision making
NPTEL Video Course - Mathematics - Probability and Statistics

Subject Co-ordinator - Prof. Somesh Kumar
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Algebra of Sets - I
Lecture 2 - Algebra of Sets - II
Lecture 3 - Introduction to Probability
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Lecture 32 - Non-Linear Estimation
Lecture 33 - Regression Models with Autocorrelated Errors
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Lecture 38 - Tutorial - III
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Lecture 40 - Tutorial - V
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NPTEL Video Course - Mathematics - Statistical Inference

Subject Co-ordinator - Prof. Somesh Kumar
Co-ordinating Institute - IIT - Kharagpur
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Lecture 1 - Introduction and Motivation
Lecture 2 - Basic Concepts of Point Estimations - I
Lecture 3 - Basic Concepts of Point Estimations - II
Lecture 4 - Finding Estimators - I
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Lecture 6 - Finding Estimators - III
Lecture 7 - Properties of MLEs
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Lecture 13 - Sufficiency and Information
Lecture 14 - Minimal Sufficiency, Completeness
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Lecture 26 - UMP Unbiased Tests
Lecture 27 - UMP Unbiased Tests (Continued.)
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Lecture 29 - Unbiased Tests for Normal Populations

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Lecture 30 - Unbiased Tests for Normal Populations (Continued.)
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Lecture 37 - Sequential Procedure
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Lecture 39 - Confidence Intervals
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NPTEL Video Course - Mathematics - A Basic Course in Real Analysis

Subject Co-ordinator - Prof. P.D. Srivastava
Co-ordinating Institute - IIT - Kharagpur

Lecture 1 - Rational Numbers and Rational Cuts
Lecture 2 - Irrational numbers, Dedekind's Theorem
Lecture 3 - Continuum and Exercises
Lecture 4 - Continuum and Exercises (Continued.)
Lecture 5 - Cantor's Theory of Irrational Numbers
Lecture 6 - Cantor's Theory of Irrational Numbers (Continued.)
Lecture 7 - Equivalence of Dedekind and Cantor's Theory
Lecture 8 - Finite, Infinite, Countable and Uncountable Sets of Real Numbers
Lecture 9 - Types of Sets with Examples, Metric Space
Lecture 10 - Various properties of open set, closure of a set
Lecture 11 - Ordered set, Least upper bound, greatest lower bound of a set
Lecture 12 - Compact Sets and its properties
Lecture 13 - Weiersstrass Theorem, Heine Borel Theorem, Connected set
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Lecture 15 - Concept of limit of a sequence
Lecture 16 - Some Important limits, Ratio tests for sequences of Real Numbers
Lecture 17 - Cauchy theorems on limit of sequences with examples
Lecture 18 - Fundamental theorems on limits, Bolzano-Weiersstrass Theorem
Lecture 19 - Theorems on Convergent and divergent sequences
Lecture 20 - Cauchy sequence and its properties
Lecture 21 - Infinite series of real numbers
Lecture 22 - Comparison tests for series, Absolutely convergent and Conditional convergent series
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Lecture 25 - Some results on limit of functions
Lecture 26 - Limit Theorems for functions
Lecture 27 - Extension of limit concept (one sided limits)
Lecture 28 - Continuity of Functions
Lecture 29 - Properties of Continuous Functions

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Lecture 30 - Boundedness Theorem, Max-Min Theorem and Bolzano's theorem
Lecture 31 - Uniform Continuity and Absolute Continuity
Lecture 32 - Types of Discontinuities, Continuity and Compactness
Lecture 33 - Continuity and Compactness (Continued.), Connectedness
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Lecture 36 - Application of MVT, Darboux Theorem, L Hospital Rule
Lecture 37 - L'Hospital Rule and Taylor's Theorem
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NPTEL Video Course - Mathematics - Statistical Methods for Scientists and Engineers
Subject Co-ordinator - Prof. Somesh Kumar
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Laws of Probability
Lecture 3 - Random Variables
Lecture 4 - Moments and Special Distributions
Lecture 5 - Moments and Special Distributions (Continued...)
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Lecture 7 - Special Distributions (Continued...)
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NPTEL Video Course - Mathematics - NOC:Probability and Statistics

Subject Co-ordinator - Prof. Somesh Kumar

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Sets, Classes, Collection
Lecture 2 - Sequence of Sets
Lecture 3 - Ring, Field (Algebra)
Lecture 4 - Sigma-Ring, Sigma-Field, Monotone Class
Lecture 5 - Random Experiment, Events
Lecture 6 - Definitions of Probability
Lecture 7 - Properties of Probability Function - I
Lecture 8 - Properties of Probability Function - II
Lecture 9 - Conditional Probability
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Lecture 12 - Problems in Probability - II
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Lecture 29 - Normal Distribution

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Lecture 74 - Examples
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NPTEL Video Course - Mathematics - NOC: Partial Differential Equations (PDE) for Engineers: Solution by Separation of Variables

Subject Co-ordinator - Prof. S. De
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to PDE
Lecture 2 - Classification of PDE
Lecture 3 - Principle of Linear Superposition
Lecture 4 - Standard Eigen Value Problem and Special ODEs
Lecture 5 - Adjoint Operator
Lecture 6 - Generalized Sturm - Louiville Problem
Lecture 7 - Properties of Adjoint Operator
Lecture 8 - Separation of Variables
Lecture 9 - Solution of 3 Dimensional Parabolic Problem
Lecture 10 - Solution of 4 Dimensional Parabolic problem
Lecture 11 - Solution of 4 Dimensional Parabolic Problem (Continued...)
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Lecture 15 - Cylindrical Co-ordinate System - 3 Dimensional Problem
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Lecture 19 - Example of Application Oriented Problems
Lecture 20 - Examples of Application Oriented Problems (Continued...)
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Lecture 2 - Properties of Countable and Uncountable sets
Lecture 3 - Examples of Countable and Uncountable sets
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Lecture 5 - Open ball, Closed ball, Limit point of a set
Lecture 6 - Tutorial-I
Lecture 7 - Some theorems on Open and Closed sets
Lecture 8 - Ordered set, Least upper bound, Greatest lower bound of a set
Lecture 9 - Ordered set, Least upper bound, Greatest lower bound of a set (Continued...)
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Lecture 11 - Properties of Compact sets
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Lecture 14 - Weierstrass Theorem
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NPTEL Video Course - Mathematics - NOC: Modeling Transport Phenomena of Microparticles

Subject Co-ordinator - Dr. G.P. Raja Sekhar, Prof. Somnath Bhattacharyya

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Preliminary concepts
Lecture 2 - Cauchy's equation of motion and Navier-Stokes equations
Lecture 3 - Reduced forms of Navier-Stokes equations and Boundary conditions
Lecture 4 - Exact solutions of Navier-Stokes equations in particular cases
Lecture 5 - Dimensional Analysis & Non-dimensionalization of Navier-Stokes' s equations
Lecture 6 - Stream function formulation of Navier-Stokes equations
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Lecture 8 - Stokes flow past a sphere
Lecture 9 - Elementary Lubrication Theory
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Lecture 11 - Solution of arbitrary Stokes flows
Lecture 12 - Mechanics of Swimming Microorganisms
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Lecture 15 - Singularities of Stokes flows
Lecture 16 - Introduction to porous media
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Lecture 18 - Flow through composite porous channels
Lecture 19 - Modeling transport of particles inside capillaries
Lecture 20 - Modeling transport of microparticles & some applications
Lecture 21 - Introduction to Electrokietics
Lecture 22 - Basics on Electrostatics
Lecture 23 - Transport Equations for Electrokinetics, Part-I
Lecture 24 - Transport Equations for Electrokinetics, Part-II
Lecture 25 - Electric Double Layer
Lecture 26 - Electroosmotic flow (EOF) of ionized fluid
Lecture 27 - EOF in micro-channel
Lecture 28 - Non-linear EOF, Overlapping Debye Layer
Lecture 29 - Two-dimensional EOF

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Lecture 31 - Electroosmosis in hydrophobic surface
Lecture 32 - Numerical Methods for Boundary Value Problems (BVP)
Lecture 33 - Numerical Methods for nonlinear BVP
Lecture 34 - Numerical Methods for coupled set of BVP
Lecture 35 - Numerical Methods for PDEs
Lecture 36 - Numerical Methods for transport equations, Part-I
Lecture 37 - Numerical Methods for transport equations, Part-II
Lecture 38 - Electrophoresis of charged colloids, Part-I
Lecture 39 - Electrophoresis of charged colloids, Part-II
Lecture 40 - Gel Electrophoresis
NPTEL Video Course - Mathematics - NOC: Constrained and Unconstrained Optimization

Subject Co-ordinator - Dr. Debjani Chakraborty, Prof. A. Goswami

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Optimization
Lecture 2 - Assumptions and Mathematical Modeling of LPP
Lecture 3 - Geometry of LPP
Lecture 4 - Graphical Solution of LPP - I
Lecture 5 - Graphical Solution of LPP - II
Lecture 6 - Solution of LPP
Lecture 7 - Simplex Method
Lecture 8 - Introduction to BIG-M Method
Lecture 9 - Algorithm of BIG-M Method
Lecture 10 - Problems on BIG-M Method
Lecture 11 - Two Phase Method
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Lecture 13 - Special Cases of LPP
Lecture 14 - Degeneracy in LPP
Lecture 15 - Sensitivity Analysis - I
Lecture 16 - Sensitivity Analysis - II
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Lecture 18 - Introduction to Duality Theory - I
Lecture 19 - Introduction to Duality Theory - II
Lecture 20 - Dual Simplex Method
Lecture 21 - Examples on Dual Simplex Method
Lecture 22 - Integer Linear Programming
Lecture 23 - Integer Linear Programming
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Lecture 25 - Mixed Integer Programming Problem
Lecture 26
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NPTEL Video Course - Mathematics - NOC:Matrix Solver

Subject Co-ordinator - Prof. Somnath Roy

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Matrix Algebra - I
Lecture 2 - Introduction to Matrix Algebra - II
Lecture 3 - System of Linear Equations
Lecture 4 - Determinant of a Matrix
Lecture 5 - Determinant of a Matrix (Continued...)
Lecture 6 - Gauss Elimination
Lecture 7 - Gauss Elimination (Continued...)
Lecture 8 - LU Decomposition
Lecture 9 - Gauss-Jordon Method
Lecture 10 - Representation of Physical Systems as Matrix Equations
Lecture 11 - Tridiagonal Matrix Algorithm
Lecture 12 - Equations with Singular Matrices
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Lecture 14 - Vector Subspace
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Lecture 16 - Finding Null Space of a Matrix
Lecture 17 - Solving Ax=b when A is Singular
Lecture 18 - Linear Independence and Spanning of a Subspace
Lecture 19 - Basis and Dimension of a Vector Space
Lecture 20 - Four Fundamental Subspaces of a Matrix
Lecture 21 - Left and right inverse of a matrix
Lecture 22 - Orthogonality between the subspaces
Lecture 23 - Best estimate
Lecture 24 - Projection operation and linear transformation
Lecture 25 - Creating orthogonal basis vectors
Lecture 26 - Gram-Schmidt and modified Gram-Schmidt algorithms
Lecture 27 - Comparing GS and modified GS
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Lecture 39 - Introduction to General Projection Methods
Lecture 40 - Residue Norm and Minimum Residual Algorithm
Lecture 41 - Developing computer programs for basic iterative methods
Lecture 42 - Developing computer programs for projection based methods
Lecture 43 - Introduction to Krylov subspace methods
Lecture 44 - Krylov subspace methods for linear systems
Lecture 45 - Iterative methods for solving linear systems using Krylov subspace methods
Lecture 46 - Conjugate gradient methods
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Lecture 51 - Numerical issues in BICG and polynomial based formulation
Lecture 52 - Conjugate gradient squared and Biconjugate gradient stabilized
Lecture 53 - Line relaxation method
Lecture 54 - Block relaxation method
Lecture 55 - Domain Decomposition and Parallel Computing
Lecture 56 - Preconditioners
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Lecture 34 - Row rank and Column rank
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Lecture 37 - Geometric multiplicity
Lecture 38 - More on eigen value
Lecture 39 - Similar matrices
Lecture 40 - Diagonalisable
NPTEL Video Course - Mathematics - NOC:Engineering Mathematics-I

Subject Co-ordinator - Prof. Jitendra Kumar

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Rolle’s Theorem
Lecture 2 - Mean Value Theorems
Lecture 3 - Indeterminate Forms - Part 1
Lecture 4 - Indeterminate Forms - Part 2
Lecture 5 - Taylor Polynomial and Taylor Series
Lecture 6 - Limit of Functions of Two Variables
Lecture 7 - Evaluation of Limit of Functions of Two Variables
Lecture 8 - Continuity of Functions of Two Variables
Lecture 9 - Partial Derivatives of Functions of Two Variables
Lecture 10 - Partial Derivatives of Higher Order
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Lecture 12 - Differentiability of Functions of Two Variables
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NPTEL Video Course - Mathematics - NOC: Integral and Vector Calculus

Subject Co-ordinator - Prof. Hari Shankar Mahato
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Partition, Riemann intergrability and One example
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Lecture 3 - Condition of integrability
Lecture 4 - Theorems on Riemann integrations
Lecture 5 - Examples
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Lecture 8 - Reduction formula (Continued...)
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Lecture 32 - Vector Calculus  
Lecture 33 - Limit, Continuity, Differentiability  
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Lecture 46 - Unit Normal, Unit binormal, Equation of Normal Plane  
Lecture 47 - Introduction and Derivation of Serret-Frenet Formula, few results  
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Lecture 50 - Application to Mechanics, Velocity, speed, acceleration  
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Lecture 60 - Overview of Course
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NPTEL Video Course - Mathematics - NOC: Transform Calculus and its applications in Differential Equations

Subject Co-ordinator - Prof. A. Goswami

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Integral Transform and Laplace Transform
Lecture 2 - Existence of Laplace Transform
Lecture 3 - Shifting Properties of Laplace Transform
Lecture 4 - Laplace Transform of Derivatives and Integration of a Function - I
Lecture 5 - Laplace Transform of Derivatives and Integration of a Function - II
Lecture 6 - Explanation of properties of Laplace Transform using Examples
Lecture 7 - Laplace Transform of Periodic Function
Lecture 8 - Laplace Transform of some special Functions
Lecture 9 - Error Function, Dirac Delta Function and their Laplace Transform
Lecture 10 - Bessel Function and its Laplace Transform
Lecture 11 - Introduction to Inverse Laplace Transform
Lecture 12 - Properties of Inverse Laplace Transform
Lecture 13 - Convolution and its Applications
Lecture 14 - Evaluation of Integrals using Laplace Transform
Lecture 15 - Solution of Ordinary Differential Equations with constant coefficients using Laplace Transform
Lecture 16 - Solution of Ordinary Differential Equations with variable coefficients using Laplace Transform
Lecture 17 - Solution of Simultaneous Ordinary Differential Equations using Laplace Transform
Lecture 18 - Introduction to Integral Equation and its Solution Process
Lecture 19 - Introduction to Fourier Series
Lecture 20 - Fourier Series for Even and Odd Functions
Lecture 21 - Fourier Series of Functions having arbitrary period - I
Lecture 22 - Fourier Series of Functions having arbitrary period - II
Lecture 23 - Half Range Fourier Series
Lecture 24 - Parseval's Theorem and its Applications
Lecture 25 - Complex form of Fourier Series
Lecture 26 - Fourier Integral Representation
Lecture 27 - Introduction to Fourier Transform
Lecture 28 - Derivation of Fourier Cosine Transform and Fourier Sine Transform of Functions
Lecture 29 - Evaluation of Fourier Transform of various functions

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Lecture 30 - Linearity Property and Shifting Properties of Fourier Transform
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Lecture 47 - Solution of Partial Differential Equations using Fourier Transform and Fourier Sine Transform
Lecture 48 - Solution of Partial Differential Equations using Fourier Transform - I
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Lecture 59 - Properties of Z-Transform
Lecture 60 - Evaluation of Z-Transform of some functions
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Lecture 2 - Strum-Liouville Problems, Linear BVP (Continued...)
Lecture 3 - Solution of BVPs by Eigen function expansion
Lecture 4 - Solution of BVPs by Eigen function expansion (Continued...)
Lecture 5 - Solutions of linear parabolic, hyperbolic and elliptic PDEs with finite domain by Eigen function
Lecture 6 - Solutions of linear parabolic, hyperbolic and elliptic PDEs with finite domain by Eigen function
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Lecture 8 - Green's Function for BVP and Dirichlet Problem (Continued...)
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Lecture 18 - Implicit scheme; Truncation error; Crank-Nicolson scheme (Continued...)
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Lecture 2 - Simple Examples of Riemann Surfaces
Lecture 3 - Maximal Atlases and Holomorphic Maps of Riemann Surfaces
Lecture 4 - A Riemann Surface Structure on a Cylinder
Lecture 5 - A Riemann Surface Structure on a Torus
Lecture 6 - Riemann Surface Structures on Cylinders and Tori via Covering Spaces
Lecture 7 - Moebius Transformations Make up Fundamental Groups of Riemann Surfaces
Lecture 8 - Homotopy and the First Fundamental Group
Lecture 9 - A First Classification of Riemann Surfaces
Lecture 10 - The Importance of the Path-lifting Property
Lecture 11 - Fundamental groups as Fibres of the Universal covering Space
Lecture 12 - The Monodromy Action
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NPTEL Video Course - Mathematics - Linear Algebra

Subject Co-ordinator - Dr. K.C. Sivakumar

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the Course Contents
Lecture 2 - Linear Equations
Lecture 3a - Equivalent Systems of Linear Equations I
Lecture 3b - Equivalent Systems of Linear Equations II
Lecture 4 - Row-reduced Echelon Matrices
Lecture 5 - Row-reduced Echelon Matrices and Non-homogeneous Equations
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Lecture 8 - Vector spaces
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Lecture 14 - Linear Transformations
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Lecture 17 - Isomorphic Vector Spaces, Equality of the Row-rank and the Column-rank - I
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Lecture 19 - The Matrix of a Linear Transformation
Lecture 20 - Matrix for the Composition and the Inverse. Similarity Transformation
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Lecture 22 - Dual Basis II. Subspace Annihilators - I
Lecture 23 - Subspace Annihilators - II
Lecture 24 - The Double Dual. The Double Annihilator
Lecture 26 - Eigenvalues and Eigenvectors of Linear Operators
Lecture 27 - Diagonalization of Linear Operators. A Characterization
Lecture 28 - The Minimal Polynomial

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Lecture 29 - The Cayley-Hamilton Theorem
Lecture 30 - Invariant Subspaces
Lecture 31 - Triangulability, Diagonalization in Terms of the Minimal Polynomial
Lecture 32 - Independent Subspaces and Projection Operators
Lecture 33 - Direct Sum Decompositions and Projection Operators - I
Lecture 34 - Direct Sum Decompositions and Projection Operators - II
Lecture 35 - The Primary Decomposition Theorem and Jordan Decomposition
Lecture 36 - Cyclic Subspaces and Annihilators
Lecture 37 - The Cyclic Decomposition Theorem - I
Lecture 38 - The Cyclic Decomposition Theorem - II. The Rational Form
Lecture 39 - Inner Product Spaces
Lecture 40 - Norms on Vector spaces. The Gram-Schmidt Procedure I
Lecture 41 - The Gram-Schmidt Procedure II. The QR Decomposition
Lecture 42 - Bessel's Inequality, Parseval's Identity, Best Approximation
Lecture 43 - Best Approximation
Lecture 44 - Orthogonal Complementary Subspaces, Orthogonal Projections
Lecture 45 - Projection Theorem. Linear Functionals
Lecture 46 - The Adjoint Operator
Lecture 47 - Properties of the Adjoint Operation. Inner Product Space Isomorphism
Lecture 48 - Unitary Operators
Lecture 49 - Unitary operators - II. Self-Adjoint Operators - I.
Lecture 50 - Self-Adjoint Operators - II - Spectral Theorem
Lecture 51 - Normal Operators - Spectral Theorem
NPTEL Video Course - Mathematics - Mathematical Logic
Subject Co-ordinator - Prof. Arindama Singh
Co-ordinating Institute - IIT - Madras

Lecture 1 - Sets and Strings
Lecture 2 - Syntax of Propositional Logic
Lecture 3 - Unique Parsing
Lecture 4 - Semantics of PL
Lecture 5 - Consequences and Equivalences
Lecture 6 - Five results about PL
Lecture 7 - Calculations and Informal Proofs
Lecture 8 - More Informal Proofs
Lecture 9 - Normal forms
Lecture 10 - SAT and 3SAT
Lecture 11 - Horn-SAT and Resolution
Lecture 12 - Resolution
Lecture 13 - Adequacy of Resolution
Lecture 14 - Adequacy and Resolution Strategies
Lecture 15 - Propositional Calculus (PC)
Lecture 16 - Some Results about PC
Lecture 17 - Arguing with Proofs
Lecture 18 - Adequacy of PC
Lecture 19 - Compactness & Analytic Tableau
Lecture 20 - Examples of Tableau Proofs
Lecture 21 - Adequacy of Tableaux
Lecture 22 - Syntax of First order Logic (FL)
Lecture 23 - Symbolization & Scope of Quantifiers
Lecture 24 - Hurdles in giving Meaning
Lecture 25 - Semantics of FL
Lecture 26 - Relevance Lemma
Lecture 27 - Validity, Satisfiability & Equivalence
Lecture 28 - Six Results about FL
Lecture 29 - Laws, Calculation & Informal Proof

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Lecture 30 - Quantifier Laws and Consequences
Lecture 31 - More Proofs and Prenex Form
Lecture 32 - Prenex Form Conversion
Lecture 33 - Skolem Form
Lecture 34 - Syntactic Interpretation
Lecture 35 - Herbrand's Theorem
Lecture 36 - Most General Unifiers
Lecture 37 - Resolution Rules
Lecture 38 - Resolution Examples
Lecture 39 - Axiomatic System FC
Lecture 40 - FC and Semidecidability of FL
Lecture 41 - Analytic Tableau for FL
Lecture 42 - Godel's Incompleteness Theorems
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NPTEL Video Course - Mathematics - Dynamic Data Assimilation: An Introduction

Subject Co-ordinator - Prof. S. Lakshmivarahan
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - An Overview
Lecture 2 - Data Mining, Data assimilation and prediction
Lecture 3 - A classification of forecast errors
Lecture 4 - Finite Dimensional Vector Space
Lecture 5 - Matrices
Lecture 6 - Matrices (Continued...)
Lecture 7 - Multi-variate Calculus
Lecture 8 - Optimization in Finite Dimensional Vector spaces
Lecture 9 - Deterministic, Static, linear Inverse (well-posed) Problems
Lecture 10 - Deterministic, Static, Linear Inverse (Ill-posed) Problems
Lecture 11 - A Geometric View Â□ Projections
Lecture 12 - Deterministic, Static, nonlinear Inverse Problems
Lecture 13 - On-line Least Squares
Lecture 14 - Examples of static inverse problems
Lecture 15 - Interlude and a Way Forward
Lecture 16 - Matrix Decomposition Algorithms
Lecture 17 - Matrix Decomposition Algorithms (Continued...)
Lecture 18 - Minimization algorithms
Lecture 19 - Minimization algorithms (Continued...)
Lecture 20 - Inverse problems in deterministic
Lecture 21 - Inverse problems in deterministic (Continued...)
Lecture 22 - Forward sensitivity method
Lecture 23 - Relation between FSM and 4DVAR
Lecture 24 - Statistical Estimation
Lecture 25 - Statistical Least Squares
Lecture 26 - Maximum Likelihood Method
Lecture 27 - Bayesian Estimation
Lecture 28 - From Gauss to Kalman-Linear Minimum Variance Estimation
Lecture 29 - Initialization Classical Method

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Lecture 30 - Optimal interpolations
Lecture 31 - A Bayesian Formation-3D-VAR methods
Lecture 32 - Linear Stochastic Dynamics - Kalman Filter
Lecture 33 - Linear Stochastic Dynamics - Kalman Filter (Continued...)
Lecture 34 - Linear Stochastic Dynamics - Kalman Filter (Continued...)
Lecture 35 - Covariance Square Root Filter
Lecture 36 - Nonlinear Filtering
Lecture 37 - Ensemble Reduced Rank Filter
Lecture 38 - Basic nudging methods
Lecture 39 - Deterministic predictability
Lecture 40 - Predictability A stochastic view and Summary
Lecture 1 - Introduction
Lecture 2 - Long division
Lecture 3 - Applications of Long division
Lecture 4 - Lagrange interpolation
Lecture 5 - The 0-1 idea in other contexts - dot and cross product
Lecture 6 - Taylors formula
Lecture 7 - The Chebyshev polynomials
Lecture 8 - Counting number of monomials - several variables
Lecture 9 - Permutations, combinations and the binomial theorem
Lecture 10 - Combinations with repetition, and counting monomials
Lecture 11 - Combinations with restrictions, recurrence relations
Lecture 12 - Fibonacci numbers; an identity and a bijective proof
Lecture 13 - Permutations and cycle type
Lecture 14 - The sign of a permutation, composition of permutations
Lecture 15 - Rules for drawing tangle diagrams
Lecture 16 - Signs and cycle decompositions
Lecture 17 - Sorting lists of numbers, and crossings in tangle diagrams
Lecture 18 - Real and integer valued polynomials
Lecture 19 - Integer valued polynomials revisited
Lecture 20 - Functions on the real line, continuity
Lecture 21 - The intermediate value property
Lecture 22 - Visualizing functions
Lecture 23 - Functions on the plane, Rigid motions
Lecture 24 - More examples of functions on the plane, dilations
Lecture 25 - Composition of functions
Lecture 26 - Affine and Linear transformations
Lecture 27 - Length and Area dilation, the derivative
Lecture 28 - Examples-I
Lecture 29 - Examples-II
Lecture 30 - Linear equations, Lagrange interpolation revisited
Lecture 31 - Completed Matrices in combinatorics
Lecture 32 - Polynomials acting on matrices
Lecture 33 - Divisibility, prime numbers
Lecture 34 - Congruences, Modular arithmetic
Lecture 35 - The Chinese remainder theorem
Lecture 36 - The Euclidean algorithm, the 0-1 idea and the Chinese remainder theorem
NPTEL Video Course - Mathematics - Advanced Complex Analysis

Subject Co-ordinator - Dr. T.E. Venkata Balaji

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Fundamental Theorems Connected with Zeros of Analytic Functions
Lecture 2 - The Argument (Counting) Principle, Rouche's Theorem and The Fundamental Theorem of Algebra
Lecture 3 - Morera's Theorem and Normal Limits of Analytic Functions
Lecture 4 - Hurwitz's Theorem and Normal Limits of Univalent Functions
Lecture 5 - Local Constancy of Multiplicities of Assumed Values
Lecture 6 - The Open Mapping Theorem
Lecture 7 - Introduction to the Inverse Function Theorem
Lecture 8 - Completion of the Proof of the Inverse Function Theorem
Lecture 9 - Univalent Analytic Functions have never-zero Derivatives and are Analytic Isomorphisms
Lecture 10 - Introduction to the Implicit Function Theorem
Lecture 11 - Proof of the Implicit Function Theorem
Lecture 12 - Proof of the Implicit Function Theorem
Lecture 13 - Doing Complex Analysis on a Real Surface
Lecture 14 - F(z,w)=0 is naturally a Riemann Surface
Lecture 15 - Constructing the Riemann Surface for the Complex Logarithm
Lecture 16 - Constructing the Riemann Surface for the m-th root function
Lecture 17 - The Riemann Surface for the functional inverse of an analytic mapping at a critical point
Lecture 18 - The Algebraic nature of the functional inverses of an analytic mapping at a critical point
Lecture 19 - The Idea of a Direct Analytic Continuation or an Analytic Extension
Lecture 20 - General or Indirect Analytic Continuation and the Lipschitz Nature of the Radius of Convergence
Lecture 21 - Analytic Continuation Along Paths via Power Series Part A
Lecture 22 - Analytic Continuation Along Paths via Power Series Part B
Lecture 23 - Continuity of Coefficients occurring in Families of Power Series defining Analytic Continuations along Paths
Lecture 24 - Analytic Continuability along Paths
Lecture 25 - Maximal Domains of Direct and Indirect Analytic Continuation
Lecture 26 - Deducing the Second (Simply Connected) Version of the Monodromy Theorem from the First (Homotopy)
Lecture 27 - Existence and Uniqueness of Analytic Continuations on Nearby Paths
Lecture 28 - Proof of the First (Homotopy) Version of the Monodromy Theorem
Lecture 29 - Proof of the Algebraic Nature of Analytic Branches of the Functional Inverse of an Analytic Function

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Lecture 30 - The Mean-Value Property, Harmonic Functions and the Maximum Principle
Lecture 31 - Proofs of Maximum Principles and Introduction to Schwarz Lemma
Lecture 32 - Proof of Schwarz Lemma and Uniqueness of Riemann Mappings
Lecture 33 - Reducing Existence of Riemann Mappings to Hyperbolic Geometry of Sub-domains of the Unit Disc
Lecture 34 - Differential or Infinitesimal Schwarz Lemma, Picks Lemma, Hyperbolic Arclengths, Metric and Geodesics
Lecture 35 - Differential or Infinitesimal Schwarz Lemma, Picks Lemma, Hyperbolic Arclengths, Metric and Geodesics
Lecture 36 - Hyperbolic Geodesics for the Hyperbolic Metric on the Unit Disc
Lecture 37 - Schwarz-Pick Lemma for the Hyperbolic Metric on the Unit Disc
Lecture 38 - Arzela-Ascoli Theorem
Lecture 39 - Completion of the Proof of the Arzela-Ascoli Theorem and Introduction to Montels Theorem
Lecture 40 - The Proof of Montels Theorem
Lecture 41 - The Candidate for a Riemann Mapping
Lecture 42 - Completion of Proof of The Riemann Mapping Theorem
Lecture 43 - Completion of Proof of The Riemann Mapping Theorem
Lecture 1 - Course Introduction
Lecture 2 - Sets, Relations and Functions
Lecture 3 - Propositional Logic and Predicate Logic
Lecture 4 - Propositional Logic and Predicate Logic (Part 2)
Lecture 5 - Elementary Number Theory
Lecture 6 - Formal Proofs
Lecture 7 - Direct Proofs
Lecture 8 - Case Study
Lecture 9 - Case Study (Part 2)
Lecture 10 - Sets, Relations, Function and Logic
Lecture 11 - Proof by Contradiction (Part 1)
Lecture 12 - Proof by Contradiction (Part 2)
Lecture 13 - Proof by Contraposition
Lecture 14 - Proof by Counter Example
Lecture 15 - Mathematical Induction (Part 1)
Lecture 16 - Mathematical Induction (Part 2)
Lecture 17 - Mathematical Induction (Part 3)
Lecture 18 - Mathematical Induction (Part 4)
Lecture 19 - Mathematical Induction (Part 5)
Lecture 20 - Mathematical Induction (Part 6)
Lecture 21 - Mathematical Induction (Part 7)
Lecture 22 - Mathematical Induction (Part 8)
Lecture 23 - Introduction to Graph Theory
Lecture 24 - Handshake Problem
Lecture 25 - Tournament Problem
Lecture 26 - Tournament Problem (Part 2)
Lecture 27 - Ramsey Problem
Lecture 28 - Ramsey Problem (Part 2)
Lecture 29 - Properties of Graphs
NPTEL Video Course - Mathematics - Basic Algebraic Geometry: Varieties, Morphisms, Local Rings, Function Fields

Subject Co-ordinator - Dr. T.E. Venkata Balaji
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - What is Algebraic Geometry?
Lecture 2 - The Zariski Topology and Affine Space
Lecture 3 - Going back and forth between subsets and ideals
Lecture 4 - Irreducibility in the Zariski Topology
Lecture 5 - Irreducible Closed Subsets Correspond to Ideals Whose Radicals are Prime
Lecture 6 - Understanding the Zariski Topology on the Affine Line; The Noetherian property in Topology and in Algebra
Lecture 7 - Basic Algebraic Geometry
Lecture 8 - Topological Dimension, Krull Dimension and Heights of Prime Ideals
Lecture 9 - The Ring of Polynomial Functions on an Affine Variety
Lecture 10 - Geometric Hypersurfaces are Precisely Algebraic Hypersurfaces
Lecture 11 - Why Should We Study Affine Coordinate Rings of Functions on Affine Varieties?
Lecture 12 - Capturing an Affine Variety Topologically From the Maximal Spectrum of its Ring of Functions
Lecture 13 - Analyzing Open Sets and Basic Open Sets for the Zariski Topology
Lecture 14 - The Ring of Functions on a Basic Open Set in the Zariski Topology
Lecture 15 - Quasi-Compactness in the Zariski Topology; Regularity of a Function at a point of an Affine Variety
Lecture 16 - What is a Global Regular Function on a Quasi-Affine Variety?
Lecture 17 - Characterizing Affine Varieties; Defining Morphisms between Affine or Quasi-Affine Varieties
Lecture 18 - Translating Morphisms into Affines as k-Algebra maps and the Grand Hilbert Nullstellensatz
Lecture 19 - Morphisms into an Affine Correspond to k-Algebra Homomorphisms from its Coordinate Ring of Functions
Lecture 20 - The Coordinate Ring of an Affine Variety Determines the Affine Variety and is Intrinsic to it
Lecture 21 - Automorphisms of Affine Spaces and of Polynomial Rings - The Jacobian Conjecture; The Punctured Plane is Not Affine
Lecture 22 - The Various Avatars of Projective n-space
Lecture 23 - Gluing (n+1) copies of Affine n-Space to Produce Projective n-space in Topology, Manifold Theory and Algebraic Geometry
Lecture 24 - Translating Projective Geometry into Graded Rings and Homogeneous Ideals
Lecture 25 - Expanding the Category of Varieties to Include Projective and Quasi-Projective Varieties
Lecture 26 - Translating Homogeneous Localisation into Geometry and Back
Lecture 27 - Adding a Variable is Undone by Homogenous Localization - What is the Geometric Significance of this Algebraic Fact?
Lecture 28 - Doing Calculus Without Limits in Geometry?
Lecture 29 - The Birth of Local Rings in Geometry and in Algebra

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NPTEL Video Course - Mathematics - NOC: Introduction to Commutative Algebra

Subject Co-ordinator - Prof. A.V. Jayanthan
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Review of Ring Theory
Lecture 2 - Review of Ring Theory (Continued...)
Lecture 3 - Ideals in commutative rings
Lecture 4 - Operations on ideals
Lecture 5 - Properties of prime ideals
Lecture 6 - Colon and Radical of ideals
Lecture 7 - Radicals, extension and contraction of ideals
Lecture 8 - Modules and homomorphisms
Lecture 9 - Isomorphism theorems and Operations on modules
Lecture 10 - Operations on modules (Continued...)
Lecture 11 - Module homomorphism and determinant trick
Lecture 12 - Nakayama’s lemma and exact sequences
Lecture 13 - Exact sequences (Continued...)
Lecture 14 - Homomorphisms and Tensor products
Lecture 15 - Properties of tensor products
Lecture 16 - Properties of tensor products (Continued...)
Lecture 17 - Tensor product of Algebras
Lecture 18 - Localization
Lecture 19 - Localization (Continued...)
Lecture 20 - Local properties
Lecture 21 - Further properties of localization
Lecture 22 - Intergral dependence
Lecture 23 - Integral extensions
Lecture 24 - Lying over and Going-up theorems
Lecture 25 - Going-down theorem
Lecture 26 - Going-down theorem (Continued...)
Lecture 27 - Chain conditions
Lecture 28 - Noetherian and Artinian modules
Lecture 29 - Properties of Noetherian and Artinian modules, Composition Series

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Lecture 30 - Further properties of Noetherian and Artinian modules and rings
Lecture 31 - Hilbert basis theorem and Primary decomposition
Lecture 32 - Primary decomposition (Continued...)
Lecture 33 - Uniqueness of primary decomposition
Lecture 34 - 2nd Uniqueness theorem, Artinian rings
Lecture 35 - Properties of Artinian rings
Lecture 36 - Structure Theorem of Artinian rings
Lecture 37 - Noether Normalization
Lecture 38 - Hilberts Nullstellensatz
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NPTEL Video Course - Mathematics - NOC:Differential Equations

Subject Co-ordinator - Prof. Srinivasa Manam

Co-ordinating Institute - IIT - Madras

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Lecture 1 - Introduction to Ordinary Differential Equations (ODE)
Lecture 2 - Methods for First Order ODE's - Homogeneous Equations
Lecture 3 - Methods for First order ODE's - Exact Equations
Lecture 4 - Methods for First Order ODE's - Exact Equations (Continued...)
Lecture 5 - Methods for First order ODE's - Reducible to Exact Equations
Lecture 6 - Methods for First order ODE's - Reducible to Exact Equations (Continued...)
Lecture 7 - Non-Exact Equations - Finding Integrating Factors
Lecture 8 - Linear First Order ODE and Bernoulli's Equation
Lecture 9 - Introduction to Second order ODE's
Lecture 10 - Properties of solutions of second order homogeneous ODE's
Lecture 11 - Abel's formula to find the other solution
Lecture 12 - Abel's formula - Demonstration
Lecture 13 - Second Order ODE's with constant coefficients
Lecture 14 - Euler - Cauchy equation
Lecture 15 - Non homogeneous ODEs Variation of Parameters
Lecture 16 - Method of undetermined coefficients
Lecture 17 - Demonstration of Method of undetermined coefficients
Lecture 18 - Power Series and its properties
Lecture 19 - Power Series Solutions to Second Order ODE's
Lecture 20 - Power Series Solutions (Continued...)
Lecture 21 - Legendre Differential Equation
Lecture 22 - Legendre Polynomials
Lecture 23 - Properties of Legendre Polynomials
Lecture 24 - Power series solutions around a regular singular point
Lecture 25 - Frobenius method of solutions
Lecture 26 - Frobenius method of solutions (Continued...)
Lecture 27 - Examples on Frobenius method
Lecture 28 - Bessel differential equation
Lecture 29 - Frobenius solutions for Bessel Equation
NPTEL Video Course - Mathematics - NOC: Numerical Analysis

Subject Co-ordinator - Prof. R. Usha

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Lesson 1 - Introduction, Motivation
Lecture 2 - Lesson 2 - Part 1 - Mathematical Preliminaries, Polynomial Interpolation - 1
Lecture 3 - Lesson 2 - Part 2 - Mathematical Preliminaries, Polynomial Interpolation - 1
Lecture 4 - Lesson 3 - Part 1 - Polynomial Interpolation - 2
Lecture 5 - Lesson 3 - Part 2 - Polynomial Interpolation - 2
Lecture 6 - Lesson 4 - Polynomial Interpolation - 3
Lecture 7 - Lagrange Interpolation Polynomial, Error In Interpolation - 1
Lecture 8 - Lagrange Interpolation Polynomial, Error In Interpolation - 1
Lecture 9 - Error In Interpolation - 2
Lecture 10 - Error In Interpolation - 2
Lecture 11 - Divide Difference Interpolation Polynomial
Lecture 12 - Properties Of Divided Difference, Introduction To Inverse Interpolation
Lecture 13 - Properties Of Divided Difference, Introduction To Inverse Interpolation
Lecture 14 - Inverse Interpolation, Remarks on Polynomial Interpolation
Lecture 15 - Numerical Differentiation - 1 Taylor Series Method
Lecture 16 - Numerical Differentiation - 2 Method Of Undetermined Coefficients
Lecture 17 - Numerical Differentiation - 2 Polynomial Interpolation Method
Lecture 18 - Numerical Differentiation - 3 Operator Method Numerical Integration - 1
Lecture 19 - Numerical Integration - 2 Error in Trapezoidal Rule Simpson's Rule
Lecture 20 - Numerical Integration - 3 Error in Simpson's Rule Composite in Trapezoidal Rule, Error
Lecture 21 - Numerical Integration - 4 Composite Simpsons Rule , Error Method of Undetermined Coefficients
Lecture 22 - Numerical Integration - 5 Gaussian Quadrature (Two-Point Method)
Lecture 23 - Numerical Integrate - 5 Gaussian Quadrature (Three-Point Method) Adaptive Quadrature
Lecture 24 - Numerical Solution of Ordinary Differential Equation (ODE) - 1
Lecture 26 - Numerical Solution Of ODE-3 Examples of Taylor Series Method Euler's Method
Lecture 27 - Numerical Solution Of ODE-4 Runge-Kutta Methods
Lecture 28 - Numerical Solution Of ODE-5 Example For RK-Method Of Order 2 Modified Euler's Method
Lecture 29 - Numerical Solution Of Ordinary Differential Equations - 6 Predictor-Corrector Methods (Adam-Moul)

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Lecture 30 - Numerical Solution Of Ordinary Differential Equations - 7
Lecture 31 - Numerical Solution Of Ordinary Differential Equations - 8
Lecture 32 - Numerical Solution of Ordinary Differential Equations - 9
Lecture 33 - Numerical Solution of Ordinary Differential Equations - 10
Lecture 34 - Numerical Solution of Ordinary Differential Equations - 11
Lecture 35 - Root Finding Methods - 1 The Bisection Method - 1
Lecture 36 - Root Finding Methods - 2 The Bisection Method - 2
Lecture 37 - Root Finding Methods - 3 Newton-Raphson Method - 1
Lecture 38 - Root Finding Methods - 4 Newton-Raphson Method - 2
Lecture 39 - Root Finding Methods - 5 Secant Method, Method Of false Position
Lecture 40 - Root Finding Methods - 6 Fixed Point Methods - 1
Lecture 41 - Root Finding Methods - 7 Fixed Point Methods - 2
Lecture 42 - Root Finding Methods - 8 Fixed Point Iteration Methods - 3
Lecture 43 - Root Finding Methods - 9 Practice Problems
Lecture 44 - Solution Of Linear Systems Of Equations - 1
Lecture 45 - Solution Of Linear Systems Of Equations - 2
Lecture 46 - Solution Of Linear Systems Of Equations - 3
Lecture 47 - Solution Of Linear Systems Of Equations - 4
Lecture 48 - Solution Of Linear Systems Of Equations - 5
Lecture 49 - Solution Of Linear Systems Of Equations - 6
Lecture 50 - Solution Of Linear Systems Of Equations - 7
Lecture 51 - Solution Of Linear Systems Of Equations - 8 Iterative Method - 1
Lecture 52 - Solution Of Linear Systems Of Equations - 8 Iterative Method - 2
Lecture 53 - Matrix Eigenvalue Problems - 2 Power Method - 2
Lecture 54 - Practice Problems
Lecture 1 - Basic Concepts
Lecture 2 - Basic Concepts - 1
Lecture 3 - Eulerian and Hamiltonian Graph
Lecture 4 - Eulerian and Hamiltonian Graph - 1
Lecture 5 - Bipartite Graph
Lecture 6 - Bipartite Graph
Lecture 7 - Diameter of a graph; Isomorphic graphs
Lecture 8 - Diameter of a graph; Isomorphic graphs
Lecture 9 - Minimum Spanning Tree
Lecture 10 - Minimum Spanning Trees (Continued...)
Lecture 11 - Minimum Spanning Trees (Continued...)
Lecture 12 - Minimum Spanning Trees (Continued...)
Lecture 13 - Maximum Matching in Bipartite Graph
Lecture 14 - Maximum Matching in Bipartite Graph - 1
Lecture 15 - Hall's Theorem and Konig's Theorem
Lecture 16 - Hall's Theorem and Konig's Theorem - 1
Lecture 17 - Independent Set and Edge Cover
Lecture 18 - Independent Set and Edge Cover - 1
Lecture 19 - Matching in General Graphs
Lecture 20 - Proof of Halls Theorem
Lecture 21 - Stable Matching
Lecture 22 - Gale-Shapley Algorithm
Lecture 23 - Graph Connectivity
Lecture 24 - Graph Connectivity - 1
Lecture 25 - 2-Connected Graphs
Lecture 26 - 2-Connected Graphs - 1
Lecture 27 - Subdivision of an edge; 2-edge-connected graphs
Lecture 28 - Problems Related to Graphs Connectivity
Lecture 29 - Flow Network
Lecture 30 - Residual Network and Augmenting Path
Lecture 31 - Augmenting Path Algorithm
Lecture 32 - Max-Flow and Min-Cut
Lecture 33 - Max-Flow and Min-Cut Theorem
Lecture 34 - Vertex Colouring
Lecture 35 - Chromatic Number and Max. Degree
Lecture 36 - Edge Colouring
Lecture 37 - Planar Graphs and Euler's Formula
Lecture 38 - Characterization Of Planar Graphs
Lecture 39 - Colouring of Planar Graphs
NPTEL Video Course - Mathematics - NOC: Transform Techniques for Engineers

Subject Co-ordinator - Prof. Srinivasa Manam
Co-ordinating Institute - IIT - Madras

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Lecture 1 - Introduction to Fourier series
Lecture 2 - Fourier series - Examples
Lecture 3 - Complex Fourier series
Lecture 4 - Conditions for the Convergence of Fourier Series
Lecture 5 - Conditions for the Convergence of Fourier Series (Continued...)
Lecture 6 - Use of Delta function in the Fourier series convergence
Lecture 7 - More Examples on Fourier Series of a Periodic Signal
Lecture 8 - Gibb's Phenomenon in the Computation of Fourier Series
Lecture 9 - Properties of Fourier Transform of a Periodic Signal
Lecture 10 - Properties of Fourier transform (Continued...)
Lecture 11 - Parseval's Identity and Recap of Fourier series
Lecture 12 - Fourier integral theorem - an informal proof
Lecture 13 - Definition of Fourier transforms
Lecture 14 - Fourier transform of a Heavyside function
Lecture 15 - Use of Fourier transforms to evaluate some integrals
Lecture 16 - Evaluation of an integral - Recall of complex function theory
Lecture 17 - Properties of Fourier transforms of non-periodic signals
Lecture 18 - More properties of Fourier transforms
Lecture 19 - Fourier integral theorem - proof
Lecture 20 - Application of Fourier transform to ODE's
Lecture 21 - Application of Fourier transforms to differential and integral equations
Lecture 22 - Evaluation of integrals by Fourier transforms
Lecture 23 - D'Alembert's solution by Fourier transform
Lecture 24 - Solution of Heat equation by Fourier transform
Lecture 25 - Solution of Heat and Laplace equations by Fourier transform
Lecture 26 - Introduction to Laplace transform
Lecture 27 - Laplace transform of elementary functions
Lecture 28 - Properties of Laplace transforms
Lecture 29 - Properties of Laplace transforms (Continued...)

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Lecture 30 - Odd and even permutations - I
Lecture 31 - Odd and even permutations - II
Lecture 32 - Alternating groups
Lecture 33 - Group actions
Lecture 34 - Examples of group actions
Lecture 35 - Orbits and stabilizers
Lecture 36 - Counting formula
Lecture 37 - Cayley's theorem
Lecture 38 - Problems - 7
Lecture 39 - Problems - 8 and Class equation
Lecture 40 - Group actions on subsets
Lecture 41 - Sylow Theorem - I
Lecture 42 - Sylow Theorem - II
Lecture 43 - Sylow Theorem - III
Lecture 44 - Problems - 9
Lecture 45 - Problems - 10
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NPTEL Video Course - Mathematics - NOC: Groups: Motion, Symmetry and Puzzles

Subject Co-ordinator - Prof. Amit Kulshrestha

Co-ordinating Institute - IIT - Madras

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Lecture 1 - Permutation, symmetry and groups
Lecture 2 - Groups acting on a set/an object
Lecture 3 - More on group actions
Lecture 4 - Groups and parity
Lecture 5 - Parity and puzzles
Lecture 6 - Generators and relations
Lecture 7 - Cosets, quotients and homomorphisms
Lecture 8 - Cayley graphs of groups
Lecture 9 - Platonic solids
Lecture 10 - Symmetries of plane and wallpapers
Lecture 11 - Introduction to GAP
Lecture 12 - GAP through Rubik's cube
Lecture 13 - Representing abstract groups
Lecture 14 - A quick introduction to group representations
Lecture 15 - Rotations and quaternions
Lecture 16 - Rotational symmetries of platonic solids
Lecture 17 - Finite subgroups of SO(3)
NPTEL Video Course - Mathematics - NOC: Introduction to Rings and Fields

Subject Co-ordinator - Prof. Krishna Hanumanthu
Co-ordinating Institute - IIT - Madras

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Lecture 1 - Introduction, main definitions
Lecture 2 - Examples of rings
Lecture 3 - More examples
Lecture 4 - Polynomial Rings - 1
Lecture 5 - Polynomial Rings - 2
Lecture 6 - Homomorphisms
Lecture 7 - Kernels, ideals
Lecture 8 - Problems - 1
Lecture 9 - Problems - 2
Lecture 10 - Problems - 3
Lecture 11 - Quotient Rings
Lecture 12 - First isomorphism and correspondence theorems
Lecture 13 - Examples of correspondence theorem
Lecture 14 - Prime ideals
Lecture 15 - Maximal ideals, integral domains
Lecture 16 - Existence of maximal ideals
Lecture 17 - Problems - 4
Lecture 18 - Problems - 5
Lecture 19 - Problems - 6
Lecture 20 - Field of fractions, Noetherian rings - 1
Lecture 21 - Noetherian rings - 2
Lecture 22 - Hilbert Basis Theorem
Lecture 23 - Irreducible, prime elements
Lecture 24 - Irreducible, prime elements, GCD
Lecture 25 - Principal Ideal Domains
Lecture 26 - Unique Factorization Domains - 1
Lecture 27 - Unique Factorization Domains - 2
Lecture 28 - Gauss Lemma
Lecture 29 - \( \mathbb{Z}[X] \) is a UFD

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NPTEL Video Course - Mathematics - Discrete Mathematics

Subject Co-ordinator - Dr. Aditi Gangopadhyay, Dr. Sugata Gangopadhyay, Dr. Tanuja Srivastava

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the theory of sets
Lecture 2 - Set operation and laws of set operation
Lecture 3 - The principle of inclusion and exclusion
Lecture 4 - Application of the principle of inclusion and exclusion
Lecture 5 - Fundamentals of logic
Lecture 6 - Logical Inferences
Lecture 7 - Methods of proof of an implication
Lecture 8 - First order logic (1)
Lecture 9 - First order logic (2)
Lecture 10 - Rules of influence for quantified propositions
Lecture 11 - Mathematical Induction (1)
Lecture 12 - Mathematical Induction (2)
Lecture 13 - Sample space, events
Lecture 14 - Probability, conditional probability
Lecture 15 - Independent events, Bayes theorem
Lecture 16 - Information and mutual information
Lecture 17 - Basic definition
Lecture 18 - Isomorphism and sub graphs
Lecture 19 - Walks, paths and circuits operations on graphs
Lecture 20 - Euler graphs, Hamiltonian circuits
Lecture 21 - Shortest path problem
Lecture 22 - Planar graphs
Lecture 23 - Basic definition
Lecture 24 - Properties of relations
Lecture 25 - Graph of relations
Lecture 26 - Matrix of relation
Lecture 27 - Closure of relation (1)
Lecture 28 - Closure of relation (2)
Lecture 29 - Warshall's algorithm

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Lecture 30 - Partially ordered relation
Lecture 31 - Partially ordered sets
Lecture 32 - Lattices
Lecture 33 - Boolean algebra
Lecture 34 - Boolean function (1)
Lecture 35 - Boolean function (2)
Lecture 36 - Discrete numeric function
Lecture 37 - Generating function
Lecture 38 - Introduction to recurrence relations
Lecture 39 - Second order recurrence relation with constant coefficients (1)
Lecture 40 - Second order recurrence relation with constant coefficients (2)
Lecture 41 - Application of recurrence relation
Lecture 1 - Introduction to linear differential equations
Lecture 2 - Linear dependence, independence and Wronskian of functions
Lecture 3 - Solution of second-order homogenous linear differential equations with constant coefficients - I
Lecture 4 - Solution of second-order homogenous linear differential equations with constant coefficients - II
Lecture 5 - Method of undetermined coefficients
Lecture 6 - Methods for finding Particular Integral for second-order linear differential equations with constant coefficients - I
Lecture 7 - Methods for finding Particular Integral for second-order linear differential equations with constant coefficients - II
Lecture 8 - Methods for finding Particular Integral for second-order linear differential equations with constant coefficients - III
Lecture 9 - Euler-Cauchy equations
Lecture 10 - Method of reduction for second-order linear differential equations
Lecture 11 - Method of variation of parameters
Lecture 12 - Solution of second order differential equations by changing dependent variable
Lecture 13 - Solution of second order differential equations by changing independent variable
Lecture 14 - Solution of higher-order homogenous linear differential equations with constant coefficients
Lecture 15 - Methods for finding Particular Integral for higher-order linear differential equations
Lecture 16 - Formulation of Partial differential equations
Lecture 17 - Solution of Lagrange's equation - I
Lecture 18 - Solution of Lagrange's equation - II
Lecture 19 - Solution of first order nonlinear equations - I
Lecture 20 - Solution of first order nonlinear equations - II
Lecture 21 - Solution of first order nonlinear equations - III
Lecture 22 - Solution of first order nonlinear equations - IV
Lecture 23 - Introduction to Laplace transforms
Lecture 24 - Laplace transforms of some standard functions
Lecture 25 - Existence theorem for Laplace transforms
Lecture 26 - Properties of Laplace transforms - I
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| Lecture 30 | Convolution theorem for Laplace transforms - I |
| Lecture 31 | Convolution theorem for Laplace transforms - II |
| Lecture 32 | Initial and final value theorems for Laplace transforms |
| Lecture 33 | Laplace transforms of periodic functions |
| Lecture 34 | Laplace transforms of Heaviside unit step function |
| Lecture 35 | Laplace transforms of Dirac delta function |
| Lecture 36 | Applications of Laplace transforms - I |
| Lecture 37 | Applications of Laplace transforms - II |
| Lecture 38 | Applications of Laplace transforms - III |
| Lecture 39 | Z-transform and inverse Z-transform of elementary functions |
| Lecture 40 | Properties of Z-transforms - I |
| Lecture 41 | Properties of Z-transforms - II |
| Lecture 42 | Initial and final value theorem for Z-transforms |
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| Lecture 44 | Applications of Z-transforms - I |
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| Lecture 47 | Fourier series and its convergence - I |
| Lecture 48 | Fourier series and its convergence - II |
| Lecture 49 | Fourier series of even and odd functions |
| Lecture 50 | Fourier half-range series |
| Lecture 51 | Parsevel's Identity |
| Lecture 52 | Complex form of Fourier series |
| Lecture 53 | Fourier integrals |
| Lecture 54 | Fourier sine and cosine integrals |
| Lecture 55 | Fourier transforms |
| Lecture 56 | Fourier sine and cosine transforms |
| Lecture 57 | Convolution theorem for Fourier transforms |
| Lecture 58 | Applications of Fourier transforms to BVP - I |
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| Lecture 60 | Applications of Fourier transforms to BVP - III |
Lecture 1 - Definition and classification of linear integral equations
Lecture 2 - Conversion of IVP into integral equations
Lecture 3 - Conversion of BVP into an integral equations
Lecture 4 - Conversion of integral equations into differential equations
Lecture 5 - Integro-differential equations
Lecture 6 - Fredholm integral equation with separable kernel
Lecture 7 - Fredholm integral equation with separable kernel
Lecture 8 - Solution of integral equations by successive substitutions
Lecture 9 - Solution of integral equations by successive approximations
Lecture 10 - Solution of integral equations by successive approximations
Lecture 11 - Fredholm integral equations with symmetric kernels
Lecture 12 - Fredholm integral equations with symmetric kernels
Lecture 13 - Fredholm integral equations with symmetric kernels
Lecture 14 - Construction of Green function - I
Lecture 15 - Construction of Green function - II
Lecture 16 - Green function for self adjoint linear differential equations
Lecture 17 - Green function for non-homogeneous boundary value problem
Lecture 18 - Fredholm alternative theorem - I
Lecture 19 - Fredholm alternative theorem - II
Lecture 20 - Fredholm method of solutions
Lecture 21 - Classical Fredholm theory
Lecture 22 - Classical Fredholm theory
Lecture 23 - Classical Fredholm theory
Lecture 24 - Method of successive approximations
Lecture 25 - Neumann series and resolvent kernels - I
Lecture 26 - Neumann series and resolvent kernels - II
Lecture 27 - Equations with convolution type kernels - I
Lecture 28 - Equations with convolution type kernels - II
Lecture 29 - Singular integral equations - I

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Lecture 30 - Singular integral equations - II
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Lecture 32 - Cauchy type integral equations - II
Lecture 33 - Cauchy type integral equations - III
Lecture 34 - Cauchy type integral equations - IV
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Lecture 36 - Solution of integral equations using Fourier transform
Lecture 37 - Solution of integral equations using Hilbert transform - I
Lecture 38 - Solution of integral equations using Hilbert transform - II
Lecture 39 - Calculus of variations
Lecture 40 - Calculus of variations
Lecture 41 - Calculus of variations
Lecture 42 - Calculus of variations
Lecture 43 - Euler equation
Lecture 44 - Euler equation
Lecture 45 - Brachistochrone problem and Euler equation - I
Lecture 46 - Euler's equation - II
Lecture 47 - Functions of several independent variables
Lecture 48 - Variational problems in parametric form
Lecture 49 - Variational problems of general type
Lecture 50 - Variational derivative and invariance of Euler's equation
Lecture 51 - Invariance of Euler's equation and isoperimetric problem - I
Lecture 52 - Isoperimetric problem - II
Lecture 53 - Variational problem involving a conditional extremum - I
Lecture 54 - Variational problem involving a conditional extremum - II
Lecture 55 - Variational problems with moving boundaries - I
Lecture 56 - Variational problems with moving boundaries - II
Lecture 57 - Variational problems with moving boundaries - III
Lecture 58 - Variational problems with moving boundaries; One sided variation
Lecture 59 - Variational problem with a movable boundary for a functional dependent on two functions
Lecture 60 - Hamilton's principle
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NPTEL Video Course - Mathematics - NOC:Nonlinear Programming
Subject Co-ordinator - S. K. Gupta
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Convex Sets and Functions
Lecture 2 - Properties of Convex Functions - I
Lecture 3 - Properties of Convex Functions - II
Lecture 4 - Properties of Convex Functions - III
Lecture 5 - Convex Programming Problems
Lecture 6 - KKT optimality conditions
Lecture 7 - Quadratic Programming Problems - I
Lecture 8 - Quadratic Programming Problems - II
Lecture 9 - Separable Programming - I
Lecture 10 - Separable Programming - II
Lecture 11 - Geometric Programming - I
Lecture 12 - Geometric Programming - II
Lecture 13 - Geometric Programming - III
Lecture 14 - Dynamic Programming - I
Lecture 15 - Dynamic Programming - II
Lecture 16 - Dynamic programming approach to find shortest path in any network
Lecture 17 - Dynamic Programming - IV
Lecture 18 - Search Techniques - I
Lecture 19 - Search Techniques - II
Lecture 20 - Search Techniques - III
NPTEL Video Course - Mathematics - NOC: Numerical Methods

Subject Co-ordinator - Prof. Sanjeev Kumar, Prof. Ameeya Kumar Nayak
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to error analysis and linear systems
Lecture 2 - Gaussian elimination with Partial pivoting
Lecture 3 - LU decomposition
Lecture 4 - Jacobi and Gauss Seidel methods
Lecture 5 - Iterative methods - II
Lecture 6 - Introduction to Non-linear equations and Bisection method
Lecture 7 - Regula Falsi and Secant methods
Lecture 8 - Newton-Raphson method
Lecture 9 - Fixed point iteration method
Lecture 10 - System of Nonlinear equations
Lecture 11 - Introduction to Eigenvalues and Eigenvectors
Lecture 12 - Similarity Transformations and Gershgorin Theorem
Lecture 13 - Jacobi's Method for Computing Eigenvalues
Lecture 14 - Power Method
Lecture 15 - Inverse Power Method
Lecture 16 - Interpolation - Part I (Introduction to Interpolation)
Lecture 17 - Interpolation - Part II (Some basic operators and their properties)
Lecture 18 - Interpolation - Part III (Newton's Forward/Backward difference and derivation of general error)
Lecture 19 - Interpolation - Part IV (Error in approximating a function by a polynomial using Newton's Forward)
Lecture 20 - Interpolation - Part V (Solving problems using Newton's Forward and Backward difference formula)
Lecture 21 - Interpolation - Part VI (Central difference formula)
Lecture 22 - Interpolation - Part VII (Lagrange interpolation formula with examples)
Lecture 23 - Interpolation - Part VIII (Divided difference interpolation with examples)
Lecture 24 - Interpolation - Part IX (Hermite's interpolation with examples)
Lecture 25 - Numerical differentiation - Part I (Introduction to numerical differentiation by interpolation formula)
Lecture 26 - Numerical differentiation - Part II (Numerical differentiation based on Lagrange's interpolation formula)
Lecture 27 - Numerical differentiation - Part III (Numerical differentiation based on Divided difference formula)
Lecture 28 - Numerical differentiation - Part IV (Maxima and minima of a tabulated function and differentiation operators)
Lecture 29 - Numerical differentiation - Part V (Differentiation based on finite difference operators)

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Lecture 30 - Numerical differentiation - Part VI (Method of undetermined coefficients and Derivatives with unequal intervals)
Lecture 31 - Numerical Integration - Part I (Methodology of Numerical Integration and Rectangular rule)
Lecture 32 - Numerical Integration - Part II (Quadrature formula and Trapezoidal rule with associated errors)
Lecture 33 - Numerical Integration - Part III (Simpsons 1/3rd rule with associated errors)
Lecture 34 - Numerical Integration - Part IV (Composite Simpsons 1/3rd rule and Simpsons 3/8th rule with examples)
Lecture 35 - Numerical Integration - Part V (Gauss Legendre 2-point and 3-point formula with examples)
Lecture 36 - Introduction to Ordinary Differential equations
Lecture 37 - Numerical methods for ODE-1
Lecture 38 - Numerical Methods - II
Lecture 39 - R-K Methods for solving ODEs
Lecture 40 - Multi-step Method for solving ODEs
NPTEL Video Course - Mathematics - NOC: Numerical Linear Algebra

Subject Co-ordinator - Prof. D. N Pandey, Prof. P. N. Agrawal

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Matrix Operations and Types of Matrices
Lecture 2 - Determinant of a Matrix
Lecture 3 - Rank of a Matrix
Lecture 4 - Vector Space - I
Lecture 5 - Vector Space - II
Lecture 6 - Linear dependence and independence
Lecture 7 - Bases and Dimension - I
Lecture 8 - Bases and Dimension - II
Lecture 9 - Linear Transformation - I
Lecture 10 - Linear Transformation - II
Lecture 11 - Orthogonal Subspaces
Lecture 12 - Row Space, Column Space and Null Space
Lecture 13 - Eigen Values and Eigen Vectors - I
Lecture 14 - Eigen Values and Eigen Vectors - II
Lecture 15 - Diagonalizable Matrices
Lecture 16 - Orthogonal Sets
Lecture 17 - Gram Schmidt orthogonalization and orthogonal bases
Lecture 18 - Introduction to Matlab
Lecture 19 - Sign Integer Representation
Lecture 20 - Computer Representation of Numbers
Lecture 21 - Floating Point Representation
Lecture 22 - Round-off Error
Lecture 23 - Error Propagation in Computer Arithmetic
Lecture 24 - Addition and Multiplication of Floating Point Numbers
Lecture 25 - Conditioning and Condition Numbers - I
Lecture 26 - Conditioning and Condition Numbers - II
Lecture 27 - Stability of Numerical Algorithms - I
Lecture 28 - Stability of Numerical Algorithms - II
Lecture 29 - Vector Norms - I

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NPTEL Video Course - Mathematics - NOC: Numerical Methods - Finite Difference Approach

Subject Co-ordinator - Prof. Ameeya Kumar Nayak
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Numerical solutions
Lecture 2 - Numerical Solution of ODE
Lecture 3 - Numerical solution of PDE
Lecture 4 - Finite difference approximation
Lecture 5 - Polynomial fitting and one-sided approximation
Lecture 6 - Solution of parabolic equation
Lecture 7 - Implicit and C-N scheme for solving 1D parabolic equation
Lecture 8 - Stability analysis of Explicit scheme for solving parabolic equation
Lecture 9 - Stability of Crank-Nicoloson's scheme
Lecture 10 - Approximation of derivative boundary conditions
Lecture 11 - Solution of two-dimensional parabolic equation
Lecture 12 - Solution of 2D parabolic equation using ADI scheme
Lecture 13 - Solution of Elliptic Equation
Lecture 14 - Solution of Elliptic equation using SOR method
Lecture 15 - Solution of Elliptic equation using ADI scheme
Lecture 16 - Solution of Hyperbolic equation
Lecture 17 - Stability analysis for Hyperbolic equations
Lecture 18 - Characteristics of PDE
Lecture 19 - Lax-Wendroff's method
Lecture 20 - Wendroff's method

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NPTEL Video Course - Mathematics - NOC:Multivariable Calculus

Subject Co-ordinator - Dr. Sanjeev Kumar, S. K. Gupta
Co-ordinating Institute - IIT - Roorkee

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Lecture 33 - Some Identities on Divergence and Curl
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Lecture 35 - Applications of Line Integrals
Lecture 36 - Green's Theorem
Lecture 37 - Surface Area
Lecture 38 - Surface Integral
Lecture 39 - Divergence Theorem of Gauss
Lecture 40 - Stoke's Theorem
NPTEL Video Course - Mathematics - NOC: Ordinary and Partial Differential Equations and Applications

Subject Coordinator - Prof. D. N Pandey, Prof. P. N. Agrawal

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to differential equations - I
Lecture 2 - Introduction to differential equations - II
Lecture 3 - Existence and uniqueness of solutions of differential equations - I
Lecture 4 - Existence and uniqueness of solutions of differential equations - II
Lecture 5 - Existence and uniqueness of solutions of differential equations - III
Lecture 6 - Existence and uniqueness of solutions of a system of differential equations
Lecture 7 - Linear System
Lecture 8 - Properties of Homogeneous Systems
Lecture 9 - Solution of Homogeneous Linear System with Constant Coefficients - I
Lecture 10 - Solution of Homogeneous Linear System with Constant Coefficients - II
Lecture 11 - Solution of Homogeneous Linear System with Constant Coefficients - III
Lecture 12 - Solution of Non-Homogeneous Linear System with Constant Coefficients
Lecture 13 - Power Series
Lecture 14 - Uniform Convergence of Power Series
Lecture 15 - Power Series Solution of Second Order Homogeneous Equations
Lecture 16 - Regular singular points - I
Lecture 17 - Regular singular points - II
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Lecture 19 - Regular singular points - IV
Lecture 20 - Regular singular points - V
Lecture 21 - Critical points
Lecture 22 - Stability of Linear Systems - I
Lecture 23 - Stability of Linear Systems - II
Lecture 24 - Stability of Linear Systems - III
Lecture 25 - Critical Points and Paths of Non-linear Systems
Lecture 26 - Boundary value problems for second order differential equations
Lecture 27 - Self-adjoint Forms
Lecture 28 - Sturm-Liouville problem and its properties
Lecture 29 - Sturm-Liouville problem and its applications

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Lecture 30 - Green's function and its applications - I
Lecture 31 - Green's function and its applications - II
Lecture 32 - Origins and Classification of First Order PDE
Lecture 33 - Initial Value Problem for Quasi-linear First Order Equations
Lecture 34 - Existence and Uniqueness of Solutions
Lecture 35 - Surfaces orthogonal to a given system of surfaces
Lecture 36 - Nonlinear PDE of first order
Lecture 37 - Cauchy method of characteristics - I
Lecture 38 - Cauchy method of characteristics - II
Lecture 39 - Compatible systems of first order equations
Lecture 40 - Charpit's method - I
Lecture 41 - Charpit's method - II
Lecture 42 - Second Order PDE with Variable Coefficients
Lecture 43 - Classification and Canonical Form of Second Order PDE - I
Lecture 44 - Classification and Canonical Form of Second Order PDE - II
Lecture 45 - Classification and Characteristic Curves of Second Order PDEs
Lecture 46 - Review of Integral Transforms - I
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Lecture 48 - Review of Integral Transforms - III
Lecture 50 - Laplace Equation - I
Lecture 51 - Laplace Equation - II
Lecture 52 - Laplace and Poisson Equations
Lecture 53 - One dimensional wave equation and its solution - I
Lecture 54 - One dimensional wave equation and its solution - II
Lecture 55 - One dimensional wave equation and its solution - III
Lecture 56 - Two dimensional wave equation and its solution - I
Lecture 57 - Solution of non-homogeneous wave equation
Lecture 58 - Solution of homogeneous diffusion equation - I
Lecture 59 - Solution of homogeneous diffusion equation - II
Lecture 60 - Duhamel's principle

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NPTEL Video Course - Mathematics - NOC: Matrix Analysis with Applications

Subject Co-ordinator - Dr. Sanjeev Kumar, S. K. Gupta

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

| Lecture 1 | Elementary row operations |
| Lecture 2 | Echelon form of a matrix |
| Lecture 3 | Rank of a matrix |
| Lecture 4 | System of Linear Equations - I |
| Lecture 5 | System of Linear Equations - II |
| Lecture 6 | Introduction to Vector Spaces |
| Lecture 7 | Subspaces |
| Lecture 8 | Basis and Dimension |
| Lecture 9 | Linear Transformations |
| Lecture 10 | Rank and Nullity |
| Lecture 11 | Inverse of a Linear Transformation |
| Lecture 12 | Matrix Associated with a LT |
| Lecture 13 | Eigenvalues and Eigenvectors |
| Lecture 14 | Cayley-Hamilton Theorem and Minimal Polynomial |
| Lecture 15 | Diagonalization |
| Lecture 16 | Special Matrices |
| Lecture 17 | More on Special Matrices and Gerschgorin Theorem |
| Lecture 18 | Inner Product Spaces |
| Lecture 19 | Vector and Matrix Norms |
| Lecture 20 | Gram Schmidt Process |
| Lecture 21 | Normal Matrices |
| Lecture 22 | Positive Definite Matrices |
| Lecture 23 | Positive Definite and Quadratic Forms |
| Lecture 24 | Gram Matrix and Minimization of Quadratic Forms |
| Lecture 25 | Generalized Eigenvectors and Jordan Canonical Form |
| Lecture 26 | Evaluation of Matrix Functions |
| Lecture 27 | Least Square Approximation |
| Lecture 28 | Singular Value Decomposition |
| Lecture 29 | Pseudo-Inverse and SVD |
Lecture 30 - Introduction to Ill-Conditioned Systems
Lecture 31 - Regularization of Ill-Conditioned Systems
Lecture 32 - Linear Systems
Lecture 33 - Linear Systems
Lecture 34 - Non-Stationary Iterative Methods
Lecture 35 - Non-Stationary Iterative Methods
Lecture 36 - Krylov Subspace Iterative Methods (Conjugate Gradient Method)
Lecture 37 - Krylov Subspace Iterative Methods (CG and Pre-Conditioning)
Lecture 38 - Introduction to Positive Matrices
Lecture 39 - Positive Matrices, Positive Eigenpair, Perron Root and vector, Example
Lecture 40 - Polar Decomposition
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mathematics - NOC: Mathematical Modelling: Analysis and Applications

Subject Co-ordinator - Prof. Ameeya Kumar Nayak
Co-ordinating Institute - IIT - Roorkee
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Lecture 1 - Introduction to Mathematical Modeling
Lecture 2 - Discrete Time Linear Models in Population Dynamics - I
Lecture 3 - Discrete Time Linear Models in Population Dynamics - II
Lecture 4 - Discrete Time Linear Age Structured Models
Lecture 5 - Numerical Methods to Compute Eigen Values
Lecture 6 - Discrete Time Non-Linear Models in Population Dynamics - II
Lecture 7 - Analysis on Logistic Difference Equation
Lecture 8 - Classifications of Bifurcation
Lecture 9 - Discrete Time Non-Linear Models in Population Dynamics - II
Lecture 10 - Discrete Time Prey - Predator Model
Lecture 11 - Introduction to Continuous Time Models
Lecture 12 - Solution of First Order First Degree Differential Equations
Lecture 13 - Continuous Time Models in Population Dynamics - I
Lecture 14 - Continuous Time Models in Population Dynamics - II
Lecture 15 - Stability and Linearization of System of Ordinary Differential Equations
Lecture 16 - Continuous Time Single Species Models
Lecture 17 - Qualitative Solution of Differential Equations - Phase Diagrams - I
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Lecture 19 - Continuous Time Lotka - Volterra Competition Model
Lecture 20 - Continuous Time Prey - Predator Model
NPTEL Video Course - Mathematics - NOC:Dynamical System and Control

Subject Co-ordinator - Prof. D. N Pandey, Dr. N. Sukavanam

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Formulation of Dynamical Systems - I
Lecture 2 - Formulation of Dynamical Systems - II
Lecture 3 - Existence and Uniqueness Theorem - I
Lecture 4 - Existence and Uniqueness Theorem - II
Lecture 5 - Linear Systems - I
Lecture 6 - Linear Systems - II
Lecture 7 - Solutions of Linear Systems - I
Lecture 8 - Solutions of Linear Systems - II
Lecture 9 - Solutions of Linear Systems - III
Lecture 10 - Fundamental Matrix - I
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Lecture 28 - Limit Cycle
Lecture 29 - Lyapunov Stability - I

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| Lecture 30 | Lyapunov Stability - II |
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| Lecture 32 | Introduction to Control Systems - II |
| Lecture 33 | Controllability of Autonomous Systems |
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| Lecture 59 | Relation between Continuous and Discrete Systems - I |
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NPTEL Video Course - Mathematics - NOC: Advanced Engineering Mathematics

Subject Co-ordinator - Prof. P.N. Agarwal

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Analytic Function
Lecture 2 - Cauchy-Riemann Equations
Lecture 3 - Harmonic Functions, Harmonic Conjugates and Milne's Method
Lecture 4 - Applications to the Problems of Potential Flow - I
Lecture 5 - Applications to the Problems of Potential Flow - II
Lecture 6 - Complex Integration
Lecture 7 - Cauchy's Theorem - I
Lecture 8 - Cauchy's Theorem - II
Lecture 9 - Cauchy's Integral Formula for the Derivatives of Analytic Function
Lecture 10 - Morera's Theorem, Liouville's Theorem and Fundamental Theorem of Algebra
Lecture 11 - Winding Number and Maximum Modulus Principle
Lecture 12 - Sequences and Series
Lecture 13 - Uniform Convergence of Series
Lecture 14 - Power Series
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Lecture 17 - Zeros and Singularities of an Analytic Function
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Lecture 30 - Conformal mapping from half plane to disk and half plane to half plane - I
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Lecture 60 - Application to Queuing Theory and Reliability Theory

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NPTEL Video Course - Mathematics - NOC:Higher Engineering Mathematics

Subject Co-ordinator - Prof. P.N. Agarwal

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Symbolic Representation of Statements - I
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Lecture 9 - Language and Grammers - III
Lecture 10 - Finite- State Machines
Lecture 11 - Partially Ordered Sets - I
Lecture 12 - Partially Ordered Sets - II
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Lecture 27 - Various types of Graphs - II
Lecture 28 - Paths and Connectivity
Lecture 29 - Subgraphs and Traversable Multigraphs

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Lecture 33 - Representation of Graphs
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NPTEL Video Course - Mathematics - NOC: Operations Research

Subject Co-ordinator - Prof. Kusumdeep
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 14 - Case studies and Exercises - III
Lecture 15 - Primal Dual Construction
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Lecture 18 - Primal-Dual relationship of solutions
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Lecture 24 - Integer Programming
Lecture 25 - Goal Programming
Lecture 26 - Multi-Objective Programming
Lecture 27 - Dynamic Programming
Lecture 28 - Transportation Problem
Lecture 29 - Assignment Problem

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Lecture 30 - Case studies and Exercises
Lecture 31 - Processing n Jobs on Two Machines
Lecture 32 - Processing n Jobs through Three Machines
Lecture 33 - Processing two jobs through m machines
Lecture 34 - Processing n jobs through m machines
Lecture 35 - Case studies and Exercises
Lecture 36 - Two Person Zero-Sum Game
Lecture 37 - Theorems of Game Theory
Lecture 38 - Solution of Mixed Strategy Games
Lecture 39 - Linear Programming method for solving games
Lecture 40 - Case studies and Exercises
NPTEL Video Course - Mathematics - Advanced Matrix Theory and Linear Algebra for Engineers

Subject Co-ordinator - Prof. Vittal Rao

Co-ordinating Institute - IISc - Bangalore

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NPTEL Video Course - Mathematics - Ordinary Differential Equations and Applications

Subject Co-ordinator - Prof. A.K. Nandakumaran, Prof. Raju K. George, Prof. P.S. Datti
Co-ordinating Institute - IISc - Bangalore | IIST - Trivandrum | TIFR-CAM - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 7 - Linear Algebra (Continued - II)
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Lecture 10 - First Order Linear Equations
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Lecture 16 - Gronwall's Lemma
Lecture 17 - Basic Lemma and Uniqueness Theorem
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NPTEL Video Course - Mechanical Engineering - Convective Heat and Mass Transfer

Subject Co-ordinator - Prof. A.W. Date
Co-ordinating Institute - IIT - Bombay
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Flow Classifications
Lecture 3 - Laws of Convection
Lecture 4 - Scalar Transport Equations
Lecture 5 - Laminar Boundary Layers
Lecture 6 - Similarity Method
Lecture 7 - Similaity Solns Velocity BL
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NPTEL Video Course - Mechanical Engineering - Cryogenic Engineering

Subject Co-ordinator - Prof. M.D. Atrey

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Cryogenic Engineering
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Lecture 41 - Instrumentation in Cryogenics - III
Lecture 42 - Safety in Cryogenics
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NPTEL Video Course - Mechanical Engineering - Advanced Strength of Materials

Subject Co-ordinator - Prof. S.K. Maiti

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Stress and Strain Tensor
Lecture 2 - Stress and Strain Tensor (Continued) and Cauchy Formula for Traction
Lecture 3 - Examples on Calculation of Strains and Tractions, Principal Stresses and Directions
Lecture 4 - Example on Calculation of Principal Stresses and Directions, Orthogonality of Principal Directions
Lecture 5 - Maximum Shear Stress and Octahedral Shear Stress, Deviatoric and Hydrostatic Stresses
Lecture 6 - Transformation of Stresses and Mohr Circle in 3-D
Lecture 7 - Mohr Circle (Continued)
Lecture 8 - Deformation, Rotation and Strain Tensors, Principal Strains, Deviatoric and Hydrostatic Strains
Lecture 9 - Strain Transformations, Strains in Polar Coordinates, Equilibrium Equations in 2-D
Lecture 10 - Equilibrium Equations in 2-D Polar Coordinates Plane Stress and Plane Strain Conditions
Lecture 11 - Stress-Strain Relations for Isotropic, Orthotropic and Anisotropic Materials Stress-Strain-Temperature Relations Recap of Lectures 1 to 11
Lecture 12 - Relation between Elastic Constants and Strain Energy Densities
Lecture 13 - Stress Distribution in Thick Cylinder
Lecture 14 - Stresses due to Shrink Fitting
Lecture 15 - Stresses in Rotating Disc
Lecture 16 - Examples on Shrink Fitting and Rotating Disc
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Lecture 18 - Torsion of Non-Circular Shaft (Continued)
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Lecture 20 - Torsion of Thin Box Sections
Lecture 21 - Torsion of Box and Open Sections
Lecture 22 - Bending of Curved Bars
Lecture 23 - Bending of Curved Bars (Continued)
Lecture 24 - Theories of Failure
Lecture 25 - Theories of Failure (Continued)
Lecture 26 - Theories of Failure (Continued) and Their Applications, Griffith Theory of Brittle Fracture
Lecture 28 - Theorems of Elasticity
Lecture 29 - Theorems of Elasticity (Continued)

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Lecture 30 - Thermal Stress Distribution in Rectangular Sheet due to Symmetric and Asymmetric Temperature Fields
Lecture 31 - Thermal Stress Distribution in Cylinders
Lecture 32 - Unsymmetrical Bending
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Lecture 39 - Beam on Elastic Foundation
Lecture 40 - Application of Beam on Elastic Foundation Analysis to Pressure Vessels for Calculation of Discontinuity Stresses
NPTEL Video Course - Mechanical Engineering - Heat and Mass Transfer

Subject Co-ordinator - Prof. S.P. Sukhatme, Prof. U.N. Gaitonde

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Mechanical Engineering - Robotics

Subject Co-ordinator - Prof. P. Seshu, Prof. P.S. Gandhi, Prof. K. Kurien Issac, Prof. B. Seth, Prof. C. Amarnath

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Mechanical Engineering - Tribology

Subject Co-ordinator - Dr. Harish Hirani
Co-ordinating Institute - IIT - Delhi

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Lecture 2 - Interdisciplinary Approach and Economic Benefits
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Lecture 18 - Lubricant Additives
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Lecture 20 - Reynolds Equation
Lecture 21 - Solution of Reynolds Equation
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Lecture 23 - Finite Difference Method to Solve Reynolds Equation
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NPTEL Video Course - Mechanical Engineering - Computer Aided Design and Manufacturing

Subject Co-ordinator - Prof. P.V. Madhusudan Rao, Prof. Anoop Chawla

Co-ordinating Institute - IIT - Delhi

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Lecture 1 - An Introduction to CAD
Lecture 2 - Input Output Devices, Raster Graphics
Lecture 3 - Raster Graphics - I
Lecture 4 - Raster Graphics - II
Lecture 5 - Polygon Filling
Lecture 6 - Windowing and Clipping
Lecture 7 - Clipping of Polygons
Lecture 8 - 2D Transformations
Lecture 9 - 3D Transformations and Projection
Lecture 10 - Perspective Projections
Lecture 11 - Projections and Hidden Surface Removal
Lecture 12 - Hidden Surface Removal
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Lecture 15 - Finite Element Method
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Lecture 17 - Galerkin's Method
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Lecture 22 - Penalty Approach and Multi Point Boundary
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Lecture 25 - 2D - FE Problems (Continued.)
Lecture 26 - 3D - FE Problems
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Lecture 29 - Modeling of Curves

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Lecture 32 - Modeling of B-Spline Curves
Lecture 33 - Modeling of B-spline Curves
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Lecture 35 - Surface Modeling
Lecture 36 - Display of Curves and Surfaces
Lecture 37 - Solid Modeling
Lecture 38 - Solid Modeling
Lecture 39 - Solid Modeling Using Octrees
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Lecture 42 - Computer Aided Manufacturing
Lecture 43 - What is CAD/CAM
Lecture 44 - An Overview of Geometric Modeling
Lecture 45 - Parametric Cubic Curve
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Lecture 51 - Geometric & Product Data Exchange
Lecture 52 - Reverse Engineering
NPTEL Video Course - Mechanical Engineering - Project and Production Management

Subject Co-ordinator - Prof. Arun Kanda

Co-ordinating Institute - IIT - Delhi

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Lecture 1 - Project and Production Management - An Overview
Lecture 2 - Project Management
Lecture 3 - Project Identification and Screening
Lecture 4 - Project Appraisal - Part I
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Lecture 6 - Project Selection
Lecture 7 - Project Representation
Lecture 8 - Consistency and Redundancy in Project Networks
Lecture 9 - Basic scheduling with A-O-A Networks
Lecture 10 - Basic Scheduling with A-O-N Networks
Lecture 11 - Project Scheduling with Probabilistic Activity
Lecture 12 - Linear Time-Cost Tradeoffs in Projects
Lecture 13 - Project Crashing with Multiple Objectives
Lecture 14 - Resource Profiles and Leveling
Lecture 15 - Limited Resource Allocation
Lecture 16 - Project Monitoring and Control with PERT/Cost
Lecture 17 - Team Building and Leadership in Projects
Lecture 18 - Organizational and Behavioral Issues
Lecture 19 - Computers in Project Management
Lecture 20 - Project Completion and Review
Lecture 21 - Life Cycle of a Production System
Lecture 22 - Role of Models in Production Management
Lecture 23 - Financial Evaluation of capital Decisions
Lecture 24 - Decision Trees and Risk Evaluation
Lecture 25 - Introducing New Products & Services
Lecture 26 - Economic Evaluation of New Products & Services
Lecture 27 - Product Mix Decisions
Lecture 28 - Product & Process Design
Lecture 29 - Issues in Location of Facilities

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Lecture 30 - Mathematical Models for Facility Location
Lecture 31 - Layout Planning
Lecture 32 - Computerised Layout Planning
Lecture 33 - Product Layouts and Assembly Line Balancing
Lecture 34 - Forecasting
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Lecture 40 - Material Requirements Planning
Lecture 41 - Scheduling of Job Shops
NPTEL Video Course - Mechanical Engineering - NOC:RAC Product Design

Subject Co-ordinator - Prof. Sanjeev Jain
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Design
Lecture 2 - Design Considerations
Lecture 3 - Basic Concepts Psychrometry and Air-Conditioning
Lecture 4 - Refrigerants
Lecture 5 - Refrigerant Properties and Applications
Lecture 6 - Refrigeration Cycle and Components
Lecture 7 - Compressor Selection
Lecture 8 - Expansion Devices
Lecture 9 - Condensers and Evaporators
Lecture 10 - Types of Heat Exchangers and Air Conditioning Systems
Lecture 11 - Selection of Air Conditioning Systems for Hostels
Lecture 12 - Case Study on a Railway Air Conditioning System
Lecture 13 - Vibration and noise issues in railway AC systems
Lecture 14 - New product launch process
Lecture 15 - Case study on a telecom cooling system and Emerging technologies
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NPTEL Video Course - Mechanical Engineering - NOC: Thermodynamics

Subject Co-ordinator - Prof. S.R kale
Co-ordinating Institute - IIT - Delhi

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Lecture 1 - Thermodynamic Concepts
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Lecture 54 - Phase and Chemical Equilibrium
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NPTEL Video Course - Mechanical Engineering - NOC:Solid Mechanics

Subject Co-ordinator - Prof. Ajeet Kumar

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Mathematical Concepts
Lecture 2 - Traction Vector
Lecture 3 - Stress Tensor and its Matrix Representation
Lecture 4 - Transformation of Stress Matrix
Lecture 5 - Stress Equilibrium Equations
Lecture 6 - Balance of Angular Momentum (Continued...)
Lecture 7 - Principal Planes and Principal stress components
Lecture 8 - Maximizing the Shear Component of Traction
Lecture 9 - Mohr's Circle
Lecture 10 - Mohr's Circle (Continued...), Stress Invariants, Decomposition of the Stress Tensor
Lecture 11 - Concept of Strain Tensor
Lecture 12 - Longitudinal and Shear Strains
Lecture 13 - Local Volumetric Strain and Local Infinitesimal Rotation
Lecture 14 - Similarity in Properties of Stress and Strain Tensors
Lecture 15 - Stress-Strain Relation
Lecture 16 - Stress-Strain Relation for Isotropic Materials
Lecture 17 - Linear Momentum Balance in Cylindrical Coordinate System
Lecture 18 - Linear Momentum Balance in Cylindrical Coordinate System (Continued...)
Lecture 19 - Strain Matrix Cylindrical Coordinate System
Lecture 20 - Extension-Torsion-Inflation in a Hollow Cylinder
Lecture 21 - Extension-Torsion-Inflation in a Hollow Cylinder (Continued...)
Lecture 22 - Solving Problems Involving Torsion of Shafts
Lecture 23 - Pure Bending of Rectangular Beams
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Lecture 25 - Bending of Unsymmetrical Beams
Lecture 26 - Concept of Shear Center
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Lecture 28 - Theoy of Beams (Continued...), and Beam Buckling
Lecture 29 - Energy Methods

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Lecture 30 - Energy Methods (Continued...)
Lecture 31 - Theories of Failure
Lecture 32 - Theories of Failure (Continued...)
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NPTEL Video Course - Mechanical Engineering - Nonlinear Vibration

Subject Co-ordinator - Prof. S.K. Dwivedy

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction of Nonlinear systems
Lecture 2 - Review of Linear vibrating systems
Lecture 3 - Phenomena associated with Nonlinear systems
Lecture 4 - Commonly observed Phenomena in Nonlinear systems
Lecture 5 - Force and Moment based Approach
Lecture 6 - Energy based approach Extended Hamilton’s principle and Lagrange Priciple
Lecture 7 - Derivation of Equation of motion of nonlinear discrete system (More examples)
Lecture 8 - Derivation of Equation of motion of nonlinear continuous system - 1
Lecture 9 - Derivation of Equation of motion of nonlinear continuous system - 2
Lecture 10 - Ordering of nonlinear Equation of motion
Lecture 11 - Qualitative Analysis Straight forward expansion
Lecture 12 - Numerical method Straight forward expansion
Lecture 13 - Lindstedt Poincareâ technique
Lecture 14 - Method of multiple scales
Lecture 15 - Method of Harmonic balance
Lecture 16 - Method of averaging
Lecture 17 - Generalized Method of averaging
Lecture 18 - Krylov-Bogoliubov-Mitropolski technique
Lecture 19 - Incremental harmonic balance method and Intrinsic multiple scale harmonic balance method
Lecture 20 - Modified Lindstedt Poincareâ technique
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Lecture 27 - Quasi-Periodic and Chaotic response
Lecture 28 - Numerical methods to obtain roots of characteristic equation and time response
Lecture 29 - Numerical methods to obtain time response

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Lecture 30 - Numerical methods to obtain frequency response
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Lecture 32 - Free Vibration of Single degree of freedom Nonlinear systems with Cubic and quadratic nonlinearities
Lecture 33 - Free Vibration of multi-degree of freedom Nonlinear systems with Cubic and quadratic nonlinearities
Lecture 34 - Forced nonlinear Vibration Single degree of freedom Nonlinear systems with Cubic nonlinearities
Lecture 35 - Forced nonlinear Vibration Single and multi-degree of freedom Nonlinear systems
Lecture 36 - Nonlinear Forced-Vibration of Single and Multi Degree-of-Freedom System
Lecture 37 - Analysis of Multi-degree of freedom system
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Lecture 40 - Nonlinear Vibration of Parametrically excited system with internal resonance
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NPTEL Video Course - Mechanical Engineering - Theory and Practice of Rotor Dynamics

Subject Co-ordinator - Prof. Rajiv Tiwari

Co-ordinating Institute - IIT - Guwahati

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Lecture 1 - Introduction
Lecture 2 - A Brief History of Rotor Dynamics
Lecture 3 - The State of the Art of Rotor Dynamics
Lecture 4 - Simple Rotor Models with Rigid Bearings
Lecture 5 - Jeffcott Rotor Model
Lecture 6 - Variant of Jeffcott Rotor Model
Lecture 7 - Rigid Rotor Mounted on Simple Anistropic Springs as Bearings
Lecture 8 - Rigid Rotor Mounted on Complex Anistropic Bearings
Lecture 9 - Flexible Shaft with a Rigid Disc Mounted on Anistropic Supports
Lecture 10 - Gyroscopic Effects
Lecture 11 - Gyroscopic Effects
Lecture 12 - Gyroscopic Effects
Lecture 13 - Gyroscopic Effects
Lecture 14 - Torsional Vibrations
Lecture 15 - Three Disc Rotor System
Lecture 16 - Transfer Matrix Approach - Part I
Lecture 17 - Transfer Matrix Approach - Part II
Lecture 18 - Transfer Matrix Approach - Part III
Lecture 19 - Geared and Branched Systems
Lecture 20 - Continuous System and Finite Element Method
Lecture 21 - Finite Element Method
Lecture 22 - Finite Element Analysis
Lecture 23 - Finite Element Analysis - Part III
Lecture 24 - Influence Coefficient Method
Lecture 25 - Transfer Matrix Method - Part I
Lecture 26 - Transfer Matrix Method - Part II
Lecture 27 - Transfer Matrix Method - Part III
Lecture 28 - Continuous System Approach
Lecture 29 - Finite Element Method - Part I

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Lecture 37 - Introduction to Rigid Rotor Balancing
Lecture 38 - Dynamic Balancing of Rotors
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Lecture 41 - Common Faults & Vibration signatures
Lecture 42 - Condition Based Monitoring
NPTEL Video Course - Mechanical Engineering - Engineering Mechanics

Subject Co-ordinator - Prof. U.S. Dixit, Dr. G. Saravana Kumar

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Fundamentals Of Engineering Mechanics
Lecture 2 - Equations of Equilibrium
Lecture 3 - Truss Analysis - Part 1
Lecture 4 - Truss Analysis - Part 2
Lecture 5 - Analysis of Frames Machines
Lecture 6 - Internal Forces
Lecture 7 - Internal Forces in Beams
Lecture 8 - Cables
Lecture 9 - Friction
Lecture 10 - Application of Friction - Part 1
Lecture 11 - Application of Friction - Part 2
Lecture 12 - Application of Friction - Part 3
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Lecture 14 - Centroids Area of Moments
Lecture 15 - Product of Inertia, Rotation of Axis and Principle Moments of Inertia
Lecture 16 - Principle Mass Moments of Inertia
Lecture 17 - Second Moment of Mass
Lecture 18 - Virtual Work of Ideal System
Lecture 19 - Principle of Virtual Work
Lecture 20 - Systems with Friction
Lecture 21 - Potential Energy
Lecture 22 - Stability of Equilibrium
Lecture 23 - Kinematics of a Particles
Lecture 24 - Kinematics of a Particle Moving on a Curve
Lecture 25 - Relative Motion
Lecture 26 - Plane Kinematics of Rigid Bodies
Lecture 27 - Kinematics of a Particle
Lecture 28 - Work and Energy
Lecture 29 - Impulse and Momentum
Lecture 30 - Direct and Oblique Impulse
Lecture 31 - Plane Kinetics of Rigid Bodies
Lecture 32 - Kinetics of a Body
Lecture 33 - Method of Momentum and Analysis of Robot Manipulator
Lecture 34 - Kinematics in 3D
Lecture 35 - Kinetics in 3D
Lecture 36 - Free Vibration
Lecture 37 - Forced Vibration Damped Undamped
Lecture 38 - Vibration of Rigid Bodies - Part 1
Lecture 39 - Vibration of Rigid Bodies - Part 2
Lecture 40 - Some Problems of Vibration
<p>| Lecture 1 | Overview of the Course, Practical and Research Trends |
| Lecture 2 | Harmonic and Periodic Motions, Vibration Terminology |
| Lecture 3 | Vibration Model, Equation of Motion—Natural Frequency |
| Lecture 4 | Energy Method, Principle of Virtual Work |
| Lecture 5 | Viscously Damped Free Vibration Special Cases |
| Lecture 6 | Logarithmic Decrement Experimental Determination of Damping Coefficient Hysteresis Loop |
| Lecture 7 | Coulomb Damping other Damping Models |
| Lecture 8 | Forced Harmonic Vibration, Magnification Factor |
| Lecture 9 | Laplace Transform, Superposition Theorem |
| Lecture 10 | Rotor Unbalance and Whirling of Shaft, Transmissibility |
| Lecture 11 | Support Motion, Vibration Isolation |
| Lecture 12 | Sharpness of Resonance, Vibration Measuring Instruments |
| Lecture 13 | Generalized and Principle Coordinates, Derivation of Equation of Motion |
| Lecture 14 | Lagrange's Equation |
| Lecture 15 | Coordinate Coupling |
| Lecture 16 | Forced Harmonic Vibration |
| Lecture 17 | Tuned Absorber, Determination of Mass Ratio |
| Lecture 18 | Tuned and Damped Absorber, Untuned Viscous Damper |
| Lecture 19 | Derivation of Equations of Motion, Influence Coefficient Method |
| Lecture 20 | Properties of Vibrating Systems |
| Lecture 21 | Modal Analysis |
| Lecture 22 | Modal Analysis |
| Lecture 23 | Simple Systems With One Two or Three Discs Geared System |
| Lecture 24 | Multi-Degree of Freedom Systems—Transfer Matrix Method Branched Systems |
| Lecture 25 | Derivation of Equations of Motion Part 1—Newton |
| Lecture 26 | Derivation of Equations of Motion Part 2—Newton |
| Lecture 27 | Vibration of Strings |
| Lecture 28 | Longitudinal and Torsional Vibration of Rods |
| Lecture 29 | Transverse Vibration of Beams, Equations of Motion and Boundary Conditions |</p>
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</tr>
</tbody>
</table>
NPTEL Video Course - Mechanical Engineering - NOC: Advanced Machining Processes

Subject Co-ordinator - Prof. Manas Das

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to advanced machining processes
Lecture 2 - Ultrasonic machining - Part I
Lecture 3 - Ultrasonic machining - Part II
Lecture 4 - Abrasive jet machining
Lecture 5 - Water jet cutting and Abrasive water jet machining
Lecture 6 - Magnetic abrasive finishing
Lecture 7 - Abrasive Flow Finishing
Lecture 8 - Magnetorheological Finishing
Lecture 9 - Magnetorheological Abrasive Flow Finishing - Part I
Lecture 10 - Magnetorheological Abrasive Flow Finishing - Part II
Lecture 11 - Magnetorheological Abrasive Flow Finishing - Part III
Lecture 12 - Electric discharge machining (EDM)
Lecture 13 - Electric Discharge Grinding, Electric Discharge Diamond Grinding and Wire Electric Discharge Machining
Lecture 14 - Electrochemical Machining (ECM)
Lecture 15 - Electrochemical Grinding, Electrostream Drilling, Shaped Tube Electrolytic Machining
Lecture 16 - Plasma Arc Machining (PAM)
Lecture 17 - Electron Beam Machining (EBM) Edit Lesson
Lecture 18 - Laser Beam Machining (LBM)
Lecture 19 - Chemical Machining (ChM)

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Lecture 1 - Introduction of nuclear energy
Lecture 2 - Binding energy and mass defect
Lecture 3 - Radioactivity and radioactive decay
Lecture 4 - Different types of nuclear transmutation
Lecture 5 - Artificial radioactivity and neutron-nucleus interactions
Lecture 6 - Energy and momentum conservation
Lecture 7 - Fission and role of neutron energy
Lecture 8 - Theory of elastic scattering
Lecture 9 - Neutron multiplication factor
Lecture 10 - Neutron diffusion theory
Lecture 11 - Solution of one-group diffusion equation
Lecture 12 - Simple reactor theory
Lecture 13 - Nuclear fuel and simple energy consideration
Lecture 14 - Axial temperature distribution and heat transfer coefficient
Lecture 15 - Prompt and delayed neutrons
Lecture 16 - Delayed neutron kinetics
Lecture 17 - Different control mechanisms and various effects
Lecture 18 - Classical reactor designs
Lecture 19 - Evolution of reactors from Gen-I to Gen-IV
Lecture 20 - The concept of breeding
Lecture 21 - Fuel cycles and FBR
Lecture 22 - Gen-IV FBR designs
Lecture 23 - Hydrogen fusion reactions
Lecture 24 - Coulomb barrier and other critical factors
Lecture 25 - Radiation dose and gross biological effects
Lecture 26 - Stochastic and deterministic effects of human cells
Lecture 27 - Lessons from TMI and Chernobyl
Lecture 28 - Defence-in-depth Philosophy
Lecture 29 - Waste classification and Disposal of Mill Tailings
Lecture 30 - Disposal methodologies for HLW and IMW
NPTEL Video Course - Mechanical Engineering - NOC: Advances in Welding and Joining Technologies

Subject Co-ordinator - Prof. Swarup bag

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Fundamentals of Welding and Joining - Part I
Lecture 2 - Fundamentals of Welding and Joining - Part II
Lecture 3 - Fundamentals of Welding and Joining - Part III
Lecture 4 - Fundamentals of Welding and Joining - Part IV
Lecture 5 - Fundamentals of Welding and Joining - Part V
Lecture 6 - Laser and Electron Beam Welding - Part I
Lecture 7 - Laser and Electron Beam Welding - Part II
Lecture 8 - Solid State Welding Processes - Part I
Lecture 9 - Solid State Welding Processes - Part II
Lecture 10 - Solid State Welding Processes - Part III
Lecture 11 - Computational Welding Mechanics - Part I
Lecture 12 - Computational Welding Mechanics - Part II
Lecture 13 - Computational Welding Mechanics - Part III
Lecture 14 - Micro and Nano Joining Processes - Part I
Lecture 15 - Micro and Nano Joining Processes - Part II
Lecture 16 - Micro and Nano Joining Processes - Part III
Lecture 17 - Welding Metallurgy - Part I
Lecture 18 - Welding Metallurgy - Part II
Lecture 19 - Welding Metallurgy - Part III
Lecture 20 - Welding Metallurgy - Part IV
Lecture 21 - Welding and Joining of Non-Metals - Part I
Lecture 22 - Welding and Joining of Non-Metals - Part II
Lecture 23 - Metal Transfer in Welding and Metal Printing

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Introduction to Machining and Machining Fluids

Subject Co-ordinator - Prof. Mamilla Ravi Sankar

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Introduction and Importance of Machining
Lecture 3 - Principles of Machining or Metal Cutting
Lecture 4 - Cutting Tools
Lecture 5 - Forces in Machining
Lecture 6 - Tribology in Machining
Lecture 7 - Lubrication surface roughness in Machining
Lecture 8 - Machinability and Thermal Aspects
Lecture 9 - Tool Wear and Tool life - Part 1
Lecture 10 - Tool Wear and Tool life - Part 2
Lecture 11 - Tool Wear and Tool life - Part 3
Lecture 12 - Tool Materials and Coatings
Lecture 13 - Machining Fluids / Cutting Fluids and its Additives - Part 1
Lecture 14 - Machining Fluids / Cutting Fluids and its Additives - Part 2
Lecture 15 - Machining Fluids / Cutting Fluids and its Emissions
Lecture 16 - Eco Friendly Cutting Fluids - Part 1
Lecture 17 - Eco Friendly Cutting Fluids - Part 2
Lecture 18 - Rheology and Thermal Characterization of Machining / Cutting Fluids
Lecture 19 - Bio-degradation Studies of Machining / Cutting Fluids
Lecture 20 - Cutting Fluid Application in Machining Region
Lecture 21 - Practical Machining Processes - 1
Lecture 22 - Practical Machining Processes - 2
Lecture 23 - Introduction to Abrasive Processes - Grinding
Lecture 24 - Cutting fluids in Grinding Process
Lecture 25 - Unbonded Conventional Abrasive Processes
Lecture 26 - Advances in Metal Cutting_Machining Processes
Lecture 27 - Advances in Metal Cutting_Machining Processes - 2

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NPTEL Video Course - Mechanical Engineering - NOC: Mechanics of Machining

Subject Co-ordinator - Dr. Uday S. Dixit
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Deformation of Metals
Lecture 2 - Mechanism of Plastic Deformation
Lecture 3 - Machining Processes
Lecture 4 - Tool Geometry
Lecture 5 - Tool Specifications, Conversion Of Tool Angles, Multi-Point Cutting Tools
Lecture 6 - Mechanics of Orthogonal Cutting, Force Relationships
Lecture 7 - Determination of Stress, Strain, and Strain Rate
Lecture 8 - Measurement of Shear Angle
Lecture 9 - Other Analysis for Force Relationships
Lecture 10 - Mechanics of Oblique Cutting
Lecture 11 - Measurement of Cutting Forces
Lecture 12 - Thermal Aspects Of Machining
Lecture 13 - Tool Wear and Tool Life and Tool Life Equations
Lecture 14 - Economics in Machining
Lecture 15 - Practical Machining Operations
Lecture 16 - Practical Machining Operations
Lecture 17 - Grinding of Metals and Mechanics of Grinding Process
Lecture 18 - Abrasive Machining and Finishing Operations
Lecture 19 - CNC Machines and CNC Programming
Lecture 20 - Introduction to Advanced Machining Processes

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NPTEL Video Course - Mechanical Engineering - NOC: Principle of Hydraulic Machines and System Design

Subject Co-ordinator - Prof. Pranab K. Mondal
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to hydraulic machines
Lecture 2 - Euler equation for turbomachines
Lecture 3 - Velocity triangles of pumps, effect of inlet swirl on velocity triangles
Lecture 4 - Pump casing, efficiencies, problems
Lecture 5 - H-Q Curve, System resistance Curve
Lecture 6 - Stodola slip model, problems - I
Lecture 7 - Stodola slip model, problems - II
Lecture 8 - Stodola slip model, problems - III
Lecture 9 - NPSH
Lecture 10 - Radial flow pump testing
Lecture 11 - Degrees of reaction
Lecture 12 - Radial equilibrium of axial flow machines - I
Lecture 13 - Radial equilibrium of axial flow machines - II
Lecture 14 - Pumps operation
Lecture 15 - Pumps operation
Lecture 16 - Affinity laws, specific speed - Part I
Lecture 17 - Affinity laws, specific speed - Part II
Lecture 18 - Pumping system design - 1
Lecture 19 - Pumping system design - 2
Lecture 20 - Pumping system design - 3
Lecture 21 - Positive displacement pump, indicator diagram - I
Lecture 22 - Positive displacement pump, indicator diagram - II
Lecture 23 - Characteristic H-Q curve of positive displacement pump, problems
Lecture 24 - Hydraulic Turbine
Lecture 25 - Impulse Turbine
Lecture 26 - Impulse Turbine
Lecture 27 - Reaction Turbine
Lecture 28 - Reaction Turbine
Lecture 29 - Degrees of Reaction and Efficiency of Hydraulic Turbine

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Lecture 30 - Hydraulic Turbine
Lecture 31 - Cavitation in Hydraulic Turbine
NPTEL Video Course - Mechanical Engineering - NOC:Theory of Rectangular Plates - Part 1

Subject Co-ordinator - Prof. Poonam Kumari
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic of Solid Mechanics
Lecture 2 - Energy Principles
Lecture 3 - Classification of Plate Theories and Some Basics
Lecture 4 - Tutorial
Lecture 5 - Governing Equation for Plate - 1
Lecture 6 - Governing Equation for Plate - 2
Lecture 7 - Tutorial
Lecture 8 - Navier Solution + Levy solution
Lecture 9 - Levy Solution
Lecture 10 - Tutorial
Lecture 11 - EKM and buckling of plates
Lecture 12 - 3D Solutions
Lecture 13 - Matlab Coding + ABAQUS
Lecture 14 - Tutorial
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: Principles of Mechanical Measurement

Subject Co-ordinator - Prof. Dipankar N. Basu

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to measurement
Lecture 2 - Generalized measurement system and static characteristics
Lecture 3 - Uncertainties in measurement
Lecture 4 - Statistical treatment of random errors
Lecture 5 - System response to periodic inputs
Lecture 6 - Zeroth and first order systems
Lecture 7 - First and second order systems
Lecture 8 - Basics of digitization and number systems
Lecture 9 - Binary logic gates and binary codes
Lecture 10 - Analog-to-digital conversion
Lecture 11 - Digital-to-analog conversion
Lecture 12 - Electromagnetic indicators
Lecture 13 - Electronic amplifiers and filters
Lecture 14 - Resistive devices
Lecture 15 - Inductive, capacitive and optical devices
Lecture 16 - Piezoelectric and nozzle-flapper transducers
Lecture 17 - Resistive strain gages and associated circuitry
Lecture 18 - Strain gage rosettes and gage orientation
Lecture 19 - Elastic and strain gage load cells
Lecture 20 - Various load cells and dynamometers
Lecture 21 - Principles of manometry
Lecture 22 - Piezometer and elastic pressure transducer
Lecture 23 - Electric pressure transducer and high and low pressure measurement
Lecture 24 - Bernoulli's equation in obstruction meters
Lecture 25 - Obstruction meters and volume flowmeters
Lecture 26 - Mass flowmeters and velocity probes
Lecture 27 - Expansion-based devices
Lecture 28 - RTD, Thermistor and Thermocouple
Lecture 29 - Introduction to pyrometers

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Lecture 30 - Basic seismic transducer
Lecture 31 - Vibro-, velo- and accelerometer
Lecture 32 - Introduction to acoustic measurement
Lecture 33 - Radioactivity and its biological effects
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:IC Engines and Gas Turbines

Subject Co-ordinator - Dr. Vinayak Kulkarni, Prof. Pranab K. Mondal

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - External and Internal combustion engines, Engine components, SI and CI engines
Lecture 2 - Four-stroke and Two-stroke engines, Comparison between SI and CI engines, and Four-stroke and Two-stroke engines
Lecture 3 - Classification of IC engines
Lecture 4 - Engine operating characteristics
Lecture 5 - Otto, Diesel and Dual cycles
Lecture 6 - Otto, Diesel and Dual cycles (Continued...)
Lecture 7 - Otto, Diesel and Dual cycles (Continued...)
Lecture 8 - Otto, Diesel and Dual cycles (Continued...)
Lecture 9 - Comparison between the cycles, Actual cycles and their analysis
Lecture 10 - Carburetor, Mixture requirements
Lecture 11 - Carburetor, Mixture requirements (Continued...)
Lecture 12 - Idling, cruising and power ranges
Lecture 13 - Idling, cruising and power ranges (Continued...)
Lecture 14 - Classification, types of nozzles, Ignition system, Battery and Magneto ignition systems
Lecture 15 - Classification, types of nozzles, Ignition system, Battery and Magneto ignition systems (Continued...)
Lecture 16 - Classification, types of nozzles, Ignition system, Battery and Magneto ignition systems (Continued...)
Lecture 17 - Engine friction, Lubrication systems, forces on piston
Lecture 18 - Lubricating oils, Thermochemistry and Fuels, Self-ignition
Lecture 19 - Octane and Cetane Numbers, Alternative Fuels - Methanol, Ethanol, hydrogen, Natural Gas
Lecture 20 - Octane and Cetane Numbers, Alternative Fuels - Methanol, Ethanol, hydrogen, Natural Gas (Continued...)
Lecture 21 - Combustion in SI and CI Engines, Pressure Crank Angle Diagram
Lecture 22 - Combustion in SI and CI Engines, Pressure Crank Angle Diagram (Continued...)
Lecture 23 - Combustion in SI and CI Engines, Pressure Crank Angle Diagram (Continued...)
Lecture 24 - SI engine injection system, Energy distribution, Engine temperatures, Heat transfer in combustion
Lecture 25 - SI engine injection system, Energy distribution, Engine temperatures, Heat transfer in combustion (Continued...)
Lecture 26 - CI engine injection systems, Air-cooled and liquid-cooled engines, Modern trends
Lecture 27 - CI engine injection systems, Air-cooled and liquid-cooled engines, Modern trends (Continued...)
Lecture 28 - CI engine injection systems, Air-cooled and liquid-cooled engines, Modern trends (Continued...)
Lecture 29 - Problems on IC engine

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NPTEL Video Course - Mechanical Engineering - NOC: Polymer Assisted Abrasive Finishing Processes

Subject Co-ordinator - Prof. Mamilla Ravi Sankar

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Polymer Assisted Abrasive Finishing Processes
Lecture 2 - Surface Integrity and Surface roughness representation - Part I
Lecture 3 - Surface Integrity and Surface roughness representation - Part II
Lecture 4 - Introduction to Grinding and Polymer assisted Grinding Wheels
Lecture 5 - Polymer medium for vibratory bowl finishing, Tumbling, Drag finishing
Lecture 6 - Polymer Pad and Chemo-mechanical Polishing
Lecture 7 - Elastic Emission Machining
Lecture 8 - Hydrodynamic Polishing, Elasto Abrasive Finishing
Lecture 9 - Abrasive Flow Machining and Finishing - Part I
Lecture 10 - Abrasive Flow Machining and Finishing - Part II
Lecture 11 - Advances in Abrasive Flow Finishing
Lecture 12 - Advances in Abrasive Flow Finishing
Lecture 13 - AFF Processes
Lecture 14 - Finishing of Biomedical implants (Micro AFF
Lecture 15 - Summary of the Course

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NPTEL Video Course - Mechanical Engineering - NOC: Mathematical Modeling of Manufacturing Processes

Subject Co-ordinator - Prof. Swarup bag
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Materials and manufacturing Processes - 1
Lecture 2 - Materials and manufacturing Processes - 2
Lecture 3 - Physics based modeling approach at different scale
Lecture 4 - Evaluation of properties and process modelling
Lecture 5 - Thermofluid and electromagnetic analysis
Lecture 6 - Solid-state deformation and residual stress - 1
Lecture 7 - Solid-state deformation and residual stress - 2
Lecture 8 - Melting, solidification and additive manufacturing
Lecture 9 - Force and velocity diagram - 1
Lecture 10 - Force and velocity diagram - 2
Lecture 11 - Heat transfer analysis
Lecture 12 - Principal and mechanism at different processes - 1
Lecture 13 - Principal and mechanism at different processes - 2
Lecture 14 - Mechanics of bulk metal forming
Lecture 15 - Mechanics of sheet metal forming - 1
Lecture 16 - Mechanics of sheet metal forming - 2
Lecture 17 - Heat transfer and thermomechanical processing
Lecture 18 - Fusion welding processes - 1
Lecture 19 - Fusion welding processes - 2
Lecture 20 - Physics of welding and metal transfer
Lecture 21 - Heat source model in fusion welding
Lecture 22 - Heat transfer and material flow
Lecture 23 - Solidification in welding - 1
Lecture 24 - Solidification in welding - 2
Lecture 25 - Solid state welding - 1
Lecture 26 - Solid state welding - 2
Lecture 27 - Hybrid welding, residual stress and distortion
Lecture 28 - Cooling and solidification at different casting processes
Lecture 29 - Powder metallurgy

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Lecture 30 - Principle of surface and coating technologies
Lecture 31 - Principle and development of additive manufacturing technologies - 1
Lecture 32 - Principle and development of additive manufacturing technologies - 2
Lecture 33 - Fundamentals of heat treatment
Lecture 34 - Evaluation of microstructural properties and residual stress
Lecture 35 - Down-scaling of conventional manufacturing processes and Micro-to-nano manufacturing
Lecture 36 - Packaging, micro-finishing and micro-manufacturing processes
Lecture 37 - Processing and shaping of non-metals and bio-materials
Lecture 38 - Principle of glass and ceramics processing and their shaping
NPTEL Video Course - Mechanical Engineering - NOC: Two-Phase flow with phase change in Conventional and Miniature Channels

Subject Co-ordinator - Prof. Manmohan Pandey
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Notation
Lecture 2 - Flow Regimes and Flow Regime Maps
Lecture 3 - The Homogeneous Model
Lecture 4 - The Separated Flow Model
Lecture 5 - The Separated Flow Model (Continued...)
Lecture 6 - The Drift Flux Model
Lecture 7 - Estimation of pressure drop in two phase flow
Lecture 8 - Two phase flow and pressure drop in miniature channels
Lecture 1 - Overview of thermodynamic system and state
Lecture 2 - First and second laws of thermodynamics
Lecture 3 - Concept of entropy and entropy generation
Lecture 4 - Concept of exergy and exergy destruction
Lecture 5 - Thermodynamic potentials and Maxwell relations
Lecture 6 - Generalized relations for entropy and specific heats
Lecture 7 - Joule-Thomson coefficient and Clapeyron equation
Lecture 8 - Liquid-vapor phase-change process
Lecture 9 - Use of property tables
Lecture 10 - Equations-of-state and Compressibility factor
Lecture 11 - Ideal cycles for reciprocating engines
Lecture 12 - Otto, Diesel and Dual combustion cycles
Lecture 13 - Stirling and Ericsson cycles
Lecture 14 - Fuel-air cycle
Lecture 15 - Numerical exercise on Fuel-air cycles
Lecture 16 - Losses in actual cycle and valve-timing diagram
Lecture 17 - Ideal Brayton cycle
Lecture 18 - Intercooling and reheating in Brayton cycle
Lecture 19 - Regeneration in Brayton cycle
Lecture 20 - Ideal Rankine cycle
Lecture 21 - Improvements and modifications in Rankine cycle
Lecture 22 - Regenerative Rankine cycle
Lecture 23 - Binary vapor power cycle
Lecture 24 - Combined gas-steam power plant
Lecture 25 - Different arrangements in combined cycles
Lecture 26 - Vapor compression refrigeration cycle
Lecture 27 - SSS cycles and refrigerants
Lecture 28 - Modifications in VCR systems
Lecture 29 - Vapor absorption refrigeration cycle
Lecture 30 - P-v-T behavior of gas mixtures
Lecture 31 - Numerical examples
Lecture 32 - Properties of moist air
Lecture 33 - Psychrometric chart and various psychrometric processes
Lecture 34 - Sensible heat factor and bypass factor
Lecture 35 - Theoretical and actual combustion process
Lecture 36 - Thermodynamic analyses of reacting systems
NPTEL Video Course - Mechanical Engineering - NOC: Fundamentals of Conduction and Radiation

Subject Co-ordinator - Prof. Dipankar N. Basu
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Relationship of Thermodynamics with Heat transfer
Lecture 2 - Modes of heat transfer
Lecture 3 - Fourier's law and thermal conductivity
Lecture 4 - Generalized heat diffusion equation
Lecture 5 - Heat diffusion equation in curvilinear coordinates
Lecture 6 - Concept of thermal resistance
Lecture 7 - Use of network of resistances in wall and cylinder
Lecture 8 - Critical thickness of insulation
Lecture 9 - Conduction with energy generation - I
Lecture 10 - Conduction with energy generation - II
Lecture 11 - General Heat Transfer Analysis
Lecture 12 - Fins with uniform cross-section area - I
Lecture 13 - Fins with uniform cross-section area - II
Lecture 14 - Fins with non-uniform cross-section area
Lecture 15 - Method of Separation of Variables
Lecture 16 - Graphical approach
Lecture 17 - Method of Superposition
Lecture 18 - Lumped capacitance approach - I
Lecture 19 - Lumped capacitance approach - II
Lecture 20 - Semi-infinite Solid
Lecture 21 - Steady Heat Conduction
Lecture 22 - Unsteady Heat Conduction
Lecture 23 - Problem solving using Energy Balance Method
Lecture 24 - Introduction to radiative heat fluxes
Lecture 25 - Spectral and directional definitions
Lecture 26 - Blackbody radiation
Lecture 27 - Emissivity
Lecture 28 - Irradiation of real surfaces
Lecture 29 - View factor

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Lecture 30 - Blackbody radiation exchange
Lecture 31 - Radiation networks
Lecture 32 - Gas radiation
Lecture 33 - Radiative Transfer Equation
NPTEL Video Course - Mechanical Engineering - NOC: Steam Power Engineering

Subject Co-ordinator - Dr. Vinayak Kulkarni
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Review of thermodynamics
Lecture 2 - Rankine cycle
Lecture 3 - Performance estimation of steam power cycles
Lecture 4 - Carnot cycle examples
Lecture 5 - Rankine cycle with superheat
Lecture 6 - Rankine cycle with reheat theory and example
Lecture 7 - Examples of Rankine cycle
Lecture 8 - Examples of reheat Rankine cycle
Lecture 9 - Rankine cycle with regeneration
Lecture 10 - Feedwater heaters
Lecture 11 - Cogeneration of power and process heat
Lecture 12 - Examples of regeneration
Lecture 13 - Examples of regenerative Rankine cycle
Lecture 14 - Binary/multi-fluid cycles
Lecture 15 - Low temperature power cycles
Lecture 16 - Examples of binary cycles
Lecture 17 - Types of boilers
Lecture 18 - Boiler accessories
Lecture 19 - Practice examples
Lecture 20 - Stagnation conditions and Nozzle flow
Lecture 21 - Nozzle flow
Lecture 22 - Examples of Nozzle
Lecture 23 - Impulse Turbine - 1
Lecture 24 - Impulse Turbine - 2
Lecture 25 - Examples on Impulse Turbine
Lecture 26 - Reaction Turbine
Lecture 27 - Reheat Factor
Lecture 28 - Examples on Turbine - 1
Lecture 29 - Examples on Turbine - 2

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Lecture 30 - Gas Mixture
Lecture 31 - Psychrometry - 1
Lecture 32 - Psychrometry - 2
Lecture 33 - Condensers
NPTEL Video Course - Mechanical Engineering - NOC: Dynamic Behaviour of Materials

Subject Co-ordinator - Prof. Prasenjit Khanikar

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Dynamic Behaviour of Materials - I
Lecture 2 - Introduction to Dynamic Behaviour of Materials - II
Lecture 3 - Introduction to Waves
Lecture 4 - Quasi-static vs Dynamic Deformation
Lecture 5 - Elastic Wave and its Classification
Lecture 6 - Propagation of Elastic Waves in Continuum
Lecture 7 - Wave Reflection, Refraction and Interaction
Lecture 8 - General Solution of Elastic Wave Equation
Lecture 9 - Additional Considerations of Elastic Wave in Cylindrical Bar
Lecture 10 - Introduction to Plastic Waves
Lecture 11 - Plastic Waves of Uniaxial Stress
Lecture 12 - Plastic Waves of Combined Stress
Lecture 13 - Taylor's Experiment for Plastic Wave Propagation - 1
Lecture 14 - Taylor's Experiment for Plastic Wave Propagation - 2
Lecture 15 - Taylor's Experiment
Lecture 16 - Introduction to Shock Waves - I
Lecture 17 - Introduction to Shock Waves - II
Lecture 18 - Shock Wave
Lecture 19 - Rankine Hugoniot Treatment and Shock Wave under Impact
Lecture 20 - Shock Wave under Impact
Lecture 21 - Equations of States (Shock Waves)
Lecture 22 - Equations of States (Shock Waves)
Lecture 23 - Complex Problems of Shock Waves and Temperature Rise under Shock Wave
Lecture 24 - Shock Wave Attenuation, Interaction and Reflection - I
Lecture 25 - Shock Wave Attenuation, Interaction and Reflection - II
Lecture 26 - Shock Wave Interaction and Reflection
Lecture 27 - Fundamentals of Materials Science and Engineering
Lecture 28 - Shock Wave Induced Phase Transformations - 1
Lecture 29 - Shock Wave Induced Phase Transformations - 2

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Lecture 30 - Shock Wave Induced Phase Transformations - 3
Lecture 31 - Shock Wave Induced Phase Transformations - 4
Lecture 32 - Experimental Techniques for Dynamic Deformation - 1
Lecture 33 - Experimental Techniques for Dynamic Deformation - 2
Lecture 34 - Plastic Deformation at High Strain Rates - 1
Lecture 35 - Plastic Deformation at High Strain Rates - 2
Lecture 36 - Plastic Deformation at High Strain Rates - 3
Lecture 37 - Plastic Deformation at High Strain Rates - 4
Lecture 38 - Plastic Deformation at High Strain Rates - 5
Lecture 39 - Plastic Deformation Under Shock Waves - 1
Lecture 40 - Plastic Deformation Under Shock Waves - 2
Lecture 41 - Plastic Deformation Under Shock Waves - 3
Lecture 42 - Shear Band - 1
Lecture 43 - Shear Band - 2
Lecture 44 - Dynamic Fracture - 1
Lecture 45 - Dynamic Fracture - 2
NPTEL Video Course - Mechanical Engineering - NOC: Plastic Working of Metallic Materials

Subject Co-ordinator - Prof. P.S. Robi

Co-ordinating Institute - IIT - Guwahati

Lecture 1 - Introduction to Plastic Working of Metals
Lecture 2 - Uniaxial Tension Test Analysis
Lecture 3 - Temperature effects in metal forming
Lecture 4 - Friction and Lubrication
Lecture 5 - Friction and Lubrication (Continued...)
Lecture 6 - Deformation zone + worked examples
Lecture 7 - Stresses at point and Theory of Plasticity
Lecture 8 - Slab Analysis
Lecture 9 - Slip Line Field Theory - Part 1
Lecture 10 - Slip Line Field Theory - Part 2
Lecture 11 - Upper Bound Theorem
Lecture 12 - Plasticity equations
Lecture 13 - Forging
Lecture 14 - Analysis of Forging
Lecture 15 - Analysis of Forging (Continued...)
Lecture 16 - Forging Die Design consideration
Lecture 17 - Forging Load
Lecture 18 - Rolling of Metals
Lecture 19 - Analysis of Rolling
Lecture 20 - Analysis of Rolling (Continued...)
Lecture 21 - Strain rate in the deformation zone
Lecture 22 - Rolling mills
Lecture 23 - Problem on rolling
Lecture 24 - Drawing of Rods, Wires and Tubes
Lecture 25 - Drawing of Rods, Wires and Tubes (Continued...)
Lecture 26 - Analysis of Wire Drawing
Lecture 27 - Wire Drawing
Lecture 28 - Extrusion Process
Lecture 29 - Analysis of Extrusion

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Lecture 30 - Introduction
Lecture 31 - Sheet deformation process
Lecture 32 - Deformation of sheet in plane stress
Lecture 33 - Analysis of stamping
Lecture 34 - Instability in sheet metal forming
Lecture 35 - Deep drawing
Lecture 36 - Hydroforming
NPTEL Video Course - Mechanical Engineering - NOC: Fundamentals of Artificial Intelligence

Subject Co-ordinator - Prof. Shyamanta M. Hazarika

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Artificial Intelligence
Lecture 2 - Problem Solving as State Space Search
Lecture 3 - Uninformed Search
Lecture 4 - Heuristic Search
Lecture 5 - Informed Search
Lecture 6 - Constraint Satisfaction Problems
Lecture 7 - Searching AND/OR Graphs
Lecture 8 - Game Playing
Lecture 9 - Minimax + Alpha-Beta
Lecture 10 - Introduction to Knowledge Representation
Lecture 11 - Propositional Logic
Lecture 12 - First Order Logic - I
Lecture 13 - First Order Logic - II
Lecture 14 - Inference in First Order Logic - I
Lecture 15 - Inference in First Order Logic - II
Lecture 16 - Answer Extraction
Lecture 17 - Procedural Control of Reasoning
Lecture 18 - Reasoning under Uncertainty
Lecture 19 - Bayesian Network
Lecture 20 - Decision Network
Lecture 21 - Introduction to Planning
Lecture 22 - Plan Space Planning
Lecture 23 - Planning Graph and GraphPlan
Lecture 24 - Practical Planning and Acting
Lecture 25 - Sequential Decision Problems
Lecture 26 - Making Complex Decisions
Lecture 27 - Introduction to Machine Learning
Lecture 28 - Learning Decision Trees
Lecture 29 - Linear Regression

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Lecture 30 - Support Vector Machines
Lecture 31 - Unsupervised Learning
Lecture 32 - Reinforcement Learning
Lecture 33 - Learning in Neural Networks
Lecture 34 - Deep Learning
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Aircraft Propulsion

Subject Co-ordinator - Dr. Vinayak Kulkarni
Co-ordinating Institute - IIT - Guwahati
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of Basic Thermodynamics
Lecture 2 - Solved Examples for Flow process
Lecture 3 - Turbomachines
Lecture 4 - Components of Gas Turbine Power Plant, Gas Turbine Attachments
Lecture 5 - Introduction to Various Aircraft engines, Engine Performance parameters
Lecture 6 - Air Standard Ideal Brayton Cycle
Lecture 7 - Examples for Ideal Brayton Cycle
Lecture 8 - Non-Ideal Brayton Cycle
Lecture 9 - Examples for Non-Ideal Brayton Cycle
Lecture 10 - Brayton Cycle with Heat Exchanger / Re-heater
Lecture 11 - Brayton Cycle with Intercooler / All Attachments
Lecture 12 - Examples of Gas Turbine Attachment
Lecture 13 - Examples of Gas Turbine Attachment
Lecture 14 - Stagnation Conditions, Real Brayton Cycle with Stagnation Conditions
Lecture 15 - Polytropic Efficiency of Compressor and Turbine
Lecture 16 - Examples of Real Cycle
Lecture 17 - Nozzle Flow
Lecture 18 - Aircraft Engine Intake, Intake Efficiency
Lecture 19 - Propelling Nozzle, Nozzle Efficiency
Lecture 20 - Turbojet engine
Lecture 21 - Turbofan engine
Lecture 22 - Ramjet engine
Lecture 23 - Examples of Ramjet Engine
Lecture 24 - Thrust Augmentation and Engine performance parameters for Aircrafts
Lecture 25 - Introduction to Turbomachinery
Lecture 26 - Centrifugal Compressor
Lecture 27 - Centrifugal Compressor
Lecture 28 - Examples of Centrifugal compressor
Lecture 29 - Axial Flow Compressor

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Lecture 30 - Axial Flow Compressor
Lecture 31 - Examples of Axial Flow Compressor
Lecture 32 - Examples of Axial Flow Compressor
Lecture 33 - Examples of Axial Flow Compressor
Lecture 34 - Axial Turbine
Lecture 35 - Radial Turbine
Lecture 36 - Examples of Axial Turbine
Lecture 37 - Practice examples of Axial Turbine and centrifugal compressor
Lecture 38 - Cascade theory and Blade design
Lecture 39 - Cascade variables and Turbine Cascade
Lecture 40 - Velocity diagrams of Turbine Cascade, Compressor cascade
Lecture 41 - Turbine cooling methods
Lecture 42 - Practice examples of aircraft engine
NPTEL Video Course - Mechanical Engineering - Acoustics

Subject Co-ordinator - Prof. Nachiketa Tiwari

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Intro, sound wave versus vibration, different types of waves, octave, music scales, sense of SPL
Lecture 2 - Review
Lecture 3 - Review
Lecture 4 - Review
Lecture 5 - 1-D wave equation, and its solution
Lecture 6 - Solution for 1-D wave equation
Lecture 7 - Waveguides, transmission line equations, and standing waves
Lecture 8 - Waveguides, transmission line equations, and standing waves
Lecture 9 - Examples of 1-D waves in tubes, short tubes, Kundt's tube
Lecture 10 - Thermodynamic processes during sound transmission
Lecture 11 - Numerical examples
Lecture 12 - Sound transmission through walls
Lecture 13 - Sound transmission through walls
Lecture 14 - Leakage in walls, STC Ratings, Octave bands
Lecture 15 - Instantaneous power flow
Lecture 16 - Radial propagation of sound, monopoles, and dipoles
Lecture 17 - Radial propagation of sound, monopoles, and dipoles
Lecture 18 - Radial propagation of sound, monopoles, and dipoles
Lecture 19 - Numerical examples
Lecture 20 - Numerical examples
Lecture 21 - Directivity
Lecture 22 - Directivity
Lecture 23 - Directivity
Lecture 24 - Directivity
Lecture 25 - Generalized elements
Lecture 26 - Examples of electromechanical systems
Lecture 27 - Transformers, radiation impedance, and Helmholtz resonator
Lecture 28 - Radiation impedance
Lecture 29 - Radiation impedance

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Lecture 30 - Models of electro-mechanical-acoustic systems
Lecture 31 - Solution for a loudspeaker model
Lecture 32 - Microphones
Lecture 33 - Vibro-meter, seismometer, accelerometer, shaker table
Lecture 34 - Sound propagation in rooms, 1-D rooms, 2D rooms
Lecture 35 - Sound in 3-D rooms
Lecture 36 - Absorption coefficient, and irregular rooms
Lecture 37 - Room constant, and Sabine's coefficient
Lecture 38 - Design of a muffler
Lecture 39 - Noise in machines, basics of noise management
NPTEL Video Course - Mechanical Engineering - Advanced Machining Processes

Subject Co-ordinator - Prof. Vijay K. Jain

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Advanced Machining Processes
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Lecture 29 - Advanced Machining Processes

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Lecture 34 - Advanced Machining Processes
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Biomicroelectromechanical systems

Subject Co-ordinator - Dr. Shantanu Bhattacharya

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Computer Aided Engineering Design

Subject Co-ordinator - Dr. Anupam Saxena

Co-ordinating Institute - IIT - Kanpur

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NPTEL Video Course - Mechanical Engineering - Mathematical Methods in Engineering and Science

Subject Co-ordinator - Dr. Bhaskar Dasgupta

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Basic Ideas of Applied Linear Algebra
Lecture 3 - Systems of Linear Equations
Lecture 4 - Square Non-Singular Systems
Lecture 5 - Ill-Conditioned and Ill-Posed Systems
Lecture 6 - The Algebraic Eigenvalue Problem
Lecture 7 - Canonical Forms, Symmetric Matrices
Lecture 8 - Methods of Plane Rotations
Lecture 9 - Householder Method, Tridiagonal Matrices
Lecture 10 - QR Decomposition, General Matrices
Lecture 11 - Singular Value Decomposition
Lecture 12 - Vector Space
Lecture 13 - Multivariate Calculus
Lecture 14 - Vector Calculus in Geometry
Lecture 15 - Vector Calculus in Physics
Lecture 16 - Solution of Equations
Lecture 17 - Introduction to Optimization
Lecture 18 - Multivariate Optimization
Lecture 19 - Constrained Optimization
Lecture 20 - Constrained Optimization
Lecture 21 - Interpolation
Lecture 22 - Numerical Integration
Lecture 23 - Numerical Solution of ODE's as IVP
Lecture 24 - Boundary Value Problems, Question of Stability in IVP Solution
Lecture 25 - Stiff Differential Equations, Existence and Uniqueness Theory
Lecture 26 - Theory of First Order ODE's
Lecture 27 - Linear Second Order ODE's
Lecture 28 - Methods of Linear ODE's
Lecture 29 - ODE Systems

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Lecture 30 - Stability of Dynamic Systems
Lecture 31 - Series Solutions and Special Functions
Lecture 32 - Sturm-Liouville Theory
Lecture 33 - Approximation Theory and Fourier Series
Lecture 34 - Fourier Integral to Fourier Transform, Minimax Approximation
Lecture 35 - Separation of Variables in PDE's, Hyperbolic Equations
Lecture 36 - Parabolic and Elliptic Equations, Membrane Equation
Lecture 37 - Analytic Functions
Lecture 38 - Integration of Complex Functions
Lecture 39 - Singularities and Residues
Lecture 40 - Calculus of Variations
NPTEL Video Course - Mechanical Engineering - Dynamics of Machines

Subject Co-ordinator - Prof. Amitabha Ghosh
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Rigid Body Motion - Part 1
Lecture 2 - Rigid Body Motion - Part 2
Lecture 3 - Dynamic Force Analysis of Mechanisms
Lecture 4 - Space Motion of Rigid Bodies
Lecture 5 - Inertia Tensor Angular Momentum
Lecture 6 - Euler's Equation of Motion
Lecture 7 - Gyroscopic Action in Machines
Lecture 8 - Unbalance in Machines
Lecture 9 - Rotary Balancing
Lecture 10 - Balancing Machines
Lecture 11 - Field Balancing of Rotors
Lecture 12 - Single-Cylinder Engine Balancing
Lecture 13 - Balancing of Single Slider Machines
Lecture 14 - In-Line Engine Balancing
Lecture 15 - V and Radial Engine Balancing
Lecture 16 - Turning Moment Diagram
Lecture 17 - Flywheel Analysis
Lecture 18 - Dynamics of Machines
Lecture 19 - Dynamics of Machines
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Lecture 28 - Dynamics of Machines
Lecture 29 - Rotating Vector Approach

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Lecture 30 - Equivalent viscous damping
Lecture 31 - Dynamics of Machines
Lecture 32 - Systems with two degree of freedom
Lecture 33 - Tuned Vibration Absorber
Lecture 34 - Design of Vibration Absorbers
Lecture 35 - Flexibility Matrix Influence Coeff
Lecture 36 - Forced Vibration of multiple
Lecture 37 - Forced Vibration of Multiple degrees
Lecture 38 - Vibration of Continuous Systems
Lecture 39 - Vibration of Continuous Systems
Lecture 40 - Vibration of Beams
Lecture 41 - Rayleigh's method
Lecture 42 - Rayleigh-Ritz Method
Lecture 43 - Vibration Measurement
Lecture 44 - Vibration Measurement Types of Pickups
NPTEL Video Course - Mechanical Engineering - Kinematics of Machines

Subject Co-ordinator - Prof. Ashok K Mallik

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Module 1 - Lecture 1
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Module 13 - Lecture 3

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Advanced manufacturing process for micro sytem fabrication

Subject Co-ordinator - Dr. Shantanu Bhattacharya

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lab session 1 - Advanced manufacturing process for micro sytem fabrication
Lab session 2 - EDM Micro Machening
Lab session 3 - EDM Micro Drilling
Lab session 4 - Laser Machening Process
Lab session 5 - Vaccume Assisted Forming
Lab session 6 - Vaccume Forming
Lab session 7 - Photolithiography
Lab session 8 - Replication part 1
Lab session 9 - Replication part 2
Lab session 10 - PCB Making
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Lecture 18 - Technical Arts 101
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Lecture 28 - Technical Arts 101
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: BioMEMS and Microsystems

Subject Co-ordinator - Dr. Shantanu Bhattacharya

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 3 - Lecture 3
Lecture 4 - Review Lecture 1,2,3
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Lecture 7 - Lecture 6
Lecture 8 - Review Lecture 4,5,6
Lecture 9 - Lecture 7
Lecture 10 - Lecture 8
Lecture 11 - Lecture 9-10
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Lecture 22 - Review Lecture 11 to 13
Lecture 23 - Review Lecture 14 to 16
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Lecture 29 - Lecture-25

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Lecture 30 - Review Lecture 17,18,19
Lecture 31 - Review Lecture 20,21,22
Lecture 32 - Lecture-26
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Lecture 40 - Review lecture 23,24,25
Lecture 41 - Review lecture 26,27,28
Lecture 42 - Review lecture 29 to 33
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NPTEL Video Course - Mechanical Engineering - NOC: Manufacturing Systems Technology - Part II

Subject Co-ordinator - Dr. Shantanu Bhattacharya

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Quality systems engineering
Lecture 2 - Quality systems engineering
Lecture 3 - Quality systems engineering
Lecture 4 - Quality systems engineering
Lecture 5 - Quality systems engineering
Lecture 6 - Quality systems engineering
Lecture 7 - Cost of quality and statistical quality control
Lecture 8 - Cost of quality and statistical quality control
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Lecture 16 - Cost of quality and statistical quality control
Lecture 17 - Cost of quality and statistical quality control
Lecture 18 - Cost of quality and statistical quality control
Lecture 19 - Robotic systems planning and designing
Lecture 20 - Robotic systems planning and designing
Lecture 21 - Robotic systems planning and designing
Lecture 22 - Robotic systems planning and designing
Lecture 23 - Robotic systems planning and designing
Lecture 24 - Robotic systems planning and designing
Lecture 25 & 26 - Robotic systems planning and designing
Lecture 27 - Robotic systems planning and designing
Lecture 28 - Robotic systems planning and designing
Lecture 29 - Robotic systems planning and designing
Lecture 30 - Robotic systems planning and designing
Lecture 1 - Introduction to Finite Element Analysis (FEA)
Lecture 2 - Introduction of FEA, Nodes, Elements and Shape Functions
Lecture 3 - Nodes, Elements and Shape Functions
Lecture 4 - Polynomials as Shape Functions, Weighted Residuals, Elements and Assembly Level Equations
Lecture 5 - Types of Errors in FEA, Overall FEA Process and Convergence
Lecture 6 - Strengths of FE Method, Continuity conditions at Interfaces
Lecture 7 - Key concepts and terminologies
Lecture 8 - Weighted integral statements
Lecture 9 - Integration by parts - Review
Lecture 10 - Gradient and Divergence Theorems - Part I
Lecture 11 - Gradient and Divergence Theorems Part - II
Lecture 12 - Functionals
Lecture 13 - Variational Operator
Lecture 14 - Weighted Integral and Weak Formulation
Lecture 15 - Weak Formulation
Lecture 16 - Weak Formulation and Weighted Integral
Lecture 17 - Variational Methods
Lecture 18 - Rayleigh Ritz Method
Lecture 19 - Method of Weighted Residuals
Lecture 20 - Different types of Weighted Residual Methods - Part I
Lecture 21 - Different types of Weighted Residual Methods - Part II
Lecture 22 - FEA formulation for 2nd order BVP - Part I
Lecture 23 - FEA formulation for 2nd order BVP - Part II
Lecture 24 - Element Level Equations
Lecture 25 - 2nd Order Boundary Value Problem
Lecture 26 - Assembly of element equations
Lecture 27 - Assembly of element equations and implementation of boundary conditions
Lecture 28 - Assembly process and the connectivity matrix
Lecture 29 - Radially Symmetric Problems
Lecture 30 - One dimensional heat transfer
Lecture 31 - 1D-Heat conduction with convective effects
Lecture 32 - Euler-Bernoulli beam
Lecture 33 - Interpolation functions for Euler-Bernoulli beam
Lecture 34 - Finite element equations for Euler-Bernoulli beam
Lecture 35 - Assembly equations for Euler-Bernoulli beam
Lecture 36 - Boundary conditions for Euler-Bernoulli beam
Lecture 37 - Shear deformable beams
Lecture 38 - Finite element formulation for shear deformable beams
Lecture 39 - Finite element formulation for shear deformable beams
Lecture 40 - Equal interpolation but reduced integration element
Lecture 41 - Eigenvalue problems
Lecture 42 - Eigenvalue problems
Lecture 43 - Introduction to time dependent problems
Lecture 44 - Spatial approximation
Lecture 45 - Temporal approximation for parabolic problems
Lecture 46 - Temporal approximation for parabolic problems
Lecture 47 - Temporal approximation for hyperbolic problems
Lecture 48 - Explicit and implicit method, diagonalization of mass matrix, closure
NPTEL Video Course - Mechanical Engineering - NOC: Basics of Noise and Its Measurements

Subject Co-ordinator - Prof. Nachiketa Tiwari

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Vibration versus Waves
Lecture 3 - Nature of Sound
Lecture 4 - The Decibel Scale
Lecture 5 - Some Key Terms
Lecture 6 - Adding Decibels
Lecture 7 - Modeling Sound Propagation
Lecture 8 - The Momentum Equation
Lecture 9 - The Continuity Equation and The Gas Law
Lecture 10 - 1-D Wave Equation
Lecture 11 - General Solution for 1-D Wave Equation
Lecture 12 - Complex Time Signal and Transfer Functions
Lecture 13 - Transmission line equations
Lecture 14 - Planar Waves in Closed Tubes
Lecture 15 - Planar Waves in 1-D Open Tubes
Lecture 16 - A Semi-Infinite Tube and Overall Summary
Lecture 17 - 1-D Tubes with Imperfect Terminations
Lecture 18 - Measuring Impedance Through Kundt’s Apparatus
Lecture 19 - Classification of Microphones
Lecture 20 - Classification of Microphones - Continuation
Lecture 21 - Classification of Microphones by Application
Lecture 22 - Microphone Sensitivity
Lecture 23 - Microphone Sensitivity - Continuation
Lecture 24 - Selecting the Right Microphone
Lecture 25 - Fourier Series Expansion
Lecture 26 - Fourier Series Expansion - Continuation
Lecture 27 - Fourier Integral
Lecture 28 - Fourier Integral - Continuation
Lecture 29 - Fourier Transform

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Lecture 30 - Fourier Transform - Continuation
Lecture 31 - Discrete Fourier Transform (DFT)
Lecture 32 - Discrete Fourier Transform (DFT) - Continuation
Lecture 33 - DFT - Calculating Frequencies and Padding
Lecture 34 - DFT - Influence of Duration and Sampling frequency on resolution
Lecture 35 - FFT and Inverse FFT
Lecture 36 - Considerations while deciding instrumentation
Lecture 37 - Considerations while selecting instruments for noise measurements
Lecture 38 - Measuring impedance through two microphone method
Lecture 39 - Designing an impedance measurement tube
Lecture 40 - Octave band analysis
Lecture 41 - Calculating results in octave bands
Lecture 42 - Weighting
Lecture 43 - Short time Fourier transforms (STFT)
Lecture 44 - Spectrograms
Lecture 45 - Reverberation time
Lecture 46 - Anechoic rooms
Lecture 47 - STC, NRC and sound attenuation
Lecture 48 - Reverberant rooms
NPTEL Video Course - Mechanical Engineering - NOC: Manufacturing Process Technology - Part I

Subject Co-ordinator - Dr. Shantanu Bhattacharya
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Manufacturing Process Technology
Lecture 2 - Structure of Matter (Bonding of Solids, Crystal Structures)
Lecture 3 - Brief introduction of non-conventional machining processes
Lecture 4 - Structure of matters (bonding of solids, crystal structures)
Lecture 5 - Elastic and Plastic Deformation
Lecture 6 - Crystal imperfection and dislocation
Lecture 7 - Plastic Deformation
Lecture 8 - Material Properties, Stress Strain Diagram for different types of materials
Lecture 9 - Friction and Wear, Solid solutions
Lecture 10 - Equilibrium Phase Diagram
Lecture 11 - Iron-carbon equilibrium phase diagram
Lecture 12 - Control of material properties (Alloying and heat treatment), Mechanical properties and Recrystallization
Lecture 13 - Introduction To Casting Process
Lecture 14 - Pattern and Mold Design
Lecture 15 - Mold Making Procedures
Lecture 16 - Fundamentals of Melting and Furnaces & Pouring and Gating Design
Lecture 17 - Vertical and Bottom Gating Systems Edit Lesson
Lecture 18 - Numerical Estimation To Find Mold Filling Time and Mold Design
Lecture 19 - Effects of friction and velocity distribution in time of filling
Lecture 20 - Numerical design of gating systems using frictional and bending losses
Lecture 21 - Principle of cooling and solidification in single and multiphase systems
Lecture 22 - Estimation of rate of solidification
Lecture 23 - Principles of cooling and solidification of casting
Lecture 24 - Modeling of Solidification Rates of Thin Casting in a Metal Mold
Lecture 25 - Solidification with Predominant Interface Resistance
Lecture 26 - Solidification with Constant Casting Surface Temperature
Lecture 27 - Solidification of Casting with Predominant Resistance in Mold and Solidified Metal
Lecture 28 - Solidification Time for Permanent Mold Casting
Lecture 29 - Solidification with Constant Casting Surface

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Lecture 30 - Riser Design and Placement - Part 1
Lecture 31 - Riser Design and Placement - Part 2
Lecture 32 - Riser Design and Placement - Part 3
Lecture 33 - Introduction of Machining Processes
Lecture 34 - Review of Basic Machining Processes and the Mechanics of Chip Formation
Lecture 35 - Estimation of Cutting Ratio and Shear Angle
Lecture 36 - Merchant's Force Analysis
Lecture 37 - Merchant Theory (Cutting Forces Analysis)
Lecture 38 - Merchant Theory (Force analysis) Part-2
Lecture 39 - Lee Shaffer's Solution
Lecture 40 - Specific Energy Model for Cutting
Lecture 41 - Modeling of Heat Generation and Cutting Tool Temperature
Lecture 42 - Temperature in Cutting and Builtup Edge Formation
Lecture 43 - Metal Cutting Operation
Lecture 44 - Tool life and Tool wear
Lecture 45 - Economics of Machining
Lecture 46 - Joining Process
Lecture 47 - Principle of Solid State Welding
Lecture 48 - Numerical Design of Welding Power Sources in Arc Welding
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Nature and Property of Materials
Subject Co-ordinator - Prof. Bishakh Bhattacharya
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - History and Evolution of Materials
Lecture 2 - Classification of Materials
Lecture 3 - Advanced and Exotic Materials
Lecture 4 - Mechanical Properties of Materials - I
Lecture 5 - Mechanical Properties of Materials - II
Lecture 6 - Mechanical Properties of Materials - III
Lecture 7 - Bonding between atoms
Lecture 8 - The Role of Crystal Structure - I
Lecture 9 - The Role of Crystal Structure - II
Lecture 10 - The Role of Crystal Structure - III
Lecture 11 - Metals - I (Ferrous alloys)
Lecture 12 - Metals - II (Non-Ferrous alloys)
Lecture 13 - Metals - III (Strengthening and Degradation)
Lecture 14 - Ceramics - I
Lecture 15 - Ceramics - II
Lecture 16 - Polymers
Lecture 17 - Polymeric Structure
Lecture 18 - Effects of Glass transition temperature
Lecture 19 - Polymer Mechanical properties
Lecture 20 - Composites - I
Lecture 21 - Composites - II
Lecture 22 - Composites - III
Lecture 23 - Smart Materials - I (Introduction)
Lecture 24 - Smart Materials - II (Piezoelectricity)
Lecture 25 - Smart Materials - III (Magnetostriiction)
Lecture 26 - Smart Materials - IV (Smart Polymers)
Lecture 27 - Smart Materials - V (SMA)
Lecture 28 - Materials Selection in Engineering Design
Lecture 29 - Numerical

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Lecture 30 - Numerical
Lecture 31 - Numerical
Lecture 32 - Numerical
Lecture 33 - Optical Properties
Lecture 34 - Optical Fiber
Lecture 35 - Thermal Properties
Lecture 36 - Numerical
Lecture 37 - Electric Properties - I
Lecture 38 - Electric Properties - II
Lecture 39 - Magnetic Properties
Lecture 40 - Laboratory demonstration
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: Manufacturing Process Technology - Part II

Subject Co-ordinator - Dr. Shantanu Bhattacharyya
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Advanced Machining Processes
Lecture 2 - Classification of Machining Processes
Lecture 3 - Silicon growth and Crystallography
Lecture 4 - Micro Fabrication Technology
Lecture 5 - Photolithography
Lecture 6 - Soft Lithography
Lecture 7 - Introduction to Wet Etching Techniques
Lecture 8 - Introduction to Dry Etching Techniques
Lecture 9 - Introduction of Additive Techniques
Lecture 10 - Introduction to Abrasive Jet Machining Process
Lecture 11 - Ultrasonic Machining Process
Lecture 12 - Determination of MRR of Ultrasonic Machining Process
Lecture 13 - Mechanics of Ultrasonic Machining (USM)
Lecture 14 - Effect of Process parameters of USM
Lecture 15 - Ultrasonic Machining Unit
Lecture 16 - Electrochemical Machining Processes (ECM)
Lecture 17 - Material Removal Rate of ECM
Lecture 18 - Electrode Double Layer
Lecture 19 - Material removal rate of an alloy in ECM
Lecture 20 - Kinematics and Dynamics of ECM
Lecture 21 - Temperature and Pressure rise during ECM
Lecture 22 - Determination of Electrolyte flow velocity in ECM
Lecture 23 - Effect of heat and Hydrogen bubble generation during ECM Process
Lecture 24 - Theoretical determination of Tool shape
Lecture 25 - Design for Electrolyte flow in ECM
Lecture 26 - Introductions of Electro-chemical Drilling Process
Lecture 27 - Introduction to Finishing Process
Lecture 28 - Electric Discharge Machining Process
Lecture 29 - EDM part-2

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Lecture 30 - Effect of various process parameters on EDM process
Lecture 31 - Analysis of RC circuit for EDM
Lecture 32 - Electrodischarge machining system
Lecture 33 - Effect of various parameters on EDM Process
Lecture 34 - Tool Electrodes and Dielectric fluids and Electron Beam Machining
Lecture 35 - Mechanics of Electron Beam Machining Process
Lecture 36 - Functional Characteristics of EBM Process Edit Lesson
Lecture 37 - Introduction of Laser Beam Machining Process
Lecture 38 - Material removal rate of LBM
Lecture 39 - Heat conduction and Temperature rise during LBM
Lecture 40 - Modelling of LBM processes
Lecture 41 - Metal forming Processes Edit Lesson
Lecture 42 - Yield Criterion used in Metal Forming Processes Edit Lesson
Lecture 43 - Concept of Principal stress, strain
Lecture 44 - Trescas' Yield criteria and Rolling Process
Lecture 45 - Rolling Processes - Part 1
Lecture 46 - Rolling Processes - Part 2
Lecture 47 - Additive Manufacturing Processes
Lecture 48 - Fused Deposition Modeling Process
NPTEL Video Course - Mechanical Engineering - NOC:Basics of Finite Element Analysis - II

Subject Co-ordinator - Prof. Nachiketa Tiwari

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of the Course
Lecture 2 - Fundamental principles
Lecture 3 - Steps followed in FEA
Lecture 4 - Weak Formulation
Lecture 5 - Weak Formulation
Lecture 6 - Assembling element level equations
Lecture 7 - Errors in FEA Solution
Lecture 8 - Measures of Errors in FEA Solution
Lecture 9 - Convergence and Accuracy of Solution - Part I
Lecture 10 - Convergence and Accuracy of Solution - Part II
Lecture 11 - Convergence - Part I
Lecture 12 - Convergence - Part II
Lecture 13 - Numerical Integration Schemes - Part I
Lecture 14 - Numerical Integration Schemes - Part II
Lecture 15 - Approximations - Part I
Lecture 16 - Approximations - Part II
Lecture 17 - Approximations - Part III
Lecture 18 - Gauss Quadrature
Lecture 19 - Gaussian Quadrature review
Lecture 20 - Gaussian Quadrature - Part II
Lecture 21 - Gaussian Quadrature - Part III
Lecture 22 - Newton-Cotes Quadrature
Lecture 23 - Two dimensional FEM problem
Lecture 24 - Two dimensional one variable FEM problem
Lecture 25 - 2D Finite element problems with single variable (Model equation)
Lecture 26 - 2D Finite element problems with single variable (Weak formulation)
Lecture 27 - Elemental level 2D finite element equations
Lecture 28 - Interpolation functions for 2D finite element problems
Lecture 29 - Interpolation functions for linear triangular elements - Part I

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Lecture 30 - Interpolation functions for linear triangular elements - Part II
Lecture 31 - Interpolation functions for Triangular and Rectangular elements
Lecture 32 - Evaluation of Stiffness and Force matrices
Lecture 33 - Stiffness and Force matrices for Triangular element
Lecture 34 - Stiffness and Force matrices for Rectangular element
Lecture 35 - Boundary elements for Finite element Equations
Lecture 36 - Boundary integrals for Triangular element
Lecture 37 - Assembly of 2-D finite elements - Part I
Lecture 38 - Assembly of 2-D finite elements - Part II
Lecture 39 - 2-D Heat transfer problems - Part I
Lecture 40 - 2-D Heat transfer problems - Part II
Lecture 41 - Numerical integration schemes for 2-D problems
Lecture 42 - Jacobian and transformation matrix for 2-D problems
Lecture 43 - Numerical Integration Schemes for 2-D Problems
Lecture 44 - Post-processing
Lecture 45 - Plane Elasticity Problems
Lecture 46 - Plane Elasticity Problems
Lecture 47 - Plane Elasticity Problems
Lecture 48 - Plane Elasticity Problems
NPTEL Video Course - Mechanical Engineering - NOC: Principles of Vibration Control

Subject Co-ordinator - Prof. Bishakh Bhattacharya

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Vibration control
Lecture 2 - Strategies and Steps in Vibration Control
Lecture 3 - Strategies, Active control, Detuning and Decoupling
Lecture 4 - Viscous damping model
Lecture 5 - Coulomb and Hysteretic damping model
Lecture 6 - Energy Dissipation in Structural Materials
Lecture 7 - Material Selection Criterion against Damping
Lecture 8 - Design for Enhanced Material Damping
Lecture 9 - Linear Viscoelastic Materials and Models
Lecture 10 - Maxwell and 3-Parameter Models
Lecture 11 - Complex modulus and Applications of VEM
Lecture 12 - Basics of Dynamic Vibration Absorber
Lecture 13 - Modelling of Dynamic Vibration Absorber
Lecture 14 - Proof mass Actuator
Lecture 15 - Springs for Vibration Isolation
Lecture 16 - Introduction to Active Vibration Control
Lecture 17 - Basics of Classical Control System
Lecture 18 - Basics of State Space Control
Lecture 19 - Controllability and Observability of System
Lecture 20 - Full State Feedback Control
Lecture 21 - SMSS Laboratory Demonstration

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NPTEL Video Course - Mechanical Engineering - NOC: Fundamentals of Acoustics

Subject Co-ordinator - Prof. Nachiketa Tiwari

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Lesson 1 - Course Overview
Lecture 2 - Lesson 2 - Introduction
Lecture 3 - Lesson 3 - Nature Of Sound
Lecture 4 - Lesson 4 - The Decibel scale
Lecture 5 - Lesson 5 - Key Terms In Acoustics
Lecture 6 - Lesson 6 - Adding Decibels
Lecture 7 - Lesson 1 - Important Mathematical Concepts - Complex Algebra
Lecture 8 - Lesson 2 - Important Mathematical Concepts - Complex Time Signals
Lecture 9 - Lesson 3 - Important Mathematical Concepts - Transfer Function
Lecture 10 - Lesson 4 - Important Mathematical Concepts - Pole Zero Plot
Lecture 11 - Lesson 5 - Important Mathematical Concepts - Bode Plot For Simple Pole
Lecture 12 - Lesson 6 - Important Mathematical Concepts - Bode Plot For Simple Zero
Lecture 13 - Lesson 1 - Bode Plots (Magnitude) for Complex Transfer Functions
Lecture 14 - Lesson 2 - Momentum Equation for 1-D Sound Propagation
Lecture 15 - Lesson 3 - Continuity Equation for 1-D Sound Propagation
Lecture 16 - Lesson 4 - Gas Law for 1-D Sound Propagation
Lecture 17 - Lesson 5 - 1-D Wave Equation
Lecture 18 - Lesson 6 - Solution for 1-D Wave Equation
Lecture 19 - Lesson 1 - Waveguide
Lecture 20 - Lesson 2 - Transmission Line Equations - Part I
Lecture 21 - Lesson 3 - Transmission Line Equations - Part II
Lecture 22 - Lesson 4 - Transmission Line Equations - Part III
Lecture 23 - Lesson 5 - Transmission Line Equations - Part IV
Lecture 24 - Lesson 6 - Transmission Line Equations - Part V
Lecture 25 - Lesson 1 - Instantaneous Power
Lecture 26 - Lesson 2 - Instantaneous Power in a L-R Circuit
Lecture 27 - Lesson 3 - Power Factor, and Acoustic Power
Lecture 28 - Lesson 4 - Power Flow into an Infinitely Long Tube
Lecture 29 - Lesson 5 - Point Sources of Sound

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Lecture 69 - Lesson 3 - Octave Band Analysis Part III
Lecture 70 - Lesson 4 - Reverberation Time
Lecture 71 - Lesson 5 - Calculation of Reverberation Time and Sound Transmission Class (STC)
Lecture 72 - Lesson 6 - Noise Reduction Coefficient (NRC)
NPTEL Video Course - Mechanical Engineering - NOC: Heat Treatment and Surface Hardening - II

Subject Co-ordinator - Dr. Kallol Mondal
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Recap - I
Lecture 2 - Recap - II
Lecture 3 - Recap - III
Lecture 4 - Determination of Phase Diagram (Experimentally) - I
Lecture 5 - Determination of Phase Diagram (Experimentally) - II
Lecture 6 - Determination of Phase Diagram (Thermodynamically)
Lecture 7 - Effect of pressure on phase transformation temperature and concept of equilibrium between condensed and vapor phases
Lecture 8 - Effect of different parameters on heat treatment and concept of saturation vapor pressure with examples
Lecture 9 - Title
Lecture 10 - G-X diagrams (Part-II) and concept of chemical potential (Micro Sign) from G-X diagrams.
Lecture 11 - Concept of common tangent for equilibrium between two phases
Lecture 12 - Expressions for equilibrium of two phases - I
Lecture 13 - Expressions for equilibrium of two phases - II
Lecture 14 - Expressions for equilibrium of two phases - III
Lecture 15 - Determining nucleation of phases using G-X plot
Lecture 16 - $\Delta G$ for nucleation and overall transformation, concepts of solid state transformation including precipitation and Quasi-Chemical Model (QCM)
Lecture 17 - Introduction to real solutions and expression of $\Delta H_{\text{mix}}$ based on the Quasi-Chemical Model (QCM)
Lecture 18 - Expression for $\Delta H_{\text{mix}}$ as a function of interaction energy and mole fraction, based on the QCM - Part I
Lecture 19 - Expression for $\Delta H_{\text{mix}}$ as a function of interaction energy and mole fraction, based on the QCM - Part II
Lecture 20 - Graphical representation of $\Delta G_{\text{mix}}, \Delta H_{\text{mix}},$ and $-T\Delta S_{\text{mix}}$ for real solutions and evolution of eutectic phase diagram from the G-X plot
Lecture 21 - Effect of $\Delta H_{\text{mix}}$ on determination of phase diagrams (same crystal structure)
Lecture 22 - Effect of $\Delta H_{\text{mix}}$ on determination of phase diagrams (Continued...)
Lecture 23 - Importance of phase diagrams
Lecture 24 - Effect of heat treatment on microstructure evolution in steel - I
Lecture 25 - Effect of heat treatment on microstructure evolution in steel - II
Lecture 26 - Recap of homogeneous and heterogeneous nucleation for solid to solid transformation
Lecture 27 - Nucleation rate and its dependence on T (temp. of interest), $\Delta T$, $\Delta G_v$ and $\Delta G^*$ and, introduction to growth kinetics
Lecture 28 - Growth kinetics (Continued...)
Lecture 29 - Growth rate variation with undercooling and kinetics of overall phase transformation
NPTEL Video Course - Mechanical Engineering - NOC: Phase Transformation in Materials

Subject Co-ordinator - Dr. Krishanu Biswas

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Brief Introduction
Lecture 2 - Define Phase, Equilibrium
Lecture 3 - Free Energy, Stability of Phases
Lecture 4 - Gibbs Free Energy of Binary Solution
Lecture 5 - Ideal Solution and Chemical Potential
Lecture 6 - Thermodynamics of solid solutions
Lecture 7 - G vs X curves
Lecture 8 - Solid solutions
Lecture 9 - Heterogeneous phase equilibria
Lecture 10 - G vs X curves for eutectic system
Lecture 11 - G-X plot for peritectic system
Lecture 12 - Effect of temperature of solid solubility, Influence of interfaces on Equilibrium
Lecture 13 - Introduction of Diffusion
Lecture 14 - Mechanism of Diffusion, Fick's I law
Lecture 15 - Fick's II law
Lecture 16 - Fick's II law (Continued...), Diffusion and Temperature
Lecture 17 - Interfacial Free Energy, Solid/Vapor Interface
Lecture 18 - Boundaries in single phase solids
Lecture 19 - High angle grain boundaries, Equilibrium in poly-crystalline materials, Interphase interfaces in solids (Continued...)
Lecture 20 - Interphase interfaces in solids (Continued...)
Lecture 21 - CSL Boundaries
Lecture 22 - Types of Nucleations
Lecture 23 - Homogeneous Nucleation
Lecture 24 - Homogeneous Nucleation (Continued...)
Lecture 25 - Heterogeneous Nucleation
Lecture 26 - Heterogeneous nucleation (Continued...)
Lecture 27 - Growth
Lecture 28 - Atomic mechanism of growth
Lecture 29 - Dendritic Solidification

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Lecture 30 - Growth rate for dendrite formation
Lecture 31 - Alloy solidification
Lecture 32 - Alloy solidification (Continued...)
Lecture 33 - Eutectic
Lecture 34 - Eutectic
Lecture 35 - Solidification of casting / ingot
Lecture 36 - Precipitation hardenable alloy
Lecture 37 - Precipitation age- hardening alloy (Continued...)
Lecture 38 - Age hardening alloy
Lecture 39 - Eutectoid transformation
Lecture 40 - Eutectoid transformation (Continued....)
Lecture 41 - Eutectoid transformation in steel (Continued...)
Lecture 42 - Martensite
Lecture 43 - Martensite (Continued...)
Lecture 44 - Martensite (Continued...)
Lecture 45 - TTT curves
Lecture 46 - Recovery, Recrystallization and Grain growth
Lecture 47 - Recovery
Lecture 48 - Recrystallization
Lecture 49 - Recrystallization (Continued...)
Lecture 50 - Introduction to spinodal decomposition
NPTEL Video Course - Mechanical Engineering - NOC: Manufacturing of Composites

Subject Co-ordinator – Prof. J. Ramkumar
Co-ordinating Institute – IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Composites
Lecture 2 - Matrices
Lecture 3 - Fiber reinforcements
Lecture 4 - Fiber reinforcements (Continued...)
Lecture 5 - Composites properties
Lecture 6 - Composites testing
Lecture 7 - Selection of material
Lecture 8 - Selection of material (Continued...)
Lecture 9 - Design for Manufacturing
Lecture 10 - Design for Manufacturing (Continued...)
Lecture 11 - Composite Manufacturing Processes
Lecture 12 - Filament winding Processes
Lecture 13 - Resin transfer moulding
Lecture 14 - Pultrusion
Lecture 15 - Compression Moulding Process
Lecture 16 - Vacuum Impregnation Methods
Lecture 17 - Stacking of Composites
Lecture 18 - Thermoplastic Composites Manufacturing Processes - Part 1
Lecture 19 - Thermoplastic Composites Manufacturing Processes - Part 2 (Continued...)
Lecture 20 - Non-destructive testing methods for composite materials
Lecture 21 - Metal Matrix Composites
Lecture 22 - Metal Matrix Composites applications (Continued...)
Lecture 23 - Processing of Metal Matrix Composites - Part 1
Lecture 24 - Processing of Metal Matrix Composites - Part 2
Lecture 25 - Ceramic Matrix Composites
Lecture 26 - Fabrication of Ceramic Matrix Composites (CMCs)
Lecture 27 - Carbon - Carbon Composites
Lecture 28 - Polymer Matrix and Nano Composites
Lecture 29 - Machining of Composites

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Lecture 30 - Repair of Composites
Lecture 31 - Manufacturing Processes
Lecture 30 - Work Systems
Lecture 31 - Measures of Productivity
Lecture 32 - Productivity Measurement
Lecture 33 - Work Study
Lecture 34 - Motion and time study
Lecture 35 - (Missing)
Lecture 36 - (Missing)
Lecture 37 - (Missing)
Lecture 38 - (Missing)
Lecture 39 - (Missing)
Lecture 40 - Industrial accidents
Lecture 41 - Human Errors
Lecture 42 - Workers compensation laws
Lecture 43 - Organisation Ergonomics - Part 1
Lecture 44 - Organisation Ergonomics - Part 2
Lecture 45 - Job Satisfaction
Lecture 46 - Worker behavior
NPTEL Video Course - Mechanical Engineering - NOC:Sustainability through Green Manufacturing Systems - An Applied Approach

Subject Co-ordinator - Dr. Deepu Philip, Dr. Amandeep Singh

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basics of Production
Lecture 2 - Basics of Production (Continued...)
Lecture 3 - Sustainability and Manufacturing
Lecture 4 - Introduction to Simulation
Lecture 5 - Introduction to Simulation (Continued...)
Lecture 6 - Basic Statistical Concepts for Sustainable Manufacturing Analysis
Lecture 7 - Basic Statistical Concepts for Sustainable Manufacturing Analysis (Continued...)
Lecture 8 - Life Cycle Assessment
Lecture 9 - Life Cycle Assessment Elements
Lecture 10 - Life Cycle Assessment Procedure
Lecture 11 - Life Cycle Assessment (Continued...)
Lecture 12 - Sustainability Framework
Lecture 13 - Basic Modeling Concepts for Factory Simulation
Lecture 14 - Basic Modeling Concepts for Factory Simulation (Continued...)
Lecture 15 - Green Manufacturing Modelling
Lecture 16 - Green Manufacturing Modelling (Continued...) Indices for Green Manufacturing
Lecture 17 - Green Manufacturing Modelling (Continued...) Developing Green Manufacturing System
Lecture 18 - Productivity and Sustainability
Lecture 19 - Productivity and Sustainability (Continued...)
Lecture 20 - Green Manufacturing Techniques
Lecture 21 - Green Manufacturing Techniques (Continued...)
Lecture 22 - Renewable Sources of Energy
Lecture 23 - Renewable Sources of Energy (Continued...)
Lecture 24 - Renewable energy in India and Industrial Symbiosis
Lecture 25 - Demonstration of Various Instruments Used for Green Machining
Lecture 26 - Laboratory demonstration

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Lecture 30 - Volume velocity - I
Lecture 31 - Interference of 1-D spherically propagating sound waves - I
Lecture 32 - Interference of 1-D spherically propagating sound waves - II
Lecture 33 - Noise sources and introduction to microphones
Lecture 34 - Classification of microphones - I
Lecture 35 - Classification of microphones - II
Lecture 36 - Classification of microphones - III
Lecture 37 - Microphone Parameters
Lecture 38 - Understanding microphone specifications
Lecture 39 - Noise Source
Lecture 40 - Noise Source
Lecture 41 - Noise Source
Lecture 42 - Noise Source
Lecture 43 - Noise Source
Lecture 44 - Noise Source
Lecture 45 - Measuring Sound Power Level - Understanding standard octave bands
Lecture 46 - Measuring Sound Power Level - Fan noise - Part I
Lecture 47 - Measuring Sound Power Level - Fan noise - Part II
Lecture 48 - Measuring Sound Power Level - Fan noise - Part III
Lecture 49 - Weighting
Lecture 50 - Noise coming from Motors
Lecture 51 - Noise coming from Motors and Pumps
Lecture 52 - Noise coming from Pump and Motor Working Simultaneously
Lecture 53 - Noise coming from Compressors
Lecture 54 - Example problems regarding Noise coming from Compressor
Lecture 55 - Noise Spread Mechanisms
Lecture 56 - Reverberation time
Lecture 57 - Reverberation time example problem
Lecture 58 - Noise from Adjacent Room
Lecture 59 - Acoustic Enclosures
Lecture 60 - Acoustic Enclosures - Example Problems
Lecture 61 - Large acoustical enclosures - I
Lecture 62 - Large acoustical enclosures - II
Lecture 63 - Acoustic barriers - I
Lecture 64 - Acoustic barriers - II
Lecture 65 - Acoustic barriers - III
Lecture 66 - Helmholtz resonator - I
Lecture 30 - Axiomatic Design
Lecture 31 - Introduction to group technology
Lecture 32 - Failure Mode Effect Analysis
Lecture 1 - Definition of the composite materials
Lecture 2 - Composite materials and its applications
Lecture 3 - Classification of the composite materials
Lecture 4 - What Makes fiber so strong?
Lecture 5 - Advantages and limitations of composite materials
Lecture 6 - Properties of the composite materials.
Lecture 7 - Different Types of Fiber
Lecture 8 - Production process and different types of Glass Fiber
Lecture 9 - Graphite Fibers
Lecture 10 - Aramid and Boron Fibers
Lecture 11 - Ceramic Fibers
Lecture 12 - Matrix - Properties and classifications
Lecture 13 - Polymers as matrix material and its classification
Lecture 14 - Thermosets and thermoplastics
Lecture 15 - Properties of thermosets and thermoplastics
Lecture 16 - Thermoset materials and its production methods
Lecture 17 - Thermoplastics and metals as matrix materials
Lecture 18 - Ceramic and carbon matrices
Lecture 19 - What is a good fabrication process of a composite?
Lecture 20 - Fabrication of Thermoset Composites
Lecture 21 - Hand Lay-Up Process
Lecture 22 - Bag Molding Process
Lecture 23 - Resin Transfer Molding Process
Lecture 24 - Fabrication of Thermoplastic, Metal and Ceramic Matrix based Composites
Lecture 25 - Terminologies and basic concepts
Lecture 26 - Orthotropic material
Lecture 27 - Modeling of unidirectional composites
Lecture 28 - Composite density as a function of mass fraction and volume fraction
Lecture 29 - Calculation of longitudinal modulus for unidirectional composites
Lecture 69 - Simplification of Stiffness Matrices - Part II
Lecture 70 - Quasi-Isotropic Laminates - Part I
Lecture 71 - Quasi-Isotropic Laminates - Part II
Lecture 72 - Failure of Composite Laminates
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: Product Design and Manufacturing

Subject Co-ordinator - Prof. J. Ramkumar, Dr. Amandeep Singh

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to product design and Manufacturing
Lecture 2 - Introduction to product design and Manufacturing (Continued...)
Lecture 3 - Fundamentals of Manufacturing towards Product Development
Lecture 4 - Fundamentals of Manufacturing towards Product Development (Continued...)
Lecture 5 - Engineering Design Process
Lecture 6 - Product design morphology
Lecture 7 - Product characteristics
Lecture 8 - Elements of Visual Design - Part 1
Lecture 9 - Elements of Visual Design - Part 2
Lecture 10 - Translating Customer Needs
Lecture 11 - Value Engineering, an introduction
Lecture 12 - Value Engineering Methodology - Part 1
Lecture 13 - Value Engineering Methodology - Part 2, FAST diagramming
Lecture 14 - Value Engineering Methodology - Part 3
Lecture 15 - Value Engineering, case study
Lecture 16 - Materials Selection - Part 1
Lecture 17 - Materials Selection - Part 2
Lecture 18 - Manufacturing Process Selection - Part 1
Lecture 19 - Manufacturing Process Selection - Part 2
Lecture 20 - Product Costing
Lecture 21 - Design for Manufacturing
Lecture 22 - Design for Assembly
Lecture 23 - Quality Control
Lecture 24 - Patent - Part 1
Lecture 25 - Patent - Part 2
Lecture 26 - Rapid Prototyping, an introduction
Lecture 27 - Rapid Prototyping Modelling
Lecture 28 - Rapid Prototyping Processes - Part 1
Lecture 29 - Rapid Prototyping Processes - Part 2

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www.digimat.in
Lecture 1 - Basic Thermodynamics
Lecture 2 - Basic Thermodynamics
Lecture 3 - Phase Stability in Materials
Lecture 4 - Effects of Temperature and Pressure on Single Components System
Lecture 5 - Clausius-Clapeyron Equation and Binary Solution
Lecture 6 - Calculation of Configurational Entropy
Lecture 7 - Chemical Potential
Lecture 8 - Phase Stability in Binary Solution
Lecture 9 - Activity and Thermodynamics of Regular Solution
Lecture 10 - Thermodynamic of Real Solution
Lecture 11 - Free Energy Curves and Various Systems
Lecture 12 - Solubility Limits 2-phase Co-existence
Lecture 13 - Phase Diagram Formation
Lecture 14 - Phase Diagram Construction
Lecture 15 - Phase Diagram Construction
Lecture 16 - Intermetallics and Phase Diagrams
Lecture 17 - Phase Rule
Lecture 18 - Gibb's Phase Rule
Lecture 19 - Gibb's Phase Rule
Lecture 20 - Phase Fraction Calculation in a Phase Diagram
Lecture 21 - Microstructure evolution in Cu-Ni binary system
Lecture 22 - Microstructure evolution (Continued...)
Lecture 23 - Phase evolution in hypoeutectic region
Lecture 24 - Phase evolution at Eutectic point
Lecture 25 - Phase Diagrams of Cu-Ni and Al-Si
Lecture 26 - Phase Diagrams of Pb-Sn and Fe-C
Lecture 27 - Phase Diagram of Fe-C (Continued...)
Lecture 28 - Fe-C Phase Diagram (Continued...)
Lecture 29 - Fe-C Phase Diagram (Continued...)
Lecture 30 - Phase Diagrams for non-Ferrous Alloys
Lecture 31 - Method of measuring Phase diagram
Lecture 32 - Methods of measuring phase diagram (Continued...)
Lecture 33 - Methods of measuring phase diagram
Lecture 34 - Ternary Phase Diagram
Lecture 35 - Ternary Phase Diagram (Continued...)
Lecture 36 - Ternary system with two phases
Lecture 37 - Ternary system with three phases
Lecture 38 - Ternary phase diagram with 4 phases
Lecture 39 - Application of Phases diagrams
Lecture 40 - Summary of Course
NPTEL Video Course - Mechanical Engineering - NOC: Advanced Composites

Subject Co-ordinator - Prof. Nachiketa Tiwari

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basics of composite materials
Lecture 2 - Different type of Fibers
Lecture 3 - Properties of single layer continuous fiber composites
Lecture 4 - Properties of single layer continuous fiber composites
Lecture 5 - Strength of single layer continuous fiber composites
Lecture 6 - Strength of single layer continuous fiber composites
Lecture 7 - Concept of Tensor
Lecture 8 - General Anisotropic Material
Lecture 9 - Specially Orthotropic Material
Lecture 10 - Specially Orthotropic Material Under Plane Stress
Lecture 11 - Stress and Strain Transformation
Lecture 12 - Transformation of Stiffness and Compliance Matrices
Lecture 13 - Strain - Displacement relations
Lecture 14 - Relations for stress and strain along thickness of laminate
Lecture 15 - Stress - Strain variation along Laminate thickness
Lecture 16 - Force and Moment resultant - Part 1
Lecture 17 - Force and Moment resultant - Part 2
Lecture 18 - Important observation related to [A], [B] and [D] matrices
Lecture 19 - Quasi-Isotropic Laminates
Lecture 20 - Maximum Stress Theory
Lecture 21 - Maximum Strain Theory
Lecture 22 - Importance of Sign of Shear Stress.
Lecture 23 - Failure Initiation in Composite Laminate.
Lecture 24 - Progressive Failure of Laminae in A Laminate
Lecture 25 - Governing equations for composite plates
Lecture 26 - Force equilibrium in Z-direction
Lecture 27 - Moment equilibrium equations
Lecture 28 - Equilibrium equations for composite plates
Lecture 29 - Boundary conditions associated with different edges of composite plate - Part 1

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www.digimat.in
Lecture 69 - Introduction to Short-Fiber Composites
Lecture 70 - Theories of Stress Transfer
Lecture 71 - Theories of Stress Transfer
Lecture 72 - Modulus of Short-Fiber Composites and Closure
NPTEL Video Course - Mechanical Engineering - NOC:Engineering Metrology

Subject Co-ordinator - Dr. Amandeep Singh, Prof. J. Ramkumar

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to measurements and metrology
Lecture 2 - Instruments in measurement systems
Lecture 3 - Instruments in measurement systems
Lecture 4 - General concepts and definitions in metrology
Lecture 5 - Standards of measurement
Lecture 6 - Limits, Fits, and Tolerances - Part 1
Lecture 7 - Limits, Fits, and Tolerances - Part 2
Lecture 8 - Limits, Fits, and Tolerances - Part 3
Lecture 9 - Limits, Fits, and Tolerances - Part 4
Lecture 10 - Linear Measurements - Part 1
Lecture 11 - Linear Measurements - Part 2
Lecture 12 - Laboratory demonstration, Vernier Caliper
Lecture 13 - Laboratory demonstration, Dial gauge and vernier, micrometer, surface plate, feeler gauge
Lecture 14 - Angular Measurements - Part 1
Lecture 15 - Angular Measurements - Part 2
Lecture 16 - Laboratory demonstration, Vernier height gauge
Lecture 17 - Laboratory demonstration, Thread gauge, spirit level
Lecture 18 - Laboratory demonstration, Combination set, slip gauges, sine bar
Lecture 19 - Comparators - Part 1
Lecture 20 - Comparators - Part 2
Lecture 21 - Transducers - Part 1
Lecture 22 - Transducers - Part 2
Lecture 23 - Screw thread metrology
Lecture 24 - Gears metrology - Part 1
Lecture 25 - Gears metrology - Part 2
Lecture 26 - Laboratory demonstration, Gear Vernier
Lecture 27 - Surface metrology
Lecture 28 - Temperature measurements
Lecture 29 - Pressure measurements - Part 1

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Lecture 30 - Pressure measurements - Part 2
Lecture 31 - Strain measurements - Part 1
Lecture 32 - Strain measurements - Part 2
Lecture 33 - Optical measurements and Nanometrology - Part 1
Lecture 34 - Optical measurements and Nanometrology - Part 2
Lecture 35 - Optical measurements and Nanometrology - Part 3
Lecture 36 - Statistics in Metrology, an introduction - Part 1
Lecture 37 - Statistics in Metrology, an introduction - Part 2
Lecture 38 - Data and scales in measurements
Lecture 39 - Discrete and continuous data
Lecture 40 - Statistics for metrology, fundamental concepts - Part 1
Lecture 41 - Statistics for metrology, fundamental concepts - Part 2
Lecture 42 - Statistics for metrology, fundamental concepts - Part 3
Lecture 43 - Probability distributions for estimating measurement
Lecture 44 - Normal distribution
Lecture 45 - Statistics for proportions
Lecture 46 - Chi square distribution, and Data outlier detection
Lecture 47 - Quality Control, introduction
Lecture 48 - Quality Control, control charts for variables
Lecture 49 - Quality Control, control charts for attributes
Lecture 50 - Quality Control, critical aspects
Lecture 51 - 3D measurements, Coordinate Measuring Machine (CMM)
Lecture 52 - Laboratory demonstration, Coordinate Measuring Machine (CMM)
NPTEL Video Course - Mechanical Engineering - NOC: Smart Materials and Intelligent System Design

Subject Co-ordinator - Prof. Bisakh Bhattacharya

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Smart Materials
Lecture 2 - Piezoelectric Material
Lecture 3 - Magnetostrictive Material
Lecture 4 - Active Smart Polymer
Lecture 5 - Shape Memory Alloys
Lecture 6 - Introduction to composites
Lecture 7 - Classification of Composites
Lecture 8 - Micromechanics and Macromechanics of Composites
Lecture 9 - Classical Laminated Plate Theory
Lecture 10 - ABD Matrices
Lecture 11 - Modelling of piezoelectric material 1
Lecture 12 - Modelling of piezoelectric material 2
Lecture 13 - Modelling of Magnetostrictive material
Lecture 14 - Modelling of Shape memory Alloys
Lecture 15 - Smart Actuators
Lecture 16 - Smart Materials based MEMS
Lecture 17 - Smart MEMS Applications
Lecture 18 - Energy Harvesting
Lecture 19 - Concept of Self Healing
NPTEL Video Course - Mechanical Engineering - NOC:Design Practice-II

Subject Co-ordinator - Dr. Shantanu Bhattacharya
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Design concepts
Lecture 2 - Computer Aided Design (CAD)
Lecture 3 - Geometrical transformation
Lecture 4 - Composition of geometrical transformation
Lecture 5 - Geometric modeling
Lecture 6 - Representation of curves
Lecture 7 - Parametric representation of synthetic curves
Lecture 8 - Curve fitting problem (Hermite case)
Lecture 9 - Problem solving (based on Bezier curve)
Lecture 10 - Representation of Surfaces
Lecture 11 - Introduction to Micro-Elctro mechanical Systems (MEMS)
Lecture 12 - Lab-on-Chip
Lecture 13 - Introduction to Sensors
Lecture 14 - Introduction to Transducers
Lecture 15 - Introduction to device fabrications
Lecture 16 - Introduction to Silicon as a MEMS material
Lecture 17 - Etching processes
Lecture 18 - Types of Photolithography
Lecture 19 - Introduction to actuators
Lecture 20 - Designing of the Micro-Valve
Lecture 21 - Electrochemical valves
Lecture 22 - Micropumps
Lecture 23 - Designing of peristaltic pumps
Lecture 24 - Different types of pumps and sensors
Lecture 25 - Computer Numerical Control
Lecture 26 - Numerical control programming
Lecture 27 - NC part programming
Lecture 28 - Introduction to rapid prototyping
Lecture 29 - Different types of rapid prototyping technologies

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Lecture 30 - Fused Deposition Modeling
Lecture 31 - LAB demonstration of Fused Deposition Modelling Techniques
Lecture 32 - LAB demonstration of Fused Deposition Modelling Process
Lecture 33
Lecture 34
Lecture 35
Lecture 36
Lecture 37

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Lecture 30 - Beam Deposition processes
Lecture 31 - Materials in Rapid Manufacturing - Part 1
Lecture 32 - Materials in Rapid Manufacturing - Part 2
Lecture 33 - Post-processing concerns - Part 1
Lecture 34 - Post-processing concerns - Part 2
Lecture 35 - Product costing for Rapid Manufacturing - Part 1
Lecture 36 - Product costing for Rapid Manufacturing - Part 2
Lecture 37 - Rapid Product Development, CAD/CAM - Part 1
Lecture 38 - Rapid Product Development, CAD/CAM - Part 2
Lecture 39 - Rapid Product Development, CAD/CAM - Part 3
Lecture 40 - Rapid Product Development, CAE and CIM
Lecture 41 - Rapid Product Development, Technomatix, Plant Simulation 10 - Part 1
Lecture 42 - Rapid Product Development, Technomatix, Plant Simulation 10 - Part 2
Lecture 43 - Rapid Product Development, Technomatix, Plant Simulation 10 - Part 3
Lecture 44 - Rapid Manufacturing, case studies
NPTEL Video Course - Mechanical Engineering - NOC: Turbulent Combustion: Theory and Modelling

Subject Co-ordinator - Prof. Ashoke De

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Combustion
Lecture 2 - Introduction to Combustion (Continued...)
Lecture 3 - Introduction to Combustion (Continued...)
Lecture 4 - Introduction to Combustion (Continued...) + Combustion and Thermochemistry
Lecture 5 - Combustion and Thermochemistry
Lecture 6 - Combustion and Thermochemistry (Continued...)
Lecture 7 - Combustion and Thermochemistry (Continued...) + Chemical Kinetics
Lecture 8 - Chemical Kinetics (Continued...)
Lecture 9 - Chemical Kinetics (Continued...)
Lecture 10 - Chemical Kinetics (Continued...) + Combustion Chemistry
Lecture 11 - Combustion Chemistry (Continued...)
Lecture 12 - Heat and Mass Transfer
Lecture 13 - Heat and Mass Transfer + Coupling of Chemical Kinetics and Thermodynamics
Lecture 14 - Coupling of Chemical Kinetics and Thermodynamics (Continued...)
Lecture 15 - Coupling of Chemical Kinetics and Thermodynamics + Laminar Premixed Flames
Lecture 16 - Laminar Premixed Flames (Continued...)
Lecture 17 - Laminar Premixed Flames (Continued...)
Lecture 18 - Laminar Premixed Flames (Continued...) + Laminar Non-Premixed Flames
Lecture 19 - Laminar Non-Premixed Flames (Continued...)
Lecture 20 - Laminar Non-Premixed Flames (Continued...)
Lecture 21 - Laminar Non-Premixed Flames
Lecture 22 - Laminar Non-Premixed Flames (Continued...)
Lecture 23 - Laminar Non-Premixed Flames (Continued...)
Lecture 24 - Laminar Non-Premixed Flames (Continued...)
Lecture 25 - Laminar Non-Premixed Flames (Continued...)
Lecture 26 - Laminar Non-Premixed Flames + Turbulence
Lecture 27 - Turbulence
Lecture 28 - Turbulence
Lecture 29 - Turbulence

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Lecture 30 - Turbulence
Lecture 31 - Turbulence
Lecture 32 - Turbulence
Lecture 33 - Turbulence
Lecture 34 - Turbulence
Lecture 35 - Turbulence
Lecture 36 - Turbulence
Lecture 37 - Turbulence
Lecture 38 - Turbulence
Lecture 39 - Turbulence
Lecture 40 - Turbulence
Lecture 41 - Turbulence
Lecture 42 - Turbulence
Lecture 43 - Turbulence
Lecture 44 - Turbulence
Lecture 45 - Turbulence
Lecture 46 - Turbulent Combustion
Lecture 47 - Turbulent Combustion
Lecture 48 - Turbulent Combustion
Lecture 49 - Turbulent Combustion
Lecture 50 - Turbulent Combustion
Lecture 51 - Turbulent Combustion
Lecture 52 - Turbulent Combustion
Lecture 53 - Turbulent Combustion
Lecture 54 - Turbulent Combustion
Lecture 55 - Turbulent Combustion
Lecture 56 - Turbulent Combustion
Lecture 57 - Turbulent Combustion
Lecture 58 - Multiphase Combustion
Lecture 59 - Multiphase Combustion
Lecture 60 - Multiphase Combustion
NPTEL Video Course - Mechanical Engineering - NOC: Manufacturing Automation

Subject Co-ordinator - Prof. Sounak Kumar Choudhury
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Manufacturing Automation
Lecture 2 - Various Aspects of Manufacturing Automation
Lecture 3 - Part Transfer Mechanisms
Lecture 4 - Automated Flow Lines
Lecture 5 - Analysis of Automated Flow Lines
Lecture 6 - Vibratory Bowl Feeder
Lecture 7 - Analysis of Vibratory Bowl Feeder
Lecture 8 - Reciprocating Tube Hopper Feeder
Lecture 9 - Centreboard Hopper Feeder and its analysis
Lecture 10 - Reciprocating fork and External Gate Hopper Feeders
Lecture 11 - Rotary Disc Feeder and Centrifugal Hopper Feeder
Lecture 12 - Bladed Wheel and Tumbling Barrel Hopper Feeders
Lecture 13 - Rotary Centreboard and Magnetic Feeders
Lecture 14 - Part Orienting Devices
Lecture 15 - Feed Tracks and their analysis
Lecture 16 - Powered Feed Track and Escapements
Lecture 17 - Various Escapements and Part Placing Mechanisms
Lecture 18 - Design for Automatic Assembly
Lecture 19 - Performance and Economics of Assembly Systems
Lecture 20 - Performance of Indexing and Free Transfer Machines

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Computational Fluid Dynamics (Prof. S. Chakraborty)

Subject Co-ordinator - Prof. S. Chakraborty
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Computational Fluid Dynamics and Principles of Conservation
Lecture 2 - Conservation of Mass and Momentum
Lecture 3 - Navier Stokes Equation (Continued.)
Lecture 4 - Energy Equation and General Structure of Conservation Equations
Lecture 5 - Classification of Partial Differential Equations and Physical Behaviour
Lecture 6 - Classification of Partial Differential Equations and Physical Behaviour (Continued.)
Lecture 7 - Approximate Solutions of Differential Equations
Lecture 8 - Approximate Solutions of Differential Equations
Lecture 9 - Weighted Residual Approach and Introduction to Discretization
Lecture 10 - Fundamentals of Discretization
Lecture 11 - Fundamentals of Discretization
Lecture 12 - Fundamentals of Discretization
Lecture 13 - Finite Volume Method
Lecture 14 - Finite Volume Method
Lecture 15 - Finite Volume Method
Lecture 16 - Important Consequences of Discretization of Unsteady State Problems
Lecture 17 - Important Consequences of Discretization of Time Dependent Diffusion Type Problems (Continued.)
Lecture 18 - Discretization of Hyperbolic Equations
Lecture 19 - PART 1
Lecture 20 - PART 1
Lecture 21 - Solution of Systems of Linear Algebraic Equations
Lecture 22 - Solution of Systems of Linear Algebraic Equations
Lecture 23 - Solution of Systems of Linear Algebraic Equations
Lecture 24 - Elimination Methods
Lecture 25 - Iterative Methods for Numerical Solution of Systems of Linear Algebraic Equations
Lecture 26 - Iterative Methods for Numerical Solution of Systems of Linear Algebraic Equations (Continued.)
Lecture 27 - Iterative Methods
Lecture 28 - PART 1
Lecture 29 - Gradient Search Methods (Continued.)
Lecture 30 - Discretization of Convection-Diffusion Equations
Lecture 31 - Discretization of Convection-Diffusion Equations
Lecture 32 - Discretization of Convection-Diffusion Equations
Lecture 33 - Discretization of Convection-Diffusion Equations
Lecture 34 - Discretization of Convection-Diffusion Equations
Lecture 35 - Discretization of Navier Stokes Equations
Lecture 36 - Discretization of Navier Stokes Equations (Continued.)
Lecture 37 - Discretization of Navier Stokes Equations (Continued.)
Lecture 38 - PART 1
Lecture 39 - Unstructured Grid Formulation (Continued.)
Lecture 40 - What is there in implementing a CFD Code
Lecture 41 - Introduction to Turbulence Modeling
Lecture 42 - Introduction to Turbulence Modeling (Continued.)
Lecture 43 - End Semester Questions Review
Lecture 1 - What is Hydraulic and Pneumatic System
Lecture 2 - Basic Components, Symbols and Circuits
Lecture 3 - Incompressible Fluids - Some Fundamental Properties
Lecture 4 - Incompressible Fluid Flow related to Fluid Drive
Lecture 5 - Capillary Fluid (incompressible) Flow and Hydrodynamic Lubrication
Lecture 6 - Basis for Calculating Hydraulic Systems
Lecture 7 - Different types of Valves - Features and Operations - I
Lecture 8 - Hydraulic Valves (General) Different types of Valves - Features and Operations - II
Lecture 9 - Hydraulic Circuits and Valves
Lecture 10 - Hydraulic Servomechanism and Servo and Proportional Control Valves
Lecture 11 - Basic Spool Valve Design Analysis
Lecture 12 - General Control Valve Analysis
Lecture 13 - Critical Centre Spool Valve Analysis
Lecture 14 - Critical Centre Spool Valve Analysis - Stroking Forces
Lecture 15 - Proportional Solenoid Pilot Operated Two Stage Pressure Relief Valve
Lecture 16 - Proportional Solenoid Pilot Operated Two Stage Pressure Relief Valve (Continued...)
Lecture 17 - Introduction to Positive Displacement Hydrostatic Units (Hydraulic Pumps and Motors)
Lecture 18 - Basic features of some Hydraulic Pumps and Motors
Lecture 19 - Analysis of an axial - Piston Swash Plate type Hydrostatic Pump (Discharge Flow Characteristics)
Lecture 20 - Analysis of an axial - Piston Swash Plate type Hydrostatic Pump (Estimation of Torque on Drive Shaft)
Lecture 21 - Analysis of an Axial - Piston Swash Plate type Hydrostatic unit (Pressure Ripple and Swash Plate Torque)
Lecture 22 - Design Analysis of Gear Pumps - I
Lecture 23 - Design Analysis of Gear Pumps - II
Lecture 24 - Basic Concept of Hydrostatic Transmission (HST) System
Lecture 25 - Selection of HST units and components
Lecture 26 - Regenerative Circuits
Lecture 27 - Introduction to Fluid Logic
Lecture 28 - Basic Devices, Symbols and Circuits
Lecture 29 - Logic Circuits
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

Lecture 30 - Design Analysis of ORBIT Motor - I
Lecture 31 - Design Analysis of ORBIT Motor - II
Lecture 32 - Design Analysis of ORBIT Motor - III
Lecture 33 - Application and Selection of Accumulators - Part I
Lecture 34 - Application and Selection of Accumulators - Part II
Lecture 35 - Hydraulic Circuits in Industrial Applications
Lecture 36 - Air preparation - Compressor and Accessories
Lecture 37 - Pneumatic Circuits
Lecture 38 - Analysis of Three - Way (Spool and Flapper Nozzle Valve)
Lecture 39 - Analysis of Flapper Nozzle Valves
Lecture 40 - Flow Force Compensation and Spool Design (Electro - hydraulic valves)
Lecture 41 - Premier and Guide to Oil - hydraulic fluids ; and Introduction to Fluid Power Symbols
Lecture 42 - Symbols in Oil Hydraulics
Lecture 43 - AppendicesTutorial on Basic Calculation on HST System and Hydraulic Fluids

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NPTEL Video Course - Mechanical Engineering - Machinery fault diagnosis and signal processing

Subject Co-ordinator - Prof. A.R. Mohanty
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Principles of Maintenance
Lecture 3 - Failure Modes Effects and Criticality Analysis
Lecture 4 - Fault Diagnostics and Prognostics
Lecture 5 - Basics of Machinery Vibration
Lecture 6 - Engineering Applications of Vibration
Lecture 7 - Rotordynamics
Lecture 8 - Time Domain Signal Analysis
Lecture 9 - Frequency Domain Signal Analysis
Lecture 10 - Computer Aided Data Acquisition
Lecture 11 - FFT Analysis
Lecture 12 - Modulation and Sidebands
Lecture 13 - Envelope Analysis
Lecture 14 - Cepstrum Analysis
Lecture 15 - Order Analysis
Lecture 16 - Basics of Instrumentation
Lecture 17 - Sensors and Transducers
Lecture 18 - Data Recording and Transmission
Lecture 19 - Vibration Transducers
Lecture 20 - Vibration Monitoring
Lecture 21 - Basics of Noise and Noise Monitoring
Lecture 22 - Numericals in Noise Vibration and Data Acquisition
Lecture 23 - Unbalance Detection
Lecture 24 - Field Balancing
Lecture 25 - Misalignment Detection
Lecture 26 - Cracked Shaft Detection
Lecture 27 - Looseness and Rub Detection
Lecture 28 - Ball and Journal Bearings
Lecture 29 - Gear Fault Detection

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Lecture 30 - Fans, Blowers and Compressors
Lecture 31 - Pumps and Turbines
Lecture 32 - Contaminant Analysis
Lecture 33 - Oil Analysis
Lecture 34 - Fault Detection in Motors and Transformers
Lecture 35 - Motor Current Signature Analysis
Lecture 36 - Thermography
Lecture 37 - Ultrasonics
Lecture 38 - Acoustic Emission and Eddy Current Testing
Lecture 39 - Radiography, Dye Penetrant Test and Visual Inspection
Lecture 40 - Case Studies
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Solar Energy Technology

Subject Co-ordinator - Prof. V.V. Satyamurty
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Energy and Dependence on External Sources and Sun, Physical Descriptions and Reactions
Lecture 2 - Sun - Earth Geometry
Lecture 3 - Terminology Extra - Terrestrial Radiation Terrestrial Radiation
Lecture 4 - Measuring Instruments
Lecture 5 - Estimation of Solar Radiation or Details
Lecture 6 - Radiation Processing - Long Term
Lecture 7 - Evaluation of the Apparent Sunrise and Sunset Angles
Lecture 8 - Estimation of Daily/Monthly Average daily Tilt Factor Under Terrestrial Conditions
Lecture 9 - Solar Collector Basics
Lecture 10 - Transmission - Absorptance Product
Lecture 11 - Daily (Or Monthly Average Daily) Transmittance - Absorptance Product Analytical Evaluation
Lecture 12 - Theory of Flat Plate Collectors - Liquid Based (A)
Lecture 13 - Theory of Flat Plate Collectors - Liquid Based (B)
Lecture 14 - Theory of Flat Plate Collectors - Liquid Based (C)
Lecture 15 - Mean temperature and Heat Capacity Effects
Lecture 16 - Theory of Air Based Solar Flat Plate Collectors
Lecture 17 - Theory of Air Based Solar Flat Plate Collectors (Continued.)
Lecture 18 - Other Collector Geometries
Lecture 19 - Concentrating Collectors
Lecture 20 - Concentrating Collectors (Continued.)
Lecture 21 - Concentrating Collectors (Continued.)
Lecture 22 - Compound Parabolic Collectors
Lecture 23 - Exercise - I
Lecture 24 - Exercise - I (Continued.)
Lecture 25 - Device and System Performance
Lecture 26 - Long Term Solar Energy System Performance
Lecture 27 - Exercise - I (Continued.)
Lecture 28 - Long Term Solar Energy System Performance Simplified Design Methods
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NPTEL Video Course - Mechanical Engineering - Technology of Surface Coating

Subject Co-ordinator - Prof. A.K. Chattopadhyay
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Mechanical Engineering - Vibration of Structures

Subject Co-ordinator - Prof. A. Dasgupta
Co-ordinating Institute - IIT - Kharagpur
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NPTEL Video Course - Mechanical Engineering - Basic Thermodynamics

Subject Co-ordinator - Prof. S.K. Som
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NPTEL Video Course - Mechanical Engineering - Design of Machine Elements I

Subject Co-ordinator - Prof. G. Chakraborty, Prof. B. Maiti, Prof. S.K. Roychowdhury

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Mechanical Engineering - Manufacturing Processes II

Subject Co-ordinator - Prof. S. Paul, Prof. A.B. Chattopadhyay, Prof. A.K. Chattopadhyay

Co-ordinating Institute - IIT - Kharagpur

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Lecture 6 - Orthogonal and Oblique Cutting
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Lecture 27 - Broaching - Principle Systems and Applications
Lecture 28 - Grinding Principle and Application
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NPTEL Video Course - Mechanical Engineering - Fluid Mechanics

Subject Co-ordinator - Prof. S.K. Som
Co-ordinating Institute - IIT - Kharagpur

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Subject Co-ordinator - Prof. S.K. Som

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Mechanical Engineering - Introduction to Fluid Mechanics and Fluid Engineering

Subject Co-ordinator - Prof. S. Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Mechanical Engineering - Microfluidics

Subject Co-ordinator - Prof. S. Chakraborty
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NPTEL Video Course - Mechanical Engineering - NOC: Fluid Machines

Subject Co-ordinator - Prof. S.K. Som
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Definition of Fluid Machines and Energy Transfer in Fluid Machines - Part I
Lecture 2 - Energy Transfer in Fluid Machines - Part II
Lecture 3 - Impulse and Reaction Machines
Lecture 4 - Principles of Similarity in Fluid Machine
Lecture 5 - Concept of Specific Speed
Lecture 6 - Basic Principles, Analysis of Force and Power Generation - Part I
Lecture 7 - Basic Principles, Analysis of Force and Power Generation - Part II
Lecture 8 - Specific Speed Governing and Limitations of Impulse Turbine
Lecture 9 - Tutorial - I
Lecture 10 - Tutorial - II
Lecture 11 - Introduction and Analysis of Force on Francis Turbine (Radial Flow) - Part I
Lecture 12 - Analysis of Force (Part-II) and Power Generation
Lecture 13 - Draft Tube
Lecture 14 - Tutorial - III
Lecture 15 - Tutorial - IV
Lecture 16 - Axial Flow Turbine
Lecture 17 - Governing of Reaction Turbine
Lecture 18 - Introduction to Rotodynamic Pumps
Lecture 19 - Flow and Energy Transfer to Centrifugal Pumps
Lecture 20 - Tutorial - V
Lecture 21 - Characteristics of a Centrifugal Pump
Lecture 22 - Matching of Pump and System Characteristics
Lecture 23 - Diffuser and Cavitation
Lecture 24 - Tutorial - VI
Lecture 25 - Tutorial - VIII
Lecture 26 - Axial Flow Pump
Lecture 27 - Reciprocating Pump - Part I
Lecture 28 - Reciprocating Pump - Part II
Lecture 29 - Tutorial - VIII

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www.digimat.in
Lecture 1 - Introduction to computer control Â□ role of computers in automation
Lecture 2 - Introduction (Continued...) - binary logic and logic gates
Lecture 3 - Classification of Computer numerical control (CNC) Â□ Point to point and continuous control
Lecture 4 - Classification (Continued...) - Closed loop and open loop control
Lecture 5 - Tutorial involving simple calculations on different aspects of CNC controls
Lecture 6 - Questions, MCQ Discussions on Motors, Encoders, Decoders and Programming Practice
Lecture 7 - Stepper motors, Permanent magnet DC motors
Lecture 8 - Binary circuits and decoders
Lecture 9 - Tachogenerator, printed circuit motors, Encoders
Lecture 10 - Programming Practice - I
Lecture 11 - Programming Practice - II
Lecture 12 - Computer Aided Offline Programming
Lecture 13 - Interpolators - Linear
Lecture 14 - Interpolators - Curvilinear
Lecture 15 - Questions on Programming and Interpolation
Lecture 16 - 3-D Machining - Basic Concepts
Lecture 17 - Curved Surface Geometry
Lecture 18 - Cutter Path Generation for Curved Surfaces
Lecture 19 - Cutter Path Generation (Concluding Part) and Current Status - CNC Machining and Related Processes
Lecture 20 - Questions and Discussions on Curved Surface Machining
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Non Traditional Abrasive Machining Processes - Ultrasonic,

Subject Co-ordinator - Prof. Asimava Roy Choudhury
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Non-traditional abrasive machining
Lecture 2 - Ultrasonic Machining
Lecture 3 - Ultrasonic Machining (Continued...)
Lecture 4 - Ultrasonic Machining - Free Impacts and Problem Solving
Lecture 5 - Ultrasonic Machining - Problems and MCQs
Lecture 6 - USM - Horn Design
Lecture 7 - USM - Horn Design (Continued...)
Lecture 8 - Ultrasonic Machining - Feed Mechanism, Head design and other aspects
Lecture 9 - Ultrasonic Machining - Effects of Various Inputs on the Output
Lecture 10 - Ultrasonic Machining - Numerical and MCQs
Lecture 11 - A JM (Abrasive jet machining)
Lecture 12
Lecture 13 - A JM - Numerical problems
Lecture 14 - A JM - Process Parameters and Response Characteristics take - home assignment discussing
Lecture 15 - A JM - MCQs
Lecture 16
Lecture 17 - AWJM - Equipment
Lecture 18 - AWJM - Numerical Problems
Lecture 19 - AWJM - Application Equipment Details
Lecture 20 - AWJM - MCQs

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Lecture 1 - Lagrangian and Eulerian Approach, Types of fluid flow
Lecture 2 - Streamlines, Streakline and Pathline
Lecture 3 - Acceleration of fluid flow
Lecture 4 - Deformation and Conservation of mass of fluid a element
Lecture 5 - Angular deformation of a fluid element, vorticity and streamfunction and velocity potential
Lecture 6 - Euler's equation
Lecture 7 - Bernoulli's equation - Part I
Lecture 8 - Kinematic viscosity, Reynolds number
Lecture 9 - Non-Newtonian fluids
Lecture 10 - Problems and Solutions
Lecture 11 - Problems and Solutions
Lecture 12 - Surface Tension - Part I
Lecture 13 - Surface Tension - Part II
Lecture 14 - Governing equation of fluid statics
Lecture 15 - Manometers
Lecture 16 - Force on a surface immersed in fluid - Part I
Lecture 17 - Force on a surface immersed in fluid - Part II
Lecture 18 - Force on a surface immersed in fluid - Part III, Stability of solid bodies in fluid - Part I
Lecture 19 - Stability of solid bodies in fluid - Part II
Lecture 20 - Fluid under rigid body motion
Lecture 21 - Lagrangian and Eulerian approaches
Lecture 22 - Concept of different flow lines
Lecture 23 - Acceleration of fluid flow
Lecture 24 - Deformation of fluid elements - Part I
Lecture 25 - Derivation of continuity equation
Lecture 26 - Problems and Solutions
Lecture 27 - Deformation of fluid elements - Part II
Lecture 28 - Deformation of fluid elements - Part III
Lecture 29 - Stream Function
Lecture 30 - Circulation, Velocity Potential
Lecture 31 - Euler's equation
Lecture 32 - Bernoulli's equation - Part I
Lecture 33 - Bernoulli's equation - Part II
Lecture 34 - Bernoulli's equation - Part III
Lecture 35 - Euler's equation in streamline coordinates
Lecture 36
Lecture 37
Lecture 38
Lecture 39
Lecture 40
Lecture 41
Lecture 42
Lecture 43
Lecture 44
Lecture 45
Lecture 46
Lecture 47
Lecture 48
Lecture 49
Lecture 50
Lecture 51 - Navier-Stokes equation - Part I
Lecture 52 - Navier-Stokes equation - Part II
Lecture 53 - Navier-Stokes equation - Part III
Lecture 54 - Navier-Stokes equation - Part IV
Lecture 55 - Pipe Flow - Part I
Lecture 56 - Pipe Flow - Part II
Lecture 57 - Pipe Flow - Part III
Lecture 58 - Pipe Flow - Part IV
Lecture 59 - Principle of Similarity and Dynamical Analysis - Part I
Lecture 60 - Principle of Similarity and Dynamical Analysis - Part II
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Spur and Helical Gear Cutting

Subject Co-ordinator - Prof. Asimava Roy Choudhury
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Simple Gear Calculations
Lecture 3 - Gear Geometry
Lecture 4 - Helical Gear Problems
Lecture 5 - Numerical Problem MCQ
Lecture 6 - Numerical Problem Milling of Helical Gears
Lecture 7 - Simple and Compound Indexing
Lecture 8 - Differential Indexing
Lecture 9 - Helical Gear Cutting on Milling Machine
Lecture 10 - Numerical Problems on Gear Milling
Lecture 11 - Gear Shaping - I
Lecture 12 - Gear Shaping - II
Lecture 13 - Gear Shaping - III
Lecture 14 - Gear Shaping - IV
Lecture 15 - Gear Hobbing - I
Lecture 16 - Gear Hobbing - II
Lecture 17 - Gear Hobbing - III
Lecture 18 - Gear Hobbing - IV
Lecture 19 - Gear Hobbing - V
Lecture 20 - Gear Hobbing - VI

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Subject Co-ordinator - Prof. PK Das
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to waste heat recovery
Lecture 2 - Introduction to waste heat recovery (Continued...)
Lecture 3 - Introduction to waste heat recovery (Continued...)
Lecture 4 - Introduction to waste heat recovery (Continued...)
Lecture 5 - Thermodynamic principles of waste heat recovery
Lecture 6 - Thermodynamic principles of waste heat recovery (Continued...)
Lecture 7 - Thermodynamic principles of waste heat recovery (Continued...)
Lecture 8 - Thermodynamic principles of waste heat recovery (Continued...)
Lecture 9 - Reversible Cycles
Lecture 10 - Reversible Cycles (Continued...)
Lecture 11 - Entropy
Lecture 12 - Entropy (Continued...)
Lecture 13 - Entropy (Continued...), Exergy
Lecture 14 - Exergy, Second Law efficiency
Lecture 15 - Second Law efficiency (Continued...)
Lecture 16 - Recapitulation of common power cycles
Lecture 17 - Recapitulation of common power cycles (Continued...)
Lecture 18 - Recapitulation of common power cycles (Continued...)
Lecture 19 - Recapitulation of common power cycles (Continued...)
Lecture 20 - Recapitulation of common power cycles (Continued...)
Lecture 21 - Recapitulation of common power cycles (Continued...)
Lecture 22 - Gas Turbine cycle
Lecture 23 - Combined cycle
Lecture 24 - Combined cycle (Continued...)
Lecture 25 - Combined Cycle (Continued...)
Lecture 26 - Heat recovery steam generator
Lecture 27 - Thermodynamic cycles for low temperature application
Lecture 28 - Thermodynamic cycles for low temperature application (Continued...), Cogeneration
Lecture 29 - Heat Exchanger

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NPTEL Video Course - Mechanical Engineering - NOC: Introduction to Mechanical Micro Machining

Subject Co-ordinator - Prof. Ajay M Sidpara
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Introduction (Continued...)
Lecture 3 - Introduction (Continued...)
Lecture 4 - Introduction (Continued...)
Lecture 5 - Introduction (Continued...)
Lecture 6 - Introduction (Continued...)
Lecture 7 - Scaling Laws
Lecture 8 - Scaling laws (Continued...)
Lecture 9 - Scaling laws (Continued...)
Lecture 10 - Difference between macro and micro machining
Lecture 11 - Difference between macro and micro machining (Continued...)
Lecture 12 - Difference between micro and macro machining (Continued...)
Lecture 13 - Difference between micro and macro machining (Continued...)
Lecture 14 - Difference between macro and micro machining (Continued...)
Lecture 15 - Difference between macro and micro machining (Continued...)
Lecture 16 - Difference between macro and micro machining (Continued...)
Lecture 17 - Difference between macro and micro machining (Continued...)
Lecture 18 - Difference between macro and micro machining (Continued...)
Lecture 19 - Difference between macro and micro machining (Continued...)
Lecture 20 - Difference between macro and micro machining (Continued...)
Lecture 21 - Difference between macro and micro machining (Continued...)
Lecture 22 - Component of the machine tool
Lecture 23 - Components of the machine tool (Continued...)
Lecture 24 - Components of the machine tool (Continued...)
Lecture 25 - Components of the machine tool (Continued...)
Lecture 26 - Components of the machine tool (Continued...)
Lecture 27 - Errors in machine tool (Continued...)
Lecture 28 - Errors in machine tool (Continued...)
Lecture 29 - Errors in machine tool (Continued...)

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Lecture 30 - Errors in machine tool (Continued...)
Lecture 31 - Components of machine tool
Lecture 32 - Components of machine tool (Continued...)
Lecture 33 - Components of machine tool (Continued...)
Lecture 34 - Components of machine tool (Continued...)
Lecture 35 - Components of machine tool (Continued...)
Lecture 36 - Components of machine tool (Continued...)
Lecture 37 - Components of machine tool (Continued...)
Lecture 38 - Components of machine tool (Continued...)
Lecture 39 - Components of machine tool (Continued...)
Lecture 40 - Components of machine tool (Continued...)
Lecture 41 - Components of machine tool (Continued...)
Lecture 42 - Components of machine tool (Continued...)
Lecture 43 - Components of machine tool (Continued...)
Lecture 44 - Components of machine tool (Continued...)
Lecture 45 - Components of machine tool (Continued...)
Lecture 46 - Components of machine tool (Continued...)
Lecture 47 - Components of machine tool (Continued...)
Lecture 48 - Components of machine tool (Continued...)
Lecture 49 - Micro tools
Lecture 50 - Micro tools (Continued...)
Lecture 51 - Micro tools (Continued...)
Lecture 52 - Fabrication of micro tool by EDM process
Lecture 53 - Micro tools (Continued...)
Lecture 54 - Micro machines
Lecture 55 - Micro machines (Continued...)
Lecture 56 - Diamond turning
Lecture 57 - Diamond turning (Continued...)
Lecture 58 - Diamond turning (Continued...)
Lecture 59 - Diamond turning (Continued...)
Lecture 60 - Sensors and metrology for micro machining
Lecture 61 - Sensors and metrology for micro machining (Continued...)
Lecture 62 - Sensors and metrology for micro machining (Continued...)
Lecture 63 - 3D surface measurement using interferometer
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Machinery Fault Diagnosis and Signal Processing

Subject Co-ordinator - Prof. Amiya Ranjan Mohanty
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Maintenance Principles
Lecture 3 - FMECA
Lecture 4 - Fault Diagnostics and Prognostics
Lecture 5 - Machine Learning in CBM
Lecture 6 - Basics of Vibration
Lecture 7 - Free and Forced Response
Lecture 8 - Vibration and Shock Isolation
Lecture 9 - Rotordynamics
Lecture 10 - Practical Examples of Vibration
Lecture 11 - Time Domain Analysis
Lecture 12 - Frequency Domain Analysis
Lecture 13 - Non Stationary Signal Analysis
Lecture 14 - Modulation and Beats
Lecture 15 - Orbit and Order Analysis
Lecture 16 - Computer aided data acquisition
Lecture 17 - Orbit and Order Analysis
Lecture 18 - Data Recording
Lecture 19 - Cepstrum Analysis
Lecture 20 - Hilbert Transform in Condition Monitoring
Lecture 21 - Introduction to MATLAB
Lecture 22 - Signal Processing using MATLAB
Lecture 23 - Numericals in Signal Processing and Data Acquisition
Lecture 24 - Signal Hetrodyning
Lecture 25 - Practical Signals
Lecture 26 - Basics Of Instrumentation
Lecture 27 - Signal Conditioning And Filtering
Lecture 28 - Errors In Measurements
Lecture 29 - Dynamic Range And Frequency Response

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Lecture 30 - Overview Of Transducers For Cbm
Lecture 31 - Accelerometers
Lecture 32 - Vibration Monitoring
Lecture 33 - Rotational Speed Measurements
Lecture 34 - Basics of Noise
Lecture 35 - Noise Monitoring
Lecture 36 - Introduction to Faults in Rotating Machines
Lecture 37 - Unbalance Detection
Lecture 38 - Field Balancing
Lecture 39 - Misalignment
Lecture 40 - Crack and Looseness
Lecture 41 - Journal and Anti-Friction Bearings
Lecture 42 - Gears
Lecture 43 - Pumps and Cavitation
Lecture 44 - IC Engines
Lecture 45 - Machinery Diagnostic Chart
Lecture 46 - Principles of Motor Current Signature Analysis
Lecture 47 - Faults in Electrical Machines
Lecture 48 - Thermography
Lecture 49 - Wear Debris Analysis
Lecture 50 - Oil Analysis
Lecture 51 - Ultrasonics
Lecture 52 - Eddy Current and Acoustic Emission
Lecture 53 - Radiography, Dye Penetrant Tests
Lecture 54 - Tool Condition Monitoring
Lecture 55 - Experimental Modal Analysis
Lecture 56 - Introduction to Failure Analysis
Lecture 57 - Railway Locomotive Noise and Vibration Monitoring
Lecture 58 - Paper Mill Vibration Monitoring
Lecture 59 - Overview of CBM facilities at IIT Kharagpur
Lecture 60 - Future of Condition based Monitoring
NPTEL Video Course - Mechanical Engineering - NOC: Metal Cutting and Machine Tools

Subject Co-ordinator - Prof. Asimava Roy Choudhury

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Geometry of single point turning tools - 1
Lecture 3 - Geometry of turning tools - 2
Lecture 4 - Geometry of single point turning tools - 3
Lecture 5 - Geometry of cutting tools and numerical problems
Lecture 6 - Different types of tools and mcq
Lecture 7 - Mechanism of chip formation
Lecture 8 - Mechanics of material removal
Lecture 9 - Measurement of Cutting Forces
Lecture 10 - Numerical problems and MCQ
Lecture 11 - Tool wear and Tool life
Lecture 12 - Wear and life of cutting tools - 2
Lecture 13 - The lathe
Lecture 14 - Calculations on mechanisms in machine tools
Lecture 15 - Numerical problems on lathe
Lecture 16 - Milling machines
Lecture 17 - Milling machine - indexing
Lecture 18 - Gear cutting CNC and non traditional machining
Lecture 19 - CNC and non-traditional machining methods
Lecture 20 - Numerical problems for week 4
Lecture 21 - Live Session

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NPTEL Video Course - Mechanical Engineering - NOC: Gear and Gear Unit Design - Theory and Practice

Subject Co-ordinator - Prof. Rathindranath Maiti
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - Motivation and Theme of the Course
Lecture 2 - Laws of Gearing, Kinematics and Geometry - Part I
Lecture 3 - Laws of Gearing, Kinematics and Geometry - Part II
Lecture 4 - Involute Toothed Gear - Properties and Terminology
Lecture 5 - Tutorial
Lecture 6 - Involute Straight Tooth Spur Gear
Lecture 7 - Helical Tooth Spur Gear and Loads on Gear Shaft
Lecture 8 - Design of Bevel Gear
Lecture 9 - Crossed Helical Gear - I
Lecture 10 - Crossed Helical Gear - II and Worm Gear
Lecture 11 - Gear Unit Design - Selection of Stage Ratios, Pinion and Gear Teeth Numbers
Lecture 12 - Gear Unit Design - First Stage Pinion and Gear Design - I (Module on Beam Strength Basis)
Lecture 13 - Gear Unit Design - Failure of Gear Tooth (Probable Dynamic Load and Wear Load Capacity)
Lecture 14 - Gear Unit Design - 1st. Stage Pinion and Gear Design-II (Probable Dynamic Load and Wear Load Capacity)
Lecture 15 - Gear Unit Design - 1st. Layout (After Gear Design)
Lecture 16 - Bearing Arrangement - Gear Box Shafts
Lecture 17 - Bearing Load Calculation - Intermediate Shaft
Lecture 18 - Bearing Selection and Introduction to Shaft Design Verification
Lecture 19 - Design Verification of Gear Box Shafts
Lecture 20 - Development (Layout) of Intermediate Shaft
Lecture 21 - Development (Layout) of Input Shaft and Integral Pinion
Lecture 22 - Development (Layout) of Output Shaft and 2nd. Stage (Output) Gear
Lecture 23 - Development (Layout) of Output Shaft (Continued...), Loads on Shaft and Bearings
Lecture 24 - Output Shaft-Bearing Lives
Lecture 25 - Design Verification of Output Shaft
Lecture 26 - Design Verification of Input Shaft (including Bearing Life Estimation)
Lecture 27 - Finalizing Design including the Sizes of the Keys
Lecture 28 - Development of Plan and Elevation of Gear Reduction Unit - I
Lecture 29 - Development of Plan and Elevation of Gear Reduction Unit - II

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NPTEL Video Course - Mechanical Engineering - NOC: Traditional and Non-Traditional Optimization Tools

Subject Co-ordinator - Prof. Dilip Kumar Pratihar

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Principle of Optimization
Lecture 2 - Traditional Methods of Optimization
Lecture 3 - Traditional Methods of Optimization (Continued...)
Lecture 4 - Binary-Coded Genetic Algorithm (BCGA)
Lecture 5 - Binary-Coded Genetic Algorithm (BCGA) (Continued...)
Lecture 6 - Binary-Coded Genetic Algorithm (BCGA) (Continued...)
Lecture 7 - Binary-Coded Genetic Algorithm (BCGA) (Continued...)
Lecture 8 - Binary-Coded Genetic Algorithm (BCGA) (Continued...)
Lecture 9 - Schema Theorem of BCGA
Lecture 10 - Schema Theorem of BCGA (Continued...)
Lecture 11 - Constraint Handling
Lecture 12 - Real-Coded GA
Lecture 13 - Faster Genetic Algorithms
Lecture 14 - Faster Genetic Algorithms (Continued...)
Lecture 15 - Faster Genetic Algorithms (Continued...)
Lecture 16 - Faster Genetic Algorithms (Continued...)
Lecture 17 - Scheduling GA
Lecture 18 - Scheduling GA (Continued...)
Lecture 19 - Scheduling GA (Continued...)
Lecture 20 - Simulated Annealing
Lecture 21 - Particle Swarm Optimization
Lecture 22 - Multi-Objective Optimization
Lecture 23 - Multi-Objective Optimization (Continued...)
Lecture 24 - Multi-Objective Optimization (Continued...)
Lecture 25 - Multi-Objective Optimization (Continued...)
Lecture 26 - Multi-Objective Optimization (Continued...)
Lecture 27 - Intelligent Optimization Toolture
Lecture 28 - A Practical Optimization Problem
Lecture 29 - A Practical Optimization Problem (Continued...)

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NPTEL Video Course - Mechanical Engineering - NOC: Mechanism and Robot Kinematics

Subject Co-ordinator - Dr. Anirvan Das Gupta

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Nomenclature
Lecture 3 - Kinematic Diagram
Lecture 4 - Degree of Freedom - I
Lecture 5 - Degree of Freedom - II
Lecture 6 - Degree of Freedom - Failure
Lecture 7 - Grashof Criteria - I
Lecture 8 - Grashof Criteria - II
Lecture 9 - Geometry and Representation of Vectors
Lecture 10 - Displacement Analysis
Lecture 11 - Displacement Analysis
Lecture 12 - Displacement Analysis
Lecture 13 - Displacement Analysis
Lecture 14 - Displacement Analysis
Lecture 15 - Displacement Analysis
Lecture 16 - Displacement Analysis
Lecture 17 - Displacement Analysis
Lecture 18 - Displacement Analysis
Lecture 19 - Displacement Analysis
Lecture 20 - Velocity Analysis
Lecture 21 - Velocity Analysis
Lecture 22 - Velocity Analysis
Lecture 23 - Velocity Analysis
Lecture 24 - Velocity Analysis
Lecture 25 - Velocity Analysis
Lecture 26 - Velocity Analysis
Lecture 27 - Velocity Analysis
Lecture 28 - Velocity Analysis
Lecture 29 - Serial Manipulator Velocity Analysis - I

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Lecture 30 - Serial Manipulator Velocity Analysis - II
Lecture 31 - Serial Manipulator Velocity Analysis - III
Lecture 32 - Parallel Manipulator Velocity Analysis
Lecture 33 - Path Generation Problem
Lecture 34 - Acceleration Analysis - I
Lecture 35 - Acceleration Analysis - II
Lecture 36 - Force Analysis - I
Lecture 37 - Force Analysis - II
Lecture 38 - Coordinate transformation - I
Lecture 39 - Coordinate transformation - II
Lecture 40 - Coordinate transformation - III
Lecture 1 - Introduction
Lecture 2 - Applications of Heat Exchangers
Lecture 3 - Classification of Heat Exchangers
Lecture 4 - Classification of Heat Exchangers (Continued...)
Lecture 5 - Design and Simulation of Heat Exchangers
Lecture 6 - Design and Simulation
Lecture 7 - Design and Simulation of Heat Exchangers - Numerical Problem
Lecture 8 - Design and Simulation of Heat Exchangers - Numerical Problem (Continued...)
Lecture 9 - Design and Simulation of Heat Exchangers - Numerical Problem (Continued...)
Lecture 10 - Tubular Heat Exchanger Types
Lecture 11 - Tubular Heat Exchanger Types
Lecture 12 - Tubular Heat Exchanger
Lecture 13 - Tubular Heat Exchanger
Lecture 14 - Tubular Heat Exchanger
Lecture 15 - Tubular Heat Exchanger
Lecture 16 - Enhancement of Heat Transfer compact Heat Exchangers
Lecture 17 - Extended Surface Heat Transfer
Lecture 18 - Extended Surface Heat Transfer
Lecture 19 - Extended Surface Heat Exchangers
Lecture 20 - Analysis of fin plates of finned tube heat exchanger
Lecture 21 - Finned tube heat exchanger
Lecture 22 - Finned tube heat exchanger (Continued...)
Lecture 23 - Finned tube heat exchanger (Continued...)
Lecture 24 - Plate fin heat exchanger
Lecture 25 - Plate fin heat exchanger (Continued...)
Lecture 26 - Plate fin heat exchanger (Continued...)
Lecture 27 - Plate fin heat exchanger
Lecture 28 - Plate fin heat exchanger
Lecture 29 - Plate fin heat exchanger
Lecture 30 - Plate fin heat exchanger
Lecture 31 - Plate fin heat exchanger
Lecture 32 - Plate fin heat exchanger
Lecture 33 - Plate fin heat exchanger
Lecture 34 - Plate fin heat exchanger
Lecture 35 - Plate fin heat exchanger
Lecture 36 - Phase change heat exchangers
Lecture 37 - Phase change heat exchangers (Continued...)
Lecture 38 - Surface Condenser
Lecture 39 - Surface Condenser (Continued...)
Lecture 40 - Surface Condenser (Continued...)
Lecture 41 - Surface Condenser (Continued...)
Lecture 42 - In tube condensation
Lecture 43 - Heat pipes and Heat pipe heat exchangers
Lecture 44 - Heat pipes and Heat pipe heat exchangers (Continued...)
Lecture 45 - Heat pipes and Heat exchangers
Lecture 46 - Heat pipes and Heat exchangers (Continued...)
Lecture 47 - Micro Heat Exchanger Introduction
Lecture 48 - Micro scale Heat Transfer
Lecture 49 - Micro scale Heat Transfer (Continued...)
Lecture 50 - Micro Channel
Lecture 51 - Micro Heat Exchanger
Lecture 52 - Regenerators
Lecture 53 - Fixed Bed Regenerator Analysis
Lecture 54 - Design and Simulation of Regenerator (Fixed Bed)
Lecture 55 - Fixed Bed Regenerator (Numerical)
Lecture 56 - Fixed Bed Regenerator (Numerical) (Continued...)
Lecture 57 - Fouling in Heat Exchangers
Lecture 58 - Fouling in Heat Exchangers (Continued...)
Lecture 59 - Fouling in Heat Exchangers (Continued...)
Lecture 60 - Direct Contact heat exchanger
Lecture 61 - Direct Contact heat exchanger (Continued...)
Lecture 62 - Heat exchanger network synthesis
Lecture 63 - Heat exchanger network
Lecture 64 - Heat exchanger network (Continued...)
Lecture 65 - Heat Exchanger Testing
Lecture 66 - Heat Exchanger Testing (Continued...)
Lecture 30 - Control Scheme
Lecture 31 - Sensors
Lecture 32 - Sensors (Continued...)
Lecture 33 - Sensors (Continued...)
Lecture 34 - Robot Vision
Lecture 35 - Robot Vision (Continued...)
Lecture 36 - Robot Vision (Continued...)
Lecture 37 - Robot Motion Planning
Lecture 38 - Robot Motion Planning (Continued...)
Lecture 39 - Robot Motion Planning (Continued...)
Lecture 40 - Robot Motion Planning (Continued...)
Lecture 41 - Intelligent Robot
Lecture 42 - Biped Walking
Lecture 43 - Biped Walking (Continued...)
Lecture 44 - Summary
Lecture 45 - Summary (Continued...)
NPTEL Video Course - Mechanical Engineering - NOC: Computational Fluid Dynamics

Subject Co-ordinator - Prof. S. Chakraborty
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

| Lecture 1 | Introduction to CFD |
| Lecture 2 | Classification of partial differential equations |
| Lecture 3 | Examples of partial differential equations |
| Lecture 4 | Examples of partial differential equations (Continued...) |
| Lecture 5 | Nature of the characteristics of partial differential equation |
| Lecture 6 | Euler-Lagrangian equation |
| Lecture 7 | Approximate Solutions of Differential Equations |
| Lecture 8 | Variational formulation |
| Lecture 9 | Example of variational formulation and introduction to weighted residual method |
| Lecture 10 | Weighted residual method (Continued...) |
| Lecture 11 | Point Collocation method, the Galerkin's method and the 'M' form |
| Lecture 12 | Finite element method (FEM) of discretization |
| Lecture 13 | Finite element method of discretization (Continued...) |
| Lecture 14 | Finite difference method (FDM) of discretization |
| Lecture 15 | Well posed boundary value problem |
| Lecture 16 | Finite volume method (FVM) of discretization |
| Lecture 17 | Illustrative examples of finite volume method |
| Lecture 18 | Illustrative examples of finite volume method (Continued...) |
| Lecture 19 | Basic rules of finite volume discretization |
| Lecture 20 | Implementation of boundary conditions in FVM |
| Lecture 21 | Implementation of boundary conditions in FVM (Continued...) |
| Lecture 22 | 1-D Unsteady state diffusion problem |
| Lecture 23 | 1-D Unsteady state diffusion problem (Continued...) |
| Lecture 24 | Consequences of Discretization of Unsteady State Problems |
| Lecture 25 | FTCS scheme |
| Lecture 26 | CTCS scheme (Leap frog scheme) and Dufort-Frankel scheme |
| Lecture 27 | Part 1 |
| Lecture 28 | Solution to linear algebraic equations (Continued...) |
| Lecture 29 | Elimination methods |

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Lecture 30 - Gaussian elimination and LU Decomposition methods
Lecture 31 - Illustrative example of elimination method
Lecture 32 - Tri-Diagonal Matrix Algorithm (TDMA)
Lecture 33 - Elimination methods
Lecture 34 - Elimination methods
Lecture 35 - Iteration methods
Lecture 36 - Generalized analysis of Iteration method
Lecture 37 - Further discussion on Iterative methods
Lecture 38 - Illustrative examples of Iterative methods
Lecture 39 - Gradient Search based methods
Lecture 40 - Steepest descent method (Continued...)
Lecture 41 - Conjugate gradient method
Lecture 42 - Convection diffusion equation
Lecture 43 - Central difference scheme applied to convection-diffusion equation
Lecture 44 - Upwind scheme
Lecture 45 - Illustrative examples
Lecture 46 - Exact solution of 1-D steady state convection diffusion equation (Continued...)
Lecture 47 - Exponential scheme
Lecture 48 - Generalized convection diffusion formulation
Lecture 49 - 2-D convection diffusion problem
Lecture 50 - False (numerical) diffusion scheme and the QUICK scheme
Lecture 51 - Discretization of Navier Stokes equation
Lecture 52 - Discretization of Navier Stokes equation (Continued...)
Lecture 53 - Concept of staggered grid
Lecture 54 - SIMPLE algorithm
Lecture 55 - Salient features of SIMPLE algorithm
Lecture 56 - Illustrative examples on the use of SIMPLE algorithm
Lecture 57 - SIMPLER algorithm
Lecture 58 - Illustrative examples of SIMPLER algorithm
Lecture 59 - What is there in implementing a CFD Code
Lecture 60 - Some representative case studies
NPTEL Video Course - Mechanical Engineering - NOC:Concepts of Thermodynamics

Subject Co-ordinator - Prof. Aditya Bandopadhyay, Prof. Suman Chakraborty

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introductory Concepts
Lecture 2 - Properties of Pure Substances
Lecture 3 - Properties of Pure Substances (Continued...)
Lecture 4 - Introduction to Property Tables
Lecture 5 - Properties of Pure Substances
Lecture 6 - Properties of Pure Substances
Lecture 7 - Use of Computer as Means of Learning Thermodynamics
Lecture 8 - Properties of Pure Substances (Continued...)
Lecture 9 - Properties of Pure Substances Spring - Piston Problem
Lecture 10 - Heat and Work
Lecture 11 - Heat and Work
Lecture 12 - Heat and Work
Lecture 13 - Heat and Work
Lecture 14 - First Law of Thermodynamics for a Control Mass System
Lecture 15 - Enthalpy and Specific Heats
Lecture 16 - First Law for a Control Mass System
Lecture 17 - First Law for a Control Mass System
Lecture 18 - First Law for a Control Mass System
Lecture 19 - Control Volume Conservation Reynolds Transport Theorem
Lecture 20 - Control Volume Mass and Energy Balance
Lecture 21 - Supplementary Lecture
Lecture 22 - First Law for Steady State Steady Flow (SSSF) Process
Lecture 23 - First Law for SSSF Process
Lecture 24 - First Law for SSSF Process
Lecture 25 - First Law for SSSF Process
Lecture 26 - First Law for SSSF Process
Lecture 27 - Supplementary Lecture
Lecture 28 - First Law of Thermodynamics for Unsteady Processes in a Control Volume
Lecture 29 - First Law for Unsteady Problems - Examples

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NPTEL Video Course - Mechanical Engineering - NOC:Electronic Packaging and Manufacturing

Subject Co-ordinator - Prof. A Bhattacharya
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - 1
Lecture 2 - Introduction - 2
Lecture 3 - Introduction - 3
Lecture 4 - Semiconductors and Components - 1
Lecture 5 - Semiconductors and Components - 2
Lecture 6 - 1st Level Packaging - I
Lecture 7 - 1st Level Packaging - II
Lecture 8 - Area Array Packages - I
Lecture 9 - Area Array Packages - II
Lecture 10 - Area Array Packages - III
Lecture 11 - Flip Chip Technology
Lecture 12 - 1st Level Interconnections - I
Lecture 13 - 1st Level Interconnections - II
Lecture 14 - 1st Level Interconnections - III
Lecture 15 - Advanced Packaging
Lecture 16 - 2nd Level Packaging
Lecture 17 - 2nd Level Packaging
Lecture 18 - 2nd Level Packaging
Lecture 19 - 2nd Level Packaging
Lecture 20 - 2nd Level Packaging
Lecture 21 - System Integration
Lecture 22 - Thermal Management 1
Lecture 23 - Thermal Management 2
Lecture 24 - Thermal Management 3
Lecture 25 - Thermal Management 4
Lecture 26 - Thermal Management 5
Lecture 27 - Thermal Management 6
Lecture 28 - Thermal Management 7
Lecture 29 - Thermal Management 8

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Lecture 30 - Thermal Management 9
Lecture 31 - Shock and Vibration - 1
Lecture 32 - Shock and Vibration - 2
Lecture 33 - Shock and Vibration - 3
Lecture 34 - Shock and Vibration - 4
Lecture 35 - Electronic Packaging Reliability - 1
Lecture 36 - Electronic Packaging Reliability - 2
Lecture 37 - Electronic Packaging Reliability - 3
Lecture 38 - Electronic Packaging Reliability - 4
Lecture 39 - Power Electronics Packaging
Lecture 40 - Special Topics
NPTEL Video Course - Mechanical Engineering - NOC: Kinematics of Mechanisms and Machines

Subject Co-ordinator - Prof. A. Dasgupta
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Motivation
Lecture 2 - Nomenclature and Classification
Lecture 3 - Kinematic Diagram
Lecture 4 - Degree of Freedom
Lecture 5 - Constrained and Robotic Mechanisms
Lecture 6 - Failure of DOF Calculation
Lecture 7 - Grashof Criterion - I
Lecture 8 - Grashof Criterion - II
Lecture 9 - Grashof Criterion - Problems
Lecture 10 - Displacement Analysis - I
Lecture 11 - Displacement Analysis - II
Lecture 12 - Displacement Analysis Example - I
Lecture 13 - Displacement Analysis Example - II
Lecture 14 - Steering Mechanisms
Lecture 15 - Displacement Analysis of Robots - I
Lecture 16 - Displacement Analysis of Robots - II
Lecture 17 - Displacement Analysis of Robots - III
Lecture 18 - Geometric Velocity Analysis - I
Lecture 19 - Geometric Velocity Analysis - II
Lecture 20 - Geometric Velocity Analysis - III
Lecture 21 - Velocity Analysis
Lecture 22 - Velocity Analysis
Lecture 23 - Velocity Analysis
Lecture 24 - Analytical Velocity Analysis - I
Lecture 25 - Analytical Velocity Analysis - II
Lecture 26 - Analytical Velocity Analysis - III
Lecture 27 - Velocity Analysis Examples
Lecture 28 - Robot Velocity Analysis - I
Lecture 29 - Robot Velocity Analysis - II
Lecture 30 - Robot Velocity Analysis - III
Lecture 31 - Robot Path Generation
Lecture 32 - Acceleration Analysis - I
Lecture 33 - Acceleration Analysis - II
Lecture 34 - Force Analysis - I
Lecture 35 - Force Analysis - II
Lecture 36 - Force Analysis Examples
Lecture 37 - Gear Kinematics
Lecture 38 - Gear trains - I
Lecture 39 - Gear trains - II
Lecture 40 - Gear trains - III

Subject Co-ordinator - Prof. Suman Chakraborty

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Motivations of studying fluid mechanics
Lecture 2 - Macroscopic and microscopic point of views
Lecture 3 - Concept of traction vector
Lecture 4 - Cauchy's theorem
Lecture 5 - Concept of pressure in a fluid
Lecture 6 - Density, Bulk Modulus, Viscosity
Lecture 7 - Viscosity, Newtonian fluid
Lecture 8 - Kinematic viscosity, Reynolds number
Lecture 9 - Non-Newtonian fluids
Lecture 10 - Some illustrative examples solved
Lecture 11 - Problems and Solutions
Lecture 12 - Surface Tension - Part I
Lecture 13 - Surface Tension - Part II
Lecture 14 - Governing equation of fluid statics
Lecture 15 - Manometers
Lecture 16 - Force on a surface immersed in fluid - Part I
Lecture 17 - Force on a surface immersed in fluid - Part II
Lecture 18 - Force on a surface immersed in fluid - Part III, Stability of solid bodies in fluid - Part I
Lecture 19 - Stability of solid bodies in fluid - Part II
Lecture 20 - Fluid under rigid body motion
Lecture 21 - Lagrangian and Eulerian approaches
Lecture 22 - Concept of different flow lines
Lecture 23 - Acceleration of fluid flow
Lecture 24 - Deformation of fluid elements - Part I
Lecture 25 - Derivation of continuity equation
Lecture 26 - Problems and Solutions
Lecture 27 - Deformation of fluid elements - Part II
Lecture 28 - Deformation of fluid elements - Part III
Lecture 29 - Stream Function

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Lecture 30 - Circulation, Velocity Potential
Lecture 31 - Euler's equation
Lecture 32 - Bernoulli's equation - Part I
Lecture 33 - Bernoulli's equation - Part II
Lecture 34 - Bernoulli's equation - Part III
Lecture 35 - Euler's equation in streamline coordinates
Lecture 36 - Problems and Solutions
Lecture 37 - Problems and Solutions
Lecture 38 - Application of Bernoulli's equation - Part I
Lecture 39 - Application of Bernoulli's equation - Part II
Lecture 40 - Application of Bernoulli's equation - Part III
Lecture 41 - Reynolds Transport Theorem (RTT)
Lecture 42 - Application of RTT
Lecture 43 - Problems and Solutions
Lecture 44 - Problems and Solutions
Lecture 45 - Application of RTT
Lecture 46 - Problems and Solutions
Lecture 47 - Problems and Solutions
Lecture 48 - Problems and Solutions
Lecture 49 - Application of RTT
Lecture 50 - Problems and Solutions
Lecture 51 - Navier-Stokes equation - Part I
Lecture 52 - Navier-Stokes equation - Part II
Lecture 53 - Navier-Stokes equation - Part III
Lecture 54 - Navier-Stokes equation - Part IV
Lecture 55 - Pipe Flow - Part I
Lecture 56 - Pipe Flow - Part II
Lecture 57 - Pipe Flow - Part III
Lecture 58 - Pipe Flow - Part IV
Lecture 59 - Principle of Similarity and Dynamical Analysis - Part I
Lecture 60 - Principle of Similarity and Dynamical Analysis - Part II
NPTEL Video Course - Mechanical Engineering - NOC: Conduction and Convection Heat Transfer (Prof. S. Chakraborty)

Subject Co-ordinator - Prof. S. Chakraborty

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Conduction
Lecture 2 - 1-D Steady State Conduction
Lecture 3 - Introduction to Convection
Lecture 4 - Conduction Equation
Lecture 5 - Conduction Equation
Lecture 6 - Conduction Equation
Lecture 7 - 1-D Steady State Conduction - I
Lecture 8 - Concept of Thermal Resistance
Lecture 9 - 1-D Steady State Conduction - II
Lecture 10 - 1-D Steady State Conduction - II (Continued...)
Lecture 11 - Problems on 1-D Steady State Conduction - I
Lecture 12 - Problems on 1-D Steady State Conduction - I (Continued...)
Lecture 13 - Problems on 1-D Steady State Conduction - II
Lecture 14 - Conduction in Cylindrical Geometry
Lecture 15 - Critical Insulation Thickness
Lecture 16 - Critical Insulation Thickness (Continued...)
Lecture 17 - Problems on Conduction in Cylindrical Geometry - 1
Lecture 18 - Problems on Conduction in Cylindrical Geometry - 2 and Conduction in Spherical Geometry
Lecture 19 - Problems on Conduction in Cylindrical Geometry - 2 and Conduction in Spherical Geometry
Lecture 20 - Heat Transfer From Extended Surfaces
Lecture 21 - Boundary Conditions at the Fin Tip
Lecture 22 - Fin Types, Efficiency and Effectiveness
Lecture 23 - Problems on Heat Transfer From Extended Surfaces
Lecture 24 - 2-D Steady State Conduction
Lecture 25 - Separation of Variables Method for 2-D Steady State Conduction
Lecture 26 - Superposition Method for 2-D Steady State Conduction
Lecture 27 - Transient Conduction
Lecture 28 - Problems on Lumped Parameter Approach
Lecture 29 - Transient Conduction

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Lecture 30 - Transient Conduction
Lecture 31 - Transient Conduction
Lecture 32 - Introduction to Convection
Lecture 33 - Review of Fluid Mechanics - 1
Lecture 34 - Review of Fluid Mechanics - 2
Lecture 35 - Review of Fluid Mechanics - 3
Lecture 36 - Review of Fluid Mechanics - 4
Lecture 38 - Energy Conservation Equation - 1
Lecture 39 - Energy Conservation Equation - 2
Lecture 40 - Energy Conservation Equation - 3
Lecture 41 - Thermal Boundary Layer - 1
Lecture 42 - Thermal Boundary Layer - 2
Lecture 43 - Energy Integral Equation - 1
Lecture 44 - Energy Integral Equation - 2
Lecture 45 - Internal Forced Convection - 1
Lecture 46 - Internal Forced Convection - 2
Lecture 47 - Internal Forced Convection - 3
Lecture 48 - Internal Forced Convection - 4
Lecture 49 - Internal Forced Convection - 5
Lecture 50 - Internal Forced Convection - 6
Lecture 51 - Viscous Dissipation - 1
Lecture 52 - Viscous Dissipation - 2
Lecture 53 - Natural Convection - 1
Lecture 54 - Natural Convection - 2
Lecture 55 - Natural Convection - 3
Lecture 56 - Natural Convection - 4
Lecture 57 - Condensation - 1
Lecture 58 - Condensation - 2
Lecture 59 - Boiling
Lecture 60 - Heat Exchangers - 1
Lecture 61 - Heat Exchangers - 2
Lecture 62 - Heat Exchangers - 3
Lecture 63 - Heat Exchangers - 4
Lecture 64 - Heat Exchangers - 5
Lecture 65 - Problems on Heat Exchangers
NPTEL Video Course - Mechanical Engineering - NOC: Advanced Concepts in Fluid Mechanics

Subject Co-ordinator - Prof. Aditya Bandopadhyay
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Eulerian and Lagrangian Description of Fluid Motion
Lecture 2 - Lines of Flow Visualization and Acceleration of Flow
Lecture 3 - Angular Deformation of Fluid Elements
Lecture 4 - Linear and Volumetric Deformation; Perspectives from Mass Conservation
Lecture 5 - Continuity Education in Integral Form
Lecture 6 - Euler Equation for Inviscid Flow
Lecture 7 - Bernoulli's Equation
Lecture 8 - Examples of Bernoulli's Equation
Lecture 9 - Reynolds Transport Equation
Lecture 10 - Reynolds Transport Theorem
Lecture 11 - Reynolds transport theorem
Lecture 12 - Reynolds transport theorem
Lecture 13 - Introduction to traction vector and stress tensor
Lecture 14 - Cauchy/Navier equation
Lecture 15 - Navier Stokes equation
Lecture 16 - Navier Stokes equation (Continued...)
Lecture 17 - Some exact solutions of the Navier Stokes equation
Lecture 18 - Interfacial boundary conditions and example of thin film flows
Lecture 19 - Exact solutions of the Navier Stokes equations in cylindrical polar coordinates
Lecture 20 - Exact solutions of the Navier Stokes equation for some unsteady flows
Lecture 21 - Confined oscillatory flows
Lecture 22 - Introduction to Turbulence
Lecture 23 - Statistical Treatment of Turbulence and Near - Wall Velocity Profiles
Lecture 24 - Introduction to Boundary Layer Theory
Lecture 25 - Similarity Solution of Boundary Layer Equation
Lecture 26 - Momentum Integral Method
Lecture 27 - Application of Momentum Integral Method and Boundary Layer Separation
Lecture 28 - Potential Flow
Lecture 29 - Potential Flow (Continued...)

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Lecture 30 - Potential Flow (Continued...)
Lecture 31 - Potential Flow (Continued...)
Lecture 32 - Potential Flow (Continued...)
Lecture 33 - Potential Flow (Continued...)
Lecture 34 - Stokes Flow past a Sphere
Lecture 35 - Stokes Flow past a Sphere (Continued...)
Lecture 36 - Stokes Flow past a Sphere (Continued...)
Lecture 37 - Lubrication Theory
Lecture 38 - Lubrication Theory (Continued...)
Lecture 39 - Lubrication Theory (Continued...)
Lecture 40 - Thin Film Dynamics
Lecture 41 - Thin Film Dynamics (Continued...)
Lecture 42 - Thin Film Dynamics (Continued...)
Lecture 43 - Thin Film Dynamics (Continued...)
Lecture 44 - Thin Film Dynamics (Continued...)
Lecture 45 - Thin Film Dynamics (Continued...)
Lecture 46 - Thin Film Dynamics (Continued...)
Lecture 47 - Thin Film Dynamics (Continued...)
Lecture 48 - Compressible Flows
Lecture 49 - Compressible Flows (Continued...)
Lecture 50 - Compressible Flows (Stagnation Properties)
Lecture 51 - Compressible Flows (Stagnation Properties, Variable Area)
Lecture 52 - Compressible Flows (Variable Area)
Lecture 53 - Compressible Flows (Variable Area)
Lecture 54 - Compressible Flows (Normal Shock)
Lecture 55 - Compressible Flows (Normal Shock) (Continued...)
Lecture 56 - Compressible Flows (Converging Nozzle)
Lecture 57 - Compressible Flows (Converging Diverging Nozzle)
Lecture 58 - Compressible Flows (Converging Diverging Nozzle) (Continued...)
Lecture 59 - Compressible Flows with Friction
NPTEL Video Course - Mechanical Engineering - Advanced Gas Dynamics

Subject Co-ordinator - Dr. Rinku Mukherjee

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Gas Dynamics & Review of Basic Thermodynamics
Lecture 2 - Review of Basic Thermodynamics Continued
Lecture 3 - An introduction to Normal Shocks
Lecture 4 - The Mach Number and Compressible Flow
Lecture 5 - The relation of physical properties across a normal shock
Lecture 6 - Normal Shock in a duct
Lecture 7 - Example Problems in Normal Shocks
Lecture 8 - An introduction to Oblique Shocks
Lecture 9 - The relation of physical properties across an oblique shock
Lecture 10 - Example Problems in Oblique Shocks
Lecture 11 - Pressure - Deflection relationship of Shocks
Lecture 12 - An introduction to Expansion waves
Lecture 13 - Area - Mach Relationship
Lecture 14 - Unsteady Shock Waves
Lecture 15 - The Shock Tube
Lecture 16 - A review of wave propagation
Lecture 17 - Wave propagation
Lecture 18 - Finite Wave Theory
Lecture 19 - The Shock Tube
Lecture 20 - The Method of Characteristics
Lecture 21 - Application of The Method of Characteristics
Lecture 22 - Application of The Method of Characteristics
Lecture 23 - Flow over a Wavy wall
Lecture 24 - Subsonic Flow over a Wavy wall
Lecture 25 - Supersonic Flow over a Wavy wall
Lecture 26 - Supersonic Flow past a 3D Cone
Lecture 27 - Quasi 2D Flow - I
Lecture 28 - Quasi 2D Flow - II
Lecture 29 - Similarity Rules and Transformed Coordinate System

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Lecture 30 - Critical Mach Number and Thin Airfoil Theory
Lecture 31 - Example Problem using Thin Airfoil Theory
Lecture 32 - Example Problems - 1
Lecture 33 - Example Problems - 2
Lecture 34 - Example Problems - 3
Lecture 35 - Supersonic Flow past a 3D Cone at an angle of attack
Lecture 36 - Supersonic Flow past a 3D Cone at an angle of attack
Lecture 37 - Supersonic Flow past a 3D Cone at an angle of attack
Lecture 38 - Supersonic Flow past a 3D Cone at an angle of attack
Lecture 39 - Supersonic Flow past a 3D Cone at an angle of attack
Lecture 40 - Supersonic Flow past a 3D Bluff Body at an angle of attack
NPTEL Video Course - Mechanical Engineering - Design and Optimization of Energy systems

Subject Co-ordinator - Prof. C. Balaji
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Optimization
Lecture 2 - System Design and Analysis
Lecture 3 - Workable system
Lecture 4 - System simulation
Lecture 5 - Information flow diagrams
Lecture 6 - Successive substitution method
Lecture 7 - Successive substitution method (Continued.)
Lecture 8 - Successive substitution method and Newton-Raphson method
Lecture 9 - Newton-Raphson method (Continued.)
Lecture 10 - Convergence characteristics of Newton-Raphson method
Lecture 11 - Newton-Raphson method for multiple variables
Lecture 12 - Solution of system of linear equations
Lecture 13 - Introduction to Curve fitting
Lecture 14 - Example for Lagrange interpolation
Lecture 15 - Lagrange interpolation (Continued.)
Lecture 16 - Best fit
Lecture 17 - Least Square Regression
Lecture 18 - Least Square Regression (Continued.)
Lecture 19 - Least Square Regression (Continued.)
Lecture 20 - Non-linear Regression (Gauss - Newton Algorithm)
Lecture 21 - Optimization- Basic ideas
Lecture 22 - Properties of objective function and cardinal ideas in optimization
Lecture 23 - Unconstrained optimization
Lecture 24 - Constrained optimization problems
Lecture 25 - Mathematical proof of the Lagrange multiplier method
Lecture 26 - Test for Maxima / Minima
Lecture 27 - Handling in-equality constraints
Lecture 28 - Kuhn-Tucker conditions (Continued.)
Lecture 29 - Uni-modal function and search methods

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Lecture 30 - Dichotomous search
Lecture 31 - Fibonacci search method
Lecture 32 - Reduction ratio of Fibonacci search method
Lecture 33 - Introduction to multi-variable optimization
Lecture 34 - The Conjugate gradient method
Lecture 35 - The Conjugate gradient method (Continued.)
Lecture 36 - Linear programming
Lecture 37 - Dynamic programming
Lecture 38 - Genetic Algorithms
Lecture 39 - Genetic Algorithms (Continued.)
Lecture 40 - Simulated Annealing and Summary
NPTEL Video Course - Mechanical Engineering - Engineering Fracture Mechanics

Subject Co-ordinator - Prof. K. Ramesh

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - EFM Course Outline
Lecture 2 - Spectacular Failures
Lecture 3 - Lessons from Spectacular Failures
Lecture 4 - LEFM and EPFM
Lecture 5 - Fracture Mechanics is Holistic
Lecture 6 - Fatigue Crack Growth Model
Lecture 7 - Crack Growth and Fracture Mechanisms
Lecture 8 - Elastic Strain Energy
Lecture 9 - Fracture Strength by Griffith
Lecture 10 - Energy Release Rate
Lecture 11 - Utility of Energy Release Rate
Lecture 12 - Pop-in Phenomenon
Lecture 13 - Displacement and Stress Formulations
Lecture 14 - Forms of Stress Functions
Lecture 15 - Airy's Stress Function for Mode-I
Lecture 16 - Westergaard Solution of Stress Field for Mode-I
Lecture 17 - Displacement Field for Mode-I
Lecture 18 - Relation between KI and GI
Lecture 19 - Stress Field in Mode-II
Lecture 20 - Generalised Westergaard Approach
Lecture 21 - William's Eigen Function Approach
Lecture 22 - Multi-parameter Stress Field Equations
Lecture 23 - Validation of Multi-parameter Field Equations
Lecture 24 - Discussion Session - I
Lecture 25 - Evaluation of SIF for Various Geometries
Lecture 26 - SIF for Embedded Cracks
Lecture 27 - SIF for Surface Cracks
Lecture 28 - Modeling of Plastic Deformation
Lecture 29 - Irwin's Model

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Lecture 30 - Dugdale Model
Lecture 31 - Fracture Toughness Testing
Lecture 32 - Plane Strain Fracture Toughness Testing
Lecture 33 - Plane Stress Fracture Toughness Testing
Lecture 34 - Paris Law and Sigmoidal Curve
Lecture 35 - Crack Closure
Lecture 36 - Crack Growth Models
Lecture 37 - J-Integral
Lecture 38 - HRR Field and CTOD
Lecture 39 - FAD and Mixed Mode Fracture
Lecture 40 - Crack Arrest and Repair Methodologies
Lecture 41 - Discussion Session - II
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Experimental Stress Analysis

Subject Co-ordinator - Prof. K. Ramesh
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of Experimental Stress Analysis
Lecture 2 - Optical Methods Work as Optical Computers
Lecture 3 - Stress, Strain and Displacement Fields
Lecture 4 - Physical Principle of Strain Gauges, Photoelasticity and Moiré®
Lecture 5 - Introduction to Moiré®, Brittle Coatings and Holography
Lecture 6 - Hologram Interferometry, Speckle Methods
Lecture 7 - Introduction to Shearography, TSA, DIC and Caustics
Lecture 8 - Fringe Patterns and Richness of Qualitative Information
Lecture 9 - Multi-Scale Analysis in Experimental Mechanics
Lecture 10 - Selection of an Experimental Technique
Lecture 11 - Introduction to Transmission Photoelasticity
Lecture 12 - Ordinary and Extraordinary Rays
Lecture 13 - Light Ellipse, Passage of Light Through a Crystal Plate
Lecture 14 - Retardation Plates, Stress-optic Law
Lecture 15 - Plane Polariscope
Lecture 16 - Jones Calculus
Lecture 17 - Circular Polariscope
Lecture 18 - Determination of Photoelastic Parameters at an Arbitrary Point
Lecture 19 - Tardy’s Method of Compensation
Lecture 20 - Calibration of Photoelastic Materials
Lecture 21 - Fringe Thinning Methodologies
Lecture 22 - Fringe Ordering in Photoelasticity
Lecture 23 - Miscellaneous Topics in Transmission Photoelasticity
Lecture 24 - Three Dimensional Photoelasticity
Lecture 25 - Overview of Digital Photoelasticity
Lecture 26 - Introduction to Photoelastic Coatings
Lecture 27 - Correction Factors for Photoelastic Coatings
Lecture 28 - Coating Materials, Selection of Coating Thickness, Industrial Application of Photoelastic Coatings
Lecture 29 - Calibration of Photoelastic Coatings, Introduction to Brittle Coatings

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NPTEL Video Course - Mechanical Engineering - Rocket Propulsion

Subject Co-ordinator - Prof. K. Ramamurthi
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Motion in Space
Lecture 3 - Rotational Frame of Reference and Orbital Velocities
Lecture 4 - Velocity Requirements
Lecture 5 - Theory of Rocket Propulsion
Lecture 6 - Rocket Equation and Staging of Rockets
Lecture 7 - Review of Rocket Principles; Propulsion Efficiency
Lecture 8 - Examples Illustrating Theory of Rocket Propulsion and Introduction to Nozzles
Lecture 9 - Theory of Nozzles
Lecture 10 - Nozzle Shape
Lecture 11 - Area Ratio of Nozzles; Under-expansion and Over-expansion
Lecture 12 - Characteristic Velocity and Thrust Coefficient
Lecture 13 - Divergence Loss in Conical Nozzles and the Bell Nozzle
Lecture 14 - Unconventional Nozzles and Problems in Nozzles
Lecture 15 - Criterion for Choice of Chemical Propellants
Lecture 16 - Choice of Fuel-Rich Propellants
Lecture 17 - Performance Prediction Analysis
Lecture 18 - Dissociation of Products of Combustion
Lecture 19 - Shifting Equilibrium and Frozen Flow in Nozzles
Lecture 20 - Factors Influencing Choice of Chemical Propellants
Lecture 21 - Low Energy Liquid Propellants and Hybrid Propellants
Lecture 22 - Introduction to Solid Propellant Rockets
Lecture 23 - Burn Rate of Solid Propellants and Equilibrium Pressure in Solid Propellant Rockets
Lecture 24 - Design Aspects of Solid Propellant Rockets
Lecture 25 - Burning Surface Area of Solid Propellant Grains
Lecture 26 - Ignition of Solid Propellant Rockets
Lecture 27 - Review of Solid Propellant Rockets
Lecture 28 - Feed Systems for Liquid Propellant Rockets
Lecture 29 - Feed System Cycles for Pump Fed Liquid Propellant Rockets

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Lecture 30 - Analysis of Gas Generator and Staged Combustion Cycles and Introduction to Injectors
Lecture 31 - Injectors, Cooling of Chamber and Mixture Ratio Distribution
Lecture 32 - Efficiencies due to Mixture Ratio Distribution and Incomplete Vaporization
Lecture 33 - Pumps and Turbines; Propellant Feed System at Zero â• Conditions
Lecture 34 - Review of Liquid Bi-propellant Rockets and Introduction to Mono-propellant Rockets
Lecture 35 - Introduction to Hybrid Rockets and a Simple Illustration of Combustion Instability in Liquid Propellant Rockets
Lecture 36 - Combustion Instability in Solid Propellant and Liquid Propellant Rockets â• Bulk and Wave Modes
Lecture 37 - Wave modes of Oscillation
Lecture 38 - Mechanisms Causing Instabilities and Strategies for Avoiding Combustion Instability
Lecture 39 - Electric and Magnetic Fields and the Electrostatic Thruster
Lecture 40 - Electrical Thrusters
Lecture 41 - Advances in Rocket Propulsion
NPTEL Video Course - Mechanical Engineering - Advanced Finite Elements Analysis

Subject Co-ordinator - Dr. R. Krishnakumar

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Advanced Finite Elements Analysis
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Lecture 30 - Advanced Finite Elements Analysis
NPTEL Video Course - Mechanical Engineering - Advanced Operations Research

Subject Co-ordinator - Prof. G. Srinivasan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Linear Programming
Lecture 2 - Revised Simplex Algorithm
Lecture 3 - Simplex Method for Bounded Variables
Lecture 4 - One Dimensional Cutting Stock Problem
Lecture 5 - One Dimensional Cutting Stock Problem (Continued.)
Lecture 6 - Dantzig-Wolfe Decomposition Algorithm
Lecture 7 - Dantzig-Wolfe Decomposition Algorithm Primal-Dual Algorithm
Lecture 8 - Primal-Dual Algorithm
Lecture 9 - Goal Programming-Formulations
Lecture 10 - Goal Programming Solutions Complexity of Simplex Algorithm
Lecture 11 - Complexity of Simplex Algorithm (Continued.) Integer Programming
Lecture 12 - Integer Programming-Formulations
Lecture 13 - Solving Zero-One Problems
Lecture 14 - Solving Zero-One Problems (Continued.)
Lecture 15 - Branch And Bond Algorithm For Integer Programming
Lecture 16 - Cutting Plane Algorithm
Lecture 17 - All Integer Primal Algorithm
Lecture 18 - All Integer Dual Algorithm
Lecture 19 - Network Models
Lecture 20 - Shortest Path Problem
Lecture 21 - Successive Shortest Path Problem
Lecture 22 - Maximum Flow Problem
Lecture 23 - Minimum Cost Flow Problem
Lecture 24 - Traveling Salesman Problem (TSP)
Lecture 25 - Branch and Bound Algorithms for TSP
Lecture 26 - Heuristics for TSP
Lecture 27 - Heuristics for TSP (Continued.)
Lecture 28 - Chinese Postman Problem
Lecture 29 - Vehicle Routeing Problem

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Lecture 30 - Queueing Models
Lecture 31 - Single Server Queueing Models
Lecture 32 - Multiple Server Queueing Models
Lecture 33 - Game Theory
Lecture 34 - Critical Path Method
Lecture 35 - Quadratic Programming
Lecture 36 - Integer Programming (Continued.)
Lecture 37 - All Integer Dual Algorithm
Lecture 38 - Mixed Integer Linear Programming
Lecture 39 - Benders Partitioning Algorithm
NPTEL Video Course - Mechanical Engineering - Introduction to Finite Element Method

Subject Co-ordinator - Dr. R. Krishnakumar

Co-ordinating Institute - IIT - Madras

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Lecture 33 - Introduction to Finite Element Method
NPTEL Video Course - Mechanical Engineering - Mechanical Measurements and Metrology

Subject Co-ordinator - Prof. Shunmugam M. S, Prof. S.P. Venkateshan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the Study of Mechanical Measurement
Lecture 2 - Errors in Measurement
Lecture 3 - Errors in Measurement (Continued...)
Lecture 4 - Propagation of Errors
Lecture 5 - Regression Analysis
Lecture 6 - Regression Analysis (Continued...)
Lecture 7 - Design of Experiments
Lecture 8 - Design of Experiments (Continued...)
Lecture 9 - Temperature Measurement
Lecture 10 - Overview of Thermometry
Lecture 11 - Thermoelectric Thermometry
Lecture 12 - Thermoelectric Thermometry (Continued...)
Lecture 13 - Measurement of Temperature Under Various Conditions
Lecture 14 - Errors in Temperature Measurement
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Lecture 16 - Resistance Thermometry (Continued...)
Lecture 17 - Resistance Thermometry (Continued...) and pyrometry
Lecture 18 - pyrometry (Continued...)
Lecture 19 - pyrometry (Continued...)
Lecture 20 - Pressure Measurement (Continued...)
Lecture 21 - Pressure Measurement (Continued...)
Lecture 22 - Pressure Measurement (Continued...)
Lecture 23 - Pressure Measurement (Continued...)
Lecture 24 - Transient Response of Pressure Transducers
Lecture 25 - Transient Response of Pressure Transducers
Lecture 26 - Measurement of High Vacuum
Lecture 27 - Measurement of Fluid Velocity
Lecture 28 - Hot Wire Anemometry and Laser Doppler Velocimetry
Lecture 29 - Laser Doppler Velocimetry and Ultrasonic Methods

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Lecture 30 - Measurement of Heat Flux
Lecture 31 - Measurement of Heat Flux (Continued...)
Lecture 32 - Transient Method of Heat Flux Measurement
Lecture 33 - Measurement of Volume and Mass Flow Rate of Fluid
Lecture 34 - Flow Measuring Devices
Lecture 35 - Measurement of Stagnation and Bulk Mean Temperature
Lecture 36 - Measurement of Thermo-Physical Properties
Lecture 37 - Measurement of Thermal Conductivity
Lecture 38 - Measurement of Heat Capacity and Heating Value
Lecture 39 - Measurement of Viscosity
Lecture 40 - Measurement of Viscosity (Continued...)
Lecture 41 - Integrating Sphere and Measurement of Emissivity
Lecture 42 - Measurements of Gas Composition
Lecture 43 - Measurements of Gas Composition (Continued...)
Lecture 44 - Measurements of Gas Composition and Smoke
Lecture 45 - Measurement of Force
Lecture 46 - Force Measurement
Lecture 47 - Vibration and Acceleration Measurement
Lecture 48 - Laser Doppler Accelerometer, Speed, Torque
Lecture 49 - General Issues in Mechanical Measurement
Lecture 50 - Case Studies
NPTEL Video Course - Mechanical Engineering - Principles of Mechanical Measurements

Subject Co-ordinator - Prof. R. Raman
Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Mechanical Engineering - Conduction And Radiation
Subject Co-ordinator - Prof. C. Balaji
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Importance of Thermal Radiation
Lecture 2 - Blackbody definition
Lecture 3 - Solid angle, spectral radiation intensity
Lecture 4 - Radiation pressure and radiation energy density
Lecture 5 - Relationship between $I$ and $T$ and Candidate blackbody distribution functions
Lecture 6 - Candidate blackbody distribution functions (Continued...)
Lecture 7 - Planck's blackbody radiation distribution function
Lecture 8 - Planck's distribution and Wien's displacement law
Lecture 9 - Universal blackbody function
Lecture 10 - Emissivity
Lecture 11 - Emissivity (Continued...)
Lecture 12 - Emissivity (Continued...)
Lecture 13 - Kirchoff law, Absorptivity
Lecture 14 - Kirchoff law, Absorptivity (Continued...)
Lecture 15 - Problems on emissivity, absorptivity
Lecture 16 - Reflectivity
Lecture 17 - Transmissivity
Lecture 18 - Problems on reflectivity and transmissivity
Lecture 19 - Radiation heat transfer between surfaces
Lecture 20 - View factor
Lecture 21 - View factor (Continued...)
Lecture 22 - View factor (Continued...)
Lecture 23 - Enclosure analysis
Lecture 24 - Enclosure analysis (Continued...)
Lecture 25 - Enclosure analysis - Gray surface
Lecture 26 - Enclosure analysis - Non gray surfaces
Lecture 27 - Radiation in participating media
Lecture 28 - Solution to the RTE
Lecture 29 - Concept of mean beam length

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Lecture 30 - Enclosure analysis in the presence of absorbing / emitting gas
Lecture 31 - Emissivities and absorptivities of Gas mixtures
Lecture 32 - Conduction - Introduction
Lecture 33 - Conduction - Energy equation
Lecture 34 - Conduction - 1D, steady state
Lecture 35 - Conduction - 1D, heat generation
Lecture 36 - Fin heat transfer - I
Lecture 37 - Fin heat transfer - II
Lecture 38 - Conduction - Cylindrical and Spherical geometries
Lecture 39 - Transient conduction
Lecture 40 - Transient conduction (Continued...)
Lecture 41 - Two dimensional steady state conduction
Lecture 42 - Analytical solution for Laplace equation
Lecture 43 - Numerical methods in conduction
Lecture 44 - Numerical methods in conduction (Continued...)
Lecture 45 - Conduction with change of phase
Lecture 46 - Conduction with change of phase (Continued...)
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Lecture 31 - Components of the Gas Turbine Engine / Thermodynamic Analysis of the Engine
Lecture 32 - Thermodynamic Analysis of the Engine
Lecture 33 - Thermodynamic Analysis of the Engine
Lecture 34 - Calculations for Thrust and Fuel Consumption
Lecture 35 - Calculations for Thrust and Fuel Consumption
Lecture 36 - Calculations for Thrust and Fuel Consumption / Emerging Trends
Lecture 37 - Emerging Trends / Ramjets
Lecture 38 - Ramjets
Lecture 39 - Ramjets / Scramjets
Lecture 40 - Scramjets
NPTEL Video Course - Mechanical Engineering - Microfluidics

Subject Co-ordinator - Dr. Ashis Kumar Sen

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and Scaling
Lecture 2 - Scaling
Lecture 3 - Micro-scale fluid mechanics
Lecture 4 - Micro-scale fluid mechanics (Continued...)
Lecture 5 - Micro-scale fluid mechanics (Continued...)
Lecture 6 - Micro-scale fluid mechanics (Continued...)
Lecture 7 - Micro-scale fluid mechanics (Continued...)
Lecture 8 - Micro-scale fluid mechanics (Continued...)
Lecture 9 - Micro-scale fluid mechanics (Continued...)
Lecture 10 - Micro-scale fluid mechanics (Continued...)
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Lecture 12 - Capillary Flows (Continued...)
Lecture 13 - Capillary Flows and Electrokinetics
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Lecture 18 - Electrokinetics (Continued...)
Lecture 19 - Electrokinetics (Continued...)
Lecture 20 - Electrokinetics and Magnetophoresis
Lecture 21 - Microfabrication Techniques
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Lecture 32 - Microvalve (Continued...)
Lecture 33 - Microvalve (Continued...)
Lecture 34 - Micro Flow Sensor and Micro mixers
Lecture 35 - Micro mixers
Lecture 36 - Micro mixers (Continued...)
Lecture 37 - Micro droplets
Lecture 38 - Micro reactors (Continued...)
Lecture 39 - Micro needles and Microparticle separation
Lecture 40 - Few applications of microfluidics
Lecture 41 - Lab Demo
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

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NPTEL Video Course - Mechanical Engineering - Convective Heat Transfer

Subject Co-ordinator - Dr. Arvind Pattamatta, Prof. Ajit K. Kolar

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to convective heat transfer - Part 1
Lecture 2 - Introduction to convective heat transfer - Part 2
Lecture 3 - Continuity Equation
Lecture 4 - Momentum and Energy Equations
Lecture 5 - Energy Equation
Lecture 6 - Reynolds Transport Theorem
Lecture 7 - Entropy Generation and streamfunction-vorticity formulation
Lecture 8 - Couette flow - Part 1
Lecture 9 - Couette flow - Part 2
Lecture 10 - Couette flow - Part 3
Lecture 11 - Boundary layer approximation
Lecture 12 - Laminar External flow past flat plate (Blasius Similarity Solution)
Lecture 13 - Numerical solution to the Blasius equation and similarity solution to heat transfer
Lecture 14 - Pohlhausen similarity solution and flows including pressure gradient (Falkner-Skan)
Lecture 15 - Falkner skan solutions for heat transfer
Lecture 16 - Similarity solution for flow and heat transfer with transpiration at walls
Lecture 17 - Thermal boundary layer in high speed flows
Lecture 18 - Approximate(Integral) methods for laminar external flow and heat transfer
Lecture 19 - Integral method for laminar external thermal boundary layer over isothermal surface
Lecture 20 - Integral method for flows with pressure gradient (von Karman-Pohlhausen method)
Lecture 21 - Integral method with pressure gradient
Lecture 22 - Heat transfer across a circular cylinder
Lecture 23 - Duhamel's method for varying surface temperature
Lecture 24 - Laminar External heat transfer with non uniform surface temperature
Lecture 25 - Laminar internal forced convection - fundamentals
Lecture 26 - Hydrodynamically and thermally fully developed internal laminar flows
Lecture 27 - Fully developed laminar internal flow and heat transfer
Lecture 28 - Shooting method for fully developed heat transfer and thermal entry length problem
Lecture 29 - Thermal entry length problem with plug velocity profile

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Lecture 30 - Extended Graetz problem for parabolic velocity profile
Lecture 31 - Extended Graetz problem
Lecture 32 - Extended Graetz problem with wall flux boundary condition
Lecture 33 - Approximate method for laminar internal flows
Lecture 34 - Integral method for thermal entry length problem
Lecture 35 - Introduction to Natural Convection Heat Transfer
Lecture 36 - Similarity Solution in Natural Convection for Vertical isothermal Plate - Part 1
Lecture 37 - Similarity Solution in Natural Convection for Vertical isothermal Plate - Part 2
Lecture 38 - Similarity Solution in Natural Convection for Vertical isoflux Plate
Lecture 39 - Approximate Method in Natural Convection Heat Transfer
Lecture 40 - Natural Convection in Other Configurations
Lecture 41 - Turbulent Convective Heat Transfer
Lecture 42 - Turbulent Convective Heat Transfer
Lecture 43 - Analogies in Turbulent Convective Heat Transfer - Part 1
Lecture 44 - Analogies in Turbulent Convective Heat Transfer - Part 2
NPTEL Video Course - Mechanical Engineering - Introduction to Explosions and Explosion Safety

Subject Co-ordinator - Prof. K. Ramamurthi

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Loud Bang and Disruption
Lecture 2 - Blast Wave in an Explosion
Lecture 3 - Typical Examples of Explosions and Classification
Lecture 4 - Shock Hugoniot and Rayleigh Line
Lecture 5 - Properties behind a Constant Velocity Shock
Lecture 6 - Blast waves
Lecture 7 - Blast waves
Lecture 8 - Blast Waves
Lecture 9 - Blast Waves
Lecture 10 - Blast Waves
Lecture 11 - Blast Waves
Lecture 12 - Blast Waves
Lecture 13 - Energy Release in a Chemical Reaction
Lecture 14 - Energy Release
Lecture 15 - Energy Release
Lecture 16 - Rate of Energy Release
Lecture 17 - Thermal Theory of Explosion
Lecture 18 - Thermal Theory
Lecture 19 - Role of Chain Carriers in an Explosion
Lecture 20 - Combustion - I
Lecture 21 - Combustion - II
Lecture 22 - Case Histories of Explosions involving Volatile Liquids
Lecture 23 - Detonation
Lecture 24 - Structure of Detonations
Lecture 25 - Realizable States in a Detonation
Lecture 26 - One Dimensional Model of Detonation
Lecture 27 - Case Histories of Explosions involving Detonation or Quasi-Detonation
Lecture 28 - Explosions in Confined and Unconfined Geometries
Lecture 29 - Dust Explosions - I

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Lecture 30 - Dust Explosions - II
Lecture 31 - Physical Explosions
Lecture 32 - Rupture of Cryogenic Storage Vessels and Pressure Vessels
Lecture 33 - Condensed Phased Explosives Based on Hydrocarbons
Lecture 34 - Condensed Phase Explosives and their Properties
Lecture 35 - TNT Equivalence and Yield of an Explosion
Lecture 36 - Atmospheric Dispersion
Lecture 37 - Modeling Atmospheric Dispersion
Lecture 38 - Explosions Involving Atmospheric Dispersion
Lecture 39 - Quantification of Damages in an Explosion
Lecture 40 - Risk Analysis for an Explosion

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NPTEL Video Course - Mechanical Engineering - Metrology

Subject Co-ordinator - Dr. K. Sadashivappa

Co-ordinating Institute - IIT - Madras

Lecture 1 - Introduction to Metrology
Lecture 2 - Metrology terminologies
Lecture 3 - Measurement errors
Lecture 4 - Linear measuring instruments Â□ 1 (Angle plate, steel rule, spring calipers)
Lecture 5 - Linear measuring instruments Â□ 2 (Combination set, Vernier calipers)
Lecture 6 - Linear measuring instruments Â□ 3 (Height gauge, Micrometers Â□ 1)
Lecture 7 - Linear measuring instruments Â□ 4 (Micrometers Â□ 2, Bore gauge)
Lecture 8 - Linear measuring instruments Â□ 5 (Dial indicators, thickness gauges, depth gauges)
Lecture 9 - Manufacturing tolerances and fits
Lecture 10 - Terminologies of limits fits and tolerances
Lecture 11 - Numerical problems on fit and tolerances
Lecture 12 - Selection of fits, Geometrical tolerances
Lecture 13 - Positional tolerances
Lecture 14 - Limit gauging - 1
Lecture 15 - Limit gauging - 2
Lecture 16 - Design of limit gauges
Lecture 17 - Measurement of straightness, flatness and squareness
Lecture 18 - Perpendicularity measurement
Lecture 19 - Basics of surface roughness
Lecture 20 - Surface finish parameters
Lecture 21 - Stylus type surface finish measuring instruments
Lecture 22 - Non-contact type surface finish measuring instruments
Lecture 23 - Screw thread production and terminology
Lecture 24 - Measurement of screw thread elements
Lecture 25 - Introduction to gears
Lecture 26 - Measurement of gear elements
Lecture 27 - Angle measurement - 1
Lecture 28 - Angle measurement - 2
Lecture 29 - Radius measurement, Contact angle measurement
Lecture 30 - Basics of interferometry
Lecture 31 - Interferometers
Lecture 32 - Introduction to comparators, Mechanical comparators
Lecture 33 - Electrical and electronic comparators, Optical comparators
Lecture 34 - Pneumatic comparators
Lecture 35 - Geometrical tests on lathe
Lecture 36 - Geometrical tests on pillar type drilling machine
Lecture 37 - Universal measuring machine (UMM) and Coordinate measuring machine (CMM)
Lecture 38 - CMM probes and CMM software
Lecture 39 - Feature measurement using CMM, Laser vision
Lecture 40 - In-process gauging and control
Lecture 41 - Stage position metrology
Lecture 42 - Micro and Nano stages, Nano technology instrumentation
Lecture 43 - Optical system design
Lecture 44 - Complex opto- mechanical assemblies, Metrology testing and certification services
Lecture 30 - Impulse / Momentum - Example 2
Lecture 31 - Impulse / Momentum - Example 3
Lecture 32 - Impulse / Momentum - Example 4
Lecture 33 - Work Energy Methods - Example 1
Lecture 34 - Work Energy Methods - Example 2
Lecture 35 - Work Energy Methods - Example 3
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: Foundation of Computational Fluid Dynamics

Subject Co-ordinator - Dr. S. Vengadesan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Week 1 - Module-1
Week 1 - Module-2
Week 1 - Module-3
Week 1 - Module-4
Week 1 - Module-5
Week 2 - Module-1
Week 2 - Module-2
Week 2 - Module-3
Week 2 - Module-4
Week 2 - Module-5
Week 3 - Module-1
Week 3 - Module-2
Week 3 - Module-3
Week 3 - Module-4
Week 3 - Module-5
Week 4 - Module-1
Week 4 - Module-2
Week 4 - Module-3
Week 4 - Module-4
Week 4 - Module-5
Week 5 - Module-1
Week 5 - Module-2
Week 5 - Module-3
Week 5 - Module-4
Week 5 - Module-5
Week 5 - Module-6
Week 6 - Module-1
Week 6 - Module-2 - Part 1
Week 6 - Module-2 - Part 2

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Week 6 – Module-3
Week 6 – Module-4
Week 6 – Module-5
Week 7 – Module-1
Week 7 – Module-2
Week 7 – Module-3
Week 7 – Module-4
Week 7 – Module-5
Week 8 – Module-1
Week 8 – Module-2
Week 8 – Module-3
Week 8 – Module-4
Week 8 – Module-5
Week 8 – Module-6
Conclusion

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NPTEL Video Course - Mechanical Engineering - NOC: Introduction to Boundary Layers

Subject Co-ordinator - Dr. Rinku Mukherjee

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Review of fundamentals of fluid mechanics - I
Lecture 2 - Review of fundamentals of fluid mechanics - II
Lecture 3 - Concept of a Boundary Layer (BL) - I
Lecture 4 - Concept of a Boundary Layer (BL) - II
Lecture 5 - Concepts of BL thickness (?)
Lecture 6 - Concepts of BL displacement thickness (?) and BL momentum thickness (?)
Lecture 7 - Control Volume approach to derive expressions for ?* over a flat plate
Lecture 8 - Control Volume approach to derive expressions for ? over a flat plate
Lecture 9 - Concept of wall friction
Lecture 10 - Concept of friction drag
Lecture 11 - Skin Friction Coefficient - I
Lecture 12 - Skin Friction Coefficient - II
Lecture 13 - Derivation of Prandtl's Laminar BL Equations - I
Lecture 14 - Derivation of Prandtl's Laminar BL Equations - II
Lecture 15 - Derivation of Prandtl's Laminar BL Equations - III
Lecture 16 - Derivation of Prandtl's Laminar BL Equations - IV
Lecture 17 - Similarity Solutions to the BL Equations Applied to a Flat Plate - I
Lecture 18 - Similarity Solutions to the BL Equations Applied to a Flat Plate - II
Lecture 19 - Similarity Solutions to the BL Equations Applied to a Flat Plate - III
Lecture 20 - Runge-Kutta Method to Numerically Solve the BL Equations Applied to a Flat Plate
Lecture 21 - Description of the Numerical Code to Solve the BL Equations Applied to a Flat Plate
Lecture 22 - Similarity Solutions to the BL Equations (other than flat plate) - I
Lecture 23 - Similarity Solutions to the BL Equations (other than flat plate) - II
Lecture 24 - Similarity Solutions to the BL Equations (other than flat plate) - III
Lecture 25 - Similarity Solutions to the BL Equations (other than flat plate) - IV
Lecture 26 - Description of the Numerical Code to Solve the BL Equations (other than flat plate)
Lecture 27 - The Energy Equation - I
Lecture 28 - The Energy Equation - II
Lecture 29 - Similarity Solutions to Thermal BL - I
Lecture 30 - Similarity Solutions to Thermal BL - II
Lecture 31 - Similarity Solutions to Thermal BL - III
Lecture 32 - BL Separation with Pressure-Gradient - I
Lecture 33 - BL Separation with Pressure Gradient - II
Lecture 34 - Effect of Prandtl Number in Thermal BL - I
Lecture 35 - Effect of Prandtl Number in Thermal BL - II
Lecture 36 - Effect of Prandtl Number in Thermal BL - III
Lecture 37 - Effect of Dissipation in Thermal BL - I
Lecture 38 - Effect of Dissipation in Thermal BL - II
Lecture 39 - Effect of Dissipation in Thermal BL - III
Lecture 40 - Similarity Solutions to Thermal BL - An Overview
Lecture 30 - Introduction to normal shocks
Lecture 31 - Normal shock relations - 1
Lecture 32 - Normal shock relations - 2
Lecture 33 - Rankine-Hugoniot equation
Lecture 34 - Discussion on Normal Shocks - 1
Lecture 35 - Discussion on Normal Shocks - 2
Lecture 36 - Normal shocks in C-D nozzles
Lecture 37 - Normal shocks in C-D nozzles (Continued...)
Lecture 38 - Moving Normal Shocks
Lecture 39 - Discussion on moving normal shocks
Lecture 40 - Oblique shocks
Lecture 41 - Oblique shock relations
Lecture 42 - Discussion on oblique shocks
Lecture 43 - Reflection of oblique shocks
Lecture 44 - Discussion on reflection of oblique shocks
Lecture 45 - Prandtl-Meyer flow
Lecture 46 - Prandtl-Meyer flow (Continued...)
Lecture 47 - Discussion on Prandtl-Meyer expansion
Lecture 48 - Shock Polar diagram and Prandtl-Meyer relation for Oblique shocks
NPTEL Video Course - Mechanical Engineering - NOC:Experimental Stress Analysis:An Overview

Subject Co-ordinator - Prof. K. Ramesh
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Stress Analysis Â□ Analytical and Numerical Approaches
Lecture 2 - Introduction to Stress Analysis - Experimental Approaches
Lecture 3 - Optical Methods Work as Optical Computers
Lecture 4 - Basic information provided by various experimental methods
Lecture 5 - Visual Appreciation of Field Information - Part 1
Lecture 6 - Visual Appreciation of Field Information - Part 2
Lecture 7 - Visual Appreciation of Field Information - Part 3
Lecture 8 - Visual Appreciation of Field Information - Part 4
Lecture 9 - Visual Appreciation of Field Information - Part 5
Lecture 10 - Completeness of a Numerical Solution
Lecture 11 - Principle of Strain Gauges
Lecture 12 - Overview of Strain Gauge Measurements
Lecture 13 - Elegance of Photoelasticity
Lecture 14 - Introduction to Photoelasticity
Lecture 15 - Different Polariscopes
Lecture 16 - Principles of Moiré®
Lecture 17 - Introduction to Moiré®
Lecture 18 - Introduction to Brittle Coatings
Lecture 19 - Introduction to Holography
Lecture 20 - Introduction to Hologram Interferometry
Lecture 21 - Introduction to Double exposure hologram interferometry
Lecture 22 - Introduction to Speckle Methods
Lecture 23 - Introduction to Speckle Interferometry Techniques
Lecture 24 - Introduction to TSA and DIC
Lecture 25 - Introduction to Caustics
Lecture 26 - Introduction to Coherent Gradient Sensor
Lecture 27 - Naming of Experimental Methods
Lecture 28 - Fringe Patterns - Richness of Qualitative Information
Lecture 29 - Key technologies that have influenced Experimental Mechanics

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Lecture 30 - Multiscale analysis and trends in experimental mechanics
Lecture 31 - Selection of an experimental technique - Part 1
Lecture 32 - Selection of an experimental technique - Part 2
NPTEL Video Course - Mechanical Engineering - NOC: Fluid Dynamics and Turbomachines

Subject Co-ordinator - Prof. Dhiman Chatterjee, Prof. Shamit Bakshi
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Fluid Flow
Lecture 2 - Flow field, Stresses on fluid element, Newtonian fluid
Lecture 3 - Non Newtonian fluid, Classification of flow, Analysis of flow
Lecture 4 - Tutorial
Lecture 5 - Lecture 1 - Integral analysis, Control volume, Generalised conservation equation
Lecture 6 - Lecture 2 - Mass and linear momentum conservation in CV
Lecture 7 - Lecture 3 - Angular momentum conservation, Non-inertial frame of reference
Lecture 8 - Lecture 4 - Tutorial
Lecture 9 - Lecture 1 - Differential Analysis
Lecture 10 - Lecture 2 - Navier-Stokes equation for 2D incompressible flow
Lecture 11 - Lecture 3 - Vorticity, Stream function, Bernoulli's equation
Lecture 12 - Lecture 4 - Tutorial
Lecture 13 - Lecture 1 - External flows, Laminar and Turbulent Boundary Layer
Lecture 14 - Lecture 2 - Differential analysis of boundary layer, Blassius equation
Lecture 15 - Lecture 3 - Boundary Layer flow with pressure gradient, Flow separation
Lecture 16 - Lecture 4 - Internal flow, Pipe friction
Lecture 17 - Lecture 1 - Basic Thermodynamics
Lecture 18 - Lecture 2 - Turbomachines
Lecture 19 - Lecture 3 - Dimensional Analysis
Lecture 20 - Lecture 4 - Tutorial
Lecture 21 - Lecture 1 - Representation of Turbomachines and Definition of velocity
Lecture 22 - Lecture 2 - Euler's energy equation
Lecture 23 - Lecture 3 - Real fluid flow and efficiency of turbomachine
Lecture 24 - Lecture 4 - Tutorial
Lecture 25 - Lecture 1 - Pumps
Lecture 26 - Lecture 2 - Pumping Systems
Lecture 27 - Lecture 3 - Hydraulic Turbines
Lecture 28 - Lecture 4 - Hydraulic Turbines
Lecture 29 - Lecture 5 - Cavitation in Hydroturbomachines

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NPTEL Video Course - Mechanical Engineering - NOC: Micro and Nano Scale Energy Transport

Subject Co-ordinator - Dr. Arvind Pattamatta

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview to Micro/Nanoscale energy transport - Part 1
Lecture 2 - Overview to Micro/Nanoscale energy transport - Part 2
Lecture 3 - Some applications of Micro/Nanoscale energy transport
Lecture 4 - Continuum heat transfer and its limitation
Lecture 5 - Energy carriers at Micro/Nanoscale and their attributes
Lecture 6 - Microscopic contributes to Internal energy of a systems
Lecture 7 - Fundamentals of Quantum mechanics - Part 1
Lecture 8 - Fundamentals of Quantum mechanics - Part 2
Lecture 9 - Fundamentals of Quantum mechanics - Part 3
Lecture 10 - Fundamentals of Quantum mechanics - Part 4
Lecture 11 - Fundamentals of Quantum mechanics - Part 5
Lecture 12 - Fundamentals of solid state physics - Part 1
Lecture 13 - Fundamentals of solid state physics - Part 2
Lecture 14 - Fundamentals of solid state physics - Part 3
Lecture 15 - Fundamentals of solid state physics - Part 4
Lecture 16 - Fundamentals of statistical thermodynamics - Part 1
Lecture 17 - Fundamentals of statistical thermodynamics - Part 2
Lecture 18 - Fundamentals of statistical thermodynamics - Part 3
Lecture 19 - Fundamentals of statistical thermodynamics - Part 4
Lecture 20 - Kinetic theory of energy carriers - Part 1
Lecture 21 - Kinetic theory of energy carriers - Part 2
Lecture 22 - Non-equilibrium energy transport at Nanoscales
Lecture 23 - Boltzmann Transport Equation under the relaxation time approximation
Lecture 24 - Derivation of Continuum laws from Boltzmann Transport Equation - Part 1
Lecture 25 - Derivation of Continuum laws from Boltzmann Transport Equation - Part 2
Lecture 26 - Derivation of Continuum laws from Boltzmann Transport Equation - Part 3
Lecture 27 - Nanoscale Energy transport in a Thin Film - Part 1
Lecture 28 - Nanoscale Energy transport in a Thin Film - Part 2
Lecture 29 - Nanoscale Energy transport in a Thin Film - Part 3

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Lecture 30 - Gas flow and Heat transport in Microchannels - Part 1
Lecture 31 - Gas flow and Heat transport in Microchannels - Part 2
Lecture 32 - Single phase liquid flow and Heat transport in Microchannels - Part 1
Lecture 33 - Single phase liquid flow and Heat transport in Microchannels - Part 2
Lecture 34 - Fundamentals of Electro kinetics in Microchannels Part1
Lecture 35 - Fundamentals of Electro kinetics in Microchannels Part2
Lecture 36 - Fundamentals of Electro kinetics in Microchannels Part3
Lecture 37 - Two phase Heat transfer in Microchannels - Part 1
Lecture 38 - Two phase Heat transfer in Microchannels - Part 2
Lecture 39 - Nano fluid Heat transfer - Part 1
Lecture 40 - Nano fluid Heat transfer - Part 2
Lecture 41 - Measurement techniques in Micro and Nanoscale Heat transfer - Part 1
Lecture 42 - Measurement techniques in Micro and Nanoscale Heat transfer - Part 2
NPTEL Video Course - Mechanical Engineering - NOC: Electron Diffraction and Imaging

Subject Co-ordinator - Prof. Sundararaman M

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - 1D-2D-3D lattice
Lecture 2 - Stereographic projection - 1
Lecture 3 - Stereographic Projection - 2
Lecture 4 - Symmetry in 1-D crystals
Lecture 5 - Symmetry in 2-D crystals
Lecture 6 - Symmetry in 3-D crystals
Lecture 7 - Understanding IUCr tables
Lecture 8 - Symmetry in 3-D Crystals
Lecture 9 - Reciprocal lattice
Lecture 10 - Directions Planes and zone axes
Lecture 11 - Interplanar distances and angles
Lecture 12 - Diffraction - 1
Lecture 13 - Diffraction - 2
Lecture 14 - Diffraction - Structure and Shape Factor
Lecture 15 - Transformation of Indices
Lecture 16 - Microscope - 1
Lecture 17 - Microscope - 2
Lecture 18 - Kikuchi Diffraction
Lecture 19 - Double Diffraction and CBED
Lecture 20 - CBED and Precession Electron Diffraction
Lecture 21 - Indexing Diffraction Pattern
Lecture 22 - Correlation of Diffraction Spots to Microstructure
Lecture 23 - 3-Index to 4-Index System
Lecture 24 - Kinematical and Dynamical Theory of Diffraction and Imaging
Lecture 25 - Contrast from Planar Defects
Lecture 26 - Contrast from Strain Fields
Lecture 27 - Atomic Scattering Factor
Lecture 28 - Coherence
Lecture 29 - Lens Aberrations

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Lecture 30 - Phase Contrast Microscopy - 1
Lecture 31 - Phase Contrast Microscopy - 2
Lecture 32 - Phase Contrast Microscopy - 3
Lecture 33 - STEM
Lecture 34 - ELES and EDS
Lecture 35 - Recent trends
Lecture 36 - Energy dispersive Spectroscopy
Lecture 37 - Revision - 1
Lecture 38 - Revision - 2
Lecture 39 - Revision of Recent trends in Microscopy
Lecture 40 - Crystallography Revision
NPTEL Video Course - Mechanical Engineering - NOC: Acoustic and Noise Control

Subject Co-ordinator - Prof. Abijith Sarkar
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Module 1 - Introduction - 1
Lecture 2 - Module 1 - Introduction - 2
Lecture 3 - Module 2 - Governing Equation - 1
Lecture 4 - Module 2 - Governing Equation - 2
Lecture 5 - Module 3 - Plane Wave - 1
Lecture 6 - Module 3 - Plane Wave - 2
Lecture 7 - Module 4 - Reflection Of Plane Waves - 1
Lecture 8 - Module 4 - Reflection Of Plane Waves - 2
Lecture 9 - Module 5 - Frequence Analysis - 1
Lecture 10 - Module 5 - Frequence Analysis - 2
Lecture 11 - Module 6 - Harmonic Plane Waves
Lecture 12 - Module 7 - Travelling And Standing Waves
Lecture 13 - Module 8 - Acoustic Mode Shapes, Reflection
Lecture 14 - Module 9 - Plane Waves
Lecture 15 - Module 10 - Flexural Waves, evanescent Waves
Lecture 16 - Module 11 - Near Field Acoustic Waves
Lecture 17 - Module 12 - cuton Waves in duct
Lecture 18 - Module 13 - Power Calculation
Lecture 19 - Module 14 - Decibel Scale
Lecture 20 - Module 15 - Db Arithmetic
Lecture 21 - Module 16 - Sound Power Level
Lecture 22 - Module 17 - Human factors in Acoustic Engineering
Lecture 23 - Module 18 - Microphone
Lecture 24 - Module 19 - Acoustic Measurements
Lecture 25 - Module 20 - Muffler Analysis
Lecture 26 - Module 21 - Transfer Matrix Method
Lecture 27 - Module 22 - Electro Mechanical Analogies - Part 1
Lecture 28 - Module 23 - Electro Mechanical Analogies Simple Example
Lecture 29 - Module 24 - Electro Mechanical Analogies Example

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Lecture 30 - Module 25 - Helmholtz Resonator
Lecture 31 - Module 26 - Source Impedance
Lecture 32 - Module 27 - Insertion Loss
Lecture 33 - Module 28 - Analysis Of Industrial Mufflers
Lecture 34 - Module 29 - Spherical Waves
Lecture 35 - Module 30 - Monopole and Dipole
Lecture 36 - Module 31 - Inhomogeneous Wave Equation
Lecture 37 - Module 32 - Green's Function
Lecture 38 - Module 33 - Kirchoff Helmholtz Integral Equation
Lecture 39 - Tutorial 1
Lecture 40 - Tutorial 2
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Lecture 31 - Strength of Solidifying Strand
Lecture 32 - Brittle Zone Near Solidus
Lecture 33 - Strength and Toughness of Solid Shell
Lecture 34 - Role of Chemistry on Solidification Behaviour
Lecture 35 - Sticking vis-a-vis Depression Behaviour
Lecture 36 - Role of Chemistry on Bulging or Depression Tendency - Part I
Lecture 37 - Role of Chemistry on Bulging or Depression Tendency - Part II
Lecture 38 - Effect of Cast Grain Size
Lecture 39 - Brittle Temperature Regions
Lecture 40 - Typical Cracks and Defects - Part I
Lecture 41 - Typical Cracks and Defects - Part II
Lecture 42 - Remedial Measures to Control Defects - Part I
Lecture 43 - Remedial Measures to Control Defects - Part II
Lecture 44 - Remedial Measures to Control Defects - Part III
Lecture 45 - Grade - Specific Casting Parameters - Part I
Lecture 46 - Grade - Specific Casting Parameters - Part II
Lecture 47 - Identification of Genesis of Quality Problems Through Metallographic Investigation - Part I
Lecture 48 - Identification of Genesis of Quality Problems Through Metallographic Investigation - Part II
Lecture 49 - Identification of Genesis of Quality Problems Through Metallographic Investigation - Part III
Lecture 30 - Precise Lattice Parameter Determination - 1
Lecture 31 - Chemical Analysis by X-Ray Fluorescence
Lecture 32 - Chemical Analysis by X-Ray Absorption
Lecture 33 - Effect of Crystallite Size on Diffracted X-Ray Intensity
Lecture 34 - Texture Determination by XRD
Lecture 35 - Particle Size Determination by XRD
Lecture 36 - Effect of Crystallite Size on Diffracted X-Ray Intensity
Lecture 37 - Determination of Single Crystal Orientation by X-Rays
Lecture 38 - Stress Analysis by X-Rays
Lecture 39 - Factors Contributing to Peak Broadening
Lecture 40 - Residual Stress Measurement by X-Rays
NPTEL Video Course - Mechanical Engineering - NOC: Transport Phenomena in Materials

Subject Co-ordinator - Dr. G. Phanikumar
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Subscript Notation - Part 1
Lecture 2 - Subscript Notation - Part 2
Lecture 3 - Coordinate Rotation
Lecture 4 - Introduction to Tensors
Lecture 5 - Symmetry of Properties
Lecture 6 - Material Derivative
Lecture 7 - Planar Flows
Lecture 8 - Reynolds Transport Theorem
Lecture 9 - Derivation of Navier-Stokes equation
Lecture 10 - Navier Stokes equations - Part 2
Lecture 11 - Flow problem statements
Lecture 12 - Simple cases in fluid flow
Lecture 13 - Simple cases in fluid flow
Lecture 14 - Pipe flow and porous medium
Lecture 15 - Simple cases in fluid flow
Lecture 16 - Friction factors and correlations
Lecture 17 - Energy Transport
Lecture 18 - Conduction cases - steady state
Lecture 19 - Conduction cases - transient state
Lecture 20 - Convective heat transfer

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NPTEL Video Course - Mechanical Engineering - NOC: Experimental Stress Analysis - An Overview

Subject Co-ordinator - Prof. K. Ramesh

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of Experimental Stress Analysis
Lecture 2 - Optical Methods Work as Optical Computers
Lecture 3 - Stress, Strain and Displacement Fields
Lecture 4 - Completeness of a numerical solution
Lecture 5 - Fringe Patterns - Richness of Qualitative Information
Lecture 6 - Multi-Scale Analysis in Experimental Mechanics
Lecture 7 - Selection of an Experimental Technique
Lecture 8 - Introduction to Transmission Photoelasticity
Lecture 9 - Ordinary and Extraordinary Rays
Lecture 10 - Light Ellipse, Passage of Light Through a Crystal Plate
Lecture 11 - Retardation Plates, Stress-optic Law
Lecture 12 - Plane Polariscoscope
Lecture 13 - Jones Calculus
Lecture 14 - Circular Polariscoscope
Lecture 15 - Determination of Photoelastic Parameters at an Arbitrary Point
Lecture 16 - Tardyâ□□s Method of Compensation
Lecture 17 - Calibration of Photoelastic Materials
Lecture 18 - Fringe Thinning Methodologies
Lecture 19 - Fringe Ordering in Photoelasticity
Lecture 20 - Miscellaneous Topics in Transmission Photoelasticity
Lecture 21 - Three Dimensional Photoelasticity
Lecture 22 - Overview of Digital Photoelasticity
Lecture 23 - Introduction to Photoelastic Coatings
Lecture 24 - Correction Factors for Photoelastic Coatings
Lecture 25 - Coating Materials, Selection of Coating Thickness, Industrial Application of Photoelastic Coatings
Lecture 26 - Calibration of Photoelastic Coatings, Introduction to Brittle Coatings
Lecture 27 - Analysis of Brittle Coatings
Lecture 28 - Introduction to Strain Gauges
Lecture 29 - Strain Sensitivity of a Strain Gauge, Bridge Sensitivity, Rosettes

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Lecture 30 - Strain Gauge Alloys, Carriers and Adhesives
Lecture 31 - Performance of Strain Gauge System
Lecture 32 - Temperature Compensation, Two-wire and Three-wire Circuits
Lecture 33 - Strain Gauge Selection
Lecture 34 - Bonding of a Strain Gauge
Lecture 35 - Soldering, Accounting for Transverse Sensitivity Effects
Lecture 36 - Correction Factors for Special Applications
Lecture 37 - Special Gauges
NPTEL Video Course - Mechanical Engineering - NOC: Mechanics of Human Movement

Subject Co-ordinator - Prof. Sujatha Srinivasan
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic Terminologies
Lecture 2 - Skeletal System
Lecture 3 - Axial and Appendicular Skeleton
Lecture 4 - Bones in the Human Body
Lecture 5 - Types of Joints
Lecture 6 - Movements about Joints
Lecture 7 - Levers in the Human Body
Lecture 8 - Skeletal Muscles
Lecture 9 - Skeletal Muscles
Lecture 10 - Skeletal Muscles
Lecture 11 - Mechanics and Modeling of Muscles
Lecture 12 - Muscle Action - Part I
Lecture 13 - Muscle Action - Part II
Lecture 14 - Principles of Statics
Lecture 15 - Static Analysis of Elbow - Part I
Lecture 16 - Static Analysis of Elbow - Part II
Lecture 17 - Static Analysis of Shoulder - Part I
Lecture 18 - Static Analysis of Shoulder - Part II
Lecture 19 - Static Analysis of Spine - Part I
Lecture 20 - Static Analysis of Spine - Part II
Lecture 21 - Static Analysis of Spine - Part III
Lecture 22 - Static Analysis of Hip - Part I
Lecture 23 - Static Analysis of Hip - Part II
Lecture 24 - Static Analysis of the Knee
Lecture 25 - Static Analysis of the Knee and Ankle
Lecture 26 - Kinetics
Lecture 27 - Kinetics
Lecture 28 - Kinetics
Lecture 29 - Kinetics

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Lecture 30 - Kinetics
Lecture 31 - Kinetics
Lecture 32 - Kinetics
Lecture 33 - Kinetics of Arm Swinging during Walking
Lecture 34 - Inverse Dynamics Analysis
Lecture 35 - Biomechanics of Balance - Part I
Lecture 36 - Biomechanics of Balance - Part II
Lecture 37 - Biomechanics of Balance - Part III
Lecture 38 - Human Gait
Lecture 39 - Human Gait Terminologies
Lecture 40 - Characteristics of Normal Gait - Part I
Lecture 41 - Characteristics of Normal Gait - Part II
Lecture 42 - Characteristics of Normal Gait - Part III
Lecture 43 - Pathological Gait Part - I
Lecture 44 - Pathological Gait Part - II
Lecture 45 - Pathological Gait Part - III
Lecture 46 - Introduction to Assistive Devices for Mobility
Lecture 47 - Design Considerations
Lecture 48 - Design Considerations
Lecture 49 - Design Considerations
Lecture 50 - Journey of Standing Wheelchair Development

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Design for Quality, Manufacturing and Assembly

Subject Co-ordinator - Prof. Palaniappaan Ramu

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to DfX
Lecture 2 - Introduction to Quality
Lecture 3 - Introduction to Robustness
Lecture 4 - Introduction to Six Sigma Concept
Lecture 5 - Recap and clarifications of basic concepts
Lecture 6 - Review of Six Sigma and Quality Loss Function (QLF)
Lecture 7 - Types of QLF and SN Ratio
Lecture 8 - Linking Quality and Robustness
Lecture 9 - Design for Six Sigma - Stages, Design of Experiments
Lecture 10 - Introduction To Design Of Experiments
Lecture 11 - Need for DoE and basic DoE methods
Lecture 12 - Factorial Design
Lecture 13 - Orthogonal Array- L4 and L8 example
Lecture 14 - Setting up an Orthogonal Array
Lecture 15 - Confounding OA and Resolution Table
Lecture 16 - Confounding Logic and Randomization of Experiments
Lecture 17 - Paper Helicopter Case Study - Part I
Lecture 18 - Paper Helicopter Case Study - Part II
Lecture 19 - Introduction To Injection Molding Process, Materials, Terminologies Related To Plastic Parts and Design Guidelines
Lecture 20 - Estimation of Mold Cost for Injection Molding (Dixon and Poli's Method)
Lecture 21 - Estimation of Mold Cost for Injection Molding (Dixon and Poli's Method) (Continued...)
Lecture 22 - Mold Cost Estimation - Tutorial
Lecture 23 - Design for Additive Manufacturing
Lecture 24 - Demo
Lecture 25 - Introduction to Sustainable Development and Sustainability Indicators - Part 1
Lecture 26 - Introduction to Sustainable Development and Sustainability Indicators - Part 2
Lecture 27 - Introduction to design process
Lecture 28 - Accounting for manufacturability and assembly in design - An overview
Lecture 29 - DfMA in product design

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Lecture 30 - General design guidelines for manual assembly
Lecture 31 - Systematic DFA methodology
Lecture 32 - Alpha symmetry, Beta symmetry
Lecture 33 - Quantification of part size and thickness
Lecture 34 - Systematic DFA Case study - controller assembly
Lecture 35 - DFA examples and discussion
Lecture 36 - Xerox Producibility Index (XPI)
Lecture 37 - High Speed and Robotic Assembly
Lecture 38 - Sheet Metal Working
Lecture 39 - Overview of DoE Workflow
Lecture 40 - DFA Software
Lecture 41 - DFM Software and Case Studies
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: Surrogates and Approximations in Engineering Design

Subject Co-ordinator - Prof. Palaniappan Ramu
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview and Motivation of Course
Lecture 2 - Basic Optimization Problem Formulation
Lecture 3 - Problem Formulation Example
Lecture 4 - Calculus related to Optimization
Lecture 5 - The big picture - Overview
Lecture 6 - Introduction to DOE - 1
Lecture 7 - Introduction to DOE - 2
Lecture 8 - Types of DOE - 1
Lecture 9 - Types of DOE - 2 and some examples
Lecture 10 - Introduction to surrogate modeling
Lecture 11 - Types of surrogate - Polynomial models
Lecture 12 - Radial basis function - 1
Lecture 13 - Radial basis function - 2
Lecture 14 - Kriging - 1
Lecture 15 - Kriging - 2
Lecture 16 - Metamodels for Safe and Efficient Automotive Structures
Lecture 17 - Exploration and Exploitation in Surrogates
Lecture 18 - Errors Based Exploration
Lecture 19 - Ensemble of Surrogates

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| Lecture 1 | Concept of Steel Quality |
| Lecture 2 | Typical Examples of Surface Defects |
| Lecture 3 | Origin of Common Quality Problems |
| Lecture 4 | Present Scenario on Quality Demands |
| Lecture 5 | Control of Residuals and Impact on Quality |
| Lecture 6 | Non-Metallic Inclusions |
| Lecture 7 | Evaluation of Residuals and Inclusions |
| Lecture 8 | Cleanliness Requirements for Different applications |
| Lecture 9 | Limitation of Primary Steelmaking and Importance of secondary Refining |
| Lecture 10 | Deoxidation |
| Lecture 11 | Prevention of Slag carryover |
| Lecture 12 | Desulphurisation |
| Lecture 13 | Degassing |
| Lecture 14 | Secondary Refining Processes |
| Lecture 15 | Injection of Calcium |
| Lecture 16 | Decarburisation |
| Lecture 17 | Cleanliness Measures in Ladle and Tundish |
| Lecture 18 | Cleanliness Measures in Mould |
| Lecture 19 | Different Routes and Temperature Control |
| Lecture 20 | Nature and Distribution of Entrapments in Casting |
| Lecture 21 | Sources of Exogenous Entrapments |
| Lecture 22 | Effect of Vertical vis-a-vis Curved Mould |
| Lecture 23 | Quality of Cast Product |
| Lecture 24 | Role of Concast Process, Caster Design and Steel Grade |
| Lecture 25 | Primary Cooling in Caster Mould |
| Lecture 26 | Heat Transfer in Mould |
| Lecture 27 | Cast Structure and Dendrite Size |
| Lecture 28 | Role of Mould Oscillation |
| Lecture 29 | Role of Chemistry - Part I |
Lecture 30 - Role of Chemistry - Part II
Lecture 31 - Role of Segregation - Part I
Lecture 32 - Role of Segregation - Part II
Lecture 33 - Deleterious Effect of Phosphorus
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Lecture 35 - Brittle Zone Near Solidus
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Lecture 37 - Role of Chemistry on Solidification Behaviour
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Lecture 47 - Remedial Measures to Control Defects - Part I
Lecture 48 - Remedial Measures to Control Defects - Part II
Lecture 49 - Remedial Measures to Control Defects - Part III
Lecture 50 - Grade - Specific Casting Parameters - Part I
Lecture 51 - Grade - Specific Casting Parameters - Part II
Lecture 52 - Identification of Genesis of Quality Problems Through Metallographic Investigation - Part I
Lecture 53 - Identification of Genesis of Quality Problems Through Metallographic Investigation - Part II
Lecture 54 - Identification of Genesis of Quality Problems Through Metallographic Investigation - Part III
Lecture 55 - Some Examples of Quality Problems
NPTEL Video Course - Mechanical Engineering - Theory of Mechanism

Subject Co-ordinator - Prof. Sujatha Srinivasan
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 30 - Acceleration Analysis
Lecture 31 - Acceleration Analysis
Lecture 32 - Force Analysis of Mechanisms, Mechanical Advantage
Lecture 33 - Force Analysis of Mechanisms - II
Lecture 34 - Balancing of Mechanisms using Counterweights
Lecture 35 - Balancing of Mechanisms using Springs
Lecture 36 - Spatial Mechanisms
Lecture 37 - Introduction to the Kinematics of Spatial Mechanisms
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Engineering Mechanics

Subject Co-ordinator - Prof. K. Ramesh

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Engineering Mechanics - I
Lecture 2 - Introduction to Engineering Mechanics - II
Lecture 3 - Force Systems - I
Lecture 4 - Force Systems - II
Lecture 5 - Equilibrium of Rigid bodies - I
Lecture 6 - Equilibrium of Rigid bodies - II
Lecture 7 - Trusses - I
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Lecture 9 - Trusses - III
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Lecture 14 - Virtual Work - I
Lecture 15 - Virtual Work - II
Lecture 16 - Energy Relations
Lecture 17 - Review Before Quiz - I
Lecture 18 - Friction - I
Lecture 19 - Friction - II
Lecture 20 - Friction - III
Lecture 21 - Particle Dynamics
Lecture 22 - Circular Motion
Lecture 23 - Absolute Motion
Lecture 24 - Relative Motion - I
Lecture 25 - Relative Motion - II
Lecture 26 - Relative Motion - III and Instantaneous Center
Lecture 27 - Rotating frame of reference I - Velocity
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Lecture 30 - RFR- IV Crank and slotted bar
Lecture 31 - RFR-V Understanding Coriolis Acceleration
Lecture 32 - Kinetics - I
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Lecture 34 - Kinetics - III
Lecture 35 - 3D Kinematics - I
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Lecture 37 - 3D Kinematics - III
Lecture 30 - Submerged Arc Welding (SAW)
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Lecture 32 - Solid State Welding processes
Lecture 33 - Friction Welding process
Lecture 34 - Electron Beam and Plasma Welding Processes
Lecture 35 - Laser Beam welding and Diffusion welding processes
Lecture 36 - High Energy Rate Forming Processes
Lecture 37 - Rapid Prototyping Technology (RPT)
Lecture 38 - Rapid Manufacturing, applications and advancements
Lecture 39 - Microwave Processing of Materials
Lecture 40 - Applications and new trends in Microwave Material Processing
Lecture 1 - General Introduction
Lecture 2 - CFD
Lecture 3 - Conservation Laws and Mathematical Preliminaries
Lecture 4 - Mass Conservation
Lecture 5 - Momentum Equation
Lecture 6 - Momentum Equation
Lecture 7 - Navier-Stokes Equation and its Simplified Forms
Lecture 8 - Energy and Scalar Transport Equations
Lecture 9 - Scalar Transport, Mathematical Classification and Boundary Conditions
Lecture 10 - Finite Difference Method
Lecture 11 - Finite Difference Approximation of First Order Derivatives
Lecture 12 - Finite Difference Approximation of Second Order Derivatives - 1
Lecture 13 - Finite Difference Approximation of Second Order Derivatives - 2
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Lecture 19 - Computer Implementation of FDM for Steady State Heat Diffusion Problems - 1
Lecture 21 - Computer Implementation of FDM for Steady State Heat Diffusion Problems - 3
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Lecture 24 - Accelerated Iterative Methods for Linear Systems
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Lecture 28 - Introduction to Finite Volume Method
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Lecture 36 - Time Integration Techniques for Navier-Stokes Equations
Lecture 37 - Implicit Pressure Correction Methods
Lecture 38 - SIMPLEC, SIMPLER and Fractional Step Methods
Lecture 39 - Turbulent Flows
Lecture 40 - Reynolds Averaging and RANS Simulation Models
Lecture 41 - RANS Turbulence Models and Large Eddy Simulation
Lecture 42 - Introduction to Grid Generation
Lecture 43 - Aspects of Practical CFD Analysis

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NPTEL Video Course - Mechanical Engineering - Metal Casting

Subject Co-ordinator - Dr. D. B. Karunakar

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Overview of different casting processes - 1
Lecture 3 - Overview of different casting processes - 2
Lecture 4 - Overview of different casting processes - 3
Lecture 5 - Terminology and Tools of Sand Moulding
Lecture 6 - Moulding Sands and Design - 1
Lecture 7 - Moulding Sands and Design - 2
Lecture 8 - Moulding Sands Properties
Lecture 9 - Moulding Sand Properties Testing
Lecture 10 - Cores and Core Sands
Lecture 11 - Patterns and Allowances
Lecture 12 - Steps Involved in Making a Sand Casting
Lecture 13 - Design of Risering System - 1
Lecture 14 - Design of Risering System - 2
Lecture 15 - Design of Risering System - 3
Lecture 16 - Design of Risering System - 4
Lecture 17 - Design of Risering System - 5
Lecture 18 - Design of Gating System - 1
Lecture 19 - Design of Gating System - 2
Lecture 20 - Sand Casting Defects - 1
Lecture 21 - Sand Casting Defects - 2
Lecture 22 - Melting Furnaces and Practice
Lecture 23 - Treatment of Molten Metal
Lecture 24 - Fluidity of Molten Metal
Lecture 25 - Solidification
Lecture 26 - Cast Irons and Steels
Lecture 27 - Aluminum and Magnesium Cast Alloys
Lecture 28 - Copper, Zinc and Titanium Cast Alloys
Lecture 29 - Die Casting Process - I

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Lecture 30 - Die Casting Process - II
Lecture 31 - Investment Casting Process - I
Lecture 32 - Investment Casting Process - II
Lecture 33 - Continuous Casting Process
Lecture 34 - Centrifugal Casting Process
Lecture 35 - Evaporative Pattern Casting and Plaster Moulding
Lecture 36 - Vacuum Sealed Moulding and Squeeze Casting
Lecture 37 - Shakeout, Fettling and Finishing
Lecture 38 - Inspection, Testing and Quality Control
Lecture 39 - Design Consideration and Economics
Lecture 40 - Environment, Health and Safety Aspects
NPTEL Video Course - Mechanical Engineering - Processing of non metals

Subject Co-ordinator - Dr. Inderdeep Singh
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Engineering Materials and Processing Techniques
Lecture 2 - Properties of Non-Metals
Lecture 3 - Glass Structure and Properties
Lecture 4 - Glass Processing - I
Lecture 5 - Glass Processing - II
Lecture 6 - Ceramics - I
Lecture 7 - Ceramics - II
Lecture 8 - Ceramic Powder Preparation
Lecture 9 - Ceramic Powder Preparation â□□ I
Lecture 10 - Processing of Ceramic Parts ? Pressing
Lecture 11 - Processing of Ceramic Parts â□□ II
Lecture 12 - Ceramics
Lecture 13 - Thermoplastics and Thermosets
Lecture 14 - Processing of Plastics
Lecture 15 - Extrusion of Plastics
Lecture 16 - Transfer Molding and Compression Molding
Lecture 17 - Injection Molding
Lecture 18 - Thermoforming
Lecture 19 - Rotational Molding and Blow Molding
Lecture 20 - Composite Materials
Lecture 21 - Composite Materials
Lecture 22 - Processing of Polymer Matrix Composites
Lecture 23 - Hand Lay-up and Spray Lay-up
Lecture 24 - Pultrusion
Lecture 25 - Compression Molding
Lecture 26 - Filament Winding
Lecture 27 - Injection Molding-1
Lecture 28 - Pre-pregging and Sheet Molding Compounds
Lecture 29 - Resin Transfer Molding and Autoclave Molding
Lecture 30 - Ceramic Matrix Composites
Lecture 31 - Ceramic Matrix Composites
Lecture 32 - Powder Processing
Lecture 33 - Chemical Vapour Infiltration
Lecture 34 - Ceramic Matrix Composites
Lecture 35 - Ceramic Matrix Composites
Lecture 36 - Drilling of Polymer Matrix Composites
Lecture 37 - Hole Making Techniques for Polymer Matrix Composites
Lecture 38 - Joining of Polymer Matrix Composites
Lecture 39 - Microwave Joining of Polymer Matrix Composites
Lecture 40 - Research Tools for Secondary Processing
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Vibration control

Subject Co-ordinator - Dr. S. P. Harsha
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basics of Vibrations for Simple Mechanical Systems
Lecture 2 - Introduction to Damping in Free and Force Vibrations
Lecture 3 - Free and Forced Vibrations of Two Degree of Systems
Lecture 4 - Multi Degree of Freedom Systems
Lecture 5 - Reduction at source - 1
Lecture 6 - Reduction at source - 2
Lecture 7 - Reduction at source - 3
Lecture 8 - Feedback Control System - 1
Lecture 9 - Shunt Damping
Lecture 10 - Vibration Isolation - 1
Lecture 11 - Vibration Isolation - 2
Lecture 12 - Vibration Isolation - 3
Lecture 13 - Source Classification
Lecture 14 - Self Excitation Vibration
Lecture 15 - Flow Induction Vibration
Lecture 16 - Field Balancing of Rigid / Flexible Rotors
Lecture 17 - Damping
Lecture 18 - Damping
Lecture 19 - Numerical Problems
Lecture 20 - Design Sensitivity - I
Lecture 21 - Design Specification
Lecture 22 - Design for Enhanced Material Damping
Lecture 23 - Basics of Passive Vibration Control
Lecture 24 - Design of Absorber
Lecture 25 - Shock Absorber
Lecture 26 - Isolators with Stiffness and Damping
Lecture 27 - Basics of Active Vibration Control
Lecture 28 - Piezoelectric Material - I
Lecture 29 - Piezoelectric Material - II

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Lecture 30 - Piezoelectric Accelerometers
Lecture 31 - Electro-rheological (ER) Fluids
Lecture 32 - Magneto-rheological (MR) Fluids
Lecture 33 - Magneto and Electrostrictive Materials
Lecture 34 - Shape Memory Alloy
Lecture 35 - Electro-Magnetics
Lecture 36 - Numerical Problems
Lecture 37 - Basics of Vibration Measurement System
Lecture 38 - Data Acquisition
Lecture 39 - Fourier Transformation
Lecture 40 - Filters
NPTEL Video Course - Mechanical Engineering - Welding Engineering

Subject Co-ordinator - Dr. D.K. Dwivedi
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Welding Engineering
Lecture 2 - Classification of Welding Processes - I
Lecture 3 - Classification of Welding Processes - II
Lecture 4 - Sources of Heat and Protection of Weld pool
Lecture 5 - Protection of Weld Pool
Lecture 6 - Introduction
Lecture 7 - Fundamentals of Arc Initiation
Lecture 8 - Arc Maintenance & Arc Characteristics
Lecture 9 - Arc Forces
Lecture 10 - Arc Efficiency
Lecture 11 - Melting Rate in Different Welding Processes
Lecture 12 - Types of power sources and their characteristics - I
Lecture 13 - Types of power sources and their characteristics - II
Lecture 14 - SMAW - I
Lecture 15 - SMAW - II
Lecture 16 - GTAW - I
Lecture 17 - GTAW - II
Lecture 18 - PAW & SAW
Lecture 19 - SAW
Lecture 20 - GMAW
Lecture 21 - Brazing, Soldering & Braze Welding
Lecture 22 - Braze welding and Electroslag welding
Lecture 23 - Weld Thermal Cycle
Lecture 24 - Effect of WTC and Cooling rate in welding
Lecture 25 - Cooling rate
Lecture 26 - Peak temperature & Solidification rate
Lecture 27 - Residual stress - I
Lecture 28 - Residual stress - II
Lecture 29 - Introduction

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Lecture 30 - Type of joints and welds
Lecture 31 - Edge preparation
Lecture 32 - Design for static and fatigue loading
Lecture 33 - Fatigue fracture of weld joints - I
Lecture 34 - Fatigue fracture of weld joints - II
Lecture 35 - Introduction-
Lecture 36 - DT & NDT
Lecture 37 - Understanding Weldability
Lecture 38 - Reactions in weldment
Lecture 39 - Weldability of Al alloys
Lecture 40 - Failure analysis and prevention
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Industrial Engineering

Subject Co-ordinator - Prof. P.K. Jain, Dr. Pradeep Kumar, Dr. Inderdeep Singh, Dr. D.K. Dwivedi

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Production Planning and Control
Lecture 2 - Product Design and Development
Lecture 3 - Statistical Process Control - Part I
Lecture 4 - Statistical Process Control - Part II
Lecture 5 - Statistical Process Control - Part III
Lecture 6 - Productivity
Lecture 7 - Factors Affecting the Productivity
Lecture 8 - Improving the Productivity Introduction to Work Study
Lecture 9 - Work Study Human Component and Method Study
Lecture 10 - Recording Techniques for Method Study - Part I
Lecture 11 - Recording Techniques for Method Study - Part II
Lecture 12 - Recording Techniques Critical Examination
Lecture 13 - Principles of Motion Economy
Lecture 14 - Work Measurement Time Study - Part I
Lecture 15 - Work Measurement Time Study - Part II
Lecture 16 - Performance Rating Allowances
Lecture 17 - Work Measurement
Lecture 18 - PMT System Standard Data Method
Lecture 19 - Ergonomics
Lecture 20 - Metabolism and Organization at Work
Lecture 21 - Working Conditions Lights Vibrations
Lecture 22 - Materials Management - Part I
Lecture 23 - Materials Management - Part II
Lecture 24 - Materials Requirement Planning
Lecture 25 - Sales Forecasting - Part I
Lecture 26 - Sales Forecasting - Part II
Lecture 27 - Capacity Planning - Part I
Lecture 28 - Capacity Planning - Part II
Lecture 29 - Network Analysis - Part I

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Lecture 30 - Network Analysis - Part II
Lecture 31 - Facility Design Part - Part I
Lecture 32 - Facility Design Part - Part II
Lecture 33 - Facility Design Part - Part III
Lecture 34 - Facility Design Part - Part IV
Lecture 35 - Product Design Development
Lecture 36 - Materials Handling
Lecture 37 - Quality Concepts
Lecture 38 - Value Engineering
Lecture 39 - Reliability
Lecture 40 - Industrial Safety

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NPTEL Video Course - Mechanical Engineering - Manufacturing Processes I

Subject Co-ordinator - Dr. D.B. Karunakar, Dr. Inderdeep Singh. Dr. D.K. Dwivedi

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Powder Metallurgy - Part I
Lecture 2 - Powder Metallurgy - Part II
Lecture 3 - Powder Metallurgy - Part III
Lecture 4 - Metal Forming - Fundamentals
Lecture 5 - Forging
Lecture 6 - Swaging and Wire Drawing
Lecture 7 - Sheet Metal Operations - Part I
Lecture 8 - Sheet Metal Operations - Part II
Lecture 9 - Sheet Metal Operations - Part III
Lecture 10 - Sheet Metal Working - Presses
Lecture 11 - Sheet Metal Working - Equipment
Lecture 12 - High Energy Rate Forming Processes
Lecture 13 - Machining Fundamentals
Lecture 14 - Machining - Part I
Lecture 15 - Machining - Part II
Lecture 16 - Machining - Part III
Lecture 17 - Metal casting - Part I
Lecture 18 - Metal casting - Part II
Lecture 19 - Metal Casting - Part III
Lecture 20 - Metal Casting - Part IV
Lecture 21 - Metal Casting - Part V
Lecture 22 - Metal Casting - Part VI
Lecture 23 - Metal Casting - Part VII
Lecture 24 - Metal Casting - Part VIII
Lecture 25 - Metal Casting - Part IX
Lecture 26 - Metal Casting - Part X
Lecture 27 - Introduction
Lecture 28 - Welding Process Classification
Lecture 29 - Brazing Soldering Braze Welding

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Lecture 30  - Arc Welding Power Source - Part I
Lecture 31  - Arc Welding Power Source - Part II
Lecture 32  - Shielded Metal Arc Welding - Part I
Lecture 33  - Shielded Metal Arc Welding - Part II
Lecture 34  - Submerged Arc Welding
Lecture 35  - Gas Metal Arc Welding - Part I
Lecture 36  - Gas Metal Arc Welding - Part II
Lecture 37  - Tungsten Inert Gas Welding - Part I
Lecture 38  - Tungsten Inert Gas Welding - Part II
Lecture 39  - Resistance Welding Process
Lecture 40  - Reaction in Weld Region Welding Defects
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Strength of Materials

Subject Co-ordinator - Dr. S.P. Harsha
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Solid Mechanics
Lecture 2 - Strength of Materials
Lecture 3 - Strength of Materials
Lecture 4 - Solid Mechanics
Lecture 5 - Strength of Materials
Lecture 6 - Strength of Materials
Lecture 7 - Strength of Materials
Lecture 8 - Strength of Materials
Lecture 9 - Strength of Materials
Lecture 10 - Strength of Materials
Lecture 11 - Strength of Materials
Lecture 12 - Strength of Materials
Lecture 13 - Strength of Materials
Lecture 14 - Strength of Materials
Lecture 15 - Strength of Materials
Lecture 16 - Strength of Materials
Lecture 17 - Strength of Materials
Lecture 18 - Strength of Materials
Lecture 19 - Strength of Materials
Lecture 20 - Strength of Materials
Lecture 21 - Strength of Materials
Lecture 22 - Strength of Materials
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Lecture 24 - Strength of Materials
Lecture 25 - Strength of Materials
Lecture 26 - Strength of Materials
Lecture 27 - Strength of Materials
Lecture 28 - Strength of Materials
Lecture 29 - Strength of Materials

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Lecture 30 - Strength of Materials
Lecture 31 - Strength of Materials
Lecture 32 - Strength of Materials
Lecture 33 - Strength of Materials
Lecture 34 - Strength of Materials
Lecture 35 - Strength of Materials
Lecture 36 - Strength of Materials
Lecture 37 - Strength of Materials
Lecture 38 - Strength of Materials
Lecture 39 - Strength of Materials
Lecture 40 - Strength of Materials
NPTEL Video Course - Mechanical Engineering - NOC: Two Phase Flow and Heat Transfer
Subject Co-ordinator - Dr. Arup Kumar Das
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Flow Regimes
Lecture 3 - Homogeneous Model
Lecture 4 - Drift Flux Model
Lecture 5 - (Missing Lecture)
Lecture 6 - Dispersed Flow
Lecture 7 - Slug Flow
Lecture 8 - Annular Flow
Lecture 9 - Droplet Annular and Stratified Flow
Lecture 10 - Measurement of Void Fraction
Lecture 11 - Signal Analysis
Lecture 12 - Two Fluid and Population Balance Model
Lecture 13 - Interface Tracking
Lecture 14 - Lattice Boltzmann Method
Lecture 15 - Smoothed Particle Hydrodynamics
Lecture 16 - Molecular Perspective of Two Phase Flow
Lecture 17 - Boiling Heat Transfer
Lecture 18 - Condensation
Lecture 19 - Solid-Liquid Flow
Lecture 20 - Gas-Solid Flow
NPTEL Video Course - Mechanical Engineering - NOC: Refrigeration and Air-Conditioning

Subject Co-ordinator - Prof. Ravi Kumar

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Recapitulation of Thermodynamics
Lecture 2 - Introduction to Refrigeration
Lecture 3 - Air Refrigeration Cycle
Lecture 4 - Aircraft Refrigeration Cycles - 1
Lecture 5 - Aircraft Refrigeration Cycles - 2
Lecture 6 - Aircraft Refrigeration Cycles - 3
Lecture 7 - Vapour Compression Cycle - 1
Lecture 8 - Vapour Compression Cycle - 2
Lecture 9 - P-h Charts
Lecture 10 - Actual Vapour Compression Cycle - 1
Lecture 11 - Actual Vapour Compression Cycle - 2
Lecture 12 - Compound Compression with Intercooling - 1
Lecture 13 - Compound Compression with Intercooling - 2
Lecture 14 - Multiple Evaporator and Cascade System
Lecture 15 - Problem Solving - 1
Lecture 16 - Refrigerants - 1
Lecture 17 - Refrigerants - 2
Lecture 18 - Vpour Absorption Systems - 1
Lecture 19 - Vpour Absorption Systems - 2
Lecture 20 - Vpour Absorption Systems - 3
Lecture 21 - Introduction to Air-conditioning
Lecture 22 - Properties of Moist Air
Lecture 23 - Psychrometric Chart
Lecture 24 - Psychrometric Processes - 1
Lecture 25 - Psychrometric Processes - 2
Lecture 26 - Psychrometric Processes - 3
Lecture 27 - Infiltration
Lecture 28 - Design Conditions
Lecture 29 - Cooling Load - 1

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Lecture 30 - Cooling Load - 2
Lecture 31 - Cooling Load - 3
Lecture 32 - Air Distribution System - 1
Lecture 33 - Air Distribution System - 2
Lecture 34 - Problem Solving - 2
Lecture 35 - Air-Conditioning Systems
Lecture 36 - Human Physiology
Lecture 37 - Thermal Comfort
Lecture 38 - Indoor Environmental Health - 1
Lecture 39 - Indoor Environmental Health - 2
Lecture 40 - Problem Solving - 3
NPTEL Video Course - Mechanical Engineering - NOC: Engineering Economic Analysis

Subject Co-ordinator - Dr. Pradeep K. Jha

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Engineering Economy, Physical and Economic Environment, Phases in Engg. process
Lecture 2 - Some economic concepts, Value and utility, Interest and Interest rate, Time value of money
Lecture 3 - Interest formulas
Lecture 4 - Interest formulas for discrete compounding and discrete payments
Lecture 5 - Interest formulas for discrete compounding and discrete payments
Lecture 6 - Problem solving on discrete compounding, discrete payment
Lecture 7 - Interest formulas for Uniform gradient series
Lecture 8 - Interest formulas for geometric gradient series
Lecture 9 - Compounding frequency of Interest
Lecture 10 - Problem solving on frequency compounding of interest and gradient series factors
Lecture 11 - Economic equivalence
Lecture 12 - Equivalence calculations involving cash flows
Lecture 13 - Methods of comparison of alternatives
Lecture 14 - comparison of alternatives
Lecture 15 - Problem solving on equivalence and comparison of alternatives
Lecture 16 - Replacement analysis
Lecture 17 - Proper treatment of sunk cost in replacement
Lecture 18 - Replacement because of improved efficiency, inadequacy, demand etc.
Lecture 19 - Problem solving on replacement analysis
Lecture 20 - Economic life of the asset
Lecture 21 - Depreciation
Lecture 22 - Basic depreciation methods
Lecture 23 - Depreciation
Lecture 24 - Modified accelerated cost recovery system (MACRS) method of depreciation, Depletion
Lecture 25 - Depreciation
Lecture 26 - Problem solving based on Depreciation and Depletion
Lecture 27 - Elements of cost
Lecture 28 - Breakeven analysis, Effect of fixed and variable cost on BEP.
Lecture 29 - Economic order quantity

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Lecture 30 - Problem solving based on Breakeven analysis and EOQ
Lecture 31 - Cost estimation
Lecture 32 - cost estimating relationships
Lecture 33 - Introduction to decision under risk Criteria for decision under risk
Lecture 34 - Expected value decision making under risk
Lecture 35 - Expected variance decision making under risk
Lecture 36 - Problem solving based on decision under risk
Lecture 37 - Income taxes
Lecture 38 - Effect of method of depreciation on income taxes
Lecture 39 - After tax economic analysis
Lecture 40 - Problem solving based on Income tax analysis
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: Convective Heat Transfer

Subject Co-ordinator - Dr. Arup Kumar Das
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Balance of Total Energy
Lecture 3 - Different Forms of Thermal Energy Equation
Lecture 4 - Thermal Boundary Layer
Lecture 5 - Forced Convection
Lecture 6 - Forced Convection
Lecture 7 - Forced Convection over a Flat Plate
Lecture 8 - Natural Convection
Lecture 9 - Natural Convection
Lecture 10 - Tutorial
Lecture 11 - Forced Convection in Ducts
Lecture 12 - Thermally Developed Slug Flow in a Duct
Lecture 13 - Thermally and Hydrodynamically Developed Flow
Lecture 14 - Thermally and Hydrodynamically Developed Flow
Lecture 15 - Thermal Entrance Region
Lecture 16 - Thermal Entrance Region
Lecture 17 - Rayleigh Benard Convection
Lecture 18 - Heat Transfer with Phase Change
Lecture 19 - Mass Transfer
Lecture 20 - Tutorial
Lecture 30 - Lesson 5 - Undamped forced vibration with harmonic excitation
Lecture 31 - Lesson 1 - Undamped dynamic vibration absorber
Lecture 32 - Lesson 2 - Tuned absorber
Lecture 33 - Lesson 3 - Numerical problems
Lecture 34 - Lesson 4 - Damped dynamic vibration absorber
Lecture 35 - Lesson 5 - Optimally tuned vibration absorber
Lecture 36 - Lesson 1 - Undamped free vibration
Lecture 37 - Lesson 2 - Eigen values and eigen vectors
Lecture 38 - Lesson 3 - Flexibility influence coefficients
Lecture 39 - Lesson 4 - Stiffness influence coefficients
Lecture 40 - Lesson 5 - Static and dynamic coupling
NPTEL Video Course - Mechanical Engineering - NOC:Joining Technologies of Commercial Importance

Subject Co-ordinator - Prof. Dheerendra Kumar Dwivedi

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Fundamental mechanisms of Joining
Lecture 3 - Classification of Joining Processes
Lecture 4 - Heat Generation in Welding
Lecture 5 - Protection of Weld Metal
Lecture 6 - Principle of Fusion Welding Processes
Lecture 7 - Fundamentals of Welding
Lecture 8 - Physics of Welding Arc
Lecture 9 - Shielded Metal Arc Welding
Lecture 10 - Gas Tungsten Arc Welding
Lecture 11 - Newer variants of Gas tungsten arc welding
Lecture 12 - Gas metal arc welding
Lecture 13 - Submerged arc welding
Lecture 14 - Electro-slag and Electro-gas welding
Lecture 15 - Laser beam welding
Lecture 16 - Brazing
Lecture 17 - Soldering and braze welding
Lecture 18 - Fundamentals of resistance welding
Lecture 19 - Resistance welding processes
Lecture 20 - Flash butt welding
Lecture 21 - Adhesive joining
Lecture 22 - Weld bonding
Lecture 23 - Solid state joining technologies
Lecture 24 - Ultrasonic welding
Lecture 25 - Diffusion welding
Lecture 26 - Explosive welding
Lecture 27 - Magnetic pulse welding
Lecture 28 - Weld thermal cycle
Lecture 29 - Heat affected zone and weld thermal cycle

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Lecture 30 - Heat affected zone and weld thermal cycle
Lecture 31 - Solidification of weld metal
Lecture 32 - Fundamentals of weldability of metals
Lecture 33 - Weldability of carbon and alloys steels
Lecture 34 - Weldability of stainless steels
Lecture 35 - Metallurgical transformations in weld and heat affected zone of steels
Lecture 36 - Weldability of aluminium alloys
Lecture 37 - Solidification cracking and their control
Lecture 38 - Residual Stresses in Weld Joints
Lecture 39 - Cracking of Welded Joints I
Lecture 40 - Cracking of Welded Joints II
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Modelling and Simulation of Dynamic Systems

Subject Co-ordinator - Prof. Pushparaj Mani Pathak
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Modelling
Lecture 2 - Examples of models
Lecture 3 - Modeling of Dynamic Systems
Lecture 4 - Introduction to Simulation
Lecture 5 - MATLAB as a Simulation tool
Lecture 6 - Bond graphs modelling
Lecture 7 - Bond graph model and causality
Lecture 8 - Generation of System Equations
Lecture 9 - Methods of Drawing bond graph models - Mechanical Systems
Lecture 10 - Methods of Drawing bond graph models - Electrical Systems
Lecture 11 - Basic System Models - Mechanical Systems
Lecture 12 - Basic System Models - Electrical Systems
Lecture 13 - Basic System Models - Hydraulic Systems
Lecture 14 - Basic System Models - Pneumatic Systems
Lecture 15 - Basic System Models - Thermal Systems
Lecture 16 - System Models
Lecture 17 - System Model of Combined Rotary and Translatory Systems
Lecture 18 - System Model of Electro Mechanical Systems
Lecture 19 - System Model of Hydro Mechanical Systems
Lecture 20 - System Models of Robots
Lecture 21 - Dynamic response of the 1st order system
Lecture 22 - Dynamic response of 2nd order system
Lecture 23 - Performance measures for 2nd order system
Lecture 24 - System Transfer functions
Lecture 25 - Transfer Function of 1st and 2nd Order System
Lecture 26 - Block Diagram Algebra
Lecture 27 - Signal Flow Graphs
Lecture 28 - State Variable Formulation
Lecture 29 - Frequency Response

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Lecture 30 - Bode Plot
Lecture 31 - Simulation using SIMULINK
Lecture 32 - Simulation of simple and compound pendulums
Lecture 33 - Simulation of planar mechanisms
Lecture 34 - Simulation of wheeled mobile robots
Lecture 35 - Validation and Verification of Simulation Models
Lecture 36 - Parameter estimation methods
Lecture 37 - Parameter estimation examples
Lecture 38 - System identifications
Lecture 39 - Introduction to Optimization
Lecture 40 - Optimization with modeling of engineering problems
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: Principles of Casting Technology

Subject Co-ordinator - Dr. Pradeep K. Jha
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Casting Technology
Lecture 2 - Mechanism of solidification
Lecture 3 - Solidification of Pure Metals and Alloys
Lecture 4 - Freeze Wave Mechanism and Solidification Time
Lecture 5 - Problem Solving on Solidification
Lecture 6 - Technology of pattern making
Lecture 7 - Allowances in pattern making
Lecture 8 - Moulding sands and its ingredients
Lecture 9 - Testing of molding sands
Lecture 10 - Sand preparation for casting
Lecture 11 - Technology of mould making
Lecture 12 - Technology of core making
Lecture 13 - Special sand moulding process
Lecture 14 - Organic binders
Lecture 15 - Special moulding process
Lecture 16 - Introduction of gating design
Lecture 17 - Types of gate
Lecture 18 - Pouring time calculation
Lecture 19 - Aspiration effects in gating system
Lecture 20 - Problem solving on gating design
Lecture 21 - Solidification analysis
Lecture 22 - Risering methods
Lecture 23 - Shape factor
Lecture 24 - Feeding and Chills effect
Lecture 25 - Problem related to riser design
Lecture 26 - Special casting process - 1
Lecture 27 - Special casting process - 2
Lecture 28 - Special casting process - 3
Lecture 29 - Technology of melting

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Lecture 30 - Melting practices
Lecture 31 - Melting and Casting of cast metal
Lecture 32 - Melting practice for gray iron
Lecture 33 - Melting practice for Malleable iron and S.G iron
Lecture 34 - Casting of steel and alloy steel
Lecture 35 - Casting practices for non-ferrous metals and alloys
Lecture 36 - Fettling of castings
Lecture 37 - Heat treatment of castings
Lecture 38 - Heat treatment practices for cast iron and non-ferrous metals and alloys
Lecture 39 - Casting defects
Lecture 40 - Diagnostics of casting defects
Lecture 30 - Problem Solving (Steam Turbine)
Lecture 31 - Gas turbine cycle
Lecture 32 - Gas Turbine cycle Performance Evaluations
Lecture 33 - Gas Turbine cycle - Modifications
Lecture 34 - Problem Solving (Gas Turbine Cycle)
Lecture 35 - Centrifugal Compressors
Lecture 36 - Centrifugal Compressors Characteristics
Lecture 37 - Axial Flow Compressor
Lecture 38 - Axial Flow Compressor Characteristics
Lecture 39 - Jet Propulsion
Lecture 40 - Problem Solving
NPTEL Video Course - Mechanical Engineering - NOC:Product Design and Development

Subject Co-ordinator - Prof. Indradeep Singh

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to product design and development
Lecture 2 - Product life-cycle
Lecture 3 - Product policy of an organization and selection of profitable products
Lecture 4 - Product design
Lecture 5 - Product design steps and product analysis
Lecture 6 - Value engineering concepts
Lecture 7 - Problem Identification and VEJP
Lecture 8 - Function analysis
Lecture 9 - Functional analysis system technique
Lecture 10 - Case study on value engineering
Lecture 11 - Quality function deployment
Lecture 12 - Computer aided design
Lecture 13 - Rubust design
Lecture 14 - Design for X
Lecture 15 - Ergonomics in product design
Lecture 16 - DFMA guidelines
Lecture 17 - Product design for manual assembly
Lecture 18 - Design guidelines for different processes
Lecture 19 - Rapid prototyping
Lecture 20 - Rapid prototyping processes
NPTEL Video Course - Mechanical Engineering - NOC:Fundamentals of Manufacturing Processes

Subject Co-ordinator - Dr. D. K. Dwivedi

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Understanding Manufacturing
Lecture 2 - Fundamental Approaches of Manufacturing
Lecture 3 - Manufacturing Process Specific Advantages and Limitations
Lecture 4 - Material and Manufacturing Processes
Lecture 5 - Classification of Manufacturing Processes
Lecture 6 - Selection of Manufacturing Processes
Lecture 7 - Applications of Manufacturing Processes
Lecture 8 - Effect of Manufacturing Processes on Mechanical Properties
Lecture 9 - Break Even Analysis in Manufacturing Processes
Lecture 10 - Casting
Lecture 11 - Steps of Casting Processes
Lecture 12 - Casting
Lecture 13 - The Pattern Allowances - I
Lecture 14 - The Pattern Allowances - II
Lecture 15 - Casting
Lecture 16 - Sand Moulding - II
Lecture 17 - Casting
Lecture 18 - Casting
Lecture 19 - Casting
Lecture 20 - Casting
Lecture 21 - Casting
Lecture 22 - Casting
Lecture 23 - Casting
Lecture 24 - Casting
Lecture 25 - Metal Working Processes
Lecture 26 - Metal Working Processes
Lecture 27 - Metal Working Processes
Lecture 28 - Metal Working Processes
Lecture 29 - Metal Working Processes
Lecture 30 - Metal Working Processes
Lecture 31 - Sheet Metal Operations
Lecture 32 - Metal Working Processes
Lecture 33 - Metal Working Processes
Lecture 34 - Metal Working Processes
Lecture 35 - Material Removal Processes
Lecture 36 - Material Removal Processes
Lecture 37 - Material Removal Processes
Lecture 38 - Material Removal Processes
Lecture 39 - Material Removal Processes
Lecture 40 - Material Removal Processes
Lecture 41 - Material removal processes
Lecture 42 - Material removal processes
Lecture 43 - Material removal processes
Lecture 44 - Material removal Processes
Lecture 45 - Material removal Processes
Lecture 46 - Material removal processes
Lecture 47 - Joining of metals
Lecture 48 - Joining of metals
Lecture 49 - Joining of metals
Lecture 50 - Brazing, soldering and weldability
Lecture 51 - Weldability and welding defects
Lecture 52 - Heat treatment
Lecture 53 - Heat treatment
Lecture 54 - Heat treatment
Lecture 55 - Heat treatment
Lecture 56 - Heat treatment
Lecture 57 - Improving surface properties
Lecture 58 - Improving surface properties
Lecture 59 - Improving surface properties
Lecture 60 - Improving surface properties
NPTEL Video Course - Mechanical Engineering - NOC:Modelling and Simulation of Discrete Event System

Subject Co-ordinator - Dr. Pradeep K. Jha
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Simulation
Lecture 2 - Concept of System, Model and Simulation
Lecture 3 - Time advance mechanism, Components of a simulation model
Lecture 4 - Program organization and logic, Steps in a simulation study
Lecture 5 - Simulation examples
Lecture 6 - Statistical Models in Simulation
Lecture 7 - Input probability distribution functions for discrete systems
Lecture 8 - Continuous distribution functions
Lecture 9 - Continuous distribution functions and empirical distribution functions
Lecture 10 - Problem solving on statistical models in simulation
Lecture 11 - Characteristics of a queueing system
Lecture 12 - Performance measures of queueing system
Lecture 13 - Analysis of a single server queueing system
Lecture 14 - Simulation of a single server queueing system
Lecture 15 - Computer representation of simulation of single server queueing system
Lecture 16 - Generation of Random Numbers
Lecture 17 - Issues and Challenges in Congruential Generators
Lecture 18 - Testing of random numbers
Lecture 19 - Generation of Random Variates
Lecture 20 - Problem Solving on Random Number and Random Variate Generation
Lecture 21 - Input modeling
Lecture 22 - Input modeling
Lecture 23 - Input modeling
Lecture 24 - Input modeling
Lecture 25 - Problem Solving on input modeling
Lecture 26 - Output analysis of a single system
Lecture 27 - Obtaining a specified precision
Lecture 28 - Comparison of alternative system configurations
Lecture 29 - Confidence Intervals for comparing more than two systems

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Lecture 30 - Problem Solving on output analysis of single and alternative systems
Lecture 31 - Introduction to simulation of manufacturing and material handling system
Lecture 32 - Issues in material handling system
Lecture 33 - Modeling of system randomness
Lecture 34 - Verification of simulation models
Lecture 35 - Model validity and credibility
Lecture 36 - Problem solving and case studies on simulation of manufacturing system
Lecture 37 - Introduction to Monte Carlo Simulation
Lecture 38 - Inventory Control Simulation using Monte Carlo Technique
Lecture 39 - In this lecture, Monte Carlo technique was used to solve inventory system problems
Lecture 40 - Problem solving on Monte Carlo Simulation
NPTEL Video Course - Mechanical Engineering - NOC: Processing of Polymers and Polymer Composites

Subject Co-ordinator - Dr. Inderdeep Singh
Co-ordinating Institute - IIT - Roorkee

Lecture 1 - Introduction to course
Lecture 2 - Engineering materials and processing techniques
Lecture 3 - Thermoplastics and thermosets
Lecture 4 - Processing of polymers
Lecture 5 - Thermoforming processes
Lecture 6 - Extrusion - I
Lecture 7 - Extrusion - II
Lecture 8 - Compression molding
Lecture 9 - Injection molding - I
Lecture 10 - Injection molding - II
Lecture 11 - Transfer molding
Lecture 12 - Rotational molding
Lecture 13 - Blow molding
Lecture 14 - Composite materials
Lecture 15 - Classification of composite materials
Lecture 16 - Processing of polymer composites
Lecture 17 - Hand lay-up
Lecture 18 - Spray lay-up
Lecture 19 - Compression molding
Lecture 20 - Injection molding
Lecture 21 - Reaction injection molding
Lecture 22 - Autoclave molding
Lecture 23 - Resin transfer molding
Lecture 24 - Filament winding
Lecture 25 - Pultrusion process
Lecture 26 - Sheet molding
Lecture 27 - Pre-pregging and challenges in primary processing of composites
Lecture 28 - Secondary processing of polymer composites
Lecture 29 - Joining of polymer composites

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Lecture 30 - Adhesive joining
Lecture 31 - Mechanical joining
Lecture 32 - Microwave joining
Lecture 33 - Induction and resistance welding
Lecture 34 - Drilling of polymer matrix composites - I
Lecture 35 - Drilling of polymer matrix composites - II
Lecture 36 - Methods to prevent drilling induced damage
Lecture 37 - Non-conventional drilling
Lecture 38 - Process simulation of secondary processing
Lecture 39 - Intelligent drilling of polymer matrix composites
Lecture 40 - Web based tools for polymer matrix composites
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: Operations Management

Subject Co-ordinator - Dr. Inderdeep Singh

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Operations Management
Lecture 2 - Operations Management
Lecture 3 - Operations Management
Lecture 4 - Types of Production Systems
Lecture 5 - Operations Strategy
Lecture 6 - Product Life-Cycle
Lecture 7 - Value Engineering Concepts
Lecture 8 - Design for X (DFX)
Lecture 9 - Ergonomics in Product Design
Lecture 10 - Rapid Prototyping
Lecture 11 - Sales Forecasting
Lecture 12 - Forecasting System
Lecture 13 - Qualitative Methods of Forecasting
Lecture 14 - Quantitative Methods - I
Lecture 15 - Quantitative Methods - II
Lecture 16 - Facility Planning
Lecture 17 - Factors Affecting Plant Location
Lecture 18 - Plant Location
Lecture 19 - Location Evaluation Methods - I
Lecture 20 - Location Evaluation Methods - II
Lecture 21 - Facility Layout and Planning - I
Lecture 22 - Facility Layout and Planning - II
Lecture 23 - Factors Influencing Plant Layout
Lecture 24 - Material Flow Patterns
Lecture 25 - Tools and Techniques used For Plant Layout Planning
Lecture 26 - Production Planning and Control
Lecture 27 - Process Planning
Lecture 28 - Aggregate Production Planning
Lecture 29 - Capacity Planning

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Lecture 30 - Capacity Planning
Lecture 31 - Project Scheduling
Lecture 32 - Network Diagrams
Lecture 33 - Critical Path Method
Lecture 34 - Critical Path Method
Lecture 35 - Critical Path Method
Lecture 36 - Program Evaluation and Review Technique (PERT)
Lecture 37 - PERT Problems - I
Lecture 38 - PERT Problems - II
Lecture 39 - Time Cost Trade Off (Crashing)
Lecture 40 - Project Network
Lecture 41 - Production Control
Lecture 42 - Sequencing
Lecture 43 - Sequencing Problems - I
Lecture 44 - Sequencing Problems - II
Lecture 45 - Master Production Scheduling (MPS)
Lecture 46 - Concept of Quality
Lecture 47 - Total Quality Management (TQM)
Lecture 48 - Total Productive Maintenance
Lecture 49 - Statistical Quality Control (SQC)
Lecture 50 - Six Sigma
Lecture 51 - Materials Management
Lecture 52 - Inventory Control
Lecture 53 - Economic Order Quantity (EOQ) Models
Lecture 54 - Economic Order Quantity (EOQ)
Lecture 55 - Production Quantity Model
Lecture 56 - Just In time (JIT)
Lecture 57 - Kanban System
Lecture 58 - Materials Requirement Planning (MRP) - I
Lecture 59 - Materials Requirement Planning (MRP) - II
Lecture 60 - Enterprise Resource Planning (ERP)
Lecture 1 - Introduction to Theory and Practics of Casting
Lecture 2 - Theory of Solidification
Lecture 3 - Solidification of pure metals and alloys
Lecture 4 - Factors affecting solidification process
Lecture 5 - Fluidity of liquid metals
Lecture 6 - Technology of patternmaking
Lecture 7 - Patternmaking
Lecture 8 - Molding sand ingredients and sand testing methods
Lecture 9 - Sand molding methods
Lecture 10 - Coremaking
Lecture 11 - Gating system design
Lecture 12 - Gating system design
Lecture 13 - Introduction to riser design
Lecture 14 - Risering methods
Lecture 15 - Problem solving on gating design and risering methods
Lecture 16 - Theory of melting
Lecture 17 - Melting and production of Iron castings
Lecture 18 - Production of steel and non-ferrous castings
Lecture 19 - Casting design considerations
Lecture 20 - Casting defects
Lecture 21 - Concept of stress and strain, Elastic and plastic behavior
Lecture 22 - State of stress in two and three dimensions, Mohr’s circle
Lecture 23 - Description of strain at a point
Lecture 24 - Mean and deviator stresses, Elastic stress strain relationships
Lecture 25 - Theory of plasticity
Lecture 26 - Yield criteria for ductile materials
Lecture 27 - Flow rules, Plastic stress strain relationships
Lecture 28 - Classification of metal working processes
Lecture 29 - Mechanics of metal working

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Lecture 30 - Temperature in metalworking
Lecture 31 - Rolling process
Lecture 32 - Analysis of rolling operation
Lecture 33 - Introduction to forging Process
Lecture 34 - Analysis of forging process
Lecture 35 - Problem solving on rolling and forging processes
Lecture 36 - Extrusion process
Lecture 37 - Drawing of rods, tubes and wires
Lecture 38 - Analysis of drawing operation
Lecture 39 - Sheet metal operations
Lecture 40 - Metal Forming Defects
Lecture 41 - Classification of joining processes
Lecture 42 - Heat flow in welding
Lecture 43 - Metallurgy of fusion welds
Lecture 44 - Heat affected zone in welding
Lecture 45 - Heat treatment processes in welding
Lecture 46 - Principle of shield arc welding processes
Lecture 47 - Principle of gas shield arc welding processes
Lecture 48 - Principle of Resistance welding
Lecture 49 - Principle of Solid State Welding Processes
Lecture 50 - Brazing, soldering and adhesive bonding
Lecture 51 - Residual stresses in welding
Lecture 52 - Methods of controlling residual stresses in welding
Lecture 53 - Welding Distortion
Lecture 54 - Control of welding distortion
Lecture 55 - Preheat and postweld heat treatment of weldments
Lecture 56 - Weldability of metals
Lecture 57 - Weldability of steels
Lecture 58 - Weldability of cast iron
Lecture 59 - Weldability of non-ferrous materials
Lecture 60 - Welding defects
NPTEL Video Course - Mechanical Engineering - NOC:Automatic Control

Subject Co-ordinator - Dr. Anil Kumar
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Definition and Types
Lecture 2 - Performance Specifications
Lecture 3 - Design Process
Lecture 4 - Block Diagrams
Lecture 5 - Laplace Transform and Transfer Function
Lecture 6 - Translational Mechanical System
Lecture 7 - Rotational Mechanical System
Lecture 8 - Electrical System
Lecture 9 - Linearization of Nonlinear Systems
Lecture 10 - Numerical Problems
Lecture 11 - Poles and Zeros
Lecture 12 - First Order System
Lecture 13 - Second Order System
Lecture 14 - Underdamped Second Order System - I
Lecture 15 - Underdamped Second Order System - II
Lecture 16 - Definition of Stability
Lecture 17 - Routh-Hurwitz Criterion
Lecture 18 - Routh-Hurwitz Criterion- Special Cases
Lecture 19 - Steady State Errors
Lecture 20 - Static Error Constants
Lecture 21 - Define Root Locus
Lecture 22 - Sketching of Root Locus - I
Lecture 23 - Sketching of Root Locus - II
Lecture 24 - Sketching of Root Locus - III
Lecture 25 - Numerical Examples and Second Order Approximation
Lecture 26 - PI Controller Design
Lecture 27 - PD Controller Design
Lecture 28 - PID Controller Design
Lecture 29 - Lag Compensation

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Lecture 30 - Lead and Lag-Lead Compensation
Lecture 31 - State Space Representation
Lecture 32 - Converting a Transfer Function to State Space
Lecture 33 - Converting From State Space to Transfer Function
Lecture 34 - Controller Design
Lecture 35 - Controller Design and Controllability
Lecture 36 - Transfer Function, Poles, Zeros, Response
Lecture 37 - Steady State Error, Root Locus
Lecture 38 - Design Via Root Locus, Compensation - I
Lecture 39 - Design Via Root Locus, Compensation - II
Lecture 40 - State Space Method
NPTEL Video Course - Mechanical Engineering - NOC: Failure Analysis and Prevention

Subject Co-ordinator - Dr. D. K. Dwivedi

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction - Need and scope of failure analysis and prevention
Lecture 2 - Introduction - Engineering disasters and understanding failures
Lecture 3 - Fundamental sources of failures - Deficient design - I
Lecture 4 - Fundamental sources of failures - Deficient design - II
Lecture 5 - Fundamental sources of failures - Deficient design - III and upgrading of a part
Lecture 6 - Fundamental sources of failures - Imperfections in base metals
Lecture 7 - Fundamental sources of failures - Improper Manufacturing - I
Lecture 8 - Fundamental sources of failures - Improper Manufacturing - II
Lecture 9 - Fundamental sources of failures - Improper Manufacturing - III
Lecture 10 - Fundamental sources of failures - Improper Manufacturing - IV and improper service conditions
Lecture 11 - Fundamental sources of failures - Poor assembly, service and maintenance
Lecture 12 - Industrial engineering tool for failure analysis - Pareto diagram
Lecture 13 - Industrial engineering tool for failure analysis - Fishbone diagram and FMEA
Lecture 14 - Industrial engineering tool for failure analysis - FMEA
Lecture 15 - Industrial engineering tool for failure analysis - Fault tree analysis
Lecture 16 - Industrial engineering tool for failure analysis - Reliability - I
Lecture 17 - Industrial engineering tool for failure analysis - Reliability - II
Lecture 18 - General procedure of failure analysis - Steps
Lecture 19 - General procedure of failure analysis - Background information collection
Lecture 20 - General procedure of failure analysis - Preliminary examination
Lecture 21 - General procedure of failure analysis - NDT for failure analysis
Lecture 22 - General procedure of failure analysis - Destructive testing
Lecture 23 - General procedure of failure analysis - DT, selection, preservation, cleaning and sectioning of
Lecture 24 - General procedure of failure analysis - Macroscopy of fracture surfaces - I
Lecture 25 - General procedure of failure analysis - Macroscopy of fracture surfaces - II
Lecture 26 - General procedure of failure analysis - Macroscopy of fracture surfaces - III
Lecture 27 - General procedure of failure analysis - Macroscopy of fracture surfaces - IV
Lecture 28 - General procedure of failure analysis - Microscopy of fracture surfaces
Lecture 29 - General procedure of failure analysis - Metallography of failed components

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Lecture 30 - General procedure of failure analysis - Determination of type of fracture - I
Lecture 31 - General procedure of failure analysis - Determination of type of fracture - II
Lecture 32 - General procedure of failure analysis - Determination of type of fracture - III and chemical analysis
Lecture 33 - General procedure of failure analysis - Application of fracture mechanics - I
Lecture 34 - General procedure of failure analysis - Application of fracture mechanics - II
Lecture 35 - General procedure of failure analysis - Simulated test service conditions and analysis of evidences
Lecture 36 - General procedure of failure analysis - Question for analysis
Lecture 37 - General procedure of failure analysis - Reporting failure analysis and failure analysis of weld joints
Lecture 38 - General procedure of failure analysis - Failure analysis of weld joint
Lecture 39 - General procedure of failure analysis - Examples of failure analysis
Lecture 40 - General procedure of failure analysis - Embrittlement of steels
NPTEL Video Course - Mechanical Engineering - NOC: Mechanical Measurement System

Subject Co-ordinator - Prof. Ravi Kumar
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic concepts of measurement
Lecture 2 - Functional elements of instruments
Lecture 3 - Classification of measuring instruments
Lecture 4 - Methods of correction for interfering and modifying inputs
Lecture 5 - Static characteristics of measuring instruments - 1
Lecture 6 - Static characteristics of measuring instruments - 2
Lecture 7 - Loading effect and Impedance matching
Lecture 8 - Statistical analysis
Lecture 9 - Chi-square test
Lecture 10 - Least square method
Lecture 11 - Uncertainty analysis
Lecture 12 - Problem solving - 1
Lecture 13 - Generalized model of a measuring system
Lecture 14 - Zero and first order system
Lecture 15 - First order system - step response
Lecture 16 - First order system - ramp response
Lecture 17 - First order system - impulse response
Lecture 18 - First order system - frequency response
Lecture 19 - Second order system - step response - 1
Lecture 20 - Second order system - step response - 2
Lecture 21 - Second order system - ramp response
Lecture 22 - Second order system - impulse and frequency response
Lecture 23 - Higher order systems
Lecture 24 - Compensation
Lecture 25 - Transducers - 1
Lecture 26 - Transducers - 2
Lecture 27 - Flow measurement - 1
Lecture 28 - Flow measurement - 2
Lecture 29 - Temperature measurement - 1
Lecture 30 - Temperature measurement - 2
Lecture 31 - Strain gauges
Lecture 32 - Piezoelectric transducers
Lecture 33 - Pressure measurement
Lecture 34 - Force and torque measurement
Lecture 35 - Displacement and acceleration measurement
Lecture 36 - Sound measurement
Lecture 37 - Thermophysical properties measurement
Lecture 38 - Flow visualization
Lecture 39 - Air pollution sampling and measurement
Lecture 40 - Problem solving - 2

Subject Co-ordinator - Dr. D. K. Dwivedi
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction and need of surface engineering
Lecture 2 - Surface/sub-surface regions and properties of importance for surface engineering
Lecture 3 - Surface properties and their modification
Lecture 4 - Classification of surface modification techniques - I
Lecture 5 - Classification of surface modification techniques - II
Lecture 6 - Comparison of surface modification techniques and scope of surface engineering
Lecture 7 - Scope of surface engineering - I
Lecture 8 - Surface properties for wear and friction resistance - I
Lecture 9 - Surface properties for wear and friction resistance - II
Lecture 10 - Surface properties for wear and friction resistance - III
Lecture 11 - Issues and application of surface modification
Lecture 12 - Surface damage
Lecture 13 - Surface damage
Lecture 14 - Surface damage
Lecture 15 - Surface damage
Lecture 16 - Surface damage
Lecture 17 - Surface damage
Lecture 18 - Surface damage
Lecture 19 - Surface damage
Lecture 20 - Surface damage
Lecture 21 - Properties and mode of wear
Lecture 22 - Metal systems
Lecture 23 - Thermal barrier coatings
Lecture 24 - Functionally graded materials and other materials
Lecture 25 - Surface modification techniques
Lecture 26 - Surface modification techniques
Lecture 27 - Surface modification techniques
Lecture 28 - Surface modification techniques
Lecture 29 - Surface modification techniques

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NPTEL Video Course - Mechanical Engineering - NOC: Work System Design

Subject Co-ordinator - Dr. Inderdeep Singh
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Work System Design
Lecture 2 - Introduction and Concept of Productivity
Lecture 3 - Measurement of Productivity
Lecture 4 - Productivity Measures
Lecture 5 - Productivity Measurement Models
Lecture 6 - Factors Influencing Productivity
Lecture 7 - Causes of Low Productivity
Lecture 8 - Productivity Improvement Technique
Lecture 9 - Numerical Problems on Productivity
Lecture 10 - Case Study on Productivity
Lecture 11 - Work Study
Lecture 12 - Steps Involved in Work Study
Lecture 13 - Concept of Work Content
Lecture 14 - Techniques of Work Study
Lecture 15 - Human Aspects of Work Study
Lecture 16 - Method Study
Lecture 17 - Method Study
Lecture 18 - Method Study
Lecture 19 - Operation Process Charts
Lecture 20 - Operation Process Charts
Lecture 21 - Flow Process Charts
Lecture 22 - Flow Process Charts
Lecture 23 - Two-Handed-Process Charts
Lecture 24 - Multiple Activity Charts
Lecture 25 - Flow Diagrams
Lecture 26 - String Diagrams
Lecture 27 - Principles of Motion Economy
Lecture 28 - Micro-Motion Study
Lecture 29 - Therbligs

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Lecture 30 - SIMO Charts
Lecture 31 - Memo-Motion Study
Lecture 32 - Cycle Graph and Chronocycle Graph
Lecture 33 - Critical Examination Techniques
Lecture 34 - Development and Selection of New Method
Lecture 35 - Installation and Maintenance of Improved Methods
Lecture 36 - Work Measurement
Lecture 37 - Techniques of Work Measurement
Lecture 38 - Steps Involved in Time Study
Lecture 39 - Steps and Equipment of Time Study
Lecture 40 - Performance Rating
Lecture 41 - Performance Rating
Lecture 42 - Allowances in Time Study
Lecture 43 - Computation of Standard Time - I
Lecture 44 - Computation of Standard Time - II
Lecture 45 - Work Measurement
Lecture 46 - Work Sampling
Lecture 47 - Procedure of Work Sampling
Lecture 48 - Work Sampling
Lecture 49 - Introduction to Synthetic Data and PMTS
Lecture 50 - Introduction to MTM and MOST
Lecture 51 - Ergonomics
Lecture 52 - Industrial Ergonomics
Lecture 53 - Ergonomics
Lecture 54 - Man-Machine System - 1
Lecture 55 - Man-Machine System - 2
Lecture 56 - Case Study
Lecture 57 - Case Study
Lecture 58 - Case Study
Lecture 59 - Case Study
Lecture 60 - Case Study
Lecture 1 - Introduction to Metal Forming Technology
Lecture 2 - Classification of Metal Working Processes
Lecture 3 - Behavior of Materials
Lecture 4 - Failure of Materials
Lecture 5 - Concept of stress and strain
Lecture 6 - Description of stress
Lecture 7 - State of stress in three dimension
Lecture 8 - Description of strain
Lecture 9 - Hydrostatic and deviator components of stress and strain
Lecture 10 - Elastic stress strain relationships
Lecture 11 - Introduction to theory of plasticity and flow curve
Lecture 12 - True stress and true strain
Lecture 13 - Yield criteria for ductile materials
Lecture 14 - Yield locus, Octahedral shear stress and strain
Lecture 15 - Plastic stress strain relationships
Lecture 16 - Measures of yielding and ductility in tensile testing
Lecture 17 - Instability in tension
Lecture 18 - Strain rate effects on flow properties
Lecture 19 - Temperature effects on flow properties
Lecture 20 - Influence of various parameters on flow properties
Lecture 21 - Classification of metal working processes
Lecture 22 - Mechanics of metalworking and analysis methods
Lecture 23 - Determination of flow stresses in metal working
Lecture 24 - Hot working and cold working
Lecture 25 - Metallurgical considerations in metal forming
Lecture 26 - Introduction and classification of forging processes
Lecture 27 - Equipments used in forging
Lecture 28 - Forging in plane strain
Lecture 29 - Introduction and classification of rolling processes
Lecture 30 - Analysis of rolling load calculations
Lecture 31 - Defects in rolled and forged products
Lecture 32 - Introduction and classification of extrusion processes
Lecture 33 - Analysis of extrusion processes
Lecture 34 - Extrusion of tubes and pipes, extrusion defect
Lecture 35 - Introduction to rod and wire drawing
Lecture 36 - Analysis of wire drawing and tube drawing processes
Lecture 37 - Sheet metal operations - I
Lecture 38 - Sheet metal operations - II
Lecture 39 - Powder metallurgy forming - I
Lecture 40 - Powder metallurgy forming - II
### Lecture 1 - Introduction

### Lecture 2 - Fundamentals of Radiation

### Lecture 3 - Basic Laws of Thermal Radiation

### Lecture 4 - Properties of Plane Surfaces

### Lecture 5 - Radiative Properties of Materials

### Lecture 6 - View Factor

### Lecture 7 - Hottel Crossed String Method

### Lecture 8 - Inside Sphere and Monte Carlo Method

### Lecture 9 - Radiative Heat Exchange Between Black Surfaces

### Lecture 10 - Radiative Heat Exchange Between Gray Diffuse Surfaces

### Lecture 11 - Network Analogy

### Lecture 12 - Solution Methods for Governing Integral Equations

### Lecture 13 - Radiative Heat Exchange between Partially Specular Gray Surfaces

### Lecture 14 - Non-Gray Surfaces

### Lecture 15 - Radiative Heat Transfer in the Presence of Conduction/Convection

### Lecture 16 - Radiative Transfer in Participating Media

### Lecture 17 - Equation of Radiative Transfer

### Lecture 18 - Solution of Radiative Transfer Equation

### Lecture 19 - Radiative Heat Transfer in Cylindrical Media

### Lecture 20 - Approximate Methods-I

### Lecture 21 - Approximate Methods-II

### Lecture 22 - The Method of Spherical Harmonics (PN Approximation) - I

### Lecture 23 - The Method of Spherical Harmonics (PN Approximation) - II

### Lecture 24 - Discrete Ordinate Method (DOM)

### Lecture 25 - Zone Method

### Lecture 26 - Exchange Areas

### Lecture 27 - Monte Carlo Method for Thermal Radiation - I

### Lecture 28 - Monte Carlo Method for Thermal Radiation - II

### Lecture 29 - Radiative Properties of Gases
Lecture 30 - Atomic and Molecular Spectra
Lecture 31 - Line Radiation
Lecture 32 - Spectral Modelling
Lecture 33 - Wide Band Models
Lecture 34 - WSGG Model
Lecture 35 - k-Distribution Model
Lecture 36 - Radiative Properties of Particulate Media
Lecture 37 - Combustion and Flame
Lecture 38 - Solar and Atmospheric Radiation
Lecture 39 - Concentrated Solar Collector
Lecture 40 - Experimental Methods
Lecture 30 - Weldability of Cr-Mo Steel - III
Lecture 31 - Weldability of Pre-Coated Steel - I
Lecture 32 - Weldability of Pre-Coated Steel - II
Lecture 33 - Weldability of Stainless Steel - I
Lecture 34 - Weldability of Stainless Steel - II
Lecture 35 - Weldability of Martensitic Stainless Steel - I
Lecture 36 - Weldability of Martensitic Stainless Steel - II
Lecture 37 - Weldability of Ferritic Stainless Steel - I
Lecture 38 - Weldability of Austenitic Stainless Steel - I
Lecture 39 - Weldability of Austenitic Stainless Steel - II
Lecture 40 - Weldability of PH Stainless Steel
NPTEL Video Course - Mechanical Engineering - NOC: Manufacturing Guidelines for Product Design
Subject Co-ordinator - Dr. Inderdeep Singh
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Product Design
Lecture 2 - Introduction of Manufacturing Processes
Lecture 3 - Manufacturing Processes
Lecture 4 - Manufacturing Processes
Lecture 5 - Process Capabilities
Lecture 6 - Engineering Materials
Lecture 7 - Properties of materials
Lecture 8 - Selection of materials - I
Lecture 9 - Selection of materials - II
Lecture 10 - Applications of Engineering Material
Lecture 11 - Robust design
Lecture 12 - Design for X
Lecture 13 - Product Design for Manual Assembly
Lecture 14 - DFMA Guidelines
Lecture 15 - Ergonomics in Product Design
Lecture 16 - Selection of processes - I
Lecture 17 - Selection of processes - II
Lecture 18 - Process Capabilities.
Lecture 19 - Design Guidelines for Sand Casting
Lecture 20 - Design Guidelines for Die Casting
Lecture 21 - Product Design Guidelines
Lecture 22 - Design Guidelines for Extrusion and Injection Molding
Lecture 23 - Design Guidelines for Sheet Metal Working
Lecture 24 - Design Guidelines for Machining
Lecture 25 - Design Guidelines for Powder Metal Processing
Lecture 26 - Assembly Processes
Lecture 27 - Adhesive Joining
Lecture 28 - Design Guidelines for Mechanical Fasteners
Lecture 29 - Design Guidelines for Welding

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Lecture 30 - Design guidelines
Lecture 31 - Induction Welding
Lecture 32 - Ultrasonic Welding
Lecture 33 - Vibration and Spin Welding
Lecture 34 - Microwave Joining
Lecture 35 - Hole making
Lecture 36 - Design for Environment
Lecture 37 - Design for Environment
Lecture 38 - Product Architecture
Lecture 39 - Rapid Prototyping
Lecture 40 - Product Design
NPTEL Video Course - Mechanical Engineering - NOC: Inspection and Quality Control in Manufacturing

Subject Co-ordinator - Prof. Kaushik Pal
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Need of Inspection
Lecture 3 - Destructive Inspection - I
Lecture 4 - Destructive Inspection - II
Lecture 5 - Testing of Composite Materials
Lecture 6 - Nondestructive Inspection - Visual Inspection
Lecture 7 - Dye Penetrant Inspection
Lecture 8 - Magnetic Particle Inspection
Lecture 9 - Eddy Current Inspection
Lecture 10 - Ultrasonic Inspection
Lecture 11 - Acoustic Emission Inspection
Lecture 12 - Radiography Inspection
Lecture 13 - Leak Testing
Lecture 14 - Thermographic Nondestructive Testing
Lecture 15 - Advanced Nondestructive Testing Techniques, NDT Standards, Safety in NDT
Lecture 16 - Engineering Metrology - Linear Measurement
Lecture 17 - Angular Measurement and Measurement of Surface Finish
Lecture 18 - Screw Thread Metrology
Lecture 19 - Gear Measurement
Lecture 20 - Miscellaneous Measurements

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NPTEL Video Course - Mechanical Engineering - NOC: Financial Mathematics

Subject Co-ordinator - Dr. Pradeep K. Jha
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Financial Mathematics
Lecture 2 - Important Mathematical Functions and its Characteristics
Lecture 3 - Progressions and Series, Growth and Decay Curves
Lecture 4 - Statistical Measures
Lecture 5 - Problem Solving on Mathematical Functions and Statistical Measures
Lecture 6 - Interest and Interest Rate, Time Value of Money
Lecture 7 - Simple Discount, Focal Date and Equation of Value
Lecture 8 - Introduction to Bank Discount
Lecture 9 - Introduction to Compound Interest
Lecture 10 - Problem Solving on Simple Interest and Bank Discount
Lecture 11 - Introduction to Discrete Compounding and Discrete Payments
Lecture 12 - Equal Payment Series and Gradient Series Factors
Lecture 13 - Geometric Gradient Series Factors
Lecture 14 - Annuities Due and Annuities Deferred
Lecture 15 - Problem Solving on Compounding Factors
Lecture 16 - Compounding Frequency of Interest
Lecture 17 - Interest Factors for Continuous Compounding
Lecture 18 - Introduction to Economic Equivalence
Lecture 19 - Principles of Equivalence
Lecture 20 - Problem Solving on Compounding Frequency and Economic Equivalence
Lecture 21 - Methods of Comparison of Alternatives
Lecture 22 - Payback Period
Lecture 23 - Capitalized Equivalent and Capital Recovery with Return
Lecture 24 - Project Balance
Lecture 25 - Problem Solving on Alternatives Comparison and Project Balance
Lecture 26 - Analysis of Credit and Loans
Lecture 27 - Assessing Interest and Structured Payments in Loans
Lecture 28 - Introduction to Cost of Credit and Amortization
Lecture 29 - Analysis of Amortization Schedule

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Lecture 30 - Graduated Payment Mortgage, Sinking Funds
Lecture 31 - Introduction to Depreciation and Depletion
Lecture 32 - Types of Depreciation
Lecture 33 - Tax Depreciation Methods
Lecture 34 - SOD and UOP Method of Depreciation, Depletion
Lecture 35 - Problem Solving on Depreciation and Depletion
Lecture 36 - Introduction to Break-Even Analysis
Lecture 37 - Analysis of Break-Even Time and Dual Break-Even Points
Lecture 38 - Economic Order Quantity
Lecture 39 - Introduction to Leverage
Lecture 40 - Financial Leverage and Total Leverage
Lecture 41 - Introduction to Stocks
Lecture 42 - Stock Valuation
Lecture 43 - Two Stage Dividend Growth and Preferred Stocks
Lecture 44 - Introduction to Bonds
Lecture 45 - Bond Premium and Discount, Bond Purchase
Lecture 46 - Introduction to Mutual funds
Lecture 47 - Performance Measures
Lecture 48 - Options
Lecture 49 - Option Valuation
Lecture 50 - Introduction to Cost of Capital and Ratio Analysis
Lecture 51 - Introduction to Risk Measurement
Lecture 52 - Decision-Making Under Risk
Lecture 53 - Decision Under Uncertainty
Lecture 54 - Risk Premium, Portfolio Return and Risk
Lecture 55 - Portfolio Diversification
Lecture 56 - Introduction to Insurance, Mortality Table
Lecture 57 - Pure Endowment and Life Annuities
Lecture 58 - Introduction to Life Insurance
Lecture 59 - Types of Life Insurance Policies
Lecture 60 - Reserve Funds, Property and Casualty Insurance
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC: Product Design Using Value Engineering

Subject Co-ordinator - Dr. Inderdeep Singh
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Product Design and Development
Lecture 2 - Product Design Steps and Product Analysis
Lecture 3 - Profit Consideration
Lecture 4 - Value Engineering (VE) History, Concept and Definitions
Lecture 5 - Value Engineering vs Cost Cutting
Lecture 6 - Creative Thinking
Lecture 7 - Problem Identification and VEJP
Lecture 8 - Types of Product Functions
Lecture 9 - Functional Analysis
Lecture 10 - Functional Analysis System Technique
Lecture 11 - Function-Cost Relationship - I
Lecture 12 - Function-Cost Relationship - II
Lecture 13 - VE Applications in Product Design
Lecture 14 - Value Engineering
Lecture 15 - Value Engineering
Lecture 16 - VE Tools and Techniques - I
Lecture 17 - VE Tools and Techniques - II
Lecture 18 - VE Success Stories - I
Lecture 19 - VE Success Stories - II
Lecture 20 - Behavioral Roadblocks

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NPTEL Video Course - Mechanical Engineering - NOC: Selection of Nanomaterials for Energy Harvesting and Storage

Subject Co-ordinator - Prof. Kaushik Pal
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Solar Energy Harvesting
Lecture 3 - Perovskite Solar Cells
Lecture 4 - Solar Thermal Energy
Lecture 5 - Heat Transfer Fluids
Lecture 6 - Hydrogen Energy
Lecture 7 - Hydrogen Production from Thermochemical Process
Lecture 8 - Hydrogen Production from Electrolysis
Lecture 9 - Photo-electrochemical Production of Hydrogen Using Solar Energy
Lecture 10 - Hydrogen Production from Biological Process
Lecture 11 - Nanogenerators
Lecture 12 - Triboelectric Nanogenerators
Lecture 13 - Pyroelectric Nanogenerators
Lecture 14 - Thermoelectric Nanogenerators and Electromagnetic generators
Lecture 15 - Other Energy Resources
Lecture 16 - Energy Storage
Lecture 17 - Electrochemical Energy Storage (Batteries)
Lecture 18 - Supercapacitors
Lecture 19 - Hydrogen Storage
Lecture 20 - Thermal Energy Storage

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NPTEL Video Course - Mechanical Engineering - Micro and Smart Systems

Subject Co-ordinator - Dr. K.J. Vinoy, Prof. S. Gopalakrishnan, Prof. K.N. Bhat, Prof. G.K. Anathasuresh

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Glimpses of Microsystems
Lecture 2 - Smart Materials and Systems
Lecture 3 - Microsensors
Lecture 4 - Microactuators
Lecture 5 - Microsystems
Lecture 6 - Smart systems Application and Structural Health Monitoring
Lecture 7 - Microfabrication Technologies
Lecture 8 - Thin-film Materials and their Deposition
Lecture 9 - Approaches for Pattern Transfer
Lecture 10 - Surface Micromachining of Microstructures
Lecture 11 - Bulk Micromachining of Microsystems
Lecture 12 - Extended Approaches for Working Microsystems
Lecture 13 - Non-conventional Approaches for Microsystems
Lecture 14 - Packaging of Microsystems
Lecture 15 - Deformation Strains and Stresses
Lecture 16 - Microdevice Suspensions
Lecture 17 - Residual Stress and Stress Gradients
Lecture 18 - Torsion and Twist
Lecture 19 - Vibrations of Microsystems Devices
Lecture 20 - Vibrations of Microsystems Devices
Lecture 21 - Micromachined Gyroscopes
Lecture 22 - Modelling of Coupled Electrostatic Microsystems
Lecture 23 - Coupled Electrothermal-elastic Modelling
Lecture 24 - Modelling of Microsystems
Lecture 25 - Finite Element Method and Microsystems
Lecture 26 - Theoretical Basis for the Finite Element Method
Lecture 27 - Energy Theorems and Weak Form of the Governing Equation
Lecture 28 - Finite Element Equation Development and Shape Functions
Lecture 29 - Isoparametric FE Formulation and some Examples

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Lecture 30 - Finite Element for Structures with Piezoelectric Materials
Lecture 31 - Semiconductor Device Physics
Lecture 32 - BJT and MOSFET Characteristics and Op-Amps
Lecture 33 - Op-Amp Circuits and Signal conditioning for Microsystems Devices
Lecture 34 - Control and Microsystems
Lecture 35 - Vibration Control of a Beam
Lecture 36 - Signal Conditioning Circuits and Integration of Microsystems and Microelectronics
Lecture 37 - Pressure Sensor Design Concepts, Processing, and Packaging
Lecture 38 - Pressure Sensor Design Concepts, Processing, and Packaging
Lecture 39 - Pressure Sensor Design Concepts, Processing, and Packaging
Lecture 40 - Capacitive Micro-accelerometer
LPTE Lecture Topic List - Created by LinuXpert Systems, Chennai

LPTE Video Course - Mechanical Engineering - NOC: Variational Methods in Mechanics

Subject Co-ordinator - Prof. G.K. Anathasuresh
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Classification of optimization problems and the place of Calculus of Variations in it - Part I
Lecture 2 - Classification of optimization problems and the place of Calculus of Variations in it - Part II
Lecture 3 - Genesis of Calculus of Variations - Part I
Lecture 4 - Genesis of Calculus of Variations - Part II
Lecture 5 - Formulation of Calculus of Variations problems in geometry and mechanics and design - Part I
Lecture 6 - Formulation of Calculus of Variations problems in geometry and mechanics and design - Part II
Lecture 7 - Unconstrained minimization in one and many variables - Part I
Lecture 8 - Unconstrained minimization in one and many variables - Part II
Lecture 9 - Constrained minimization KKT conditions - Part I
Lecture 10 - Constrained minimization KKT conditions - Part II
Lecture 11 - Sufficient conditions for constrained minimization - Part I
Lecture 12 - Sufficient conditions for constrained minimization - Part II
Lecture 13 - Mathematical preliminaries function, functional, metrics and metric space, norm and vector space
Lecture 14 - Mathematical preliminaries function, functional, metrics and metric space, norm and vector space
Lecture 15 - Function spaces and Gateaux variation
Lecture 16 - First variation of a functional Freche?t differential and variational derivative
Lecture 17 - Fundamental lemma of calculus of variations and Euler Lagrange equations - Part I
Lecture 18 - Fundamental lemma of calculus of variations and Euler Lagrange equations - Part II
Lecture 19 - Extension of Euler-Lagrange equations to multiple derivatives
Lecture 20 - Extension of Euler-Lagrange equations to multiple functions in a functional
Lecture 21 - Global Constraints in calculus of variations - Part I
Lecture 22 - Global Constraints in calculus of variations - Part II
Lecture 23 - Local (finite subsidiary) constrains in calculus of variations - Part I
Lecture 24 - Local (finite subsidiary) constrains in calculus of variations - Part II
Lecture 25 - Size optimization of a bar for maximum stiffness for given volume - Part I
Lecture 26 - Size optimization of a bar for maximum stiffness for given volume - Part II
Lecture 27 - Size optimization of a bar for maximum stiffness for given volume - Part III
Lecture 28 - Calculus of variations in functionals involving two and three independent variables - Part I
Lecture 29 - Calculus of variations in functionals involving two and three independent variables - Part II

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Lecture 30 - General variation of a functional, transversality conditions. Broken extremals, Wierstrass-Erdmann corner conditions
Lecture 31 - General variation of a functional, transversality conditions. Broken extremals, Wierstrass-Erdmann corner conditions
Lecture 32 - Variational (energy) methods in statics; principles of minimum potential energy and virtual work
Lecture 33 - General framework of optimal structural designs - Part I
Lecture 34 - General framework of optimal structural designs - Part II
Lecture 35 - Optimal structural design of bars and beams using the optimality criteria method
Lecture 36 - Invariants of Euler-Lagrange equations and canonical forms
Lecture 37 - Noether's theorem
Lecture 38 - Minimum characterization of Sturm-Liouville problems
Lecture 39 - Rayleigh quotient for natural frequencies and mode shapes of elastic systems
Lecture 40 - Stability analysis and buckling using calculus of variations
Lecture 41 - Strongest (most stable) column
Lecture 42 - Dynamic compliance optimization
Lecture 43 - Electro-thermal-elastic structural optimization
Lecture 44 - Formulating the extremization problem starting from the differential equation, self-adjointness
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Compliant Mechanisms: Principles and Design

Subject Co-ordinator - Prof. G. K. Ananthasuresh

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview
Lecture 2 - Spirit of compliant design
Lecture 3 - A glimpse of applications
Lecture 4 - Mobility and degrees of freedom in compliant mechanisms
Lecture 5 - Maxwell's rule and Grübler's formula
Lecture 6 - Using compatibility and force equilibrium matrices to identify degrees of freedom and states of stress
Lecture 7 - Empirical formula for flexure joints
Lecture 8 - Types of elastic pairs (flexures)
Lecture 9 - Linear finite element analysis of compliant mechanisms with beam elements
Lecture 10 - A compliant mechanism kit
Lecture 11 - Linear and nonlinear finite element analyses using continuum elements
Lecture 12 - Subtleties in finite element analysis: geometric nonlinearity and contact
Lecture 13 - Deformation of a cantilever under a tip-load, using elliptic integrals
Lecture 14 - Elliptic integrals and their use in elastica analysis
Lecture 15 - Frisch-Fay's approach to large deformation of beam
Lecture 16 - Burns-Crossley's kinematic model
Lecture 17 - Howell-Midha's elastic model
Lecture 18 - Putting together the pseudo rigid-body model
Lecture 19 - Modeling a partially compliant mechanism
Lecture 20 - Kinematic coefficients of a four-bar linkage with and without springs
Lecture 21 - Solving equations of PRB modeling and comparing with finite element analysis
Lecture 22 - Loop-closure equations for PRB models of compliant mechanisms
Lecture 23 - Burmester theory for compliant mechanisms
Lecture 24 - PRB-based Synthesis Examples
Lecture 25 - Structural optimization approach
Lecture 26 - Early works on design for compliance
Lecture 27 - Design for deflection of trusses
Lecture 28 - Design for deflection of beams and frames
Lecture 29 - Design of elastic continua for desired deflection

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Lecture 30 - Continuum element-based topology optimization of compliant mechanisms
Lecture 31 - YinSyn; synthesis of nonlinear responses with compliant mechanisms
Lecture 32 - Five different formulations for compliant mechanism design and some benchmark problems
Lecture 33 - Distributed compliance
Lecture 34 - How to achieve distributed compliance
Lecture 35 - Shape optimization
Lecture 36 - Cam-flexure clamp-case-study
Lecture 37 - SL model for compliant mechanisms
Lecture 38 - Feasibility maps for compliant mechanisms
Lecture 39 - Selection of compliant mechanisms for given userSpecifications
Lecture 40 - Two case-studies using feasibility maps technique
Lecture 41 - SML model for compliant mechanisms for dynamic response
Lecture 42 - Re-design of compliant mechanisms; Matlab and Java codes
Lecture 43 - Non-dimensional analysis of beams
Lecture 44 - Deformation index and slenderness ratio of compliant mechanisms
Lecture 45 - Kinetoelastostatic maps
Lecture 46 - Designing with kinetoelastic maps
Lecture 47 - Non-dimensionalization of stress, frequency, and other measures
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Lecture 49 - Instant centre method for designing compliant mechanisms
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Lecture 52 - Comparative analysis of different methods for designing compliant mechanisms
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Lecture 68 - Miniature compliant mechanisms as cell-manipulation tools

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NPTEL Video Course - Mechanical Engineering - NOC:A Short Lecture series on Contour Integration in the Complex Plane

Subject Co-ordinator - Prof. Venkata Sonti
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to complex variables
Lecture 2 - Cauchy Riemann Equations
Lecture 3 - Analytic Functions
Lecture 4 - Simple definitions
Lecture 5 - Definition of sets, domains, theorem on antiderivative
Lecture 6 - Cauchy Gorsat Theorem
Lecture 7 - Implications of Cauchy Gorsat Theorem, Cauchy Integral Formula
Lecture 8 - Implications of CIF, converse of CG theorem
Lecture 9 - Examples in contour integrals, ratios of polynomials
Lecture 10 - Contour integration of sinc function
Lecture 11 - Method of path deformation
Lecture 12 - Method of path deformation (Continued...)
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Lecture 15 - Infinite branch cut example
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Lecture 22 - Inverse Laplace Transform
Lecture 23 - Inverse Laplace Transform (Continued...)
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Lecture 25 - Summary of the total course

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NPTEL Video Course - Metallurgy and Material Science - NOC:Phase Field Modelling: The Materials Science, Mathematics and Computational Aspects

Subject Co-ordinator - Dr. M.P. Gururajan

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Metallurgy and Material Science - NOC: Introduction to Materials Science and Engineering

Subject Co-ordinator - Prof. Rajesh Prasad
Co-ordinating Institute - IIT - Delhi

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| Lecture 3 | Unit cell |
| Lecture 4 | Classification of lattices |
| Lecture 5 | Gaps in Bravais lattice list |
| Lecture 6 | Symmetry - I |
| Lecture 7 | Symmetry - II |
| Lecture 8 | Classification of lattices on the basis of symmetry |
| Lecture 9 | A symmetry based approach to Bravais lattices |
| Lecture 10 | Miller indices of directions |
| Lecture 11 | Miller indices for planes |
| Lecture 12 | Miller indices for plane and its normal in Cubic Crystal |
| Lecture 13 | Weiss Zone law and its applications |
| Lecture 14 | Inter-planar spacing |
| Lecture 15 | Bragg’s Law |
| Lecture 16 | Close-packing of hard spheres |
| Lecture 17 | Hexagonal Close-Packed (HCP) structure |
| Lecture 18 | Lattice and motif of HCP crystals |
| Lecture 19 | c/a ratio of an ideal HCP crystal |
| Lecture 20 | ABCABC stacking of close-packed spheres |
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Lecture 71 - Proportion of phases present in the system
Lecture 72 - Microstructure evolution during solidification in isomorphous systems
Lecture 73 - Eutectic system
Lecture 74 - Eutectic reaction
Lecture 75 - Eutectic, hypoeutectic and hypereutectic alloys
Lecture 76 - Gibbsâ□□ phase rule
Lecture 77 - Fe-C phase diagram
Lecture 78 - Eutectoid, hypoeutectoid and hypereutectoid steels
Lecture 79 - Microstructure of a hypoeutectoid steel
Lecture 80 - Microstructure of a hypereutectoid steel
Lecture 81 - Diffusion
Lecture 82 - Fickâ□□ s first law
Lecture 83 - Fickâ□□ s second law
Lecture 84 - Error function solution of Fickâ□□ s second law
Lecture 85 - Atomic mechanisms of diffusion
Lecture 86 - Substitutional diffusion revisited
Lecture 87 - Diffusion paths
Lecture 88 - Steady and unsteady state diffusion
Lecture 89 - Phase Transformation
Lecture 90 - Nucleation
Lecture 91 - Nucleation and capillary rise
Lecture 92 - Nucleation, growth and overall transformation
Lecture 93 - Time-temperature-transformation (TTT) diagram
Lecture 94 - Homogeneous and heterogeneous nucleation
Lecture 95 - Heat treatment of steels
Lecture 96 - TTT diagram of Eutectoid Steels
Lecture 97 - Quenching and martensite
Lecture 98 - Austempering and bainite
Lecture 99 - Tempering
Lecture 100 - Residual stresses and Quench cracks
Lecture 101 - Marquenching and martempering
Lecture 102 - TTT diagram of hypoeutectoid and hypereutectoid steels
Lecture 103 - TTT diagram of alloy steel
Lecture 104 - Hardenability of steels
Lecture 105 - Glass Ceramics
Lecture 106 - Tensile test
Lecture 107 - Plastic deformation and crystal structure
Lecture 108 - Shape change
Lecture 109 - Slip
Lecture 110 - Resolved shear stress
Lecture 111 - CRSS
Lecture 112 - Schmid's law
Lecture 113 - CRSS
Lecture 114 - Why is experimental CRSS less than theoretical CRSS
Lecture 115 - Strengthening mechanisms
Lecture 116 - Dislocation density
Lecture 117 - Frank-Read source
Lecture 118 - strain hardening
Lecture 119 - Dislocation interaction leading to strain hardening - I
Lecture 120 - Dislocation interaction leading to strain hardening - II
Lecture 121 - Solid solution hardening
Lecture 122 - Grain size hardening
Lecture 123 - Age hardening - I
Lecture 124 - Age hardening - II
Lecture 125 - Metastable precipitates
Lecture 126 - Annealing of cold-worked metals
Lecture 127 - Recovery
Lecture 128 - Recrystallization
Lecture 129 - Grain Growth
Lecture 130 - True stress and true strain
Lecture 131 - Creep
Lecture 132 - Effect of stress and temperature on creep
Lecture 133 - Creep Mechanisms
Lecture 134 - Composites
Lecture 135 - Isostrain modulus
Lecture 136 - Isostress modulus
Lecture 137 - Fracture
Lecture 138 - Ductile and Brittle Fracture
Lecture 139 - Role of crack size
Lecture 140 - Griffith's Criterion
Lecture 141 - Stress Concentration
Lecture 142 - Ductile to brittle transition
Lecture 143 - Enhancing fracture resistance
Lecture 144 - Toughening of glass
Lecture 145 - Toughening of glass
Lecture 146 - Fatigue
Lecture 147 - Sub-Critical crack growth
NPTEL Video Course - Metallurgy and Material Science - NOC: Introduction to Crystal Elasticity and Crystal Plasticity

Subject Co-ordinator - Prof. Swarup Bag
Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Structure and properties of materials - Part I
Lecture 2 - Structure and properties of materials - Part II
Lecture 3 - Elasticity Isotropic elasticity of materials; Anisotropic elasticity - Part I
Lecture 4 - Elasticity Isotropic elasticity of materials; Anisotropic elasticity - Part II
Lecture 5 - Continuum Plasticity - I (Part A)
Lecture 6 - Continuum Plasticity - I (Part B)
Lecture 7 - Continuum Plasticity - II (Part A)
Lecture 8 - Continuum Plasticity - II (Part B)
Lecture 9 - Crystal Plasticity - I (Part A)
Lecture 10 - Crystal Plasticity - I (Part B)
Lecture 11 - Crystal Plasticity - II (Part A)
Lecture 12 - Crystal Plasticity - II (Part B)
Lecture 13 - Crystal Plasticity - II (Part C)
Lecture 14 - Hardening Mechanisms in Metals - Part I
Lecture 15 - Hardening Mechanisms in Metals - Part II
Lecture 16 - Hardening Mechanisms in Metals - Part III
Lecture 17 - Multi-Scale Approach to Materials Modelling

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NPTEL Video Course - Metallurgy and Material Science - Electroceramics

Subject Co-ordinator - Dr. Ashish Garg

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1
Lecture 2
Lecture 3
Lecture 4
Lecture 5
Lecture 6
Lecture 7
Lecture 8
Lecture 9
Lecture 10
Lecture 11
Lecture 12
Lecture 13
Lecture 14
Lecture 15
Lecture 16
Lecture 17
Lecture 18
Lecture 19
Lecture 20
Lecture 21
Lecture 22
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Lecture 25
Lecture 26
Lecture 27
Lecture 28
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Lecture 36
Lecture 37
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Lecture 39
Lecture 40
Lecture 41

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Lecture 1 - Energy Resources and Environment
Lecture 2 - Characterization of Fuels
Lecture 3 - Characterization of Fuels
Lecture 4 - Production of Secondary Fuels
Lecture 5 - Materials Balance in Coke-making
Lecture 6 - Heat Balance and Clean Development Mechanism
Lecture 7 - Production of Secondary Fuels
Lecture 8 - Materials and Heat Balance in Gasification
Lecture 9 - Principles of combustion
Lecture 10 - Principles of combustion
Lecture 11 - Materials balance in combustion
Lecture 12 - Principles of Combustion
Lecture 13 - Flame Temperature Calculations
Lecture 14 - Refractory in Furnaces
Lecture 15 - Refractory in Furnaces
Lecture 16 - Furnace
Lecture 17 - Heat Utilization in furnaces, energy flow diagrams
Lecture 18 - Heat Utilization in furnaces, energy flow diagrams
Lecture 19 - Heat Utilization in Furnaces
Lecture 20 - Heat Utilization in Furnaces
Lecture 21 - Transport Phenomena in Furnaces
Lecture 22 - Macroscopic Energy Balance
Lecture 23 - Macroscopic Energy Balance
Lecture 24 - Macroscopic Energy Balance
Lecture 25 - Macroscopic Energy Balance
Lecture 26 - Macroscopic Energy Balance
Lecture 27 - Principles of Burner Design
Lecture 28 - Transport Phenomena in Furnaces
Lecture 29 - Transport Phenomena in Furnaces
Lecture 30 - Transport Phenomena in Furnaces
Lecture 31 - Transport Phenomena in Furnaces
Lecture 32 - Steady Heat flows in Furnace and Heat Exchanger
Lecture 33 - Exercises on Heat Flow in Furnaces and Heat Exchangers
Lecture 34 - Exercises on Heat Flow in Furnaces and Heat Exchangers
Lecture 35 - Miscellaneous Topics
Lecture 36 - Miscellaneous Topics
Lecture 37 - Miscellaneous Topics
Lecture 38 - Miscellaneous topics
Lecture 39 - Furnace efficiency, Fuel Saving, Carbon Offset
Lecture 40 - Furnace efficiency, Fuel Saving, Carbon Offset
NPTEL Video Course - Metallurgy and Material Science - Introduction to Biomaterials

Subject Co-ordinator - Dr. Kantesh Balani, Dr. Birkamjit Basu

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to basic concepts of Biomaterials Science; Salient properties of important material classes
Lecture 2 - Manufacturing and properties of metals, ceramics, polymers and composites
Lecture 3 - Concept of biocompatibility, host response, structure-property of biological cell
Lecture 4 - Structure and properties of cells, protein and cellular adaptation process
Lecture 5 - Cell-I
Lecture 6 - Cell-II
Lecture 7 - Cell Migration and Cell Division and cell death
Lecture 8 - Cell Differentiation and Cell Death
Lecture 9 - Cell Apoptosis-I
Lecture 10 - Cell Apoptosis-II
Lecture 11 - Structure and properties of Protein; cell - material interaction
Lecture 12 - Assessment of biocompatibility of biomaterials
Lecture 13 - Biological testing (hemocompatibility, tribological testing)
Lecture 14 - Structure and properties of bone as well as in vivo testing and histocompatibility assessment
Lecture 15 - Important biometallic alloys
Lecture 16 - Ti Alloy
Lecture 17 - Co-Cr-Mo alloys
Lecture 18 - Bioceramics
Lecture 19 - Processing of Bioceramics
Lecture 20 - Ceramics, Bioceramics and Glasses
Lecture 21 - Sintering and mechanical properties of ceramics
Lecture 22 - Fracture and toughening of ceramic composites
Lecture 23 - Development of based bioceramic composites for hard tissue replacement
Lecture 24 - Alternative phosphate materials, based composites with bactericidal property and glass ceramics
Lecture 25 - Electrostatic Spraying of UHMWPE-HA-CNT composites
Lecture 26 - Thin Films and Coatings
Lecture 27 - Thermal Spray Coatings
Lecture 28 - Biocompatibility of plasma sprayed CNT reinforced Hydroxyapatite biocomposite coatings
Lecture 29 - Biocompatibility of Alumina and CNT reinforced Hydroxyapatite

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Lecture 30 - Glass-ceramics for dental restoration applications
Lecture 31 - Structure and properties of polymers
Lecture 32 - Biodegradable polymers (Importance)
Lecture 33 - Biodegradable polymers (Types)
Lecture 34 - Mechanisms of Bioerosion
Lecture 35 - External field and material interaction
Lecture 36 - Tissue Engineering and wound healing
Lecture 37 - Understanding Design Concepts of Bio-implants
Lecture 38 - Understanding Design Concepts of Dental-implants
Lecture 39 - Understanding Design Concepts of Orthopedic-implant
NPTEL Video Course - Metallurgy and Material Science - Materials and Energy balance in Metallurgical Processes

Subject Co-ordinator - Prof. Satish Ch. Koria

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Course
Lecture 2 - Measurement of Quantities
Lecture 3 - Exercises on Measurement of Quantities, Introduction to Stoichiometry
Lecture 4 - Stoichiometry Concept and Exercise
Lecture 5 - Exercise on Stoichiometry and Introduction to Thermochemistry
Lecture 6 - Thermochemistry
Lecture 7 - Exercise on Thermochemistry & Frequently Asked Questions
Lecture 8 - Errors in Measurements
Lecture 9 - Basics of Materials & Energy Balance
Lecture 10 - Introduction to Mineral Beneficiation
Lecture 11 - Materials Balance in Mineral Processing and Faq
Lecture 12 - Exercises in Mineral Processing
Lecture 13 - Calcination Concepts & Exercises
Lecture 14 - Pyromet ExtractionUnit Processes
Lecture 15 - Predominance Area Diagram
Lecture 16 - Material Balance in Roasting; illustration
Lecture 17 - Heat Balance in Roasting illustration
Lecture 18 - Exersises on Roasting
Lecture 19 - Exercises on Roasting
Lecture 20 - Smelting Matte Smelting
Lecture 21 - Exercise-I Matte Smelting
Lecture 22 - Exercise-II Matte Smelting
Lecture 23 - Reduction Smelting
Lecture 24 - Lead Smelting Material Balance
Lecture 25 - Imperial Smelting Process
Lecture 26 - Introduction to Ironmaking
Lecture 27 - Coke Making
Lecture 28 - Ironmaking Fundamentals
Lecture 29 - Material & Heat Balance in Ironmaking - I

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Lecture 30 - Material & Heat Balance in Ironmaking - II
Lecture 31 - RIST Diagram - I
Lecture 32 - RIST Diagram - II
Lecture 33 - Concepts in Converting
Lecture 34 - Exercise in Converting
Lecture 35 - Additional Topics - I Melting in Cupola
Lecture 36 - Additional Topics - II Gasification
Lecture 37 - Additional Topics - III Material Balance in Gasification
Lecture 38 - Additional Topics - IV Industrial Furnaces
Lecture 39 - Energy Balance in Industrial Furnaces
Lecture 40 - Thoughts on Application of Energy Balance
Lecture 1 - Conductivity of materials, Drude's theory and its failures
Lecture 2 - Free electron theory
Lecture 3 - Free electron theory
Lecture 4 - Crystal structure, Reciprocal lattice I
Lecture 5 - Reciprocal lattice II, Brillouin zone and Bragg's diffraction condition
Lecture 6 - Electrons in a crystal, Bloch's electron
Lecture 7 - Free electron band diagrams in an empty lattice
Lecture 8 - Effect of periodic potential, Origin of band-gap through Kronig-Penny model
Lecture 9 - Electron dynamics
Lecture 10 - Conduction in relation to band diagrams
Lecture 11 - Semiconductor E-k diagrams and their material properties
Lecture 12 - Equilibrium carrier statistics in semiconductors
Lecture 13 - Equilibrium carrier statistics in semiconductors
Lecture 14 - Equilibrium carrier statistics in semiconductors
Lecture 15 - Doping in semiconductors
Lecture 16 - Equilibrium carrier statistics in semiconductors
Lecture 17 - Equilibrium carrier statistics in semiconductors
Lecture 18 - Semiconductor junctions in band-diagrams
Lecture 19 - Linear dielectric behavior
Lecture 20 - Non-linear dielectric behavior
Lecture 21 - Carrier recombination-generation - I
Lecture 22 - Carrier recombination-generation - II
Lecture 23 - R-G statistics via R-G centers
Lecture 24 - Optoelectronic materials and bandgap engineering
Lecture 25 - Optical properties of materials
Lecture 26 - Optical properties of single interfaces
Lecture 27 - Optical Properties of two interfaces
Lecture 28 - Drift
Lecture 29 - Diffusion
Lecture 30 - Continuity Equation
Lecture 31 - Resistor and diode (p-n junction)
Lecture 32 - Fundamentals of p-n junction
Lecture 33 - Fundamentals of p-n junction (Continued...)
Lecture 34 - Solar cells
Lecture 35 - Microelectronics processing
Lecture 36 - MOS capacitor
Lecture 37 - Transistor
Lecture 38 - Organic Electronics
Lecture 39 - Organic Light Emitting Diodes
Lecture 40 - Organic Solar Cells and Organics Thin Film Transistors
Lecture 30 - Diffusion in Solids
Lecture 31 - Diffusion in Solids
Lecture 32 - Phase Diagrams
Lecture 33 - Phase Diagrams
Lecture 34 - Phase Diagrams
Lecture 35 - Phase Diagrams
Lecture 36 - Phase Diagrams
Lecture 37 - Phase Transformations
Lecture 38 - Phase Transformations
Lecture 39 - Phase Transformations
Lecture 40 - Phase Transformations
Lecture 41 - Phase Transformations
Lecture 42 - Phase Transformations
Lecture 43 - Phase Transformations
Lecture 44 - Phase Transformations
Lecture 45 - Phase Transformations
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - Environmental Degradation of Materials

Subject Co-ordinator - Dr. Kallol Mondal
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction, Basic definition of corrosion
Lecture 2 - Forms of Degradation, Thermodynamics of corrosion
Lecture 3 - Thermodynamics of corrosion
Lecture 4 - Thermodynamics of corrosion
Lecture 5 - Thermodynamics of corrosion, Electrochemical series, Concentration cell
Lecture 6 - Reduction Potential series, Pourbaix diagram
Lecture 7 - Pourbaix diagram
Lecture 8 - Pourbaix diagram
Lecture 9 - Pourbaix diagram, Kinetics of corrosion
Lecture 10 - Kinetics of corrosion, Rate expression, Solved problems
Lecture 11 - Solved problems on the corrosion rate, Exchange current density
Lecture 12 - Exchange current density, Polarization, Activation Polarization, Tafel Equation
Lecture 13 - Activation Polarization, Concentration Polarization
Lecture 14 - Concentration Polarization, Mixed Potential Theory
Lecture 15 - Mixed Potential Theory, Explanation of corrosion events on the basis of Mixed potential theory, Effect of impurity, Effect of area factor, Cathodic and anodic protection
Lecture 16 - Explanation of corrosion events on the basis of Mixed potential theory, Effect of area factor, Cathodic and anodic protection
Lecture 17 - Explanation of corrosion events on the basis of Mixed potential theory, Effect of area factor, Cathodic and anodic protection
Lecture 18 - Passivation and Mixed potential theory
Lecture 19 - Passivation and Mixed potential theory
Lecture 20 - Different corrosion protection mechanisms, electrochemical ways of protection, cathodic protection
Lecture 21 - Cathodic and anodic protection
Lecture 22 - Anodic protection, Forms of corrosion, Factors of corrosion
Lecture 23 - Forms of corrosion, Uniform Corrosion, Galvanic corrosion
Lecture 24 - Galvanic corrosion
Lecture 25 - Crevice corrosion
Lecture 26 - Crevice corrosion, Pitting corrosion
Lecture 27 - Pitting corrosion, Intergranular corrosion
Lecture 28 - Intergranular corrosion, Dealloying
Lecture 29 - Dealloying, Erosion corrosion

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Lecture 30 - Erosion corrosion, Cavitation
Lecture 31 - Cavitation, Fretting corrosion, corrosion cracking
Lecture 32 - Stress corrosion cracking
Lecture 33 - Stress corrosion cracking
Lecture 34 - Biologically influenced corrosion, liquid metal attack
Lecture 35 - Corrosion protection, change of materials, effect of design of component
Lecture 36 - Corrosion protection, change of environment, Inhibitors, coatings
Lecture 37 - Oxidation and hot corrosion, pitting Bedworth ratio, thermodynamics of oxidation
Lecture 38 - Thermodynamics of oxidation, Ellingham diagram, oxidation kinetics and laws
Lecture 39 - Oxide structure and Oxidation
Lecture 40 - Hot corrosion, corrosion testing and failure analysis, linear polarization
Lecture 41 - Degradation of composites, polymers and ceramics, corrosion and society
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - NOC: Phase Diagrams in Materials Science and Engineering

Subject Co-ordinator - Dr. Krishanu Biswas
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the course
Lecture 2 - Heterogeneous equilibrium and Free energy Formalism
Lecture 3 - Concept of Chemical Potential
Lecture 4 - Phase Rule-I
Lecture 5 - Phase Rule-II and Single Component Equilibria
Lecture 6 - Single Component Phase Diagram
Lecture 7 - Binary Phase Diagram - Isomorphous Diagram
Lecture 8 - Binary Isomorphous System
Lecture 9 - Solidification of Isomorphous Alloys
Lecture 10 - Free Energy of Binary Isomorphous Phase Diagram
Lecture 11 - Phase Diagram of Binary Eutectic Systems Edit Lesson
Lecture 12 - Solidification of eutectic, hypo-eutectic and hyper-eutectic alloys & their morphologies - I
Lecture 13 - Solidification of eutectic, hypo-eutectic and hyper-eutectic alloys & their morphologies - II
Lecture 14 - Phase diagrams of binary eutectic two terminal solid solution
Lecture 15 - Phase diagrams of binary peritectic System - I
Lecture 16 - Phase diagrams of binary peritectic System - II
Lecture 17 - Phase diagrams of binary peritectic System with intermediate phases
Lecture 18 - Intermediate Phases
Lecture 19 - Introduction to Monotectic Phase Diagram
Lecture 20 - Microstructural Evolution of Monotectic Phase Diagram
Lecture 21 - Free Energy Composition diagrams for Monotectic systems and Syntactic phase diagram
Lecture 22 - Quasichemical theory - I
Lecture 23 - Quasichemical theory - II
Lecture 24 - Quasichemical theory Free energy formalism
Lecture 25 - Solid state reaction
Lecture 26 - Introduction to Iron-Carbon phase diagram
Lecture 27 - Eutectoid transformation in Iron-Carbon phase diagram
Lecture 28 - Austenite to pearlite transformation in Iron-Carbon phase diagram
Lecture 29 - Hypo-eutectoid steels

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Lecture 30 - Pearlite Transformation
Lecture 31 - Martensite Transformation - I
Lecture 32 - Martensite Transformation - II
Lecture 33 - Tempering of Martensite
Lecture 34 - Bainite Transformation
Lecture 35 - TTT curves for Steel
Lecture 36 - Cast Iron - I
Lecture 37 - Cast Iron - II
Lecture 38 - Ductile Iron and Nodular Iron
Lecture 39 - Malleable Iron
Lecture 40 - Alloyed Cast Iron
Lecture 41 - Phase Diagram for different Solid State Reaction
Lecture 42 - Phase Diagram of Ceramic
Lecture 43 - Ternary Phase Diagram - I
Lecture 44 - Ternary Phase Diagram - II
Lecture 45 - Ternary Phase Diagram and Tie Line Construction - I
Lecture 46 - Ternary Phase Diagram and Tie Line Construction - II
Lecture 47 - Ternary Phase Diagram and Tie Line Construction - III
Lecture 48 - Ternary Isomorphous Phase Diagram
Lecture 49 - Ternary Three Phase Equilibria
Lecture 50 - Three Phase Equilibria in Ternary Systems - I
Lecture 51 - Three Phase Equilibria in Ternary Systems - II
Lecture 52 - Solidification Behaviour of Ternary Alloy
Lecture 53 - Three Phase Equilibria
Lecture 54 - Ternary Four Phase Equilibria - I
Lecture 55 - Ternary Four Phase Equilibria - II
Lecture 56 - Solidification Behaviour of Ternary Eutectic Alloys
Lecture 57 - Phase Diagram of Ternary Eutectic with Terminal Solid Solution
Lecture 58 - Ternary Peritectic Reaction
Lecture 59 - Quasi-peritectic Reaction
Lecture 60 - Case Studies on Ternary Phase Diagrams - I
Lecture 61 - Case Studies on Ternary Phase Diagrams - II
NPTEL Video Course - Metallurgy and Material Science - NOC:Fundamentals of Material Processing - I

Subject Co-ordinator - Prof. Shashank Shekhar
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Solidification (Casting)
Lecture 3 - Solidification (Welding)
Lecture 4 - Thermodynamics of Solidification
Lecture 5 - Kinetics of Solidification (Homogeneous)
Lecture 6 - Kinetics of Solidification (Heterogeneous)
Lecture 7 - Heat Flow
Lecture 8 - Heat Flow (Continued...)
Lecture 9 - Heat Flow (Insulating Mold Condition)
Lecture 10 - Heat Flow (Insulating Mold Condition) (Continued...)
Lecture 11 - Heat Flow (Interface Resistance Controlled Solidification)
Lecture 12 - Heat Flow (Effect of Superheat)
Lecture 13 - Heat Flow (Solidification of Alloys)
Lecture 14 - Composition Variation
Lecture 15 - Composition Variation (Continued...)
Lecture 16 - Complete and Limited Liquid Diffusion
Lecture 17 - Mixed Mode Solidification
Lecture 18 - Mixed Mode Solidification and Zone Refining
Lecture 19 - Zone Refining (Continued...)
Lecture 20 - Cellular Solidification of Single Phase Alloy
Lecture 21 - Cellular Solidification of Single Phase Alloy (Continued...)
Lecture 22 - Cellular Solidification of Single Phase Alloy (Continued...)
Lecture 23 - Plane Front Solidification of Multiphase Alloy
Lecture 24 - Plane Front Solidification of Multiphase Alloy (Continued...)
Lecture 25 - Fluid Flow Considerations
Lecture 26 - Introduction to Powder Processing
Lecture 27 - Introduction to Powder Processing (Continued...)
Lecture 28 - Powder characterization
Lecture 29 - Powder Characterization Techniques

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Lecture 30 - Powder Characterization using Surface Area
Lecture 31 - Powder Characterization using Gas Permeability Method
Lecture 32 - Powder Manufacturing
Lecture 33 - Powder Manufacturing (Continued...)
Lecture 34 - Powder Manufacturing (Continued...)
Lecture 35 - Powder Consolidation
Lecture 36 - Powder Consolidation (Continued...)
Lecture 37 - Particle Packing
Lecture 38 - Powder Compaction
Lecture 39 - Powder Compaction (Continued...)
Lecture 40 - Sintering Theory
NPTEL Video Course - Metallurgy and Material Science - NOC:Heat Treatment and Surface Hardening - I

Subject Co-ordinator - Dr. Kallol Mondal, Prof. Sandeep Sangal
Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Heat Treatment and Importance of Material Tetrahedron
Lecture 2 - Case studies in reference to Material tetrahedron T/t information and processing
Lecture 3 - Few more case studies in reference to processing with T/t modification
Lecture 4 - Critical Definition and Phase Transformation Thermodynamics and Driving Force
Lecture 5 - Thermodynamics of Phase Transformation Driving force of Phase Transformation
Lecture 6 - Thermodynamics of Phase Transformation and Driving Force for Phase Transformation
Lecture 7 - Finding Value of Driving Force (?G) and Single Component (liquid-solid)
Lecture 8 - Finding Value of Driving Force (?G) and Nucleation Single Component (liquid-solid)
Lecture 9 - Nucleation Treatment Single Component (Solid-Liquid) - I
Lecture 10 - Nucleation Treatment Single Component (Solid-Liquid) - II
Lecture 11 - Solved Problem on Nucleation rate and How to determine the value of ?sl Physical Concept & Interfaicel Energy
Lecture 12 - How to determine the value of ?sl (Physical Concept and Interfacial Energy)
Lecture 13 - Interfacial Energy - I
Lecture 14 - Interfacial Energy - II
Lecture 15 - Heterogeneous Nucleation - I
Lecture 16 - Heterogeneous Nucleation - II
Lecture 17 - Solid - Solid Transformation and Nucleation rate - I
Lecture 18 - Solid - Solid Transformation and Nucleation rate - II
Lecture 19 - Phase Diagram and G vs X plot - I
Lecture 20 - Phase Diagram and G vs X plot - II
Lecture 21 - Phase Diagram and G vs X plot - III
Lecture 22 - Introduction to Kinetics of Phase Transformation
Lecture 23 - Variation of ?G* and r* with Undercooling
Lecture 24 - Nucleation rate - I
Lecture 25 - Nucleation Rate - II
Lecture 26 - Critical Undercooling
Lecture 27 - Maximum nucleation rate for homogeneous nucleation
Lecture 28 - Maximum nucleation rate for heterogeneous nucleation
Lecture 29 - Nucleation kinetics in solid state
Lecture 30 - Interface controlled growth
Lecture 31 - Diffusion controlled growth
Lecture 32 - Avrami Kinetics - I
Lecture 33 - Avrami Kinetics - II
Lecture 34 - Avrami Kinetics - III
Lecture 35 - Time-Temperature-Transformation (TTT) diagram
Lecture 36 - Diffusion in Solids - I
Lecture 37 - Diffusion in Solids - II
Lecture 38 - Diffusion in Solids - III
Lecture 39 - Diffusion in Solids - IV
Lecture 40 - Applications of heat treatment
Lecture 1 - Material Evolution
Lecture 2 - Bonding in Materials
Lecture 3 - Correlation between bond and physical properties
Lecture 4 - Crystal Structure
Lecture 5 - Unit Cell (Primitive and Non-primitive)
Lecture 6 - Crystal Systems and Bravais Lattices
Lecture 7 - Bravais Lattice and Symmetry in Crystals
Lecture 8 - Symmetry in Crystals
Lecture 9 - Symmetry and Correlation with the Bravais Lattice
Lecture 10 - Miller Indices (Planar and Directions)
Lecture 11 - Miller Indices - Part 2
Lecture 12 - Miller Indices - Part 3
Lecture 13 - Miller Indices and Weiss Zone Law
Lecture 14 - Structure of Metals and Alloys
Lecture 15 - Structure of Metals, Packing, Co-ordination and Interstices
Lecture 16 - Interstices, Solid Solutions and Alloys
Lecture 17 - Solid Solutions
Lecture 18 - Solid Solutions
Lecture 19 - Covalent Solids
Lecture 20 - Covalent Solids (Continued...) and Ionic Solids
Lecture 21 - Ionic Solids
Lecture 22 - Ionic solids (Continued...)
Lecture 23 - Ionic Solids (Continued...)
Lecture 24 - Ionic Solids (Continued...)
Lecture 25 - Ionic Solids (Ceramics)
Lecture 26 - HCP Based Structure
Lecture 27 - Structure of Non-crystalline Solids (glasses)
Lecture 28 - Structure of Non-Crystalline Solids
Lecture 29 - Structure of Non-Crystalline Solids (Polymers)
Lecture 30 - Structure of Polymers
Lecture 31 - Structure of Polymers (Continued...)
Lecture 32 - Structure Determination (X-ray Diffraction)
Lecture 33 - X-ray Diffraction
Lecture 34 - X-ray Diffraction (Continued...)
Lecture 35 - X-ray Diffraction (Continued...)
Lecture 36 - X-ray Diffraction (Continued...)
Lecture 37 - X-ray Diffraction (Continued...)
Lecture 38 - Defects in Solids (Point Defects)
Lecture 39 - Point Defect Concentration
Lecture 40 - 2-D Defects
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - NOC: Defects in Crystalline Solids - Part I

Subject Co-ordinator - Prof. Shashank Shekhar
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Defects
Lecture 2 - Equilibrium Points Defects
Lecture 3 - Energy of Vacancy Formation
Lecture 4 - Vacancy Concentration Measurement Techniques
Lecture 5 - Self-interstitial Defects + Frenkel Defects
Lecture 6 - Schottky Defects + Extrinsic Defects
Lecture 7 - Interstitials in Iron
Lecture 8 - Defects Reaction + Kroger-Vink Notation
Lecture 9 - Defects Reaction and its Thermodynamics
Lecture 10 - Equilibrium Concentration using Defects Reaction
Lecture 11 - Examples on defect reaction
Lecture 12 - Diffusion (Interstitial Diffusion)
Lecture 13 - Non-steady state diffusion
Lecture 14 - Self-diffusion + Examples
Lecture 15 - Diffusion in substitutional alloys + Diffusion along defects
Lecture 16 - History of Dislocations
Lecture 17 - Volterra Model + Structure of Dislocations + Burger vectors
Lecture 18 - Characteristics of Dislocations
Lecture 19 - Mixed Dislocations + Dislocation Loops
Lecture 20 - Elastic Continuum Model + Strain field for screw dislocations
Lecture 21 - Stress and Strain Fields
Lecture 22 - Stress State around Edge Dislocations + Elastic Energy of Dislocations
Lecture 23 - Glide Forces on Dislocations + Line Tension on Dislocations
Lecture 24 - Climb Forces on Dislocations + Interaction Between Dislocations
Lecture 25 - Image Forces on Dislocations
Lecture 26 - Resistance to Dislocation Motion + Peierl Nebarro Valley
Lecture 27 - Slip System + Examples
Lecture 28 - Dislocations and Slips + Examples
Lecture 29 - Critical resolved Shear Stress + Examples (Continued...)

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Lecture 30 - Glide+Kinks
Lecture 31 - Cross-slip+Climb
Lecture 32 - Climb+Jogs
Lecture 33 - Examples on Jogs+Dislocation Intersection
Lecture 34 - Dislocation Intersection and step characteristics+Superjogs
Lecture 35 - Strain and strain-rate due to dislocation motion+Velocity of dislocations+Observation of dislocations
Lecture 36 - Observation of dislocation (Continued...) + Dislocation Dynamics
Lecture 37 - Dislocations in FCC+Partial dislocations
Lecture 38 - Partial dislocations (Continued...) + Stacking Fault
Lecture 39 - Thompson's Tetrahedron+Examples
Lecture 40 - Dislocations in BCC+Asymmetry of Slip
NPTEL Video Course - Metallurgy and Material Science - NOC:Corrosion - Part I

Subject Co-ordinator - Dr. Kallol Mondal

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to corrosion - I
Lecture 2 - Introduction to corrosion - II
Lecture 3 - Types and forms of corrosion
Lecture 4 - Uniform and Galvanic corrosion
Lecture 5 - Crevice and Pitting corrosion
Lecture 6 - Forms of corrosion
Lecture 7 - Electrochemical Nature of Corrosion and its Thermodynamics
Lecture 8 - Thermodynamics aspects of corrosion - I
Lecture 9 - Thermodynamics aspects of corrosion - II
Lecture 10 - Thermodynamics aspects of corrosion - III
Lecture 11 - Relation Between Free Energy and Equilibrium Constant
Lecture 12 - Derivation of Nernst Equation
Lecture 13 - Standard Reduction Potential Series for Pure Metals
Lecture 14 - Reduction Potentials in Acidic and Neutral Solutions
Lecture 15 - Nernst equation in terms of pH
Lecture 16 - Limitations of Standard Reduction Potential Series of Pure Metals
Lecture 17 - Concentration Cell Formation and Galvanic Series
Lecture 18 - Examples of Concentration cell and Spontaneity of Corrosion Process
Lecture 19 - Spontaneity of Corrosion Process and Introduction to Pourbaix Diagram
Lecture 20 - Construction of Pourbaix Diagram
Lecture 21 - Construction of Pourbaix diagram for Ni-H2O system - I
Lecture 22 - Construction of Pourbaix diagram for Ni-H2O system - II
Lecture 23 - Construction of Pourbaix diagram for Ni-H2O system - III
Lecture 24 - Pourbaix diagram of Ni-H2O and AI-H2O
Lecture 25 - Inferences from Pourbaix diagram of Fe-H2O and AI-H2O
Lecture 26 - Estimation of Corrosion Rate - I
Lecture 27 - Estimation of Corrosion Rate - II
Lecture 28 - Estimation of Corrosion Rate - III
Lecture 29 - Exchange Current Density

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Lecture 30 - Exchange Current Density and Standard Hydrogen Electrode
Lecture 31 - Electrical Double Layer and Polarization
Lecture 32 - Correlation between Current Density and Overvoltage
Lecture 33 - Introduction to Butler-Volmer Equation
Lecture 34 - Derivation of Tafel Equation
Lecture 35 - Tafel Plot and Activation Polarization
Lecture 36 - Activation polarization, concentration polarization and total polarization
Lecture 37 - Summary of concentration polarization (CP) and introduction to mixed potential theory - I
Lecture 38 - Mixed potential theory - II
Lecture 39 - Understanding of mixed potential theory through the case studies and events of corrosion - I
Lecture 40 - Understanding of mixed potential theory through the case studies and events of corrosion - II
Lecture 41 - Understanding of mixed potential theory through the case studies and events of corrosion - III
NPTEL Video Course - Metallurgy and Material Science - NOC: Solar Photovoltaics: Principles, Technologies and

Subject Co-ordinator - Dr. Ashish Garg

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Solar Energy
Lecture 2 - Solar Radiation
Lecture 3 - Atmospheric Effects on Solar Radiation
Lecture 4 - Effect of Location on Time
Lecture 5 - Sun-Earth Angular Relations
Lecture 6 - Solar Radiation Measurements
Lecture 7 - Introduction to Band Theory
Lecture 8 - Semiconductor Basics - I
Lecture 9 - Semiconductor Basics - II
Lecture 10 - Electrical Properties of Semiconductors
Lecture 11 - Carrier Transport
Lecture 12 - Carrier Transport, Generation and Recombination
Lecture 13 - Recombination-Generation statistics
Lecture 14 - Recombination-Generation statistics (Continued...)
Lecture 15 - Recombination-Generation statistics (Continued...)
Lecture 16 - P-N Junction basics
Lecture 17 - P-N Junction Characteristics
Lecture 18 - P-N Junction
Lecture 19 - P-N Junction Analysis (Dark)
Lecture 20 - P-N Junction Analysis (Dark)
Lecture 21 - P-N Junction Analysis (Light)
Lecture 22 - P-N Junction Analysis (Light)
Lecture 23 - P-N Junction Analysis (Light)
Lecture 24 - P-N Junction Analysis (Light)
Lecture 25 - Solar Cell Device Parameters
Lecture 26 - Solar Cell Device Parameters
Lecture 27 - Solar PV Technologies
Lecture 28 - Generation-I Technologies (Mono Silicon Solar Cells)
Lecture 29 - Generation-I Technologies (Mono Silicon Solar Cells)

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Lecture 30 - Generation-I Technologies (Poly Silicon Solar Cells)
Lecture 31 - Manufacturing of Si
Lecture 32 - Generation I Technologies
Lecture 33 - Generation II Technologies
Lecture 34 - Generation II Technologies
Lecture 35 - Generation II Technologies
Lecture 36 - Generation II Technologies
Lecture 37 - Generation II Technologies
Lecture 38 - Generation III Technologies
Lecture 39 - Generation III Technologies
Lecture 40 - Generation III Technologies
Lecture 41 - Generation III Technologies
NPTEL Video Course - Metallurgy and Material Science - NOC: Defects in Crystalline Solids - Part II

Subject Co-ordinator - Prof. Shashank Shekhar

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Dislocation structure in FCC
Lecture 2 - Partial dislocations in FCC
Lecture 3 - Thompsons Tetrahedron
Lecture 4 - Dislocation lock in FCC
Lecture 5 - Other defects in FCC (Twins and Frank Partial)
Lecture 6 - Dislocation structure in BCC
Lecture 7 - Soft core and Hard core for Screw dislocation in BCC
Lecture 8 - Dislocation structure in HCP
Lecture 9 - Burger vector and partial dislocation in HCP
Lecture 10 - Dislocation structure in ionic crystal
Lecture 11 - Dislocation structure in superlattices
Lecture 12 - Stacking fault and Kear-Wilsdorf lock in superlattices
Lecture 13 - Dislocation interaction & Strain hardening
Lecture 14 - Origin and Nucleation of dislocations
Lecture 15 - Multiplication of dislocations
Lecture 16 - Interaction of point defects and dislocation - Solid Solution Strengthening
Lecture 17 - Cottrell atmosphere and Yield-point phenomenon

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Lecture 30 - Passivation and Mixed Potential Theory
Lecture 31 - Effect of Galvanic Coupling between an Active-Passive Metal and a Noble Metal
Lecture 32 - Anodic Protection of an Active-Passive Metal and an Introduction of Linear Polarization
Lecture 33 - Linear Polarization and Understanding Relative Corrosion Resistance of a Metal
Lecture 34 - Oxidation of Metals and Alloys
Lecture 35 - Different Stages of Oxidation and Pilling Bedworth Ratio
Lecture 36 - Pilling Bedworth Ratio of Different Metal Oxides
Lecture 37 - Thermodynamics of Oxidation
Lecture 38 - Construction of Ellingham Diagram - I
Lecture 39 - Construction of Ellingham Diagram - II
Lecture 40 - Kinetics of Oxidation
Lecture 41 - Oxide Structure and Oxidation Mechanism
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - NOC:Fundamentals and Applications of Dielectric Ceramics

Subject Co-ordinator - Dr. Ashish Garg
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Outline of the Course
Lecture 2 - Basics of Crystal Structure
Lecture 3 - Basics of Crystallography and Bonding
Lecture 4 - Arrangement of Atoms in Crystal Lattice
Lecture 5 - Structure Formation
Lecture 6 - Pauling's Rule and Crystal Structure of Ceramics
Lecture 7 - Ceramic Materials
Lecture 8 - Defect Chemistry
Lecture 9 - Defect Chemistry
Lecture 10 - Concentration and Effect of Intrinsic Impurities
Lecture 11 - Intrinsic and Extrinsic Defects
Lecture 12 - Defect Concentration
Lecture 13 - Intrinsic Ionization in Metal Oxides
Lecture 14 - Brouwer's Diagram
Lecture 15 - Introduction to Dielectrics
Lecture 16 - Dielectric Displacement and Polarization Mechanism
Lecture 17 - Polarization Mechanisms
Lecture 18 - Dielectric Polarizability - 1
Lecture 19 - Dielectric Polarizability - 2
Lecture 20 - Frequency Dependence of Dielectrics
Lecture 21 - Losses in Dielectric Materials
Lecture 22 - Frequency Dependence of Dielectric Constant
Lecture 23 - Dipolar Relaxation
Lecture 24 - Debye Equations for Dipolar Relaxation
Lecture 25 - Impedance Spectroscopy
Lecture 26 - Impedance Spectroscopy and Dielectric Breakdown
Lecture 27 - Basics of Non-linear Dielectrics
Lecture 28 - Piezoelectric Effect
Lecture 29 - Pyroelectric Effect and Electrostriction

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Lecture 30 - Thermodynamics of Piezoelectric and Pyroelectric Materials
Lecture 31 - Basics of Ferroelectric Materials
Lecture 32 - Ferroelectric Phase Transitions
Lecture 33 - Thermodynamics of Phase Transition in Ferroelectrics
Lecture 34 - Second Order Phase Transition in Ferroelectric Materials
Lecture 35 - First Order Phase Transition in Ferroelectric Materials
Lecture 36 - Domain Walls in Ferroelectric Materials
Lecture 37 - Domain Structure and Properties of Ferroelectric Materials
Lecture 38 - Phase Diagram and Measurements of Ferroelectric Materials
Lecture 39 - Principal of Measurements and Applications of Piezoelectric and Pyroelectric Materials
Lecture 40 - Applications of Piezoelectric and Pyroelectric Materials
Lecture 30 - Solid Oxide Fuel Cell (Continued...)
Lecture 31 - Hydrogen Generation through MIEC Reactor
Lecture 32 - Lithium Ion Battery
Lecture 33 - Lithium Ion Battery (Continued...)
Lecture 34 - Magnetic Ceramics
Lecture 35 - Magnetic Ceramics (Continued...)
Lecture 36 - Magnetic Ceramics (Continued...)
Lecture 37 - Magnetic Ceramics (Continued...)
Lecture 38 - Sintering of Ceramics
Lecture 39 - Sintering of Ceramics (Continued...)
Lecture 40 - Sintering of Ceramics (Continued...)
Lecture 41 - Sintering of Ceramics (Continued...)
Lecture 42 - Mechanical Properties of Ceramic Materials
Lecture 43 - Mechanical Properties of Ceramic Materials (Continued...)
Lecture 44 - Mechanical Properties of Ceramic Materials (Continued...)
Lecture 45 - Mechanical Properties of Ceramic Materials (Continued...)
Lecture 46 - Structural Ceramics Materials
Lecture 47 - Bioceramics
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - Non-ferrous Extractive Metallurgy

Subject Co-ordinator - Prof. H.S. Ray, Mr. L. Pugazhenthy

Co-ordinating Institute - IIT - Kharagpur | India Lead Zine Development Association

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Brief History of Non-ferrous Metal
Lecture 2 - Brief History of Non-ferrous Metal (Continued...)
Lecture 3 - Sources of Non-ferrous Metal
Lecture 4 - Mineral Benefication Techniques
Lecture 5 - General Methods of Metal Extraction
Lecture 6 - Principles of Carbon Reduction
Lecture 7 - Principles of Hydrometalling
Lecture 8 - Principles of Electro Metallurgy
Lecture 9 - Electrometallurgy (Continued...), and Temkin Model for Fused Salts
Lecture 10 - Refining of Metals - Chemical Methods
Lecture 11 - Refining of Metals - Physical Methods
Lecture 12 - Concluding part of Module - 4
Lecture 13 - Concluding part of Module - 4 (Continued...)
Lecture 14 - Module - 5 Extraction of Metals from Oxides, Extraction of Magnesium
Lecture 15 - Extraction Aluminium
Lecture 16 - Extraction Aluminium (Continued...1)
Lecture 17 - Extraction Aluminium (Continued...2)
Lecture 18 - Extraction Aluminium (Continued...3)
Lecture 19 - Extraction of Tin
Lecture 20 - Extraction of Ferro Alloys
Lecture 21 - Module - 6 Extraction of Metals from Sulphides Extraction of Copper
Lecture 22 - Extraction of Copper (Continued...)
Lecture 23 - Hydrometallurgy of Copper
Lecture 24 - Extraction of Lead
Lecture 25 - Extraction of Zinc-Imperial Smelting Process
Lecture 26 - Module - 7 Extraction of metals from halides, Extraction of reactor metals
Lecture 27 - Extraction of reactor metals (Continued...1)
Lecture 28 - Extraction of reactor metals (Continued...2)
Lecture 29 - Extraction of Titanium
Lecture 30 - Extraction of Precious Metals
Lecture 31 - Production of Secondary Metals and Treatment of Wastes
Lecture 32 - Energy and Environment Related Issues in Nonferrous Metals Production
Lecture 33 - Energy and Environment Related Issues in Nonferrous Metals Production (Continued...1)
Lecture 34 - Energy and Environment Related Issues in Nonferrous Metals Production (Continued...2)
Lecture 35 - Energy and Environment Related Issues in Nonferrous Metals Production (Continued...3)
Lecture 36 - Energy and Environment Related Issues in Nonferrous Metals Production (Continued...4)
Lecture 37 - Energy and Environment Related Issues in Nonferrous Metals Production (Continued...5)
Lecture 38 - Energy and Environment Related Issues in Nonferrous Metals Production (Continued...6)
Lecture 39 - Nonferrous Metals in India - Unleashing its true potential
Lecture 40 - Nonferrous Metals in India - Unleashing its true potential (Continued...)
Lecture 41 - Review and Summary
Lecture 42 - Review and Summary (Continued...1)
Lecture 43 - Review and Summary (Continued...2)
NPTEL Video Course - Metallurgy and Material Science - Principles of Physical Metallurgy

Subject Co-ordinator - Prof. R.N. Ghosh
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Atomic Bond and Crystal Structure
Lecture 3 - Atomic Bond and Crystal Structure (Continued...1)
Lecture 4 - Atomic Bond and Crystal Structure (Continued...2)
Lecture 5 - Experimental Tools & Techniques
Lecture 6 - Experimental Tools & Techniques (Continued...)
Lecture 7 - Solidification of Pure Metal
Lecture 8 - Plastic Deformation of Pure Metal
Lecture 9 - Plastic Deformation of Pure Metal (Continued...)
Lecture 10 - Crystal Defects in Metals
Lecture 11 - Crystal Defects in Metals (Continued...1)
Lecture 12 - Crystal Defects in Metals (Continued...2)
Lecture 13 - Crystal Defects in Metals (Continued...3)
Lecture 14 - Crystal Defects in Metals (Continued...4)
Lecture 15 - Diffusion in Solids
Lecture 16 - Diffusion in Solids (Continued...)
Lecture 17 - Numerical Examples in Diffusion
Lecture 18 - Solidification of Binary Alloys
Lecture 19 - Solidification of Binary Alloys (Continued...1)
Lecture 20 - Solidification of Binary Alloys (Continued...2)
Lecture 21 - Solidification of Binary Alloys (Continued...3)
Lecture 22 - Solidification of Binary Alloys (Continued...4)
Lecture 23 - Iron-Carbon Phase Diagram
Lecture 24 - Iron-Carbon Phase Diagram (Continued...)
Lecture 25 - Ternary Phase Diagram
Lecture 26 - Common Binary Alloys
Lecture 27 - Metal Working
Lecture 28 - Metal Working
Lecture 29 - Precipitation for Solid Solution

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Lecture 30 - Precipitation for Solid Solution (Continued...)
Lecture 31 - Heat Treatment of Steel
Lecture 32 - Heat Treatment of Steel (Continued...1)
Lecture 33 - Heat Treatment of Steel (Continued...2)
Lecture 34 - Heat Treatment of Steel (Continued...3)
Lecture 35 - Heat Treatment of Steel (Continued...4)
Lecture 36 - Heat Treatment of Steel (Continued...5)
Lecture 37 - Surface Hardening
Lecture 38 - Structural Steel
Lecture 39 - Structural Steel (Continued...)
Lecture 40 - Ultra High Strength Steel
Lecture 41 - Preferred Orientation
Lecture 42 - Metal Joining
NPTEL Video Course - Metallurgy and Material Science - Processing of Semiconducting Materials

Subject Co-ordinator - Dr. Pallab Banerji
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Electronics Materials
Lecture 2 - Electrical Conductivity of Materials
Lecture 3 - Direct and Indirect Band Semiconductors
Lecture 4 - Doping in Semiconductors
Lecture 5 - Semiconductor Statistics
Lecture 6 - Importance of Doping
Lecture 7 - Diffusion and Ion Implantation - I
Lecture 8 - Diffusion and Ion Implantation - II
Lecture 9 - Diffusion and Ion Implantation - III
Lecture 10 - Elemental Semiconductors
Lecture 11 - Compound Semiconductors
Lecture 12 - Bulk Crystal Growth - I
Lecture 13 - Bulk Crystal Growth - II
Lecture 14 - Ga As Crystal Growth
Lecture 15 - Defects in Crystals - I
Lecture 16 - Defects in Crystals - II
Lecture 17 - Band Gap Engineering - I
Lecture 18 - Band Gap Engineering - II
Lecture 19 - Chemical Vapour Deposition - I
Lecture 20 - Chemical Vapour Deposition - II
Lecture 21 - MOCVD
Lecture 22 - Molecular Beam Epitaxy - I
Lecture 23 - Molecular Beam Epitaxy - II
Lecture 24 - p - n Junction
Lecture 25 - Carrier Transport in P - N Junction
Lecture 26 - Characterization - I
Lecture 27 - Characterization - II
Lecture 28 - Optical Characterization - I
Lecture 29 - Metal-Semiconductor Contact - I

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Lecture 30 - Metal-Semiconductor Contact - II
Lecture 31 - Applications of Metal-Semiconductor Contact
Lecture 32 - Oxidation - I
Lecture 33 - Oxidation - II
Lecture 34 - Different Types of Semiconductor - I
Lecture 35 - Oxidation - I
Lecture 36 - Oxidation - II
Lecture 37 - Dielectric Films
Lecture 38 - Low - K and High - K materials
Lecture 39 - Metallization
Lecture 40 - Materials for Photovoltaics
NPTEL Video Course - Metallurgy and Material Science - Science and Technology of Polymers

Subject Co-ordinator - Prof. B. Adhikari

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic Concepts on Polymers
Lecture 2 - Basic Concepts on Polymers (Continued...)
Lecture 3 - Basic Concepts on Polymers (Continued...)
Lecture 4 - Polymer Raw Materials
Lecture 5 - Principles of Polymer Synthesis
Lecture 6 - Principles of Polymer Synthesis (Continued...)
Lecture 7 - Principles of Polymer Synthesis (Continued...)
Lecture 8 - Principles of Polymer Synthesis (Continued...)
Lecture 9 - Principles of Polymer Synthesis (Continued...)
Lecture 10 - Principles of Polymer Synthesis (Continued...)
Lecture 11 - Structure and Properties of Polymers (Continued...)
Lecture 12 - Structure and Properties of Polymers (Continued...)
Lecture 13 - Structure and Properties of Polymers (Continued...)
Lecture 14 - Structure and Properties of Polymers (Continued...)
Lecture 15 - Polymerization Techniques
Lecture 16 - Polymerization Techniques (Continued...)
Lecture 17 - Polymerization Techniques (Continued...)
Lecture 18 - Polymer Products
Lecture 19 - Polymer Products (Continued...)
Lecture 20 - Rubber Products
Lecture 21 - Rubber Products (Continued...)
Lecture 22 - Conducting Polymers
Lecture 23 - Conducting Polymers (Continued...)
Lecture 24 - Liquid Crystalline Polymers
Lecture 25 - Stimuli Responsive Polymer and its application
Lecture 26 - Stimuli Responsive Polymer and its application (Continued...)
Lecture 27 - Polymeric Nanomaterials and Devices (Continued...)
Lecture 28 - Polymeric Nanomaterials and Devices (Continued...)
Lecture 29 - Polymeric Nanomaterials and Devices (Continued...)

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Lecture 30 - Environmental Degradation of Polymers
Lecture 31 - Environmental Degradation of Polymers (Continued...)
Lecture 32 - Polymer Composites
Lecture 33 - Polymer Composites (Continued...)
Lecture 34 - Polymer Composites (Continued...)
Lecture 35 - Multicomponent Polymeric Materials
Lecture 36 - Multicomponent Polymeric Materials (Continued...)
Lecture 37 - Multicomponent Polymeric Materials (Continued...)
Lecture 38 - Viscoelasticity
Lecture 39 - Engineering and Speciality Polymers
Lecture 40 - Engineering and Speciality Polymers (Continued...)
NPTEL Video Course - Metallurgy and Material Science - Advanced Materials and Processes

Subject Co-ordinator - Prof. B.S. Murty

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Structure of Materials - Part I
Lecture 2 - Structure of Materials - Part II
Lecture 3 - Nano Crystalline Materials - Part I
Lecture 4 - Nano Crystalline Materials - Part II
Lecture 5 - Nano Crystalline Materials - Part III
Lecture 6 - Nano Crystalline Materials - Part IV
Lecture 7 - Amorphous Materials - Part I
Lecture 8 - Amorphous Materials - Part II
Lecture 9 - Amorphous Materials - Part III
Lecture 10 - Amorphous Materials - Part IV
Lecture 11 - Amorphous Materials - Part V
Lecture 12 - Quasicrystals - Part I
Lecture 13 - Quasicrystals - Part II
Lecture 14 - Nano Quasicrystals - Part I
Lecture 15 - Nano Quasicrystals - Part II
Lecture 16 - Rapid Solidification Processing
Lecture 17 - Mechanical Alloying
Lecture 18 - Advanced Al Alloys - Part I
Lecture 19 - Advanced Al Alloys - Part II
Lecture 20 - Advanced Al Alloys - Part III
Lecture 21 - Advanced Al Alloys - Part IV and Ti Alloys
Lecture 22 - Shape Memory Alloys
Lecture 23 - Strengthening Mechanisms - Part I
Lecture 24 - Strengthening Mechanisms - Part II
Lecture 25 - Superalloys
Lecture 26 - In-Situ Composites - Part I

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Lecture 30 - Design of Chemical Reactors (Continued...)
Lecture 31 - Design of Chemical Reactors (Continued...)
Lecture 32 - Synthesis of industrial polymers
Lecture 33 - Synthesis of industrial polymers (Continued...)
Lecture 34 - Synthesis of industrial polymers (Continued...)
Lecture 35 - Synthesis of industrial polymers (Continued...)
Lecture 36 - Synthesis of industrial polymers (Continued...)
Lecture 37 - Synthesis of industrial polymers (Continued...)
Lecture 38 - Synthesis of industrial polymers (Continued...)
Lecture 39 - Synthesis of industrial polymers (Continued...)
Lecture 40 - Synthesis of industrial polymers (Continued...)
Lecture 41 - Synthesis of industrial polymers (Continued...)
Lecture 42 - Synthesis of industrial polymers (Continued...)
Lecture 43 - Synthesis of industrial polymers (Continued...)
Lecture 44 - Synthesis of industrial polymers (Continued...)
Lecture 45 - Synthesis of industrial polymers (Continued...)
Lecture 46 - Synthesis of industrial polymers (Continued...)
Lecture 47 - Synthesis of industrial polymers (Continued...)

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NPTEL Video Course - Metallurgy and Material Science - NOC: Advanced Materials and Processes

Subject Co-ordinator - Prof. Jayanta Das

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Introduction (Continued...)
Lecture 3 - Introduction (Continued...)
Lecture 4 - Introduction (Continued...)
Lecture 5 - Introduction (Continued...)
Lecture 6 - Bulk Metallic Glass, Glassy and Amorphous Materials
Lecture 7 - Bulk Metallic Glass, Glassy and Amorphous Materials (Continued...)
Lecture 8 - Bulk Metallic Glass, Glassy and Amorphous Materials (Continued...)
Lecture 9 - Bulk Metallic Glass, Glassy and Amorphous Materials (Continued...)
Lecture 10 - Bulk Metallic Glass, Glassy and Amorphous Materials (Continued...)
Lecture 11 - Bulk Metallic Glass, Glassy and Amorphous Materials (Continued...)
Lecture 12 - Bulk Metallic Glass, Glassy and Amorphous Materials (Continued...)
Lecture 13 - Bulk Metallic Glass, Glassy and Amorphous Materials (Continued...)
Lecture 14 - Bulk Metallic Glass, Glassy and Amorphous Materials (Continued...)
Lecture 15 - Bulk Metallic Glass, Glassy and Amorphous Materials (Continued...)
Lecture 16 - Shape Memory Alloys
Lecture 17 - Shape Memory Alloys (Continued...)
Lecture 18 - Shape Memory Alloys (Continued...)
Lecture 19 - Shape Memory Alloys (Continued...)
Lecture 20 - Shape Memory Alloys (Continued...)
Lecture 21 - Shape Memory Alloys
Lecture 22 - Shape Memory Alloys
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Lecture 26 - Introduction of High Temperature Materials
Lecture 27 - Introduction of High Temperature Materials (Continued...)
Lecture 28 - Introduction of High Temperature Materials (Continued...)
Lecture 29 - Introduction of High Temperature Materials (Continued...)

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Lecture 30 - Heat treatment after carburizing and Nitriding
Lecture 31 - Diffusion Coating Principle
Lecture 32 - Diffusion Coating Processes
Lecture 33 - Thick Coating by Cladding
Lecture 34 - High Temperature Degradation
Lecture 35 - Corrosion Prevention
Lecture 36 - Chemical Conversion Coating
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Lecture 38 - Electro and Electroless Deposition Process
Lecture 39 - Hot Dipping - I
Lecture 40 - Hot Dipping - II
Lecture 41 - Thermal Spray Deposition - I
Lecture 42 - Thermal Spray Deposition - II
Lecture 43 - Thermal Spray Deposition - III
Lecture 44 - Thermal Spray Deposition - IV
Lecture 45 - Physical Vapour Deposition (PVD)
Lecture 46 - Sputtering
Lecture 47 - Chemical Vapor Deposition (CVD)
Lecture 48 - Composite Coating
Lecture 49 - Ion Implantation - I
Lecture 50 - Ion Implantation - II
Lecture 51 - Electron Beam Welding
Lecture 52 - Electron Beam Surface engineering
Lecture 53 - Laser Materials Processing
Lecture 54 - Laser Assisted Materials Processing
Lecture 55 - Laser Surface Engineering
Lecture 56 - Laser Surface Engineering with Laser surface hardening and laser surface melting
Lecture 57 - Laser Surface Alloying
Lecture 58 - Laser Surface Cladding
Lecture 59 - Surface Damage - Case Studies
Lecture 60 - Overview and Conclusion

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NPTEL Video Course - Metallurgy and Material Science - Advanced Metallurgical Thermodynamics

Subject Co-ordinator - Prof. B.S. Murty
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Basic definitions
Lecture 2 - Free energy, Stability, equilibrium in a unary system
Lecture 3 - Effect of Pressure on equilibrium transformations
Lecture 4 - Free energy of solutions, free energy-composition diagrams
Lecture 5 - Solution models, chemical potential
Lecture 6 - Phase rule, free energy-composition diagrams and phase diagrams
Lecture 7 - Evolution of phase diagrams
Lecture 8 - Evolution of phase diagrams, miscibility gap
Lecture 9 - To concept, partition less solidification
Lecture 10 - To concept, partition less solidification (Continued...)
Lecture 11 - Eutectic solidification, glass formation
Lecture 12 - Kauzmann paradox, order of a transformation, glass forming ability
Lecture 13 - Eutectic solidification, coupled growth, heterogeneous nucleation
Lecture 14 - Peritectic solidification, metastable phase diagrams
Lecture 15 - Errors in drawing phase diagrams, Fe-C vs. Fe-Fe3C phase diagram
Lecture 16 - Free energy of undercooled liquid, shape of nucleus
Lecture 17 - Solid state phase transformations - Precipitation
Lecture 18 - Precipitation
Lecture 19 - Precipitation - quasicrystals
Lecture 20 - Precipitate coarsening, stability of a phase, spinodal decomposition
Lecture 21 - Spinodal decomposition
Lecture 22 - Eutectoid reaction
Lecture 23 - Eutectoid reaction (Continued...)
Lecture 24 - Bainitic transformation
Lecture 25 - Kinetics of eutectoid transformations
Lecture 26 - Martensitic Transformation
Lecture 27 - Martensitic transformation, order-disorder transformation
Lecture 28 - Miscibility gap in phase diagrams
Lecture 29 - Phase diagram calculations

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Lecture 30 - Thermodynamics of heterogeneous systems
Lecture 31 - Thermodynamics of heterogeneous systems (Continued...)
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - Materials Characterization

Subject Co-ordinator - Dr. S. Sankaran

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Properties of light, Image formation
Lecture 2 - Magnification and resolution
Lecture 3 - Depth of field, focus and field of view
Lecture 4 - Lens defects, filters and light microscopy introduction
Lecture 5 - Optical microscope demo., Bright field imaging, opaque specimen illumination
Lecture 6 - Opaque stop microscopy, Phase contrast microscopy
Lecture 7 - Dark field microscopy, Polarization microscopy
Lecture 8 - Differential interference contrast and fluorescence microscopy
Lecture 9 - Sample preparation techniques for optical microscopy
Lecture 10A - Tutorial problems (Continuation...)
Lecture 10 - Tutorial problems
Lecture 11 - Introduction to scanning electron Microscopy
Lecture 12 - Lens aberrations, Object resolution, Image quality
Lecture 13 - Interaction between electrons and sample, Imaging capabilities, Structural analysis, Elemental analysis
Lecture 14 - SEM and its mode of operation, Effect of aperture size, Working distance, condenser lens strength
Lecture 15 - SEM and its mode of operation - continuation, Relation between probe current and probe diameter, Summary
Lecture 16 - Factors affecting Interaction volume, Demonstration of SEM
Lecture 17 - Image formation and interpretation
Lecture 18 - Image formation and interpretation continued, EDS, WDS
Lecture 19 - Special contrast mechanisms, Monte Carlo simulations of Interaction volume
Lecture 20 - Electron channeling contrast imaging (ECCI), Electron back scattered diffraction (EBSD) - Theory & Instrument demonstration
Lecture 21 - Tutorial Problems on SEM
Lecture 22 - Basics of X-ray emission from source, electron excitation and X-ray interaction with materials
Lecture 23 - Properties of X-rays
Lecture 24 - Bragg's Law Derivation
Lecture 25 - Diffraction relationship with reciprocal space
Lecture 26 - X-ray scattering
Lecture 27 - Factors affecting intensities of X-ray peaks
Lecture 28 - Factors affecting intensities of X-ray peaks - continuation

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Lecture 29 - Effect of crystallite size and strain on intensity of X-rays
Lecture 30 - Profile fit, Factors affecting peak broadening
Lecture 31 - Indexing of diffraction pattern, Quantitative analysis
Lecture 32 - Indexing, Quantitative analysis-continuation, Residual stress measurements
Lecture 33 - XRD and Residual stress measurement- lab demonstration
Lecture 34 - Introduction to Transmission Electron Microscopy (TEM)
Lecture 35 - Fundamentals of Transmission Electron Microscopy (TEM)
Lecture 36 - Basics of Diffraction-1
Lecture 37 - Basics of Diffraction-2
Lecture 38 - TEM imaging-1
Lecture 39 - TEM imaging-2
Lecture 40 - TEM instrument demonstration
Lecture 41 - TEM sample preparation-1
Lecture 42 - TEM sample preparation-2
Lecture 43 - XRD Tutorial - 1
Lecture 44 - XRD tutorial - 2
Lecture 45 - TEM Tutorial - 1
Lecture 46 - TEM Tutorial - 2
Lecture 47 - Quantitative metallography - Tutorial 1
Lecture 48 - Quantitative metallography - Tutorial 2
Lecture 49 - Quantitative metallography - Tutorial 3
Lecture 50 - Quantitative metallography - Tutorial 4
Lecture 51 - Quantitative metallography - Tutorial 5
Lecture 52 - Quantitative metallography - Tutorial 6
Lecture 53 - Quantitative metallography - Tutorial 7
NPTEL Video Course - Metallurgy and Material Science - Physics of Materials

Subject Co-ordinator - Dr. Prathap Haridoss
Co-ordinating Institute - IIT - Madras

Lecture 1 - Introduction
Lecture 2 - Properties of Materials
Lecture 3 - Thermal Expansion
Lecture 4 - Measuring Electrical Conductivity
Lecture 5 - Free Electron Gas
Lecture 6 - The Ideal Gas
Lecture 7 - Drude Model
Lecture 8 - Drude Model
Lecture 9 - Drude Model
Lecture 10 - Drude Model
Lecture 11 - Large Systems and Statistical Mechanics
Lecture 12 - Maxwell Boltzmann Statistics
Lecture 13 - Classical Particles and Quantum Particles
Lecture 14 - History of Quantum Mechanics - 1
Lecture 15 - History of Quantum Mechanics - 2
Lecture 16 - Introduction to Drude Sommerfeld model
Lecture 17 - Fermi-Dirac Statistics - Part 1
Lecture 18 - Fermi-Dirac Statistics - Part 2
Lecture 19 - Features of the Fermi Dirac Distribution Function
Lecture 20 - Maxwell-Boltzmann Distribution Vs Fermi-Dirac Distribution
Lecture 21 - Anisotropy and Periodic Potential in a Solid
Lecture 22 - Confinement and Quantization - Part 1
Lecture 23 - Confinement and Quantization - Part 2
Lecture 24 - Density of States
Lecture 25 - Fermi Energy, Fermi Surface, Fermi Temperature
Lecture 26 - Electronic Contribution to Specific Heat at Constant Volume
Lecture 27 - Reciprocal Space-1
Lecture 28 - Reciprocal Space-2
Lecture 29 - Reciprocal Space-3
Lecture 30 - Wigner Seitz Cell and Introduction to Brillouin Zones
Lecture 31 - Brillouin Zones, Diffraction, and Allowed Energy Levels
Lecture 32 - E Vs k, Brillouin Zones and the Origin of Bands
Lecture 33 - Calculating Allowed Energy Bands and Forbidden Band Gaps
Lecture 34 - Bands; Free Electron Approximation, Tight Binding Approximation
Lecture 35 - Semiconductors
Lecture 36 - Magnetic Properties
Lecture 37 - Electron Compounds; Phonons, Optoelectronic Materials
Lecture 38 - Superconductivity
Lecture 39 - Bose-Einstein Statistics
Lecture 40 - Physics of Nano Scale Materials; Course Summary
NPTEL Video Course - Metallurgy and Material Science - Electronic materials, devices, and fabrication

Subject Co-ordinator - Prof. Parasuraman S

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Metals, semiconductors and insulators
Lecture 2 - Introduction to semiconductors
Lecture 3 - Density of states and Fermi-Dirac statistics
Lecture 4 - Assignment 1 - Bonding, DOS, and Fermi statistics
Lecture 5 - Intrinsic semiconductors
Lecture 6 - Intrinsic semiconductors - conductivity
Lecture 7 - Assignment 2 - Intrinsic semiconductors
Lecture 8 - Extrinsic semiconductors
Lecture 9 - Extrinsic semiconductors - Fermi level
Lecture 10 - Extrinsic semiconductors - conductivity
Lecture 11 - Assignment 3 - Extrinsic semiconductors
Lecture 12 - Metal-semiconductor junctions
Lecture 13 - Assignment 4 - Metal-semiconductor junctions
Lecture 14 - pn junctions in equilibrium
Lecture 15 - pn junctions under bias
Lecture 16 - pn junction breakdown and heterojunctions
Lecture 17 - Assignment 5 - pn junctions
Lecture 18 - Transistors
Lecture 19 - MOSFETs
Lecture 20 - Assignment 6 - transistors
Lecture 21 - Optoelectronic devices
Lecture 22 - Optoelectronic devices
Lecture 23 - Optoelectronic devices
Lecture 24 - Optoelectronic devices
Lecture 25 - Optoelectronic devices
Lecture 26 - Assignment 7 - optical properties
Lecture 27 - Assignment 8 - optoelectronic devices
Lecture 28 - Semiconductor manufacturing
Lecture 29 - Si wafer manufacturing

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Lecture 30 - IC device manufacturing
Lecture 31 - Layering
Lecture 32 - Doping
Lecture 33 - Lithography
Lecture 34 - Etching and deposition (growth)
Lecture 35 - Metallization and polishing
Lecture 36 - Process and device evaluation
Lecture 37 - Productivity and process yield
Lecture 38 - Clean room design and contamination control
Lecture 39 - Devices and IC formation
Lecture 40 - IC circuit logic and packaging
NPTEL Video Course - Metallurgy and Material Science - NOC: Fundamentals of optical and scanning electron microscopy

Subject Co-ordinator - Dr. S. Sankaran

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Properties of light, Image formation
Lecture 2 - Magnification and resolution
Lecture 3 - Depth of field, focus and field of view
Lecture 4 - Lens defects, filters and light microscopy introduction
Lecture 5 - Optical microscope demo., Bright field imaging, opaque specimen illumination
Lecture 6 - Opaque stop microscopy, Phase contrast microscopy
Lecture 7 - Dark field microscopy, Polarization microscopy
Lecture 8 - Differential interference contrast and fluorescence microscopy
Lecture 9 - Sample preparation techniques for optical microscopy
Lecture 10 - Tutorial problems
Lecture 11 - Tutorial problems (Continued...)
Lecture 12 - Introduction to scanning electron Microscopy
Lecture 13 - Lens aberrations, Object resolution, Image quality
Lecture 14 - Interaction between electrons and sample, Imaging capabilities, Structural analysis, Elemental analysis
Lecture 15 - SEM and its mode of operation, Effect of aperture size, Working distance, condenser lens strength
Lecture 16 - SEM and its mode of operation- continuation, Relation between probe current and probe diameter, Summary
Lecture 17 - Factors affecting Interaction volume, Demonstration of SEM
Lecture 18 - Image formation and interpretation
Lecture 19 - Image formation and interpretation continued, EDS, WDS
Lecture 20 - Special contrast mechanisms, Monte Carlo simulations of Interaction volume
Lecture 21 - Electron channeling contrast imaging (ECCI), Electron back scattered diffraction (EBSD)-Theory &
Lecture 22 - Tutorial Problems on SEM

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NPTEL Video Course - Metallurgy and Material Science - NOC: Fundamentals of electronic materials and devices

Subject Co-ordinator - Prof. Parasuraman S

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Electronic Materials
Lecture 2 - Semiconductors - Introduction
Lecture 3 - Electron statistics in a solid
Lecture 4 - Worked numericals on week 1 lessons
Lecture 5 - Intrinsic semiconductors
Lecture 6 - Intrinsic semiconductors - conductivity
Lecture 7 - Optional - worked assignment on intrinsic semiconductors
Lecture 8 - Extrinsic semiconductors - Introduction
Lecture 9 - Extrinsic semiconductors - Fermi level
Lecture 10 - Extrinsic semiconductors - Mobility
Lecture 11 - Worked assignment on extrinsic semiconductors
Lecture 12 - Metal-semiconductor junctions
Lecture 13 - pn junctions in equilibrium
Lecture 14 - Optional - worked assignment on metal-semiconductor junctions
Lecture 15 - pn junctions under bias
Lecture 16 - Junction breakdown and heterojunctions
Lecture 17 - Worked assignment on pn junctions
Lecture 18 - Transistors - overview
Lecture 19 - MOSFETs
Lecture 20 - Worked assignment on transistors
Lecture 21 - Optoelectronic devices - Introduction
Lecture 22 - Light emitting diodes
Lecture 23 - Solid state semiconductor lasers
Lecture 24 - Optional - worked assignment on optical properties
Lecture 25 - Photodetectors
Lecture 26 - Solar cells
Lecture 27 - Worked assignment on optoelectronic devices
NPTEL Video Course - Metallurgy and Material Science - NOC: Introduction to Reciprocal Space and its use in Solids

Subject Co-ordinator - Dr. Prathap Haridoss
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Reciprocal space; Definition and Properties
Lecture 2 - Condition for Diffraction
Lecture 3 - Worked out examples
Lecture 4 - Ewald Sphere and lattices in reciprocal space
Lecture 5 - Wigner Sietz cells and Brillouin Zones
Lecture 6 - Worked out examples
Lecture 7 - Brillouin Zones, Diffraction and allowed energy levels
Lecture 8 - E Vs K, Brillouin zones and the Origin of Bands
Lecture 9 - Week 3 Worked out examples
Lecture 10 - Reciprocal space as Fourier transform of real lattice
Lecture 11 - Alternate notation of reciprocal space
NPTEL Video Course - Metallurgy and Material Science - NOC: Analysis and Modeling of Welding

Subject Co-ordinator - Dr. G. Phanikumar

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to fusion welding processes
Lecture 2 - Introduction to fusion welding processes
Lecture 3 - Heat sources - Part 1/2
Lecture 4 - Heat sources - Part 2/2
Lecture 5 - Heat removal
Lecture 6 - Thermal Modelling - Part 1/2
Lecture 7 - Thermal Modelling - Part 2/2
Lecture 8 - Zones in a weldment
Lecture 9 - Analytical Solutions to Weld Thermal Field
Lecture 10 - Conduction to Keyhole mode
Lecture 11 - Fluid flow modelling - Part 1/2
Lecture 12 - Fluid flow modelling - Part 2/2
Lecture 13 - Solute transfer modelling - Part 1/2
Lecture 14 - Solute transfer modelling - Part 2/2
Lecture 15 - Solute segregation profile - Part 1/2
Lecture 16 - Solute segregation profile - Part 2/2
Lecture 17 - Microstructure Formation in Fusion Welds
Lecture 18 - Numerical Solutions to Thermal Field and Fluid Flow in Welding - Part 1
Lecture 19 - Numerical Solutions to Thermal Field and Fluid Flow in Welding - Part 2
Lecture 20 - Dissimilar Welding
NPTEL Video Course - Metallurgy and Material Science - NOC: Theory and Practice of Non Destructive Testing

Subject Co-ordinator - Dr. Ranjit Bauri
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Visual optical method
Lecture 2 - Dye Penetrant Testing - 1
Lecture 3 - Dye Penetrant Testing - 2
Lecture 4 - Dye Penetrant Testing - 3
Lecture 5 - Dye Penetrant Testing - 4
Lecture 6 - Magnetic particle testing - 1
Lecture 7 - Magnetic particle testing - 2
Lecture 8 - Magnetic particle testing - 3
Lecture 9 - Magnetic particle testing - 4
Lecture 10 - Magnetic particle testing - 5
Lecture 11 - Eddy current testing - 1
Lecture 12 - Eddy current testing - 2
Lecture 13 - Eddy current testing - 3
Lecture 14 - Eddy current testing - 4
Lecture 15 - Eddy current testing - 5
Lecture 16 - Ultrasonic testing - 1
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Lecture 22 - Ultrasonic testing - 7
Lecture 23 - Ultrasonic testing - 8
Lecture 24 - Ultrasonic testing - 9
Lecture 25 - Ultrasonic testing - 10
Lecture 26 - Acoustic Emission Testing - 1
Lecture 27 - Acoustic Emission Testing - 2
Lecture 28 - Acoustic Emission Testing - 3
Lecture 29 - Acoustic Emission Testing - 4

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NPTEL Video Course - Metallurgy and Material Science - NOC: Defects in Materials

Subject Co-ordinator - Prof. Sundararaman M

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to defects in materials
Lecture 2 - 1-D Lattice
Lecture 3 - 2-D Lattice
Lecture 4 - 3-D Lattice - a
Lecture 5 - 3-D Lattice - b
Lecture 6 - 3-D Lattice - c
Lecture 7 - 3-D Crystals
Lecture 8 - Types of Point Defects
Lecture 9 - Vacancy Concentration Determination - 1
Lecture 10 - Vacancy Concentration Determination - 2
Lecture 11 - Point Defect Interstitial
Lecture 12 - Transformamtion of co-ordinates
Lecture 13 - Tensor - 1
Lecture 14 - Tensor - 2
Lecture 15 - Strain
Lecture 16 - Stress
Lecture 17 - Description of Dislocation - 1
Lecture 18 - Description of Dislocation - 2
Lecture 19 - Stress field around Dislocation
Lecture 20 - Self Energy of Dislocation
Lecture 21 - Force on Dislocation
Lecture 22 - Forces Between Dislocation
Lecture 23 - Chemical Force on Dislocation
Lecture 24 - Perfect Dislocation in FCC Structures
Lecture 25 - Intrinsic Stacking Faults in FCC
Lecture 26 - Extrinsic Faults and Thompson Tetrahedron in FCC
Lecture 27 - Dislocations in BCC and HCP
Lecture 28 - Dislocations in Ordered Alloys and Dislocation Dislocation Interaction
Lecture 29 - Twinning - 1

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Lecture 30 - Twinning - 2
Lecture 31 - Martensitic Transformation - 1
Lecture 32 - Martensitic Transformation - 2
Lecture 33 - Interfaces - 1
Lecture 34 - Interfaces - 2
Lecture 35 - Defect Interaction and Strength
NPTEL Video Course - Metallurgy and Material Science - NOC: Elementary Stereology for Quantitative Metallography

Subject Co-ordinator - Dr. S. Sankaran
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Method of Stereology
Lecture 2 - Volume Fraction and Particle Size - Part 1
Lecture 3 - Volume Fraction and Particle Size - Part 2
Lecture 4 - Geometric Probability - Part 1
Lecture 5 - Geometric Probability - Part 2
Lecture 6 - Probability Distributions
Lecture 7 - Volume Fraction and Particle Size - Part 3
Lecture 8 - Volume Fraction and Particle Size - Part 4
Lecture 9 - Geometrical Probability - I
Lecture 10 - Geometrical Probability - II
Lecture 11 - Basic Stereological Parameters - Part 1
Lecture 12 - Basic Stereological Parameters - Part 2
Lecture 13 - Counting of grains and particles - Part 1
Lecture 14 - Description of Polycrystalline Microstructures derived measures
Lecture 15 - Counting of grains and particles - Part 2
Lecture 16 - Counting of Grains and Particles - Part 3
Lecture 17 - Counting of Grains and Particles - Part 4
Lecture 18 - Other Applications of the Dissector
Lecture 19 - Stereology of Anisotropic Microstructures
Lecture 1 - Introduction to the course, Introduction to physical metallurgy of steels
Lecture 2 - Martensitic transformation, Introduction to modern automotive steels
Lecture 3 - Introduction to modern automotive steels
Lecture 4 - Introduction to advanced high strength steels
Lecture 5 - Introduction to Dual Phase Steel and TRIP Steel Heat Treatments
Lecture 6 - Thermal and Mechanical Processing of TRIP and Hot Forming Steels
Lecture 7 - Introduction to Welding Processes in Automotive Industries
Lecture 8 - Principles of Resistance Spot Welding (RSW)
Lecture 9 - Process Characteristics of Resistance Spot Welding - Part I
Lecture 10 - Process Characteristics of Resistance Spot Welding - Part II
Lecture 11 - Introduction to Laser Beam Welding - Part I
Lecture 12 - Introduction to Laser Beam Welding - Part II
Lecture 13 - Principles of Gas Metal Arc Welding - Part I
Lecture 14 - Principles of Gas Metal Arc Welding - Part II
Lecture 15 - Welding Metallurgy of Advanced High Strength Steels - Part I
Lecture 16 - Microstructural Evolution During Welding of Advanced High Strength Steels
Lecture 17 - Elemental Behaviour During Welding of Advanced High Strength Steels
Lecture 18 - Quantification of Microstructural Constituents in Automotive Steel Welds - Part I
Lecture 19 - Quantification of Microstructural Constituents in Automotive Steel Welds - Part II and Mechanical Properties
Lecture 20 - Methodologies to Improve the Weldability of Advanced High Strength Steels
NPTEL Video Course - Metallurgy and Material Science - NOC: Welding Processes

Subject Co-ordinator - Prof. Murugaiyan Amirthalingam

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the course
Lecture 2 - Classification of welding processes and definition of welding arc
Lecture 3 - Physics of welding arc - Part 1
Lecture 4 - Physics of welding arc - Part 2
Lecture 5 - Physics of welding arc - Part 3
Lecture 6 - Physics of welding arc - Part 4
Lecture 7 - Fundamentals of ionisation in welding arc
Lecture 8 - Electrical conductivity of welding arc
Lecture 9 - Electrical resistivity of welding arc
Lecture 10 - Heat transfer inside the arc
Lecture 11 - Arc ignition mechanisms Part - I
Lecture 12 - Arc ignition mechanisms Part - II
Lecture 13 - Principles of Gas Tungsten Arc Welding
Lecture 14 - Shielding gases for arc welding
Lecture 15 - Selection of shielding gases for engineering alloys
Lecture 16 - Arc welding power sources - Part 1
Lecture 17 - Arc welding power sources - Part 2
Lecture 18 - Arc welding power sources - Part 3
Lecture 19 - Variations in GTAW process
Lecture 20 - Square wave, variable polarity, GTAW with filler, hot wire GTAW
Lecture 21 - Dual gas GTAW and Plasma Welding processes
Lecture 22 - Multi cathode GTAW and Activated GTAW
Lecture 23 - Buried GTAW and Rate controlling parameters of GTAW
Lecture 24 - Introduction to consumable welding processes
Lecture 25 - Melting rate of consumable wires
Lecture 26 - Physics of droplet transfer in consumable welding
Lecture 27 - Modes of droplet transfer - Part 1
Lecture 28 - Modes of droplet transfer - Part 2
Lecture 29 - Modes of droplet transfer - Part 3

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Lecture 30 - Shielded Metal Arc Welding
Lecture 31 - Flux cored arc welding - Introduction
Lecture 32 - Electrode fluxes and process characteristics of flux cored arc welding
Lecture 33 - Flux cored arc welding - Process characteristics
Lecture 34 - Advances in gas metal arc welding - Pulsed GMAW
Lecture 35 - Advances in gas metal arc welding - Controlled dip short circuiting processes
Lecture 36 - Submerged arc welding
Lecture 37 - Resistance welding - Fundamentals
Lecture 38 - Resistance spot welding - Part 1
Lecture 39 - Resistance spot welding - Part 2
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Lecture 42 - Variants in resistance welding - Part 1
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Lecture 44 - Laser welding process - Introduction - Part 1
Lecture 45 - Laser welding process - Part 2
Lecture 46 - Laser welding process - Part 3
Lecture 47 - Laser welding process - Part 4
Lecture 48 - Electron beam welding process
Lecture 49 - Other welding processes - Electroslag welding
Lecture 50 - Magnetically Impelled Arc Butt (MIAB) welding
Lecture 51 - Aluminothermic (thermit) welding
Lecture 52 - Introduction to solid state welding processes - Friction welding
Lecture 53 - Friction stir welding - Part 1
Lecture 54 - Friction stir welding - Part 2
Lecture 55 - Other solid state welding processes
Lecture 56 - Joining processes for Plastics - Part 1
Lecture 57 - Joining processes for Plastics - Part 2
Lecture 58 - Adhesive bonding of plastics
Lecture 59 - Welding nomenclatures
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - NOC:Creep Deformation of Materials

Subject Co-ordinator - Prof. Srikant Gollapudi

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Importance of studying creep
Lecture 2 - Basics of plastic deformation and characteristics of dislocations - Part 1
Lecture 3 - Basics of plastic deformation and characteristics of dislocations - Part 2
Lecture 4 - Basics of plastic deformation and characteristics of dislocations - Part 3
Lecture 5 - Creep and different factors that influence creep deformation - Part 1
Lecture 6 - Creep and different factors that influence creep deformation - Part 2
Lecture 7 - Creep and different factors that influence creep deformation - Part 3
Lecture 8 - Creep and different factors that influence creep deformation - Part 4
Lecture 9 - Creep and different factors that influence creep deformation - Part 5
Lecture 10 - Creep and different factors that influence creep deformation - Part 6
Lecture 11 - Mechanisms of Creep - Part 1
Lecture 12 - Mechanisms of Creep - Part 2
Lecture 13 - Mechanisms of Creep - Part 3
Lecture 14 - Mechanisms of Creep - Part 4
Lecture 15 - Mechanisms of Creep - Part 5
Lecture 16 - Transitions in Creep Mechanisms and Creep Constitutive Equation
Lecture 17 - Deformation Mechanism Maps - Part 1
Lecture 18 - Deformation Mechanism Maps - Part 2
Lecture 19 - Modeling the Useful Creep Life of Materials/Components - Part 1
Lecture 20 - Modeling the Useful Creep Life of Materials/Components - Part 2
Lecture 21 - Modeling the Useful Creep Life of Materials/Components - Part 3
Lecture 22 - Creep Testing Methods - Part 1
Lecture 23 - Creep Testing Methods - Part 2
Lecture 24 - Improving Creep Resistance of Materials

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NPTEL Video Course - Metallurgy and Material Science - NOC: Nanotechnology, Science and Applications

Subject Co-ordinator - Dr. Prathap Haridoss
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Nanotechnology Science and Applications - Introduction
Lecture 2 - Nanotechnology
Lecture 3 - Discussion on Feynman's talk on Nanotechnology - Part I
Lecture 4 - Discussion on Feynman's talk on Nanotechnology - Part II
Lecture 5 - Impact of the nanoscale on thermodynamic considerations
Lecture 6 - Phase Diagrams and Stable Phases
Lecture 7 - Calorimetry
Lecture 8 - Zirconia - ZrO2
Lecture 9 - Experimentally Investigating the Hall-Petch relationship
Lecture 10 - Impact of the Nanoscale on the Hall-Petch Relationship
Lecture 11 - Impact of the nanoscale on Mechanical properties
Lecture 12 - Superplasticity and the Nanoscale
Lecture 13 - Superplasticity and the Nanoscale
Lecture 14 - Severe Plastic Deformation and the nanoscale
Lecture 15 - An approach to prepare bulk nanostructures
Lecture 16 - Nanosized Ferroelectrics
Lecture 17 - Impact of the nanoscale on optical properties
Lecture 18 - Experimental approach to study impact of the nanoscale on optical properties
Lecture 19 - Impact of the nanoscale on optical properties
Lecture 20 - Nanocomposites
Lecture 21 - Effect of Nanoscale on Magnetic Properties
Lecture 22 - Effect of Nanostructure on Damping Properties
Lecture 23 - Carbon
Lecture 24 - Carbon Nanotubes
Lecture 25 - Graphene, a 2D nanomaterials
NPTEL Video Course - Metallurgy and Material Science - NOC: Surface Engineering of Nanomaterials

Subject Co-ordinator - Prof. Kaushik Pal
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Tribology and Its Classification
Lecture 2 - Friction Tribology
Lecture 3 - Wear and Corrosion
Lecture 4 - Lubrication
Lecture 5 - Effect of Tribology on Surface of Nanomaterials
Lecture 6 - Conventional Surface Engineering
Lecture 7 - Types of Surface Modifications
Lecture 8 - Physical Modifications
Lecture 9 - Chemical Modifications
Lecture 10 - Applications of Surface Engineering towards Nanomaterials
Lecture 11 - Deposition and Surface Modification Methods
Lecture 12 - Physical Vapour Deposition (PVD)
Lecture 13 - Chemical Vapour Deposition (CVD)
Lecture 14 - Advanced Surface Modification Practices
Lecture 15 - Advantages of Deposition for Surface Modification
Lecture 16 - Synthesis, Processing and Characterization of Nano-structured Coatings
Lecture 17 - Functional Coatings
Lecture 18 - Advanced Coating Practices
Lecture 19 - Characterization of Nano-coatings
Lecture 20 - Applications of Nano-coatings
Lecture 21 - Need of Advanced Methods for Surface and Coating Testings
Lecture 22 - Size Dependency in Nanostructures of Nanocoatings
Lecture 23 - Size Effect in Electrochemical Properties of Nanostructured Coatings
Lecture 24 - Size Effect in Mechanical Properties of Nanostructured Coatings
Lecture 25 - Size Effect in Physical and Other Properties of Nanostructured Coatings
Lecture 26 - Thin Films for Surface Engineering of Nanomaterials
Lecture 27 - Sputtering Techniques
Lecture 28 - Evaporation Processes
Lecture 29 - Thin Film Deposition through Gas Phase Techniques

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Lecture 30 - Liquid Phase Techniques
Lecture 31 - Microencapsulation Processes
Lecture 32 - Microencapsulation
Lecture 33 - Plating of Nanocomposite Coatings - I
Lecture 34 - Plating of Nanocomposite Coatings - II
Lecture 35 - Advantages of Microencapsulation over Other Conventional Methods
Lecture 36 - Current Trends in Surface Modification of Nanomaterials - Part-1
Lecture 37 - Current Trends in Surface Modification of Nanomaterials - Part-2
Lecture 38 - Current Trends in Surface Modification of Nanomaterials - Part-3
Lecture 39 - Modified Nanomaterials
Lecture 40 - Main Problems in Synthesis of Modified Nanomaterials
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Metallurgy and Material Science - NOC: Material Science and Engineering

Subject Co-ordinator - Dr. Vivek Pancholi
Co-ordinating Institute - IIT - Roorkee
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Atomic structure and bonding
Lecture 3 - Crystal systems and structures
Lecture 4 - X-ray diffraction
Lecture 5 - Crystal planes and directions
Lecture 6 - Optical microscope
Lecture 7 - Optical aberration
Lecture 8 - Metallography
Lecture 9 - Microstructure
Lecture 10 - Quantitative metallography
Lecture 11 - Crystallographic defects
Lecture 12 - Diffusion
Lecture 13 - Phase diagram - 1
Lecture 14 - Phase diagram - 2
Lecture 15 - Eutectic phase diagram
Lecture 16 - Equilibrium and non-equilibrium cooling
Lecture 17 - Equilibrium cooling of eutectic system
Lecture 18 - Solidification structure
Lecture 19 - Iron-carbon phase diagram
Lecture 20 - Nucleation and growth
Lecture 21 - TTT and CCT curves
Lecture 22 - Heat treatment
Lecture 23 - Precipitation
Lecture 24 - Elastic behaviour
Lecture 25 - Tensile test
Lecture 26 - Engineering and true stress and strain
Lecture 27 - Plastic deformation - 1
Lecture 28 - Plastic deformation - 2
Lecture 29 - Strengthening mechanism - 1

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Lecture 30 - Strengthening mechanism - 2
Lecture 31 - Strengthening mechanism - 3
Lecture 32 - Strengthening mechanism - 4
Lecture 33 - Fracture
Lecture 34 - Fracture
Lecture 35 - Fatigue
Lecture 36 - Creep
Lecture 37 - NDT
Lecture 38 - Ceramics, polymers, composites
Lecture 39 - Electrical and magnetic properties
Lecture 40 - Alloy designation and properties
NPTEL Video Course - Metallurgy and Material Science - NOC: Structural Analysis of Nanomaterials

Subject Co-ordinator - Prof. Kaushik Pal
Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Structure of Materials
Lecture 3 - Imperfections in Structure of Materials
Lecture 4 - Phase Diagram
Lecture 5 - Transformation of Phases
Lecture 6 - Basic Properties
Lecture 7 - Basic Properties
Lecture 8 - Basic Properties
Lecture 9 - Basic Properties
Lecture 10 - Selection of Nanomaterials based on Applications
Lecture 11 - Introduction to X-Ray Diffraction
Lecture 12 - Diffraction Methods and Directions of XRD
Lecture 13 - Determination of Crystal Structures by XRD Patterns
Lecture 14 - Precise Parameter Measurements
Lecture 15 - Orientation of Single Crystals
Lecture 16 - Qualitative Analysis by Diffraction
Lecture 17 - Quantitative Analysis by Diffraction
Lecture 18 - Microscopic Structural Analysis of Nanomaterials - I
Lecture 19 - Microscopic Structural Analysis of Nanomaterials - II
Lecture 20 - Other Characterization Techniques

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Lecture 1 - Introduction to Thermomechanical Processes
Lecture 2 - Conventional Thermomechanical Processes
Lecture 3 - Non-conventional Thermomechanical Processes
Lecture 4 - Stress and Strain
Lecture 5 - Effect of Strain Rate and Temperature
Lecture 6 - Microstructure Evolution
Lecture 7 - Dynamic Recovery
Lecture 8 - Discontinuous Dynamic Recrystallization
Lecture 9 - Dynamic Recrystallization
Lecture 10 - Continuous Dynamic Recrystallization (CDRX) and Geometrical Dynamic Recrystallization (GDRX)
Lecture 11 - Stereographic Projection
Lecture 12 - Using Stereographic Projection
Lecture 13 - Crystallographic Texture
Lecture 14 - Crystallographic Texture
Lecture 15 - Crystallographic Texture
Lecture 16 - Constitutive Analysis
Lecture 17 - Constitutive Analysis
Lecture 18 - Higher Strain Rate
Lecture 19 - Constitutive Based Model
Lecture 20 - Constitutive analysis
Lecture 21 - Processing Maps
Lecture 22 - Processing Maps
Lecture 23 - Microstructure and Application
Lecture 24 - Processing Maps
Lecture 25 - Processing Maps
Lecture 26 - Equal Channel Angular Pressing (ECAP)
Lecture 27 - Friction Stir Processing (FSP)
Lecture 28 - Accumulative Roll Bonding (ARB)
Lecture 29 - Multi Axial Forging (MAF)
Lecture 30 - Severe Plastic Deformation
Lecture 31 - Overview on Thermo-Chemical treatments
Lecture 32 - Overview on Thermo-Chemical treatments (Continued...)
Lecture 33 - Thermodynamic aspects of thermo-chemical treatments
Lecture 34 - Thermodynamics of Gaseous Nitriding - I
Lecture 35 - Thermodynamics of Gaseous Nitriding - II
Lecture 36 - Gaseous Nitriding of Pure Iron
Lecture 37 - Gaseous Nitriding of Iron based alloys
Lecture 38 - Duplex and Dual Phase microstructures through nitriding
Lecture 39 - Alloying element nitride precipitation during nitriding of iron based alloys
Lecture 40 - Kinetics of gaseous nitriding
NPTEL Video Course - Metallurgy and Material Science - NOC: Welding Metallurgy

Subject Co-ordinator - Dr. Pradeep K. Jha

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to welding metallurgy
Lecture 2 - Overview of Welding Processes
Lecture 3 - Introduction to phase diagrams
Lecture 4 - Phase diagram of Iron Carbon system
Lecture 5 - Phase diagram of non ferrous metals and alloys
Lecture 6 - Phase Transformations
Lecture 7 - Time Temperature Transformation Diagrams
Lecture 8 - Continuous Cooling Transformation Diagrams
Lecture 9 - Carbon Equivalent, Schaeffler Diagrams
Lecture 10 - Problem solving on Phase Diagrams
Lecture 11 - Introduction to strengthening mechanism in metals
Lecture 12 - Solid solution strengthening and grain refinement
Lecture 13 - Precipitation Hardening and Martensite Strengthening
Lecture 14 - Strain Hardening and Strain Ageing
Lecture 15 - Problem solving on strengthening mechanism in metals
Lecture 16 - Introduction to Heat treatment Processes in Welding
Lecture 17 - Hardening and Hardenability
Lecture 18 - Martempering and Austempering
Lecture 19 - Case Hardening methods
Lecture 20 - Heat treatment of Non-Ferrous metals and alloys
Lecture 21 - Heat Sources in Welding
Lecture 22 - Heat Flow in Welding
Lecture 23 - Temperature Distribution in Welding
Lecture 24 - Effect of Welding Parameters
Lecture 25 - Metallurgical effect of Heat Flow on Welding
Lecture 26 - Principles of Solidification in Welding
Lecture 27 - Solute redistribution during Solidification
Lecture 28 - Constitutional Supercooling
Lecture 29 - Microsegregation and Banding

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Lecture 30 - Grain Structure during Solidification in Welding
Lecture 31 - Distinct Zones in Fusion Welded Specimen
Lecture 32 - Heat Affected Zone
Lecture 33 - Properties of Heat Affect Zone
Lecture 34 - Microstructural Products in Weldments
Lecture 35 - Introduction to Preheat and Postweld Heat Treatment
Lecture 36 - Preheat and Postweld Heat Treatment of Different Materials
Lecture 37 - Residual Stresses in Welding
Lecture 38 - Causes of Residual Stress Development in Welding
Lecture 39 - Measurement of Residual Stresses in Weldments
Lecture 40 - Controlling Residual Stresses in Weldments
Lecture 41 - Introduction to Welding Distortion
Lecture 42 - Types of Welding Distortions
Lecture 43 - Angular Distortions in Welds
Lecture 44 - Bowing, Buckling and Twisting in Welds
Lecture 45 - Control of Distortion in Welds
Lecture 46 - Introduction to Cracks in Welds
Lecture 47 - Types of Weld Cracks
Lecture 48 - Specific Weld Cracks
Lecture 49 - Chevron Cracks and Reheat Cracks
Lecture 50 - Lamellar Cracks and Stress Corrosion Cracking
Lecture 51 - Introduction to Weldability of Metals
Lecture 52 - Weldability of Carbon Steels
Lecture 53 - Weldability of Alloy Steels
Lecture 54 - Weldability of Cast Iron
Lecture 55 - Weldability of Non Ferrous Metals and Alloys
Lecture 56 - Introduction to Welding Defects
Lecture 57 - Surface and Subsurface Welding Defects
Lecture 58 - Issues in Welding
Lecture 59 - Considerations for Fatigue Loading in Welding
Lecture 60 - Design Features for Fatigue and Static Loading in Welding
NPTEL Video Course - Metallurgy and Material Science - NOC: Biomaterials for Bone Tissue Engineering Applications

Subject Co-ordinator - Prof. Bikramjit Basu
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Biomaterial
Lecture 3 - Biocompatibility
Lecture 4 - Host response
Lecture 5 - Tissue Eng
Lecture 6 - Scaffold
Lecture 7 - Bone structure
Lecture 8 - Bone properties
Lecture 9 - Implant - I
Lecture 10 - Implant - II
Lecture 11 - Proteins
Lecture 12 - Cell structure
Lecture 13 - Bacteria structure
Lecture 14 - Antibacterial assay
Lecture 15 - Cell fate processes
Lecture 16 - Cell division
Lecture 17 - Cell differentiation
Lecture 18 - Stem cells
Lecture 19 - Osseointegration
Lecture 20 - In vivo testing
Lecture 21 - Cell-material interaction
Lecture 22 - Cell-signalling
Lecture 23 - In vitro testing
Lecture 24 - Cytotoxicity assays
Lecture 25 - Biocompatibility assay
Lecture 26 - Clinical trials - I
Lecture 27 - Clinical trials - II
Lecture 28 - Metal manufacturing
Lecture 29 - Ceramics manufacturing

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Lecture 30 - Polymers manufacturing
Lecture 31 - Additive manufacturing
Lecture 32 - HA-Ti-Toughness, Cell functionality
Lecture 33 - HA-CaTiO 3 development
Lecture 34 - HA-BaTiO 3 Functional Prop
Lecture 35 - HA-Ag antimicrob and cell viability
Lecture 36 - HA-ZnO, Cell fate and antimicrobial
Lecture 37 - Dental ceramics processing
Lecture 38 - Sr-based glass Ceramics
Lecture 39 - Acetabular socket (Compression mold)
Lecture 40 - ZTA femoral ball head fabrication
Lecture 30
Lecture 31
Lecture 32
Lecture 33
Lecture 34
Lecture 35
Lecture 36
Lecture 37
Lecture 38
Lecture 39 - Live Session
Lecture 30 - Erosive wear of SiC-WC composites
Lecture 31 - Overview
Lecture 32 - Sliding wear of alumina ceramics and zirconia ceramics in cryogenic environment
Lecture 33 - Sliding wear of silicon carbide in cryogenic environment
Lecture 34 - Wear of TiB2 Ceramic Composites
Lecture 35 - Erosive wear of ultra-high temperature NbB2-based ceramic composites
Lecture 36 - Erosive wear of ultra-high temperature ZrB2-based ceramic composites
Lecture 37 - Computational analysis in assessing wear
Lecture 38 - Basics of ceramics coating techniques
Lecture 39 - Erosive wear of WC-Co coating
Lecture 40 - Abrasive wear of WC-Co coating
NPTEL Video Course - Mining Engineering - Fundamentals of Environmental Pollution and Control

Subject Co-ordinator - Prof. J. Bhattacharyya

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - State of the Environment
Lecture 2 - Environmental Movement
Lecture 3 - Definitions of Environmental Terms
Lecture 4 - Water Pollutants
Lecture 5 - Water Pollutants (Continued...)
Lecture 6 - Water Pollution Modelling-Surface Water
Lecture 7 - Water Pollution Modelling-Surface Water (Continued...)
Lecture 8 - BOD Modelling - Part 1
Lecture 9 - BOD Modelling - Part 2
Lecture 10 - Oxygen Demanding Waste in Streams - Part 1
Lecture 11 - Oxygen Demanding Waste in Streams - Part 2
Lecture 12 - Ground Water and its Contamination
Lecture 13 - Ground Water and its Contamination (Continued...)
Lecture 14 - Ground Water and its Contamination (Continued...)
Lecture 15 - Waste Water Treatment
Lecture 16 - Wastewater Treatment (Continued...)
Lecture 17 - Wastewater Treatment (Continued...)
Lecture 18 - Chemical Treatment
Lecture 19 - Wetland Treatment and Bio-Technology Applications
Lecture 20 - Introduction to Soil
Lecture 21 - Parameters to Soil for Vegetative Growth
Lecture 22 - Parameters to Soil for Vegetative Growth (Continued...)
Lecture 23 - Soil Acidity
Lecture 24 - Soil Erosion
Lecture 25 - Mechanical Soil Erosion Control
Lecture 26 - Soil Erosion Prediction
Lecture 27 - Universal Soil Loss Equation
Lecture 28 - Air Pollutants
Lecture 29 - Health Effects of Air Pollutants - Part 1
Lecture 30 - Health Effects of Air Pollutants - Part 2
Lecture 31 - Air Pollutants and Meteorology - Part 1
Lecture 32 - Air Pollutants and Meteorology - Part 2
Lecture 33 - The Point-Source Gaussian Plume Model
Lecture 34 - Ground Level Concentration
Lecture 35 - Emission Control
Lecture 36 - EIA, EMP & EA
NPTEL Video Course - Mining Engineering - NOC: Drilling and Blasting Technology

Subject Co-ordinator - Prof. Kaushik Dey
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Drilling Technology
Lecture 2 - Introduction to Blasting Technology
Lecture 3 - Rock Formation
Lecture 4 - Rock Formation (Continued...)
Lecture 5 - Rock Formation (Continued...)
Lecture 6 - Rock Properties and Testing - 1
Lecture 7 - Rock Properties and Testing - 2
Lecture 8 - Drilling Mechanism
Lecture 9 - Drillability of Rock
Lecture 10 - Drilling Machines - 1
Lecture 11 - Drilling Machines - 2
Lecture 12 - Drilling Pattern - 1
Lecture 13 - Drilling Pattern - 2
Lecture 14 - Special Drilling Methods - I
Lecture 15 - Special Drilling Methods - II
Lecture 16 - Explosives - 1
Lecture 17 - Explosives - 2
Lecture 18 - Explosives accessories - 1
Lecture 19 - Explosives accessories - 2
Lecture 20 - Explosives accessories - 3
Lecture 21 - Explosives properties - 1
Lecture 22 - Explosives properties - 2
Lecture 23 - Explosives properties - 3
Lecture 24 - Basics of blasting - 1
Lecture 25 - Basics of blasting - 2
Lecture 26 - Explosive storage and transportation - 1
Lecture 27 - Explosive storage and transportation - 2
Lecture 28 - Surface blasting - 1
Lecture 29 - Surface blasting - 2

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Lecture 30 - Surface blast design
Lecture 31 - Underground blast design - 1
Lecture 32 - Underground blast design - 2
Lecture 33 - Blasting results - 1
Lecture 34 - Blasting results - 2
Lecture 35 - Blasting results - 3
Lecture 36 - Blasting results - 4
Lecture 37 - Problems - 1
Lecture 38 - Problems - 2
Lecture 39 - Problems - 3
Lecture 40 - Problems - 4
NPTEL Video Course - Mining Engineering - NOC: Network Analysis for Mines and Mineral Engineering

Subject Co-ordinator - Prof. Kaushik Dey
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Network Analysis
Lecture 2 - Introduction to network and some terminology
Lecture 3 - Construction of network
Lecture 4 - Introduction to activity on node diagram and comparison with arrow diagram
Lecture 5 - Rules of dummy job, redundancy and cycles
Lecture 6 - Critical path and its calculation
Lecture 7 - Algorithm for critical path early start and early finish times
Lecture 8 - Late start and late finish times algorithm
Lecture 9 - Understanding the slack
Lecture 10 - Examples of slacks and calculation of AON network
Lecture 11 - Project due dates and earliest completion time examples
Lecture 12 - CPM model and cost modelling
Lecture 13 - Lowest cost schedule and optimum schedule
Lecture 14 - Crashing and stretching of jobs
Lecture 15 - Crashing and stretching of jobs (Continued...)
Lecture 16 - Introduction to PERT
Lecture 17 - Expected length of critical path calculation with examples
Lecture 18 - Probability of completion of a project
Lecture 19 - Event oriented project management
Lecture 20 - Algorithm and computer program
NPTEL Video Course - Multi Disciplinary - NOC:Designing Learner-Centric MOOCs

Subject Co-ordinator - Dr.Sameer Sahasrabudhe, Prof.Sahana Murthy, Prof.Sridhar Iyer, Dr.Jayakrishnan M.

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Perceptions of MOOC
Lecture 2 - Learner Expectation
Lecture 3 - Learner Engagement
Lecture 4 - Course Introduction
Lecture 5 - Evolution of MOOCs
Lecture 6 - Known Challenges
Lecture 7 - Why LCM?
Lecture 8 - The LCM Model
Lecture 9 - What is an LeD?
Lecture 10 - Chunking a Lecture into LeD
Lecture 11 - Introducing Reflection Spot
Lecture 12 - Making Your Own LeD
Lecture 13 - Dos and Don'ts - Part 1
Lecture 14 - Dos and Don'ts - Part 2
Lecture 15 - LeDs Takeaway
Lecture 16 - What is an LbD?
Lecture 17 - Creating LbDs
Lecture 18 - Constructive Customized Feedback in LbDs
Lecture 19 - Giving Feedback for Open Ended Questions
Lecture 20 - Recommendations for effective LbDs
Lecture 21 - What is an LxT?
Lecture 22 - Creating LxTs
Lecture 23 - Creating an Assimilation Quiz
Lecture 24 - What is an LxI?
Lecture 25 - Creating LxIs with Reflection Quiz
Lecture 26 - Orchestrating your MOOC
Lecture 27 - Orchestration Dynamics in LCM
Lecture 28 - Assessment
Lecture 29 - From Regular course to LCM

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Lecture 30 - Course Design in MOOC
Lecture 31 - Maintaining Learner Connect
Lecture 32 - Implementing the Learner-Centric Approach
NPTEL Video Course - Multi Disciplinary - NOC: Introduction to Learning Analytics

Subject Co-ordinator - Prof. Ramkumar Rajendran

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Learning Analytics
Lecture 2 - LA, EDM and Academic Analytics
Lecture 3 - Types of Learning Analytics - I
Lecture 4 - Types of Learning Analytics - II
Lecture 5 - Data Collection
Lecture 6 - Data Collection in TELE
Lecture 7 - Data collection in MOOC
Lecture 8 - Multichannel Data
Lecture 9 - Ethics and Data Privacy in LA
Lecture 10 - Descriptive Analytics
Lecture 11 - Data Visualization
Lecture 12 - YouTube Analytics Dashboard
Lecture 13 - MOOCs Analytics Dashboard
Lecture 14 - Predictive Analytics
Lecture 15 - Linear Regression
Lecture 16 - Weka demo and how to read the results
Lecture 17 - MOOC data for Course Project
Lecture 18 - Summary of the Course

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NPTEL Video Course - Multi Disciplinary - NOC:Designing Learner-Centric e-Learning in STEM Disciplines

Subject Co-ordinator - Prof. Sahana Murthy

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Preview
Lecture 2 - Who Should Join this Course and Why?
Lecture 3 - Course Format_Learner Centric MOOC (LCM)
Lecture 4 - E Learning in STEM
Lecture 5 - Challenges in e-learning
Lecture 6 - What is Learner Centric Approach
Lecture 7 - Instructional Design in e-learning
Lecture 8 - ADDIE Process of Instructional Design
Lecture 9 - Constructive alignment
Lecture 10 - Implementing constructive alignment
Lecture 11 - Promoting learner engagement with content
Lecture 12 - Interactive video
Lecture 13 - Learning by Doing (LbD)
Lecture 14 - Articulation and Reflection
Lecture 15 - Construct your Own Understanding
Lecture 16 - Contextualized Learning
Lecture 17 - Feedback
Lecture 18 - Collaboration and Peer Learning
Lecture 19 - Addressing Diversity
Lecture 20 - Brief Recap and What’s Next?
Lecture 21 - Selection and Analysis of Effective Technology
Lecture 22 - Effective Integration of Technology
Lecture 23 - Multimedia Principle and Contiguity Principle
Lecture 24 - Modality Principle and Redundancy Principle
Lecture 25 - Coherence Principle
Lecture 26 - Segmenting and Personalization Principle
Lecture 27 - Visual Communication Strategies for Developing e-Learning Content
Lecture 28 - Closing
Lecture 29 - Industry Perspective

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Lecture 30 - Industry Perspective
Lecture 31 - Industry Perspective
NPTEL Video Course - Multi Disciplinary - NOC:Sustainable and Affordable Sanitation Solutions for Small Towns

Subject Co-ordinator - Prof. N.C Narayanan

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the Issue of Sanitation
Lecture 2 - Overview of Sanitation in the country
Lecture 3 - Centralised or Decentralised?
Lecture 4 - Need for Participatory Planning
Lecture 5 - Context setting for the Alappuzha Project
Lecture 6 - Environmental Policy
Lecture 7 - Environmental Impact Assessment 2006 and National Urban Sanitation Plan
Lecture 8 - Environmental Governance - Challenges and Alternatives
Lecture 9 - Municipal Solid Waste Management
Lecture 10 - MSWM - Status, Policy, governance structure
Lecture 11 - Integrated Municipal Solid Waste Management
Lecture 12 - Plastic Waste Management
Lecture 13 - Municipal Solid Waste Management in Alappuzha
Lecture 14 - Liquid Waste Management - an Overview
Lecture 15 - Introduction to Faecal Sludge Management
Lecture 16 - Faecal Sludge Management for Alappuzha town
Lecture 17 - Introduction to liquid waste treatment technologies
Lecture 18 - Decentralized Waste Water Treatment system - An Introduction
Lecture 19 - Case studies - Decentralised waste water treatment
Lecture 20 - Decentralized waste water treatment systems plan for Alappuzha
Lecture 21 - History of Sanitation in Alappuzha
Lecture 22 - Organic waste management in Alappuzha
Lecture 23 - Inorganic waste management - Role of Kudumbashree and Haritha Karma Sena
Lecture 24 - Youth engagement for recaiming canals
Lecture 25 - Significance of institution building in reclaiming canals

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NPTEL Video Course - Multi Disciplinary - NOC: Fuzzy Logic and Neural Networks

Subject Co-ordinator - Prof. Dilip Kumar Pratihar

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Fuzzy Sets
Lecture 2 - Introduction to Fuzzy Sets (Continued...)
Lecture 3 - Introduction to Fuzzy Sets (Continued...)
Lecture 4 - Introduction to Fuzzy Sets (Continued...)
Lecture 5 - Introduction to Fuzzy Sets (Continued...)
Lecture 6 - Introduction to Fuzzy Sets (Continued...)
Lecture 7 - Applications of Fuzzy Sets
Lecture 8 - Applications of Fuzzy Sets (Continued...)
Lecture 9 - Applications of Fuzzy Sets (Continued...)
Lecture 10 - Applications of Fuzzy Sets (Continued...)
Lecture 11 - Applications of Fuzzy Sets (Continued...)
Lecture 12 - Applications of Fuzzy Sets (Continued...)
Lecture 13 - Applications of Fuzzy Sets (Continued...)
Lecture 14 - Applications of Fuzzy Sets (Continued...)
Lecture 15 - Applications of Fuzzy Sets (Continued...)
Lecture 16 - Applications of Fuzzy Sets (Continued...)
Lecture 17 - Optimization of Fuzzy Reasoning and Clustering Tool
Lecture 18 - Optimization of Fuzzy Reasoning and Clustering Tool (Continued...)
Lecture 19 - Optimization of Fuzzy Reasoning and Clustering Tool (Continued...)
Lecture 20 - Optimization of Fuzzy Reasoning and Clustering Tool (Continued...)
Lecture 21 - Some Examples of Neural Networks
Lecture 22 - Some Examples of Neural Networks (Continued...)
Lecture 23 - Some Examples of Neural Networks (Continued...)
Lecture 24 - Some Examples of Neural Networks (Continued...)
Lecture 25 - Some Examples of Neural Networks (Continued...)
Lecture 26 - Some Examples of Neural Networks (Continued...)
Lecture 27 - Some Examples of Neural Networks (Continued...)
Lecture 28 - Some Examples of Neural Networks (Continued...)
Lecture 29 - Some Examples of Neural Networks (Continued...)

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NPTEL Video Course - Multi Disciplinary - NOC:Entrepreneurship Essentials

Subject Co-ordinator - Prof. Manoj Kumar Mondal

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Two Amazing and Inspiring Stories
Lecture 3 - Myths and Realities About Entrepreneurship
Lecture 4 - Entrepreneurial Qualities
Lecture 5 - Why Start-ups Fail
Lecture 6 - Vision, Mission and Entrepreneurial Qualities
Lecture 7 - Vision, Mission and Entrepreneurial Qualities (Continued...)
Lecture 8 - Value Proposition
Lecture 9 - Business Model generation - I
Lecture 10 - Business Model generation - II
Lecture 11 - Competitive Advantage
Lecture 12 - Lean Startup
Lecture 13 - Lean Startup (Continued...)
Lecture 14 - Balanced Founding Team and Early Recruits
Lecture 15 - Forms of Legal Entities
Lecture 16 - Marketing for Startups
Lecture 17 - Marketing for Startups (Continued...)
Lecture 18 - Marketing Research
Lecture 19 - Marketing Research (Continued...)
Lecture 20 - Marketing Research Example
Lecture 21 - Financial Statements
Lecture 22 - Financial Statements (Continued...)
Lecture 23 - Financial Statements (Continued...)
Lecture 24 - Financial Statements (Continued...)
Lecture 25 - Financial Statements (Continued...)
Lecture 26 - Financial Statements (Continued...)
Lecture 27 - Financial Statements (Continued...)
Lecture 28 - Break-Even Point (Cost Volume and Profit Analysis)
Lecture 29 - Break-Even Point (Cost Volume and Profit Analysis) (Continued...)
Lecture 30 - Break-Even Point (Cost Volume and Profit Analysis) (Continued...)
Lecture 31 - Writing Business Plan
Lecture 32 - Writing Business Plan (Continued...)
Lecture 33 - Funding your start up
Lecture 34 - Funding your start up (Continued...)
Lecture 35 - Funding your start up (Continued...)
Lecture 36 - Funding your start up (Continued...)
Lecture 37 - Funding your start up (Continued...)
Lecture 38 - How to Start a Startup
Lecture 39 - Go to Market Strategy
Lecture 40 - Innovation and Entrepreneurship
Lecture 41 - Innovation and Entrepreneurship (Continued...)
Lecture 42 - Innovation and Entrepreneurship (Continued...)
Lecture 43 - Dos and Don'ts
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Multi Disciplinary - NOC: Roadmap for Patent Creation

Subject Co-ordinator - Prof. Gouri Gargate
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Roadmap for patent creation - Introduction
Lecture 2 - Roadmap for patent creation - Property and IP
Lecture 3 - Roadmap for patent creation - IPR
Lecture 4 - Roadmap for patent creation - IP and future areas
Lecture 5 - Roadmap for patent creation - Patent - Introduction
Lecture 6 - Patent searching and analysis
Lecture 7 - Patent - Definition
Lecture 8 - Novelty
Lecture 9 - Non obviousness
Lecture 10 - Industrial application
Lecture 11 - Parts of patent document
Lecture 12 - Terminologies and codes used in a patent document
Lecture 13 - How to read a patent? - I
Lecture 14 - How to read a patent? - II
Lecture 15 - How to read a patent? - III
Lecture 16 - Roadmap for patent creation - IP identification tool
Lecture 17 - Roadmap for patent creation - Patentability tool
Lecture 18 - Roadmap for patent creation - IP audit framework
Lecture 19 - Roadmap for patent creation - Public patent databases
Lecture 20 - Roadmap for patent creation - Capsule version
Lecture 21 - Types of patent
Lecture 22 - Patent filing procedure in India
Lecture 23 - Patent timelines - India and PCT
Lecture 24 - Inventions not patent in India
Lecture 25 - Indicators for patentability
Lecture 26 - Use of patent database for research/project topic identification
Lecture 27 - Importance of laboratory notebook
Lecture 28 - In which technical category my invention falls - IPC
Lecture 29 - Patent - Statutory differences between India, Europe and USA

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Lecture 30 - Identification of inventor and applicant and their rights
Lecture 31 - Developing your own IP system
Lecture 32 - When to publish and when to patent (confidentiality)
Lecture 33 - Statutory exceptions (anticipation)
Lecture 34 - Procedure for patent filing (Forms and fees)
Lecture 35 - Interaction with IP attorney (Initial drafting, FER reply and hearing)
Lecture 36 - Research/project planning
Lecture 37 - Post patent filing requirements
Lecture 38 - Patent commercialization
Lecture 39 - Capsule version
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

Lecture 30 - Lessons on Good Teaching from ELNET-3L
Lecture 31 - Evaluation of Teaching Quality
Lecture 32 - Evaluation of Teaching Quality - A Research Proposal
Lecture 33 - Evaluation of Teaching Quality - A Research Proposal (Continued...)
Lecture 34 - Evaluation of Teaching Quality - A Research Proposal (Continued...)
Lecture 35 - Assessment and Evaluation - to Improve Teaching
Lecture 36 - Item Analysis - Theory and Practice
Lecture 37 - Learning Styles and Learning Approaches
Lecture 38 - Good Teaching Attributes and Characteristics
Lecture 39 - Teacher Effectiveness Research
Lecture 40 - Teacher Effectiveness Research (Continued...)
Lecture 41 - Teaching Learning Process using Outcome based Education

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NPTEL Video Course - Multi Disciplinary - NOC: Introduction to Environmental Engineering and Science - Fundamentals

Subject Co-ordinator - Prof. Brajesh Kumar Dubey
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Sustainability Concepts - Innovations and Challenges
Lecture 2 - Sustainability Concepts - Innovations and Challenges
Lecture 3 - Basics and Sustainability Concepts and Evolution
Lecture 4 - Engineering for Sustainability
Lecture 5 - Life Cycle Thinking and Circular Economy
Lecture 6 - Mass Concentration Units
Lecture 7 - Partial Pressure Units
Lecture 8 - Other Types of Units
Lecture 9 - Units (Continued...), Qualitative and Quantitative Measurements
Lecture 10 - Quantitative Measurements Basics
Lecture 11 - Ecology
Lecture 12 - Energy Flow and Ecological Concepts
Lecture 13 - Population
Lecture 14 - Population, Consumption and Biodiversity
Lecture 15 - Environmental Chemistry
Lecture 16 - Mass Balance and Reactor Systems
Lecture 17 - Mass Balance in Continuous Reactor / Continuous Stirred Tank Reactor (CSTR) and Plug Flow Reactor
Lecture 18 - Plug Flow Reactor and Energy Flow
Lecture 19 - Energy Balance and Earth Overshot Day
Lecture 20 - Mass Transport Processes
Lecture 21 - Oxygen Demand in Environmental Systems
Lecture 22 - BOD Examples, Oxygen Levels in Surface Waters, COD
Lecture 23 - Environmental Health Basics and SDGs
Lecture 24 - Field Applications
Lecture 25 - Nutrient Cycle
Lecture 26 - Environmental Risk
Lecture 27 - Risk Assessment Steps and EIA Introduction
Lecture 28 - Environmental Risk Assessments with Concepts of EIA and LCA
Lecture 29 - Environmental Risk Assessments with Concepts of EIA and LCA (Continued...)

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NPTEL Video Course - Multi Disciplinary - NOC: Neuroscience of Human Movement

Subject Co-ordinator - Prof. Varadhan
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 0 - Neuroscience of Human Movement
Lecture 1 - Membrane Physiology - Part 1
Lecture 2 - Membrane Physiology - Part 2
Lecture 3 - Nernst Equation
Lecture 4 - Goldman Equation
Lecture 5 - Action Potential - Part 1
Lecture 6 - Action Potential - Part 2
Lecture 7 - Action Potential - Part 3
Lecture 8 - Action Potential - Part 4
Lecture 9 - Action Potential - Part 5
Lecture 10 - Review of Action Potential and Neurotransmitters
Lecture 11 - Neuromuscular Junction
Lecture 12 - Disorders of Neuromuscular Junction
Lecture 13 - Skeletal Muscles - Part 1
Lecture 14 - Skeletal Muscles - Part 2
Lecture 15 - Skeletal Muscles - Part 3
Lecture 16 - Skeletal Muscles - Part 4
Lecture 17 - Muscle force production
Lecture 18 - Motor Units - Part 1
Lecture 19 - Motor Units - Part 2
Lecture 20 - Motor Units - PIC and EMG
Lecture 21 - Receptors - Part 1
Lecture 22 - Receptors - Part 2
Lecture 23 - Spine and Spinal Cord
Lecture 24 - Excitation and Inhibition within Spinal Cord - Part 1
Lecture 25 - Excitation and Inhibition within Spinal Cord - Part 2
Lecture 26 - Monosynaptic Reflexes - Part 1
Lecture 27 - Monosynaptic Reflexes - Part 2
Lecture 28 - Monosynaptic Reflexes - Part 3

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Lecture 29 - Oligosynaptic and Polysynaptic Reflexes - Part 1
Lecture 30 - Oligosynaptic and Polysynaptic Reflexes - Part 2
Lecture 31 - Pre-Programmed Reactions - Part 1
Lecture 32 - Pre-Programmed Reactions - Part 2
Lecture 33 - Spinal Cord Injuries and Central Pattern Generators
Lecture 34 - Animal Preparations for Neuroscience Experiments
Lecture 35 - Overview of motor control system
Lecture 36 - Terminology
Lecture 37 - Primary Motor Cortex - Part 2
Lecture 38 - Primary Motor Cortex - Part 3
Lecture 39 - Primary Motor Cortex - Part 4
Lecture 40 - Primary Motor Cortex - Part 5
Lecture 41 - Primary Motor Cortex - Part 6
Lecture 42 - Primary Motor Cortex - Part 7
Lecture 43 - Primary Motor Cortex - Part 8
Lecture 44 - Primary Motor Cortex - Part 9
Lecture 45 - Primary Motor Cortex - Part 10
Lecture 46 - Primary Motor Cortex - Part 11
Lecture 47 - Primary Motor Cortex - Part 12
Lecture 48 - Primary Motor Cortex - Part 13
Lecture 49 - Primary Motor Cortex - Part 14
Lecture 50 - Primary Motor Cortex - Part 15
Lecture 51 - Cerebellum - Part 1
Lecture 52 - Cerebellum - Part 2
Lecture 53 - Cerebellum - Part 3
Lecture 54 - Cerebellum - Part 4
Lecture 55 - Cerebellum - Part 5
Lecture 56 - Cerebellum - Part 6
Lecture 57 - Cerebellum - Part 7
Lecture 58 - Cerebellum - Part 8
Lecture 59 - Cerebellum - Part 9
Lecture 60 - Cerebellum - Part 10
Lecture 61 - Cerebellum - Part 11
Lecture 62 - Cerebellum - Part 12
Lecture 63 - Basal Ganglia - Part 1
Lecture 64 - Basal Ganglia - Pathways
Lecture 65 - Basal Ganglia - Inputs
Lecture 66 - Basal Ganglia - Outputs
Lecture 67 - Basal Ganglia - Various Functions

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Lecture 68 - Basal Ganglia - Motor Functions
Lecture 69 - Basal Ganglia - Motor Functions.
Lecture 70 - Basal Ganglia - Dopamine and Acetylcholine
Lecture 71 - Basal Ganglia - Disorders
Lecture 72 - Parkinson's Disease - Intro
Lecture 73 - Parkinson's Disease - Rate Model, Pathophysiology
Lecture 74 - Parkinson's Disease - Current therapeutic approaches and the future
Lecture 75 - Basal Ganglia - Various Disorders
Lecture 76 - Neuropsychiatric disorders due to BG dysfunction
Lecture 77 - Parietal and Premotor Cortex - Part 1
Lecture 78 - Parietal and Premotor Cortex - Part 2
Lecture 79 - Parietal and Premotor Cortex - Part 3
Lecture 80 - Parietal and Premotor Cortex - Part 4
Lecture 81 - Parietal and Premotor Cortex - Part 5
Lecture 82 - Parietal and Premotor Cortex - Part 6
NPTEL Video Course - Multi Disciplinary - NOC:Manage TB

Subject Co-ordinator - Dr. M S Jawahar, Dr. V.V. Banu Rekha, Prof. Mohan Natrajan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - How is TB affecting public health Globally and Nationally
Lecture 2 - Epidemiology of TB - Session - 1
Lecture 3 - Epidemiology of TB - Session - 2
Lecture 4 - Pathogenesis of TB - Session - 1
Lecture 5 - Pathogenesis of TB - Session - 2
Lecture 6 - Clinical manifestations of TB - Session - 1
Lecture 7 - Clinical manifestations of TB - Session - 2
Lecture 8 - Clinical manifestations of TB - Session - 3
Lecture 9 - Bacteriological Diagnosis of Tuberculosis - Smear and Culture
Lecture 10 - Demonstration of processing of sputum specimen for culture for diagnosis of tuberculosis
Lecture 11 - Demonstration of sputum smear examination for diagnosis of tuberculosis
Lecture 12 - Demonstration of solid culture method for diagnosis of tuberculosis
Lecture 13 - Demonstration of liquid culture method for diagnosis of tuberculosis in sputum
Lecture 14 - Phenotypic drug susceptibility testing in Tuberculosis
Lecture 15 - Demonstration of drug susceptibility testing of first line anti-TB drugs by liquid culture
Lecture 16 - Molecular Diagnosis of Tuberculosis - Session - 1
Lecture 17 - Molecular Diagnosis of Tuberculosis - Session - 2
Lecture 18 - Demonstration of Xpert MTB-RIF assay for diagnosis of tuberculosis from sputum specimens
Lecture 19 - Demonstration of Line Probe Assay (LPA) (Direct detection of tuberculosis and resistance to isoniazid and rifampicin)
Lecture 20 - Radiology in diagnosis of Tuberculosis - Session - 1
Lecture 21 - Radiology in diagnosis of Tuberculosis - Session - 2
Lecture 22 - Radiology in diagnosis of Tuberculosis - Session - 3
Lecture 23 - Radiology in diagnosis of Tuberculosis - Session - 4
Lecture 24 - Approach to diagnosis of Pulmonary TB
Lecture 25 - Case Discussion - Approach to diagnosis of TB in a person with presumptive pulmonary TB
Lecture 26 - Case Discussion - Approach to diagnosis of pulmonary TB in a patient with negative sputum smear for AFB
Lecture 27 - Approach to diagnosis of Extra-pulmonary TB
Lecture 28 - Case Discussion - Approach to diagnosis of TB in a person with swelling in the neck
Lecture 29 - Case Discussion - Approach to diagnosis of TB spine

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Lecture 30 - Diagnosis of Childhood Tuberculosis-Session - 1
Lecture 31 - Diagnosis of Childhood Tuberculosis-Session - 2
Lecture 32 - Video demonstration of gastric fluid aspiration technique in a child
Lecture 33 - Case Discussion-Approach to diagnosis of TB in a child with presumptive pulmonary TB
Lecture 34 - Case Discussion-Approach to diagnosis of TB meningitis in a child
Lecture 35 - Drugs for treating Tuberculosis and Principles of Chemotherapy-Session - 1
Lecture 36 - Drugs for treating Tuberculosis and Principles of Chemotherapy-Session - 2
Lecture 37 - Treatment of Drug Sensitive Pulmonary Tuberculosis
Lecture 38 - Case discussion-Approach to treatment of drug sensitive TB
Lecture 39 - Management of drug resistant Tuberculosis-Session - 1
Lecture 40 - Management of drug resistant Tuberculosis-Session - 2
Lecture 41 - Case discussion-Approach to treatment of Multi-drug resistant TB (MDR-TB)/ Extensively drug resistant TB (XDR-TB)
Lecture 42 - Management of Extra-pulmonary Tuberculosis-Session - 1
Lecture 43 - Management of Extra-pulmonary Tuberculosis-Session - 2
Lecture 44 - Panel discussion-Practical difficulties in the management of Extra-pulmonary TB
Lecture 45 - Management of patients with HIV-TB coinfection-Session - 1
Lecture 46 - Management of patients with HIV-TB coinfection-Session - 2
Lecture 47 - Case discussion-Approach to management of HIV-TB
Lecture 48 - Management of TB in special situations
Lecture 49 - Case discussion-Approach to management of TB in pregnancy
Lecture 50 - Treatment of Pediatric Tuberculosis-Session - 1
Lecture 51 - Treatment of Pediatric Tuberculosis-Session - 2
Lecture 52 - Management of Adverse effects to anti-TB drugs-Session - 1
Lecture 53 - Management of Adverse effects to anti-TB drugs-Session - 2
Lecture 54 - Case discussion-Approach to management of jaundice during anti-TB treatment
Lecture 55 - Case discussion-Approach to management of skin rashes during anti-TB treatment
Lecture 56 - Non-tuberculous Mycobacteria- Diagnosis and Clinical management-Session - 1
Lecture 57 - Non-tuberculous Mycobacteria - Diagnosis and Clinical Management Session - 2
Lecture 58 - Newer Anti-TB drugs and regimens-Session - 1
Lecture 59 - Newer Anti-TB drugs and regimens-Session - 2
Lecture 60 - Management of Latent TB Infection-Session - 1
Lecture 61 - Management of Latent TB Infection-Session - 2
Lecture 62 - Airborne infection control in tuberculosis-Session - 1
Lecture 63 - Airborne infection control in tuberculosis-Session - 2
Lecture 64 - Vaccine for Tuberculosis-Session - 1
Lecture 65 - Vaccine for Tuberculosis-Session - 2
Lecture 66 - Services offered by Revised National TB Control Programme (RNTCP)-Session - 1
Lecture 67 - Services offered by Revised National TB Control Programme (RNTCP)-Session - 2
Lecture 68 - Services offered by Revised National TB Control Programme (RNTCP)-Session - 3

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Lecture 69 - Services offered by Revised National TB Control Programme (RNTCP)-Session - 4
Lecture 70 - Tuberculosis notification-Session - 1
Lecture 71 - Tuberculosis notification-Session - 2
Lecture 72 - Addressing Social Barriers in Tuberculosis Control-Session - 1
Lecture 73 - Addressing Social Barriers in Tuberculosis Control-Session - 2
Lecture 74 - Standards for TB Care in India-Session - 1
Lecture 75 - Standards for TB Care in India-Session - 2
Lecture 76 - Global Tuberculosis Control Strategies

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NPTEL Video Course - Multi Disciplinary - NOC: Ecology and Environment

Subject Co-ordinator - Dr. Abhijit P. Deshpande
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Sustainability
Lecture 2 - Dams
Lecture 3 - Dams
Lecture 4 - Adayar River
Lecture 5 - Adayar River
Lecture 6 - Urbanisation in Western Ghats and Biodiesel
Lecture 7 - Use And Throw Plastic
Lecture 8 - Nano Materials Information Technology
Lecture 9 - Definition of Health Risk
Lecture 10 - Transport Of Pollutants in the Environment
Lecture 11 - Assessment of Risk
Lecture 12 - Remediation and Liability
Lecture 13 - Remediation and Liability
Lecture 14 - Life Cycle Analysis
Lecture 15 - Energy and Environment module - 1
Lecture 16 - Energy and Environment module - 2
Lecture 17 - Energy and Environment module - 3
Lecture 18 - Energy and Environment module - 4
Lecture 19 - Energy and Environment module - 5
Lecture 20 - Energy and Environment module - 6
Lecture 21 - Energy and Environment module - 7
Lecture 22 - Drinking Water Supply
Lecture 23 - Drinking Water Supply
Lecture 24 - Water Quality Standards And Philosophy of Water Treatment
Lecture 25 - Water Treatment
Lecture 26 - Wastewater Management in Developing Urban Environments
Lecture 27 - Wastewater Recycling
Lecture 28 - Sustainable Water Management In Urban Areas - Part 1
Lecture 29 - Sustainable Water Management In Urban Areas - Part 2

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Lecture 30 - Ground Water Contamination
Lecture 31 - Groundwater - Sanitation Nexus
Lecture 32 - Chasing Sustainability - The Challenge - Part 1
Lecture 33 - Chasing Sustainability - The Challenge - Part 2
Lecture 34 - Devoloping Frame Works Of Action
Lecture 35 - Devoloping Frame Works Of Action
Lecture 36 - Social And sanitation
Lecture 37 - Promoting Policies For Eco-Productive Cities in the global House - Part 1
Lecture 38 - Promoting Policies For Eco-Productive Cities in the global House - Part 2
Lecture 39 - The need to study ecology
Lecture 40 - Ecosystem functions and services
Lecture 41 - What is studied in ecology?
Lecture 42 - Ecological footprint
Lecture 43 - Energy and Material flow in ecosystems and ecological efficiency
Lecture 44 - Energy flow, productivity and Biodiversity
Lecture 45 - Biodiversity, population and ecological principles
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Multi Disciplinary - NOC:Current Regulatory Requirements for Conducting Clinical Trials

Subject Co-ordinator - Prof. Nandini K Kumar, Prof. Sucheta Banerjee Kurundkar, Prof. A. B. Ramteke

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - C1 - L00
Lecture 2 - C1 - Introduction Assorted Interviews
Lecture 3 - C1 - L01
Lecture 4 - C1 - L02
Lecture 5 - C1 - L03
Lecture 6 - C1 - L04
Lecture 7 - C1 - L05
Lecture 8 - C1 - L06
Lecture 9 - C1 - L07
Lecture 10 - C1 - L08
Lecture 11 - C1 - L09
Lecture 12 - C1 - L10A
Lecture 13 - C1 - L10B

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NPTEL Video Course - Multi Disciplinary - NOC: Regulatory Requirements for Medical Devices and IVD kits in India

Subject Co-ordinator - Prof. A. B. Ramteke, Prof. Malay Mitra

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - C2 - Introduction Assorted Interviews
Lecture 2 - C2 - L00
Lecture 3 - C2 - L01
Lecture 4 - C2 - L02
Lecture 5 - C2 - L03
Lecture 6 - C2 - L04
Lecture 7 - C2 - L05
Lecture 8 - C2 - L06
Lecture 9 - C2 - L07
Lecture 10 - C2 - L08
Lecture 11 - C2 - L09

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NPTEL Video Course - Multi Disciplinary - NOC: Numerical Methods for Engineers

Subject Co-ordinator - Dr. Niket S. Kaisare

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Overview of Learning Modules
Lecture 3 - Course Plan
Lecture 4 - Tutorial
Lecture 5 - Errors and Approximations
Lecture 6 - Truncation and Round-Off Errors
Lecture 7 - Binary Numbers
Lecture 8 - Floating Point
Lecture 9 - Floating Point in Binary system
Lecture 10 - Iterative Method
Lecture 11 - Direct Method
Lecture 12 - Sequential Method
Lecture 13 - Linear Algebra
Lecture 14 - Introduction to Linear Equations
Lecture 15 - Rank Condition for Solving Linear Equations
Lecture 16 - Motivating Gauss Elimination
Lecture 17 - Gauss Elimination
Lecture 18 - Tutorial Recap
Lecture 19 - Back Substitution to find solution
Lecture 20 - Gauss Jordan and LU Decomposition
Lecture 21 - Partial Pivoting in Gauss Elimination
Lecture 22 - Analysis of Gauss Elimination
Lecture 23 - Tri-Diagonal Systems
Lecture 24 - Thomas Algorithm for Tri-Diagonal Systems
Lecture 25 - Gauss Siedel Method
Lecture 26 - Analysis of Gauss Siedel Method
Lecture 27 - Gauss Siedel vs. Jacobi Methods
Lecture 28 - Bonus
Lecture 29 - Summary

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NPTEL Video Course - Multi Disciplinary - Basic Course in Biomedical Research

Subject Co-ordinator - Dr. Sanjay Mehendale
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to health research
Lecture 2 - Formulating research question
Lecture 3 - Literature review
Lecture 4 - Measures of disease frequency
Lecture 5 - Descriptive study designs
Lecture 6 - Analytical study designs
Lecture 7 - Experimental study designs
Lecture 8 - Validity of epidemiological studies
Lecture 9 - Qualitative research methods
Lecture 10 - Measurement of study variables
Lecture 11 - Sampling methods
Lecture 12 - Calculating sample size and power
Lecture 13 - Selection of study population
Lecture 14 - Study plan and project management
Lecture 15 - Designing data collection tools
Lecture 16 - Principles of data collection
Lecture 17 - Data management
Lecture 18 - Overview of data analysis
Lecture 19 - Ethical framework for health research
Lecture 20 - Conducting clinical trails
Lecture 21 - Preparing a concept paper for research projects
Lecture 22 - Elements of a protocol for research studies
NPTEL Video Course - Multi Disciplinary - NOC:Teaching and Learning in Engineering (TALE)

Subject Co-ordinator - Prof. N.J. Rao
Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview of TALE and Good Engineer
Lecture 2 - Education and Teaching
Lecture 3 - Learning, Instruction and Assessment
Lecture 4 - What is OBE?
Lecture 5 - Accreditation
Lecture 6 - Outcomes
Lecture 7 - Program Outcomes - 1
Lecture 8 - Program Outcomes - 2
Lecture 9 - Taxonomy of Learning
Lecture 10 - Cognitive Levels
Lecture 11 - General Categories of Knowledge
Lecture 12 - Metacognitive Knowledge
Lecture 13 - Vincenti Categories of Engineering Knowledge
Lecture 14 - Affective and Psychomotor Domains
Lecture 15 - Taxonomy Table
Lecture 16 - Course Outcomes - 1
Lecture 17 - Course Outcomes - 2
Lecture 18 - Course Outcomes - POs and PSOs
Lecture 19 - Attainment of COs
Lecture 20 - Attainment of POs and PSOs
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course – Multi Disciplinary – NOC: Teaching and Learning in General Programs

Subject Co-ordinator - Prof. N.J. Rao

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 – Teaching and Learning in General Programs (TALG)
Lecture 2 – Education and Teaching
Lecture 3 – Learning, Assessment and Instruction
Lecture 4 – Outcome Based Education (OBE)
Lecture 5 – Accreditation
Lecture 6 – Program Outcomes
Lecture 7 – POs and PSOs
Lecture 8 – Taxonomy of Learning
Lecture 9 – Taxonomy of Learning
Lecture 10 – Taxonomy of Learning
Lecture 11 – Taxonomy of Learning
Lecture 12 – Affective Domain
Lecture 13 – Psychomotor Domain
Lecture 14 – Taxonomy Tables
Lecture 15 – Course Outcomes – 1
Lecture 16 – Course Outcomes – 2
Lecture 17 – Tagging the Course Outcomes
Lecture 18 – Attainment of Course Outcomes
Lecture 19 – Attainment of POs and PSOs

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Lecture 1 - Engineering Programs, NBA Accreditation and Engineering Courses
Lecture 2 - Course Design
Lecture 3 - ISD and ADDIE
Lecture 4 - Analysis Phase - 1
Lecture 5 - Analysis Phase - 2
Lecture 6 - Design Phase
Lecture 7 - Technology and Targets
Lecture 8 - Assessment Pattern and Assessment Instruments
Lecture 9 - Item Banks
Lecture 10 - Development Phase
Lecture 11 - Instruction Material and Learning Material
Lecture 12 - Implement Phase - 1
Lecture 13 - Implement Phase - 2
Lecture 14 - Evaluate Phase
Lecture 15 - Course Exit Survey
Lecture 16 - Evaluating Laboratories and Electives
Lecture 17 - Exit Surveys for Projects
Lecture 18 - Summary Feedback
Lecture 19 - Instruction
Lecture 20 - Instructional Situations
Lecture 21 - How Brains Learn - 1
Lecture 22 - How Brains Learn - 2
Lecture 23 - How Brains Learn - 3
Lecture 24 - Instructional Components - 1
Lecture 25 - Instructional Components - 2
Lecture 26 - Merrill’s Principles of Learning
Lecture 27 - ID based on Merrill’s Principles
Lecture 28 - Direct Approach to Instruction
Lecture 29 - Project Based Approach to Instruction
Lecture 30 - Problem Based Approach to Instruction
Lecture 31 - Experiential Approach to Instruction
Lecture 32 - Simulation Approach to Instruction
Lecture 33 - Instruction for Design
Lecture 34 - Instruction for Metacognitive Learning
Lecture 35 - So, what should a teacher do?
NPTEL Video Course - Nanotechnology - Nano structured materials-synthesis, properties, self assembly and applications

Subject Co-ordinator - Prof. A.K. Ganguli

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Nanotechnology
Lecture 2 - Introduction to Nanotechnology (Continued...)
Lecture 3 - Synthetic Methodologies
Lecture 4 - Synthetic Methodologies (Continued...)
Lecture 5 - Synthetic Methodologies (Continued...)
Lecture 6 - Synthetic Methodologies (Continued...)
Lecture 7 - Synthetic Methodologies (Continued...)
Lecture 8 - Synthetic Methodologies (Continued...)
Lecture 9 - Template Methods - I
Lecture 10 - Template Methods - II
Lecture 11 - Spray Pyrolysis
Lecture 12 - V-L-S Method
Lecture 13 - Lithography - I
Lecture 14 - Lithography - II
Lecture 15 - Fullerenes and Carbon Nanotubes - I
Lecture 16 - Fullerenes and Carbon Nanotubes - II
Lecture 17 - Fullerenes and Carbon Nanotubes - III
Lecture 18 - Metal and Metal Oxide Nanowires - I
Lecture 19 - Metal and Metal Oxide Nanowires - II
Lecture 20 - Metal and Metal Oxide Nanowires - III
Lecture 21 - Self Assembly of Nanostructures - I
Lecture 22 - Self Assembly of Nanostructures - II
Lecture 23 - Self Assembly of Nanostructures - III
Lecture 24 - Core Shell Nanostructures - I
Lecture 25 - Core Shell Nanostructures - II
Lecture 26 - Core Shell Nanostructures - III
Lecture 27 - Nanocomposites - I
Lecture 28 - Nanocomposites - II
Lecture 29 - Photocatalysis - I

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Lecture 30 - Photocatalysis - II
Lecture 31 - Photocatalysis - III
Lecture 32 - Dielectric Properties - I
Lecture 33 - Dielectric Properties - II
Lecture 34 - Magnetic Properties - I
Lecture 35 - Magnetic Properties - II
Lecture 36 - Magnetic Properties - III
Lecture 37 - Optical Properties - I
Lecture 38 - Optical Properties - II
Lecture 39 - Mechanical Properties
Lecture 40 - Concluding Lecture
NPTEL Video Course - Nanotechnology - Nanostructures and Nanomaterials: Characterization and Properties

Subject Co-ordinator - Dr. Anandh Subramaniam, Dr. Kantesh Balani

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Nanomaterials
Lecture 2 - Introduction to Nanomaterials
Lecture 3 - Introduction to Nanomaterials
Lecture 4 - Introduction to Nanomaterials
Lecture 5 - Introduction to Nanomaterials
Lecture 6 - Introduction to Nanomaterials
Lecture 7 - Introduction to Nanomaterials
Lecture 8 - Introduction to Nanomaterials
Lecture 9 - Introduction to Nanomaterials
Lecture 10 - Introduction to Nanomaterials
Lecture 11 - Surface Effects and Physical properties of nanomaterials
Lecture 12 - Surface Effects and Physical properties of nanomaterials
Lecture 13 - Surface Effects and Physical properties of nanomaterials
Lecture 14 - Surface Effects and Physical properties of nanomaterials
Lecture 15 - Surface Effects and Physical properties of nanomaterials
Lecture 16 - Defect Structure & Mechanical Behaviour of Nanomaterials
Lecture 17 - Defect Structure & Mechanical Behaviour of Nanomaterials
Lecture 18 - Defect Structure & Mechanical Behaviour of Nanomaterials
Lecture 19 - Defect Structure & Mechanical Behaviour of Nanomaterials
Lecture 20 - Defect Structure & Mechanical Behaviour of Nanomaterials
Lecture 21 - Electrical, Magnetic and Optical Properties of Nanomaterials
Lecture 22 - Electrical, Magnetic and Optical Properties of Nanomaterials
Lecture 23 - Electrical, Magnetic and Optical Properties of Nanomaterials
Lecture 24 - Electrical, Magnetic and Optical Properties of Nanomaterials
Lecture 25 - Electrical, Magnetic and Optical Properties of Nanomaterials
Lecture 26 - Atomic Bonding
Lecture 27 - Overview of Nano structures and Nano materials
Lecture 28 - Carbon Nanostructures
Lecture 29 - Multi-Scale Hierarchy

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Lecture 30 - Self Assembly  
Lecture 31 - Nanomaterials in Nature  
Lecture 32 - Surfaces and Interfaces  
Lecture 33 - Non-wetting  
Lecture 34 - Nanomaterials Science and Nanomanufacturing  
Lecture 35 - Surface Adsorption Isotherms (Langmuir/Bet)  
Lecture 36 - Reciprocal Lattice  
Lecture 37 - Transmission Electron Microscopy  
Lecture 38 - Transmission Electron Microscopy  
Lecture 39 - Auger Electron Spectroscopy  
Lecture 40 - X-Ray Photoelectron Spectroscopy (XPS)  
Lecture 41 - Electron Energy Loss Spectroscopy (EELS)  
Lecture 42 - Deformation Behavior of Nanomaterials  
Lecture 43 - Fracture and Creep  
Lecture 44 - Nanomechanics  
Lecture 45 - Nanotribology
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - Elements of Ocean Engineering

Subject Co-ordinator - Dr. Ashoke Bhar

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Physical Oceanography - I
Lecture 3 - Physical Oceanography - II
Lecture 4 - Physical Oceanography - III
Lecture 5 - Physical Oceanography - IV
Lecture 6 - Sediments & Open Ocean
Lecture 7 - Open Ocean - I
Lecture 8 - Open Ocean - II
Lecture 9 - Physical Properties of Water
Lecture 10 - Water and Waves
Lecture 11 - Waves - I
Lecture 12 - Waves - II
Lecture 13 - Waves - III
Lecture 14 - Introduction to Offshore Structures - I
Lecture 15 - Introduction to Offshore Structures - II
Lecture 16 - Waves - IV
Lecture 17 - The Wave Spectra
Lecture 18 - The Wave Spectra (Continued...1)
Lecture 19 - The Wave Spectra (Continued...2)
Lecture 20 - Offshore Structures - I
Lecture 21 - Offshore Structures - II
Lecture 22 - Offshore Structures - III
Lecture 23 - Floating Offshore Structures
Lecture 24 - Drilling from Platforms
Lecture 25 - Drilling and Topsides
Lecture 26 - Topsides
Lecture 27 - Mooring Systems
Lecture 28 - Mooring Systems (Continued...1)
Lecture 29 - Static Analysis of Mooring Cable

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Lecture 30 - Static Analysis of Mooring Cable (Continued...)
Lecture 31 - Mooring Systems (Continued...2)
Lecture 32 - Mooring Systems (Continued...3)
Lecture 33 - Mooring Systems (Continued...4)
Lecture 34 - Mooring Systems (Continued...5)
Lecture 35 - Mooring Systems (Continued...6)
Lecture 36 - Fixed Offshore Structures
Lecture 37 - Fixed Offshore Structures (Continued...)
Lecture 38 - Structural Analysis of Jacket Platforms
Lecture 39 - Structural Analysis of Jacket Platforms (Continued...1)
Lecture 40 - Structural Analysis of Jacket Platforms (Continued...2)
Lecture 41 - Jacket Pile Selection
Lecture 42 - Jacket Pile Selection (Continued...1)
Lecture 43 - Jacket Pile Selection (Continued...2)
Lecture 44 - Floating Platform Design
Lecture 45 - Semi-Submersibles
Lecture 46 - Semi-Submersibles & TLPs
Lecture 47 - Tension Leg Platform
Lecture 48 - Tension Leg Platform (Continued...)
Lecture 49 - SPAR Platform
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - Hydrostatics and Stability

Subject Co-ordinator - Dr. Hari V. Warrior

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Archimedes Principle
Lecture 3 - Archimedes Principle (Continued...)
Lecture 4 - Numerical Integration
Lecture 5 - Problems in Stability - I
Lecture 6 - Problems in Stability - II
Lecture 7 - Problems in Stability - III
Lecture 8 - Problems in Integration
Lecture 9 - Free Surface Effect
Lecture 10 - Inclining Experiment
Lecture 11 - Hydrostatic Curves - I
Lecture 12 - Hydrostatic Curves - II
Lecture 13 - Stability Curve
Lecture 14 - Dynamical Stability - I
Lecture 15 - Dynamical Stability - II
Lecture 16 - Healing Moment - I
Lecture 17 - Healing Moment - II
Lecture 18 - Healing Moment - III
Lecture 19 - Dynamical Stability - III
Lecture 20 - Discussion
Lecture 21 - Righting Stability - I
Lecture 22 - Righting Stability - II
Lecture 23 - Trim Calculations - I
Lecture 24 - Trim Calculations - II
Lecture 25 - Trim Stability - I
Lecture 26 - Trim Stability - II
Lecture 27 - Dry Docking - I
Lecture 28 - Dry Docking - II
Lecture 29 - Bilging - I

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - Marine Construction and Welding

Subject Co-ordinator - Prof. N.R. Mandal
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to ships & offshore structures
Lecture 2 - Characteristics of shipbuilding industry
Lecture 3 - Structural Requirement
Lecture 4 - Basic Structural Components
Lecture 5 - Structural Subassemblies
Lecture 6 - Bulkheads
Lecture 7 - Decks & Shells
Lecture 8 - Structural Assemblies Double Bottom Construction
Lecture 9 - Wing Tanks & Duct Keels
Lecture 10 - Fore & Altend Construction
Lecture 11 - General Cargo Carrier
Lecture 12 - Bulk Carrier
Lecture 13 - Structural Details
Lecture 14 - Container Ship
Lecture 15 - RO-RO Ship
Lecture 16 - Oil Tanker
Lecture 17 - Structural Alignment & Continuity
Lecture 18 - Steel Material Preparation
Lecture 19 - Shot Blasting
Lecture 20 - Acid Pickling
Lecture 21 - Plate Cutting
Lecture 22 - Plate & Section Forming - I
Lecture 23 - Plate & Section Forming - II
Lecture 24 - Line Heating
Lecture 25 - Fusion Welding & Power Source
Lecture 26 - Welding Parameters & their Effects
Lecture 27 - Welding Methods
Lecture 28 - Shielded Metal Arc Welding
Lecture 29 - Gas Metal Arc Welding - I

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Lecture 30 - Gas Metal Arc Welding - II
Lecture 31 - Gas Tungsten Arc Welding
Lecture 32 - Submerged Arc Welding
Lecture 33 - Electroslag Welding
Lecture 34 - Electrogas Welding
Lecture 35 - Friction Stir Welding
Lecture 36 - FSW Metallurgy
Lecture 37 - Welding Defects & NDT
Lecture 38 - Welding Distortions
Lecture 39 - Distortion Mechanism & Types of Distortion
Lecture 40 - Distortion Control & Mitigation
Lecture 41 - Welding Sequence
NPTEL Video Course - Ocean Engineering - Marine Hydrodynamics

Subject Co-ordinator - Dr. T. Sahoo

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Marine Hydrodynamics
Lecture 2 - Law of Conservation of Mass - Continuity of Equation
Lecture 3 - Streamlines and Flow Direction
Lecture 4 - Worked Examples on Various Types of Flow
Lecture 5 - Equation of Motion (Law of Conservation of Momentum)
Lecture 6 - Applications of Equations of Motion
Lecture 7 - Applications of Equations of Motion (Continued...)
Lecture 8 - Two Dimensional Flows
Lecture 9 - Two Dimensional Flows (Continued...)
Lecture 10 - Source, Sink and Doublet
Lecture 11 - Worked Examples on Two Dimensional Flows
Lecture 12 - Conformal Mapping and Joukowsky Transformation
Lecture 13 - Uniform Flow Past an Elliptic Cylinder
Lecture 14 - Aerofoil theory
Lecture 15 - Aerofoil theory (Continued...)
Lecture 16 - Aerofoil theory (Continued...)
Lecture 17 - Schwarz - Christoffel Transformation
Lecture 18 - Motion of a cylinder
Lecture 19 - Vertex Motion
Lecture 20 - Irrotational Flow - A Bird's eyview
Lecture 21 - Introduction to Water Waves
Lecture 22 - Basic Equation and Conditions of Water Waves
Lecture 23 - Water particle kinematics in wave motion
Lecture 24 - Capillary Gravity Waves
Lecture 25 - Linearised Long Wave Equation
Lecture 26 - Linearised Long Wave Equation (Continued...)
Lecture 27 - Wave motion in two layer fluids
Lecture 28 - Worked Examples on Wave Motion
Lecture 29 - Worked Examples on Wave Motion (Continued...)

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Lecture 30 - Gravity wave transformation and energy rotation
Lecture 31 - Gravity wave transformation and energy rotation (Continued...)
Lecture 32 - Gravity wave transformation and energy rotation (Continued...)
Lecture 33 - Navier - Stokes equation of motion
Lecture 34 - Analysis of Basic Flow Problems
Lecture 35 - Analysis of Basic Flow Problems (Continued...)
Lecture 36 - Unsteady unidirectional flows
Lecture 37 - Unsteady unidirectional flows (Continued...)
Lecture 38 - An introduction to Boundary Layer Theory
Lecture 39 - Solution methods for Boundary Layer Equations
Lecture 40 - Solutions Methods for Boundary Layer Equations (Continued...)
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - Seakeeping and Manoeuvring

Subject Co-ordinator - Prof. Debabrata Sen

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Regular Water Waves - I
Lecture 2 - Regular Water Waves - II
Lecture 3 - Definition of Ship Motions & Encounter Frequency
Lecture 4 - Single Degree of Freedom Motions in Regular Waves
Lecture 5 - Uncoupled Heave, Pitch and Roll - I
Lecture 6 - Uncoupled Heave, Pitch and Roll - II
Lecture 7 - Uncoupled Heave, Pitch and Roll - III
Lecture 8 - Uncoupled Heave, Pitch and Roll - IV
Lecture 9 - Uncoupled Heave, Pitch and Roll - V
Lecture 10 - Coupled Motions
Lecture 11 - Irregular Waves
Lecture 12 - Description of Irregular Waves by Spectrum
Lecture 13 - Theoretical Wave Spectrum
Lecture 14 - Ship Motion in Irregular Waves - I
Lecture 15 - Ship Motion in Irregular Waves - II
Lecture 16 - Ship Motion in Irregular Waves - III
Lecture 17 - Description of Short-Crested Sea
Lecture 18 - Motions in Short-Crested Sea
Lecture 19 - Derived Responses & Dynamic Effects - I
Lecture 20 - Derived Responses & Dynamic Effects - II
Lecture 21 - Derived Responses & Dynamic Effects - III
Lecture 22 - Seakeeping Considerations in Design
Lecture 23 - Manoeuvring
Lecture 24 - Dynamic Equations of Motion - I
Lecture 25 - Dynamic Equations of Motion - II
Lecture 26 - Hydrodynamic Derivatives
Lecture 27 - Controls-Fixed Stability
Lecture 28 - Stability & Cotrollability
Lecture 29 - Definitive Manoeuvres - I

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Lecture 30 - Definitive Manoeuvres - II
Lecture 31 - Definitive Manoeuvres - III
Lecture 32 - Non-linear Equations of Motion
Lecture 33 - Non-linear Equations & Model Tests
Lecture 34 - Captive Model Tests and Experimental Determination of Hydrodynamic Derivatives
Lecture 35 - PMM Tests - I
Lecture 36 - PMM Tests - II
Lecture 37 - Rudder & Control Surfaces - I
Lecture 38 - Rudder & Control Surfaces - II
Lecture 39 - Theoretical Determination of Hydrodynamic Derivatives - I
Lecture 40 - Theoretical Determination of Hydrodynamic Derivatives - II
NPTEL Video Course - Ocean Engineering - Applied Thermodynamics for Marine Systems

Subject Co-ordinator - Prof. P.K. Das
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction & Some Definitions
Lecture 2 - First Law of Thermodynamics (Closed System)
Lecture 3 - First Law of Thermodynamics (Open System)
Lecture 4 - Second Law of Thermodynamics
Lecture 5 - Second Law and Carnot Principle
Lecture 6 - Property of Pure Substance, Steam Table
Lecture 7 - Ideal Gas Laws, Different Processes
Lecture 8 - Introduction to Vapour Power Cycle
Lecture 9 - Vapour Power Cycle
Lecture 10 - Steam Power Cycle, Steam Nozzle
Lecture 11 - Basic Concept of Turbine, Velocity Diagram
Lecture 12 - Steam Turbine-Impulse
Lecture 13 - Reaction Turbine Compounding
Lecture 14 - Comparison of Different Staging Arrangement
Lecture 15 - Basics Laws of Fluid Mechanics
Lecture 16 - Pipe Friction, Major Loss, Minor Loss
Lecture 17 - Pipeline & Pipe Network
Lecture 18 - Refrigeration Vapour Compression Cycle
Lecture 19 - Psychometrics
Lecture 20 - Psychometrics (Continued...)
Lecture 21 - Psychometric Processes
Lecture 22 - Psychometric Processes (Continued...), Air Conditioning
Lecture 23 - Summer & Winter Air Conditioning
Lecture 24 - Gas Power Cycles, Cycles for IC Engines
Lecture 25 - Gas Turbine Cycles
Lecture 26 - Modification of Brayton Cycle
Lecture 27 - Introduction to Convective Heat Transfer Forced & Free Convection

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Lecture 30 - Ship Motion in irregular Waves - III
Lecture 31 - Motion in Short Crested Sea, Coupled Motions
Lecture 32 - Derived Responses
Lecture 33 - Ship Controllability
Lecture 34 - Equation of Motion in Horizontal Plane
Lecture 35 - Hydrodynamic Derivatives and Stability
Lecture 36 - Hydrodynamic Derivatives and Stability
Lecture 37 - Ship Trials and Maneuvers - I
Lecture 38 - Ship Trials and Maneuvers - II
Lecture 39 - Heel During Turn, IMO Requirements
Lecture 40 - Rudder Hydrodynamics
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - Strength and Vibration of Marine Structures

Subject Co-ordinator - Prof. S.K. Satsangi, Prof. A.H. Sheikh

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Ship Structures - I
Lecture 2 - Introduction to Ship Structures - II
Lecture 3 - Deflection of Structure Beam - I
Lecture 4 - Deflection of Structure Beam - II
Lecture 5 - Deflection of Structure Beam - III
Lecture 6 - Deflection of Structure Beam - IV
Lecture 7 - Statically Indeterminate Structures - I
Lecture 8 - Statically Indeterminate Structures - II
Lecture 9 - Statically Indeterminate Structures - III
Lecture 10 - Statically Indeterminate Structures - IV
Lecture 11 - Statically Indeterminate Structures - V
Lecture 12 - Statically Indeterminate Structures - VI
Lecture 13 - Longitudinal Bending of Hull Girder - I
Lecture 14 - Longitudinal Bending of Hull Girder - II
Lecture 15 - Longitudinal Bending of Hull Girder - III
Lecture 16 - Theory of Column - I
Lecture 17 - Theory of Column - II
Lecture 18 - Theory of Column - III
Lecture 19 - Theory of Column - IV
Lecture 20 - Calculation of Momentum of Inertia of Main Section
Lecture 21 - Bending in Inclined Condition
Lecture 22 - Calculation of Deflection/Shear Stress
Lecture 23 - Ship Vibration - I
Lecture 24 - Ship Vibration - II
Lecture 25 - Ship Vibration - III
Lecture 26 - Ship Vibration - IV
Lecture 27 - Ship Vibration - V
Lecture 28 - Propeller Induced Vibration & Hull Frequency Estimation
Lecture 29 - Hull Frequency Estimation from Basic Group (Continued...)

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Lecture 30 - Analysis of Bulkhead - I
Lecture 31 - Analysis of Bulkhead - II
Lecture 32 - Stress Concentration/Structural Discontinuities
Lecture 33 - Composite Construction
Lecture 34 - Method of Plastic Analysis
Lecture 35 - Calculation of Natural Frequency of Hull Girder
Lecture 36 - Hull Resonance Diagram
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - NOC: Water Economics and Governance

Subject Co-ordinator - Prof. Manoj Kumar Tiwari
Co-ordinating Institute - IIT - Kharagpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Global Water Availability and Uses
Lecture 3 - Water Availability and Uses in India
Lecture 4 - Surface Water and Ground Water Resources
Lecture 5 - Water Use Practices and Major Challenges
Lecture 6 - Background to Water Rights
Lecture 7 - Water Rights
Lecture 8 - Right to Sanitation
Lecture 9 - Rights to Water and Sanitation - Underline Principals and Implementation
Lecture 10 - Water Rights
Lecture 11 - Water Sustainability
Lecture 12 - The Dublin Statement on Water Sustainability
Lecture 13 - Action Agenda in the Dublin Statement on Water Sustainability
Lecture 14 - Water Sustainability
Lecture 15 - Water Sustainability
Lecture 16 - Valuing Water
Lecture 17 - Valuing Water
Lecture 18 - Valuing Water
Lecture 19 - Valuing Water
Lecture 20 - Valuing Water
Lecture 21 - Pricing Water
Lecture 22 - Pricing Water
Lecture 23 - Pricing Water
Lecture 24 - Pricing Water
Lecture 25 - Pricing Water
Lecture 26 - Water Pricing
Lecture 27 - Conflicts in Water Pricing
Lecture 28 - Conflicts in Water Pricing
Lecture 29 - Conflicts in Water Pricing

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Lecture 30 - Water Pricing Case Studies
Lecture 31 - Economics of Water Projects
Lecture 32 - Economics of Water Projects
Lecture 33 - Economics of Water Projects
Lecture 34 - Economics of Water Projects
Lecture 35 - Economics of Demand and Sectoral Allocation
Lecture 36 - Economics Evaluation of Water Projects
Lecture 37 - Evaluation of Water Projects
Lecture 38 - Evaluation of Water Projects
Lecture 39 - Evaluation of Water Projects
Lecture 40 - Evaluation of Water Projects
Lecture 41 - Evaluation of Water Projects
Lecture 42 - Evaluation of Water Projects
Lecture 43 - Water Governance
Lecture 44 - Elements, Dimensions and Principles of Water Governance
Lecture 45 - Principles of Water Governance
Lecture 46 - Principles of Water Governance and Effective Water Governance Schemes
Lecture 47 - Effective Water Governance Schemes and its Benchmarking
Lecture 48 - Decision Making and Implementation in Water Governance and its Benchmarking
Lecture 49 - Water Governance in India
Lecture 50 - Water Governance in India
Lecture 51 - Water Governance in India
Lecture 52 - Water Governance in India
Lecture 53 - Water Governance in India
Lecture 54 - Water Dispute Management
Lecture 55 - Water Dispute Management
Lecture 56 - Water Dispute Management
Lecture 57 - Water Dispute Management
Lecture 58 - Global Water Diplomacy
Lecture 59 - Global Water Diplomacy
Lecture 60 - Global Water Diplomacy
Lecture 61 - Course Summary
Lecture 62 - Course Summary (Continued...)
Lecture 63 - Live Session-1
Lecture 64 - Live Session-2
Lecture 65 - Live Session-2 (April 20, 2018)
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - Design of Offshore Structures

Subject Co-ordinator - Dr. S. Nallayarasu

Co-ordinating Institute - IIT - Madras

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**NPTEL Video Course - Ocean Engineering - Foundation for Offshore Structures**

**Subject Co-ordinator - Dr. S. Nallayarasu**

**Co-ordinating Institute - IIT - Madras**

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NPTEL Video Course - Ocean Engineering - Health, Safety and Environmental Management in Petroleum and Offshore Engineering

Subject Co-ordinator - Dr. Srinivasan Chandrasekaran

Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Ocean Engineering - Port and Harbour Structures

Subject Co-ordinator - Prof. R. Sundaravadivelu
Co-ordinating Institute - IIT - Madras

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - Ship Resistance and Propulsion

Subject Co-ordinator - Dr. P. Krishnankutty, Prof. V. Anantha Subramanian

Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Ocean Engineering - Coastal Engineering

Subject Co-ordinator - Prof. V. Sundar

Co-ordinating Institute - IIT - Madras

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - Ocean Structures and Materials

Subject Co-ordinator - Dr. Srinivasan Chandrasekaran
Co-ordinating Institute - IIT - Madras
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NPTEL Video Course - Ocean Engineering - Dynamics of Ocean Structures

Subject Co-ordinator - Dr. Srinivasan Chandrasekaran

Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Ocean Engineering - Advanced Marine Structures

Subject Co-ordinator - Dr. Srinivasan Chandrasekaran

Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Ocean Engineering - NOC:Dynamics of Ocean Structures

Subject Co-ordinator - Dr. Srinivasan Chandrasekaran

Co-ordinating Institute - IIT - Madras

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NPTEL Video Course - Ocean Engineering - NOC: Risk and Reliability of offshore structures

Subject Co-ordinator - Dr. Srinivasan Chandrasekaran
Co-ordinating Institute - IIT - Madras

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - NOC:HSE for offshore and petroleum engineers-Practices

Subject Co-ordinator - Dr. Srinivasan Chandrasekaran

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Ocean Engineering - NOC: Offshore Structures Under Special Loads Including Fire Resistance

Subject Co-ordinator - Dr. Srinivasan Chandrasekaran
Co-ordinating Institute - IIT - Madras
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Lecture 3 - Novelty of compliant platforms
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NPTEL Video Course - Ocean Engineering - NOC: Structural Health Monitoring

Subject Co-ordinator - Dr. Srinivasan Chandrasekaran

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Physics - Electromagnetic Theory (Prof. D.K. Ghosh)

Subject Co-ordinator - Prof. D.K. Ghosh

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Line and Surface Integrals
Lecture 3 - Divergence and Curl of Vector Fields
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NPTEL Video Course - Physics - Special Theory of Relativity

Subject Co-ordinator - Prof. Shiva Prasad

Co-ordinating Institute - IIT - Bombay

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Lecture 2 - Michelson-Morley Experiment
Lecture 3 - Postulates of Special Theory of Relativity and Galilean Transformation
Lecture 4 - Look out for a New Transformation
Lecture 5 - Lorentz Transformation
Lecture 6 - Length Contraction and Time Dilation
Lecture 7 - Examples of Length Contraction and Time Dilation
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Lecture 22 - Electric & Magnetic Field Transformation
Lecture 23 - Example of EM Field Transformation
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NPTEL Video Course - Physics - NOC: Theory of Groups for Physics Applications

Subject Co-ordinator - Prof. Urjit A. Yajnik

Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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| Lecture 3 | Basic Group Concepts and Low Order Groups - I |
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NPTEL Video Course - Physics - NOC: Quantum Mechanics - I

Subject Co-ordinator - Prof. Ramadevi
Co-ordinating Institute - IIT - Bombay

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Physics - Plasma Physics: Fundamentals and Applications

Subject Co-ordinator - Prof. Vijayshri, Prof. V.K. Tripathi
Co-ordinating Institute - IIT - Delhi | IGNOU - Delhi
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Physics - Quantum Electronics

Subject Co-ordinator - Prof. K. Thyagarajan
Co-ordinating Institute - IIT - Delhi

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NPTEL Video Course - Physics - Semiconductor Optoelectronics

Subject Co-ordinator - Prof. M.R. Shenoy
Co-ordinating Institute - IIT - Delhi

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Co-ordinating Institute - IIT - Delhi
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Lecture 10 - Semiconductor Materials
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NPTEL Video Course - Physics - NOC:Nuclear and Particle Physics

Subject Co-ordinator - Dr. P. Poulose
Co-ordinating Institute - IIT - Guwahati

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NPTEL Video Course - Physics - NOC: Advanced Condensed Matter Physics

Subject Co-ordinator - Dr. Saurabh Basu
Co-ordinating Institute - IIT - Guwahati
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Lecture 18 - Introduction to electrodynamics, Meissner effect
Lecture 19 - London penetration depth, Type I and II superconductors
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NPTEL Video Course - Physics - NOC: Advanced Quantum Mechanics with Applications

Subject Co-ordinator - Dr. Saurabh Basu

Co-ordinating Institute - IIT - Guwahati

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Lecture 2 - Stern Gerlach Experiment, Spin Quantization, Young's Double Slit Experiment
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Lecture 4 - The Density Matrix Formalism, Expectation values of Operators
Lecture 5 - Quantum Harmonic Oscillator, Creation and annihilation Operators
Lecture 6 - Coherent States and their Properties
Lecture 7 - Applications of Coherent States, squeezed states
Lecture 8 - Symmetries and Conservational Principles in Quantum Mechanics
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Lecture 31 - Quantum Dynamics
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NPTEL Video Course - Physics - NOC:A Brief Course on Superconductivity

Subject Co-ordinator - Dr. Saurabh Basu
Co-ordinating Institute - IIT - Guwahati

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Lecture 2 - Meissner effect, Electrodynamics of Superconductors, coherence length and penetration depth
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Lecture 4 - BCS ground state, variational calculation, expression for Tc
Lecture 5 - Order parameter, Free energy functional, Ginzburg-Landau (GL) Theory, GL equations
Lecture 6 - London Equations, Flux quantization
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Lecture 8 - Experimental determination of Superconducting properties
Lecture 9 - Unconventional Superconductivity, Uemura plot, High-Tc superconductivity, d-wave pairing, ARPES
Lecture 10 - Singlet and triplet states of two s =1/2, magnetic Hamiltonian
Lecture 11 - t-J model, discrete symmetry groups, example square lattice
Lecture 12 - Cuprate Superconductors, electron vs hole doped superconductors
Lecture 13 - Non-Fermi Liquid Theory, Adiabatic continuity
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NPTEL Video Course - Physics - NOC: Introduction to Statistical Mechanics

Subject Co-ordinator - Prof. Girish S. Setlur
Co-ordinating Institute - IIT - Guwahati
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Lecture 31 - Second quantised hamiltonians
Lecture 32 - Current algebra
NPTEL Video Course - Physics - NOC: Numerical Methods and Simulation Techniques for Scientists and Engineers

Subject Co-ordinator - Dr. Saurabh Basu
Co-ordinating Institute - IIT - Guwahati

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Lecture 2 - Roots of Non-linear equations, Bisection method
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Lecture 4 - Newton Raphson Method
Lecture 5 - Newton Raphson Method (example), Curve fitting and interpolation of data
Lecture 6 - Newton’s interpolation formula, statistical interpolation of data
Lecture 7 - Linear and Polynomial regression
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NPTEL Video Course - Physics - NOC: Theoretical Mechanics

Subject Co-ordinator - Dr. Charudatt Y. Kadolkar
Co-ordinating Institute - IIT - Guwahati

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Lecture 2 - Generalized Coordinates, Configuration Space
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Lecture 25 - Continuous Systems and Fields
Lecture 26 - The Stress-Energy Tensor
Lecture 27 - Hamiltonian Formulation

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Physics - Nuclear Physics: Fundamentals and Applications

Subject Co-ordinator - Prof. H.C. Verma
Co-ordinating Institute - IIT - Kanpur
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Nuclear Size
Lecture 3 - Nuclear Size (Continued...)
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Lecture 6 - Semi empirical Mass Formula (Continued...)
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Lecture 10 - How are Neutron stars bound
Lecture 11 - Deuteron
Lecture 12 - Deuteron (Continued...)
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Lecture 14 - Scattering of nucleons
Lecture 15 - Low energy n-p scattering
Lecture 16 - Theories of nuclear forces
Lecture 17 - Shell model
Lecture 18 - Shell model (Continued...)
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Lecture 28 - Beta decay (Continued...)
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Lecture 32 - Nuclear reaction (Continued...)
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Lecture 35 - Nuclear Fission Reactor
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Lecture 37 - Nuclear Fusion
Lecture 38 - Nuclear fusion (Continued...)
Lecture 39 - Thermonuclear fusion reactors
Lecture 40 - Fusion reactions in Stars and stellar neutrinos
Lecture 41 - Nucleosynthesis of elements in Stars
Lecture 42 - Mossbauer Spectroscopy
Lecture 43 - RBS, PIXE, NAA, Summary
NPTEL Video Course - Physics - NOC:Introduction to Electromagnetism

Subject Co-ordinator - Prof. Manoj K Harbola
Co-ordinating Institute - IIT - Kanpur

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Lecture 2 - Coloumb's Force due to several Point charges
Lecture 3 - Force due to distribution of Charges
Lecture 4 - What is an Electric Field?
Lecture 5 - Electric Field due to a Charged Distribution
Lecture 6 - Helmholtz's Theorem for Electric Field
Lecture 7 - Divergence of a Field
Lecture 8 - Divergence of Electric Field & Gauss's Law
Lecture 9 - Curl Of a Field - I
Lecture 10 - Curl of a Field - II & Stokes' Theorem
Lecture 11 - Line surface area & volume elements in Cartesian & Cylindrical Coordinates
Lecture 12 - Line surface area & volume elements in Spherical Polar Coordinates
Lecture 13 - Examples of application of the divergence and stokes' theorems
Lecture 14 - Electrostatic Potential
Lecture 15 - Electric field as the gradient of electrostatic potential
Lecture 16 - Laplace's and Poisson's equations for electrostatic potential
Lecture 17 - Electrostatic potential due to a charge distribution - I; a line charge of finite length
Lecture 18 - Electrostatic potential due to a charge distribution - II;a ring and a spherical shell of charge
Lecture 19 - Uniqueness of the solution of Laplace's and Poisson's equations
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Lecture 21 - Method of images II
Lecture 22 - Laplaces equations in some other physical phenomena
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Lecture 24 - Energy of a charge distribution - II An example
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Lecture 29 - Electric polarization and bound charges - I

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NPTEL Video Course - Physics - NOC: Engineering Mechanics

Subject Co-ordinator - Prof. Manoj K Harbola

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 13 - Finding a force and a couple equivalent to an applied force
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NPTEL Video Course – Physics – NOC: Physics of Turbulence

Subject Co-ordinator – Prof. Mahendra Verma
Co-ordinating Institute – IIT – Kanpur

Sub-Titles – Available / Unavailable | MP3 Audio Lectures – Available / Unavailable

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NPTEL Video Course - Physics - Astrophysics and Cosmology

Subject Co-ordinator - Prof. S. Bharadwaj

Co-ordinating Institute - IIT - Kharagpur

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Subject Co-ordinator - Prof. Samudra Roy
Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Physics - NOC: Solid State Physics

Subject Co-ordinator - Prof. Amal Kumar Das

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Physics - NOC: Modern Optics

Subject Co-ordinator - Prof. Partha Roy Choudhuri

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Physics - NOC: Introduction to Non-linear Optics and its Applications

Subject Co-ordinator - Prof. Samudra Roy

Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Physics - NOC:Upstream LNG Technology

Subject Co-ordinator - Prof. Pavitra Sandilya
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Physics - NOC: Experimental Physics-I

Subject Co-ordinator - Prof. Amal Kumar Das
Co-ordinating Institute - IIT - Kharagpur

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Lecture 55 - Study the induced e.m.f of inductance coil
Lecture 56 - Mutual inductance
Lecture 57 - Theory regarding permeability of air
Lecture 58 - Experiment to determination the permeability of air
Lecture 59 - Devices around us
Lecture 60 - Devices around us (Continued...)

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NPTEL Video Course - Physics - NOC:Experimental Physics-II

Subject Co-ordinator - Prof. Amal Kumar Das
Co-ordinating Institute - IIT - Kharagpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

| Lecture 1 | Introduction |
| Lecture 2 | Summary of Experimental Physics - I |
| Lecture 3 | Summary of Experimental Physics - I (Continued...) |
| Lecture 4 | Summary of Experimental Physics - I (Continued...) |
| Lecture 5 | Summary of Experimental Physics - I (Continued...) |
| Lecture 6 | Basic analysis |
| Lecture 7 | Basic analysis (Continued...) |
| Lecture 8 | Basic components |
| Lecture 9 | Basic components (Continued...) |
| Lecture 10 | Basic components (Continued...) |
| Lecture 11 | Basic idea on mirrors and lenses and their applications |
| Lecture 12 | Determination of focal length of concave mirror |
| Lecture 13 | Determination of focal length of concave mirror (Continued...) |
| Lecture 14 | Determination of focal length of convex mirror |
| Lecture 15 | Determination of focal length of convex lens |
| Lecture 16 | Determination of focal length of concave lens |
| Lecture 17 | Determination of focal length of convex lens by displacement method |
| Lecture 18 | Applications of mirrors and lenses |
| Lecture 19 | Determination of refractive index of liquid using travelling microscope |
| Lecture 20 | Basic discussion on spectrometer and prism |
| Lecture 21 | Basic discussion on spectrometer and prism (Continued...) |
| Lecture 22 | Basic discussion on spectrometer and prism (Continued...) |
| Lecture 23 | Schuster's method |
| Lecture 24 | Discussion on angle of the prism, angular dispersion and dispersive power of given prism |
| Lecture 25 | Determination of the angle of prism |
| Lecture 26 | Determination of the angle of minimum deviation for a given prism and hence to determine the refractive index |
| Lecture 27 | Discussion on the angle of incidence and corresponding deviation of light through a prism and determination of the angle of minimum deviation for a given prism from the plot of the angle of incidence versus deviation |
| Lecture 28 | Determination of the angle of minimum deviation from (i-D) plot for a given prism and hence to determine the refractive index |
| Lecture 29 | Determination of the calibration plot of deviation versus wavelength for a given prism and hence to determine the wavelength of the unknown light source |

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Lecture 30 - Determination of the dispersive power, Cauchy constant and resolving power of a given prism.
Lecture 31 - Interference Phenomena
Lecture 32 - Interference Phenomena (Continued...)
Lecture 33 - Interference Phenomena (Continued...)
Lecture 34 - Bi-prism
Lecture 35 - Bi-prism (Continued...)
Lecture 36 - Interference phenomena by Newton ring (Theory)
Lecture 37 - Interference phenomena by Newton ring (Experiment)
Lecture 38 - Michelson interferometer (Theory)
Lecture 39 - Michelson interferometer (Experiment)
Lecture 40 - Theory of diffraction
Lecture 41 - Theory of diffraction (Continued...)
Lecture 42 - Theory of diffraction (Continued...)
Lecture 43 - Single slit diffraction
Lecture 44 - Double slit diffraction
Lecture 45 - Plane transmission grating
Lecture 46 - Plane transmission grating (Continued...)
Lecture 47 - Theory of polarization
Lecture 48 - Theory of polarization (Continued...)
Lecture 49 - Experiment for Verification of Malus law
Lecture 50 - Experiment for brewester
Lecture 51 - Experiment for Brewester angle
Lecture 52 - Experiment on e-ray and o-ray
Lecture 53 - Polarimeter
Lecture 54 - Zone-plate Theory
Lecture 55 - Zone-plate Experiment
Lecture 56 - Theory of Photoelectric Effect
Lecture 57 - Experiment on Photoelectric Effect
Lecture 58 - Thomson experiment to determine the specific charge of an electron (e/m)
Lecture 59 - Frank-Hertz Experiment
Lecture 60 - Experiment on Rydberg constant
Lecture 61 - Experiment on Rydberg constant (Continued...)
Lecture 1 - Introductory lecture about this course
Lecture 2 - Quantum Mechanics and Symmetry of the Hydrogen Atom
Lecture 3 - Hydrogen atom
Lecture 4 - Hydrogen atom
Lecture 5 - Degeneracy of the Hydrogen Atom
Lecture 6 - Wavefunctions of the Hydrogen Atom
Lecture 7 - Angular Momentum in Quantum Mechanics
Lecture 8 - Angular Momentum in Quantum Mechanics
Lecture 9 - Angular Momentum in Quantum Mechanics
Lecture 10 - Angular Momentum in Quantum Mechanics Dimensionality of the Direct-Product (Composite) Vector Space CGC recursion relations
Lecture 11 - Angular Momentum in Quantum Mechanics CGC matrix, Wigner D Rotation Matrix, Irreducible Tensor Operators
Lecture 12 - Angular Momentum in Quantum Mechanics - more on ITO, and the Wigner-Eckart Theorem
Lecture 13 - Angular Momentum in Quantum Mechanics Wigner-Eckart Theorem - 2
Lecture 14 - Relativistic Quantum Mechanics of the Hydrogen Atom - 1
Lecture 15 - Relativistic Quantum Mechanics of the Hydrogen Atom - 2
Lecture 16 - Relativistic Quantum Mechanics of the Hydrogen Atom - PAULI Equation - Foldy - Wouthysen Transformations - 2
Lecture 17 - Relativistic Quantum Mechanics of the Hydrogen Atom - Foldy - Wouthysen Transformations - 3
Lecture 18 - Relativistic Quantum Mechanics of the Hydrogen Atom - Foldy - Wouthysen Transformations - 3
Lecture 19 - Relativistic Quantum Mechanics of the Hydrogen Atom - Spherical Symmetry of the Coulomb Potential
Lecture 20 - Hartree-Fock Self-Consistent Field formalism - 1
Lecture 21 - Hartree-Fock Self-Consistent Field formalism - 2
Lecture 22 - Hartree-Fock Self-Consistent Field formalism - 3
Lecture 23 - Hartree-Fock Self-Consistent Field formalism - 4
Lecture 24 - Hartree-Fock Self-Consistent Field formalism - 5
Lecture 25 - Perturbative treatment of relativistic effects | Schrodinger's and Dirac QM
Lecture 26 - Perturbative treatment of relativistic effects | Schrodinger's and Dirac QM
Lecture 27 - Probing the atom - Collisions and Spectroscopy - boundary conditions - 1
Lecture 28 - Atomic Probes - Collisions and Spectroscopy - boundary conditions - 2
Lecture 29 - Atomic Probes - Collisions and Spectroscopy - Scattering phase shifts and boundary conditions
Lecture 30 - Atomic Probes - Time reversal symmetry - applications in atomic collisions and photoionization processes
Lecture 31 - Atomic Photoionization cross sections, angular distributions of photoelectrons - 1
Lecture 32 - Atomic Photoionization cross sections, angular distributions of photoelectrons - 2
Lecture 33 - Atomic Photoionization cross sections, angular distributions of photoelectrons - 3
Lecture 34 - Atomic Photoionization cross sections, angular distributions of photoelectrons - 4
Lecture 35 - Atomic Photoionization cross sections, angular distributions of photoelectrons - Cooper Zare Formula
Lecture 36 - Stark- Zeeman Spectroscopy - Stark effect
Lecture 37 - Stark- Zeeman Spectroscopy - Stark effect on n=2 excited state of the H atom - Zeeman effect
Lecture 38 - Stark- Zeeman Spectroscopy - Normal, Anomalous Zeeman effect; Paschen- Back effect
Lecture 39 - Stark- Zeeman Spectroscopy - Anomalous Zeeman effect
Lecture 40 - Zeeman effect - Fine structure, Hyperfine structure - Elemental, rudimentary introduction to Laser
NPTEL Video Course - Physics - Classical Field Theory

Subject Co-ordinator - Prof. Suresh Govindarajan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - What is Classical Field Theory?
Lecture 2 - Symmetries and Invariances - I
Lecture 3 - Symmetries and Invariances - II
Lecture 4 - Group Theory in Physics - I
Lecture 5 - Group Theory in Physics - II
Lecture 6 - Finite Groups - I
Lecture 7 - Finite Groups - II
Lecture 8 - Basics of CFT - I
Lecture 9 - Basics of CFT - II
Lecture 10 - Basics of CFT - III
Lecture 11 - Green Functions - I
Lecture 12 - Green Functions - II
Lecture 13 - Noether's Theorem - I
Lecture 14 - Noether's Theorem - II
Lecture 15 - Kink Soliton
Lecture 16 - Hidden Symmetry
Lecture 17 - Local Symmetries
Lecture 18 - The Abelian Higgs model
Lecture 19 - Lie Algebras - I
Lecture 20 - Lie Algebras - II
Lecture 21 - Magnetic Vortices - I
Lecture 22 - Magnetic Vortices - II
Lecture 23 - Non-abelian gauge theories - I
Lecture 24 - Non-abelian gauge theories - II
Lecture 25 - Irreps of Lie algebras - I
Lecture 26 - Irreps of Lie algebras - II
Lecture 27 - The Standard Model - I
Lecture 28 - The Standard Model - II
Lecture 29 - Irreps of the Lorentz/Poincare algebras

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Lecture 30 - The Dirac monopole
Lecture 31 - The 't Hooft-Polyakov monopole
Lecture 32 - Revisiting Derrick's Theorem
Lecture 33 - The Julia-Zee dyon
Lecture 34 - Instantons - I
Lecture 35 - Instantons - II
Lecture 36 - Instantons - III
Lecture 37 - Instantons - IV
Lecture 38 - Dualities
Lecture 39 - Geometrization of Field Theory
NPTEL Video Course - Physics - Topics in Nonlinear Dynamics

Subject Co-ordinator - Prof. V. Balakrishnan
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Overview
Lecture 2 - Critical points of a dynamical system
Lecture 3 - Two-dimensional flows
Lecture 4 - Stable and unstable manifolds
Lecture 5 - Hamiltonian dynamics - Part I
Lecture 6 - Hamiltonian dynamics - Part II
Lecture 7 - Hamiltonian dynamics - Part III
Lecture 8 - Hamiltonian dynamics - Part IV
Lecture 9 - Hamiltonian dynamics - Part V
Lecture 10 - Elementary bifurcations
Lecture 11 - Limit cycles
Lecture 12 - Poincaré index
Lecture 13 - Illustrative examples
Lecture 14 - Quiz 1. Questions and answers
Lecture 15 - Bead on a rotating hoop
Lecture 16 - Types of dynamical behaviour
Lecture 17 - Discrete time dynamics - Part I
Lecture 18 - Discrete time dynamics - Part II
Lecture 19 - Discrete time dynamics - Part III
Lecture 20 - Discrete time dynamics - Part IV
Lecture 21 - Coarse-grained dynamics in phase space - Part I
Lecture 22 - Coarse-grained dynamics in phase space - Part II & Stochastic dynamics - Part I
Lecture 23 - Stochastic dynamics - Part II
Lecture 24 - Stochastic dynamics - Part III
Lecture 25 - Stochastic dynamics - Part IV & Stochastic dynamics - Part IV
Lecture 26 - Discrete time dynamics - Part V
Lecture 27 - Quiz 2. Questions and answers
Lecture 28 - Stochastic dynamics - Part V
Lecture 29 - Stochastic dynamics - Part VI

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NPTEL Video Course - Physics - Condensed Matter Physics

Subject Co-ordinator - Prof. G. Rangarajan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Principles of Condensed Matter Physics
Lecture 2 - Symmetry in Perfect Solids
Lecture 3 - Symmetry in Perfect Solids (Continued...)
Lecture 4 - Symmetry in Perfect Solids - Worked Examples
Lecture 5 - Diffraction Methods For Crystal Structures
Lecture 6 - Diffraction Methods For Crystal Structures (Continued...)
Lecture 7 - Diffraction Methods For Crystal Structures - Worked Examples
Lecture 8 - Physical Properties of Crystals
Lecture 9 - Physical Properties of Crystals (Continued...)
Lecture 10 - Physical Properties of Crystals - Worked Examples
Lecture 11 - Cohesion in Solids
Lecture 12 - Cohesion in Solids - Worked Examples
Lecture 13 - The Free Electron Theory of Metals
Lecture 14 - The Free Electron Theory of Metals - Worked Examples
Lecture 15 - The Free Electron Theory of Metals - Electrical Conductivity
Lecture 16 - The Free Electron Theory of Metals - Electrical Conductivity - Worked Examples
Lecture 17 - Thermal Conductivity of Metals
Lecture 18 - Thermal Conductivity of Metals - Worked Examples
Lecture 19 - The Concept of Phonons
Lecture 20 - Debye Theory of Specific Heat, Lattice Vibrations
Lecture 21 - Debye Theory of Specific Heat, Lattice Vibrations - Worked Examples
Lecture 22 - Lattice Vibrations (Continued) Phonon thermal conductivity
Lecture 23 - Lattice Vibrations (Continued) Phonon Thermal Conductivity - Worked Examples
Lecture 24 - Anharmonicity and Thermal Expansion
Lecture 25 - Dielectric (Insulating) Solids
Lecture 26 - Dispersion and Absorption of Electromagnetic Waves in Dielectric Media, Ferro-and Antiferroelectrics
Lecture 27 - Optical Properties of Metals; Ionic Polarization in Alkali Halides; Piezoelectricity
Lecture 28 - Dielectric Solids - Worked Examples
Lecture 29 - Dia - and Paramagnetism

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Lecture 30 - Paramagnetism of Transition Metal and Rare Earth Ions
Lecture 31 - Quenching of Orbital Angular Momentum; Ferromagnetism
Lecture 32 - Exchange Interactions, Magnetic Order, Neutron Diffraction
Lecture 33 - Hysteresis and Magnetic Domains; Spin Waves and Magnons
Lecture 34 - Magnetic Resonance
Lecture 35 - Magnetism and Magnetic Resonance - Worked Examples
Lecture 36 - Magnetism - Worked Examples (Continued...)
Lecture 37 - Pauli Paramagnetism and Landau Diamagnetism
Lecture 38 - Band Magnetism; Itinerant Electrons; Stoner Model
Lecture 39 - Superconductivity - Perfect Electrical Conductivity and Perfect Diamagnetism
Lecture 40 - Type I and Type II Superconductors
Lecture 41 - Ginsburg - Landau Theory, Flux Quantization
Lecture 42 - Cooper Pairs
Lecture 43 - Microscopic (BCS) Theory of Superconductivity
Lecture 44 - BCS Theory (Continued...)
Lecture 45 - Josephson Effect (Continued...); High Temperature Superconductors
Lecture 46 - Superconductors - Worked Examples
Lecture 47 - Energy Bands in Solids
Lecture 48 - Electron Dynamics in a Periodic Solid
Lecture 49 - Semiconductors
Lecture 50 - Semiconductors (Continued...)
Lecture 51 - Semiconductors - Worked Examples
Lecture 52 - Defects in Solids - Point Defects
Lecture 53 - Point Defects in Solids - Worked Examples
Lecture 54 - Defects in Solids - Line and Surface Defects
Lecture 55 - Dislocations in Solids - Worked Examples
Lecture 56 - Quantum Fluids and Quantum Solids
Lecture 57 - Quantum Liquids and Quantum Solids - Worked Examples
Lecture 58 - Epilogue
Lecture 30 - Moller Scattering - I
Lecture 31 - Moller Scattering - II
Lecture 32 - Vertex Correction - I
Lecture 33 - Vertex Correction - II
Lecture 34 - Vertex Correction - III
Lecture 35 - Vertex Correction - IV
Lecture 36 - Electron Selfenergy
Lecture 37 - Photon Selfenergy - I
Lecture 38 - Photon Selfenergy - II
Lecture 30 - The Central Potential
Lecture 31 - The Spherical Harmonics
Lecture 32 - Central Potential
Lecture 33 - Illustrative Exercises - I
Lecture 34 - Illustrative Exercises - II
Lecture 35 - Ehrenfest's Theorem
Lecture 36 - Perturbation Theory - I
Lecture 37 - Perturbation Theory - II
Lecture 38 - Perturbation Theory - III
Lecture 39 - Perturbation Theory - IV
Lecture 40 - Time-dependent Hamiltonians
Lecture 41 - The Jaynes-Cummings model
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Physics - Special Topics in Classical Mechanics

Subject Co-ordinator - Prof. P.C. Deshmukh

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Course Overview
Lecture 2 - Equations of Motion (i)
Lecture 3 - Equations of Motion (ii)
Lecture 4 - Equations of Motion (iii)
Lecture 5 - Equations of Motion (iv)
Lecture 6 - Equations of Motion (v)
Lecture 7 - Oscillators, Resonances, Waves (i)
Lecture 8 - Oscillators, Resonances, Waves (ii)
Lecture 9 - Oscillators, Resonances, Waves (iii)
Lecture 10 - Oscillators, Resonances, Waves (iv)
Lecture 11 - Polar Coordinates (i)
Lecture 12 - Polar Coordinates (ii)
Lecture 13 - Dynamical Symmetry in the Kepler Problem (i)
Lecture 14 - Dynamical Symmetry in the Kepler Problem (ii)
Lecture 15 - Real Effects of Pseudo-Forces (i)
Lecture 16 - Real Effects of Pseudo-Forces (ii)
Lecture 17 - Real Effects of Pseudo-Forces (iii)
Lecture 18 - Real Effects of Pseudo-Forces (iv)
Lecture 19 - Special Theory of Relativity (i)
Lecture 20 - Special Theory of Relativity (ii)
Lecture 21 - Special Theory of Relativity (iii)
Lecture 22 - Special Theory of Relativity (iv)
Lecture 23 - Potentials Gradients Fields (i)
Lecture 24 - Potentials Gradients Fields (ii)
Lecture 25 - Potentials Gradients Fields (iii)
Lecture 26 - Gauss Law Eq of continuity (i)
Lecture 27 - Gauss Law Eq of continuity (ii)
Lecture 28 - Gauss Law Eq of continuity (iii)
Lecture 29 - Fluid Flow Bernoulli Principle (i)

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Lecture 30 - Fluid Flow Bernoulli Principle (ii)
Lecture 31 - Classical Electrodynamics (i)
Lecture 32 - Classical Electrodynamics (ii)
Lecture 33 - Classical Electrodynamics (iii)
Lecture 34 - Classical Electrodynamics (iv)
Lecture 35 - Chaotic Dynamical Systems (i)
Lecture 36 - Chaotic Dynamical Systems (ii)
Lecture 37 - Chaotic Dynamical Systems (iii)
Lecture 38 - Chaotic Dynamical Systems (iv)
Lecture 39 - Chaotic Dynamical Systems (v)
Lecture 40 - The Scope and Limitations of Classical Mechanics
NPTEL Video Course - Physics - Special, Select Topics in the Theory of Atomic Collisions and Spectroscopy

Subject Co-ordinator - Prof. P.C. Deshmukh

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to the STiTACS course
Lecture 2 - Quantum Theory of collisions
Lecture 3 - Quantum Theory of collisions
Lecture 4 - Quantum Theory of collisions
Lecture 5 - Quantum Theory of collisions
Lecture 6 - Quantum Theory of collisions
Lecture 7 - Quantum Theory of collisions
Lecture 8 - Quantum Theory of collisions
Lecture 9 - Quantum Theory of collisions
Lecture 10 - Quantum Theory of collisions
Lecture 11 - Quantum Theory of collisions
Lecture 12 - Quantum Theory of collisions
Lecture 13 - Many body theory, electron correlations
Lecture 14 - Second Quantization Creation, Destruction and Number operators
Lecture 15 - Many-particle Hamiltonian & Schrodinger Equation in 2nd Quantization
Lecture 16 - Many-electron problem in quantum mechanics
Lecture 17 - Hartree-Fock Self-Consistent-Field
Lecture 18 - Exchange, Statistical, Fermi-Dirac correlations
Lecture 19 - Limitations of the Hartree-Fock Self-Consistent-Field formalism
Lecture 20 - Many-Body formalism, II Quantization
Lecture 21 - Density fluctuations in an electron gas
Lecture 22 - Bohm-Pines approach to Random Phase Approximation
Lecture 23 - Bohm-Pines approach to Random Phase Approximation (Continued...)
Lecture 24 - Bohm-Pines approach to Random Phase Approximation (Continued...)
Lecture 25 - Schrodinger, Heisenberg and Dirac Â□picturesÂ□ of QM
Lecture 26 - DysonÂ’s chronological operator
Lecture 27 - Gell-Mann-Low Theorem
Lecture 28 - Reyleigh-Schrodinger perturbation methods and adiabatic switching
Lecture 29 - Feynman Diagrams

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Lecture 30 - I Order Feynman Diagrams
Lecture 31 - II and higher order Feynman Diagrams
Lecture 32 - Linear response of electron correlations
Lecture 33 - Lippman Schwinger equation of potential scattering
Lecture 34 - Born Approximation
Lecture 35 - Coulomb scattering
Lecture 36 - Scattering of partial waves
Lecture 37 - Scattering at high energy
Lecture 38 - Resonances in Quantum Collisions
Lecture 39 - Breit-Wigner Resonances
Lecture 40 - Fano parameterization of Breit-Wigner formula
Lecture 41 - Discrete state embedded in the continuum
Lecture 42 - Resonance life times
Lecture 43 - Wigner-Eisenbud formalism of time-delay in scattering
Lecture 44 - Photoionization and Photoelectron Angular Distributions
Lecture 45 - Ionization and Excitation of Atoms by Fast Charged Particles
Lecture 46 - Photo-absorption by Free and Confined Atoms and Ions
NPTEL Video Course - Physics - Selected Topics in Mathematical Physics

Subject Co-ordinator - Prof. V. Balakrishnan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

| Lecture 1 | Analytic functions of a complex variable - Part I |
| Lecture 2 | Analytic functions of a complex variable - Part II |
| Lecture 3 | Calculus of residues - Part I |
| Lecture 4 | Calculus of residues - Part II |
| Lecture 5 | Calculus of residues - Part III |
| Lecture 6 | Calculus of residues - Part IV |
| Lecture 7 | Linear response; dispersion relations - Part I |
| Lecture 8 | Linear response; dispersion relations - Part II |
| Lecture 9 | Analytic continuation and the gamma function - Part I |
| Lecture 10 | Analytic continuation and the gamma function - Part II |
| Lecture 11 | Möbius transformations - Part I |
| Lecture 12 | Möbius transformations - Part II |
| Lecture 13 | Möbius transformations - Part III |
| Lecture 14 | Multivalued functions; integral representations - Part I |
| Lecture 15 | Multivalued functions; integral representations - Part II |
| Lecture 16 | Multivalued functions; integral representations - Part III |
| Lecture 17 | Multivalued functions; integral representations - Part IV |
| Lecture 18 | Laplace transforms - Part I |
| Lecture 19 | Laplace transforms - Part II |
| Lecture 20 | Fourier transforms - Part I |
| Lecture 21 | Fourier transforms - Part II |
| Lecture 22 | Fourier transforms - Part III |
| Lecture 23 | Fundamental Green function for $\Box^2$ - Part I |
| Lecture 24 | Fundamental Green function for $\Box^2$ - Part II |
| Lecture 25 | The diffusion equation - Part I |
| Lecture 26 | The diffusion equation - Part II |
| Lecture 27 | The diffusion equation - Part III |
| Lecture 28 | The diffusion equation - Part IV |
| Lecture 29 | Green function for $(\Box^2 + k^2)$; nonrelativistic scattering - Part I |

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Physics - Nuclear Reactors and Safety - An Introduction

Subject Co-ordinator - Dr.G.Vaidyanathan

Co-ordinating Institute - SRM University

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Energy Sources
Lecture 2 - Nuclear Power Production Cycle
Lecture 3 - Basic Physics of Nuclear Fission
Lecture 4 - Basic Physics of Nuclear Fission (Continued...)
Lecture 5 - Nuclear Reactors
Lecture 6 - Reactors Generation
Lecture 7 - Radiation Sources and Protection
Lecture 8 - Biological Effects of Radiation
Lecture 9 - Safety Principles
Lecture 10 - Safety Principles (Continued...)
Lecture 11 - Safety Approach
Lecture 12 - Risk and Probabilistic safety analysis (PSA)
Lecture 13 - History of Events in Nuclear Power Plants and Radiation facilities
Lecture 14 - Other Events
Lecture 15 - Validation and Dynamic Analysis
Lecture 16 - Validation and Dynamic Analysis (Continued...)
Lecture 17 - Quality Assurance
Lecture 18 - Siting of Nuclear Plants
Lecture 19 - Siting of Nuclear Plants (Continued...)
Lecture 20 - Engineered Safety Systems
Lecture 21 - Engineered Safety Systems (Continued...)
Lecture 22 - Assessment of Radiological Consequences of Incidents
Lecture 23 - Safety Regulation in India
Lecture 24 - Safety Regulation in India (Continued...)
Lecture 25 - Safety Regulation in India (Continued...)
Lecture 26 - Safety Practices in Indian NPPs
Lecture 27 - Safety Practices in Indian NPPs (Continued...)
Lecture 28 - Safety Practices in Indian NPPs (Continued...)
Lecture 29 - Passive Safety

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Lecture 1 - Discrete probability distributions - Part 1
Lecture 2 - Discrete probability distributions - Part 2
Lecture 3 - Continuous random variables
Lecture 4 - Central Limit Theorem
Lecture 5 - Stable distributions
Lecture 6 - Stochastic processes
Lecture 7 - Markov processes - Part 1
Lecture 8 - Markov processes - Part 2
Lecture 9 - Markov processes - Part 3
Lecture 10 - Birth-and-death processes
Lecture 11 - Continuous Markov processes
Lecture 12 - Langevin dynamics - Part 1
Lecture 13 - Langevin dynamics - Part 2
Lecture 14 - Langevin dynamics - Part 3
Lecture 15 - Langevin dynamics - Part 4
Lecture 16 - Itô and Fokker-Planck equations for diffusion processes
Lecture 17 - Level-crossing statistics of a continuous random process
Lecture 18 - Diffusion of a charged particle in a magnetic field
Lecture 19 - Power spectrum of noise
Lecture 20 - Elements of linear response theory
Lecture 21 - Random pulse sequences
Lecture 22 - Dichotomous diffusion
Lecture 23 - First passage time - Part 1
Lecture 24 - First passage time - Part 2
Lecture 25 - First passage and recurrence in Markov chains
Lecture 26 - Recurrent and transient random walks
Lecture 27 - Non-Markovian random walks
Lecture 28 - Statistical aspects of deterministic dynamics - Part 1
Lecture 29 - Statistical aspects of deterministic dynamics - Part 2
Lecture 30 - Damped Simple Harmonic Motion
Lecture 31 - Wave Motion - Travelling and Standing Waves
Lecture 32 - Wave Motion - Wave Equation, General Solution
Lecture 33 - Fluid Dynamics - Hydrostatic Equilibrium
Lecture 34 - Fluid Dynamics - Equation of Continuity
Lecture 35 - Fluid Flow - Bernoullis Principle
Lecture 36 - Circulation and Vorticity
Lecture 37 - What is Thermodynamics?
Lecture 38 - The Classical Ideal Gas
Lecture 39 - The Laws of Thermodynamics
Lecture 40 - Specific Heat of an Ideal Gas
Lecture 41 - Van der Waals Equation
Lecture 42 - Phase Transitions
Lecture 43 - Summary
NPTEL Video Course - Physics - Nonequilibrium Statistical Mechanics

Subject Co-ordinator - Prof. V. Balakrishnan

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Recapitulation of equilibrium statistical mechanics
Lecture 2 - The Langevin model (Part 1)
Lecture 3 - The Langevin model (Part 2)
Lecture 4 - The Langevin model (Part 3)
Lecture 5 - The Langevin model (Part 4)
Lecture 6 - Linear response theory (Part 1)
Lecture 7 - Linear response theory (Part 2)
Lecture 8 - Linear response (Part 3)
Lecture 9 - Linear response (Part 4)
Lecture 10 - Linear response (Part 5)
Lecture 11 - Linear response (Part 6)
Lecture 12 - Linear response theory (Part 7)
Lecture 13 - Quiz 1 - Questions and answers
Lecture 14 - Linear response theory (Part 8)
Lecture 15 - Linear response theory (Part 9)
Lecture 16 - The dynamic mobility
Lecture 17 - Fokker-Planck equations (Part 1)
Lecture 18 - Fokker-Planck equations (Part 2)
Lecture 19 - Fokker-Planck equations (Part 3)
Lecture 20 - The generalized Langevin equation (Part 1)
Lecture 21 - The generalized Langevin equation (Part 2)
Lecture 22 - Diffusion in a magnetic field
Lecture 23 - The Boltzmann equation for a dilute gas (Part 1)
Lecture 24 - The Boltzmann equation for a dilute gas (Part 2)
Lecture 25 - The Boltzmann equation for a dilute gas (Part 3)
Lecture 26 - The Boltzmann equation for a dilute gas (Part 4)
Lecture 27 - The Boltzmann equation for a dilute gas (Part 5)
Lecture 28 - Quiz 2 - Questions and answers
Lecture 29 - Critical phenomena (Part 1)
Lecture 30 - Critical phenomena (Part 2)
Lecture 31 - Critical phenomena (Part 3)
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Lecture 35 - Critical phenomena (Part 7)
Lecture 36 - The Wiener process (standard Brownian motion)
Lecture 30 - Vibrations of Solid (Low Temperature)
Lecture 31 - Vibrations of Solid (Continuation)
Lecture 32 - Free Electrons (Fermi Gas) in a Metal
Lecture 33 - Free Electrons (Fermi Gas) in a Metal (Continuation)
Lecture 34 - Problem solving demo - Part 1
Lecture 35 - Problem solving demo - Part 2
NPTEL Video Course - Physics - NOC: Waves and Oscillations

Subject Co-ordinator - Prof. M. S. Santhanam

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Simple Harmonic Motion
Lecture 2 - Superposition of Oscillations
Lecture 3 - Superposition of Oscillations
Lecture 4 - Superposition of Oscillations
Lecture 5 - Simple Harmonic Motion
Lecture 6 - Damped oscillator - Part 1
Lecture 7 - Damped oscillator - Part 2
Lecture 8 - Damped oscillator and Q-factor
Lecture 9 - Damped oscillator
Lecture 10 - Forced oscillator - Part 1
Lecture 11 - Forced oscillator - Part 2
Lecture 12 - Resonances
Lecture 13 - Q-factor of forced oscillator
Lecture 14 - Applications of forced oscillator
Lecture 15 - Forced Oscillator
Lecture 16 - Coupled Oscillations - Part 1
Lecture 17 - Coupled Oscillations - Part 2
Lecture 18 - Solving for normal modes
Lecture 19 - Coupled oscillations - More examples
Lecture 20 - Coupled oscillator
Lecture 21 - Coupled Oscillations of Loaded String
Lecture 22 - Solutions for Loaded String
Lecture 23 - Oscillations of Loaded String
Lecture 24 - Continuum Limit of Loaded String
Lecture 25 - Wave equation and its solutions
Lecture 26 - Wave equation - impedance and velocities
Lecture 27 - Standing waves
Lecture 28 - Transverse waves in periodic structures
Lecture 29 - Wave equation

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Lecture 30 - Reflection and transmission of waves
Lecture 31 - Impedance matching
Lecture 32 - Energy of vibrating string
Lecture 33 - Dispersion of waves
Lecture 34 - Bandwidth theorem and problems
Lecture 35 - Longitudinal Waves and Speed of Sound
Lecture 36 - Longitudinal Standing Waves
Lecture 37 - Sound Intensity
Lecture 38 - Longitudinal Waves
Lecture 39 - Fourier Series - Part 1
Lecture 40 - Fourier Series - Part 2
Lecture 41 - Fourier Series and Energy of Vibrating String
Lecture 42 - Frequency Spectrum and Fourier Transforms
Lecture 43 - Fourier Series
Lecture 44 - Waves in Optical Systems
Lecture 45 - Waves in Optical Systems
Lecture 46 - Waves in Optical Systems
Lecture 47 - Waves in Optical Systems
Lecture 48 - Waves in Optical Systems
Lecture 49 - Interference
Lecture 50 - Interference
Lecture 51 - Michelson and Fabry-Perot Interferometers
Lecture 52 - Young's Double Slit Experiment
Lecture 53 - Diffraction
Lecture 54 - Beyond Linear Oscillators
Lecture 55 - Beyond Linear Oscillators
Lecture 56 - Beyond Linear Oscillators
Lecture 57 - Beyond Linear Waves
Lecture 58 - Waves in Quantum Mechanics and Summary
Lecture 30 - Optical Fiber Components and Devices - III
Lecture 31 - Optical Fiber Components and Devices - IV
Lecture 32 - Optical Fiber Components and Devices - V
Lecture 33 - Optical Sources and Detectors - I
Lecture 34 - Optical Sources and Detectors - II
Lecture 35 - Optical Sources and Detectors - III
Lecture 36 - Optical Sources and Detectors - IV
Lecture 37 - Optical Sources and Detectors - V
Lecture 38 - System Design Aspects
Lecture 39 - Optical Fiber Measurements
Lecture 40 - Summary and Recent Advances
NPTEL Video Course - Physics - NOC: Solar Photovoltaics Fundamentals, Technology and Applications

Subject Co-ordinator - Prof. Soumitra SataPathi

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Energy and its Sources
Lecture 2 - Introduction to Solar Energy
Lecture 3 - Introduction of Quantum Mechanics in Solar Photovoltaics - I
Lecture 4 - Introduction of Quantum Mechanics in Solar Photovoltaics - II
Lecture 5 - Introduction of Quantum Mechanics in Solar Photovoltaics - III
Lecture 6 - Band Theory
Lecture 7 - Energy Band Diagram
Lecture 8 - Charge Carrier Dynamics in Semiconductor
Lecture 9 - P-N junction model and Diode working principle
Lecture 10 - Current-Voltage Characteristics of Solar Cell
Lecture 11 - Equivalent Circuits of Solar Cells, Fill Factor
Lecture 12 - Fabrication Process of Semiconductor Grade Silicon
Lecture 13 - Fabrication Process of Single crystalline Silicon
Lecture 14 - Thin Film deposition Techniques
Lecture 15 - Thin Film Solar Cells
Lecture 16 - Photo Physics of Dye Sensitized Solar Cells
Lecture 17 - Fabrication of Dye Sensitized Solar Cells
Lecture 18 - Design of Novel dyes
Lecture 19 - Design of Electrolytes
Lecture 20 - Quantum Dot Solar Cells
Lecture 21 - Fabrication of Organic Solar Cells
Lecture 22 - Physics of Bulk Hetero Junction (BHJ) Solar Cells
Lecture 23 - Photo Physics of Organic Solar Cells
Lecture 24 - Morphology Optimization of Organic Solar Cells
Lecture 25 - Perovskite Solar Cells
Lecture 26 - Fabrication of Perovskite Solar Cells
Lecture 27 - Photo Physics of Perovskite Solar Cells
Lecture 28 - Stability in Perovskite Solar Cells
Lecture 29 - Morphology Optimization of Perovskite Solar Cells

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Lecture 1 - Introduction, The Klein-Gordon equation
Lecture 2 - Particles and antiparticles, Two component framework
Lecture 3 - Coupling to electromagnetism, Solution of the Coulomb problem
Lecture 4 - Bohr-Sommerfeld semiclassical solution of the Coulomb problem, The Dirac equation and the Clifford algebra
Lecture 5 - Dirac matrices, Covariant form of the Dirac equation, Equations of motion, Spin, Free particle solutions
Lecture 6 - Electromagnetic interactions, Gyromagnetic ratio
Lecture 7 - The Hydrogen atom problem, Symmetries, Parity, Separation of variables
Lecture 8 - The Frobenius method solution, Energy levels and wavefunctions
Lecture 9 - Non-relativistic reduction, The Foldy-Wouthuysen transformation
Lecture 10 - Interpretation of relativistic corrections, Reflection from a potential barrier
Lecture 11 - The Klein paradox, Pair creation process and examples
Lecture 12 - Zitterbewegung, Hole theory and antiparticles
Lecture 13 - Charge conjugation symmetry, Chirality, Projection operators, The Weyl equation
Lecture 14 - Weyl and Majorana representations of the Dirac equation, Unitary and antiunitary symmetries
Lecture 15 - Time reversal symmetry, The PCT invariance
Lecture 16 - Arrow of time and particle-antiparticle asymmetry, Band theory for graphene
Lecture 17 - Dirac equation structure of low energy graphene states, Relativistic signatures in graphene properties
Lecture 18 - Groups and symmetries, The Lorentz and Poincare groups
Lecture 19 - Group representations, generators and algebra, Translations, rotations and boosts
Lecture 20 - The spinor representation of SL(2,C), The spin-statistics theorem
Lecture 21 - Finite dimensional representations of the Lorentz group, Euclidean and Galilean groups
Lecture 22 - Classification of one particle states, The little group, Mass, spin and helicity
Lecture 23 - Massive and massless one particle states
Lecture 24 - P and T transformations, Lorentz covariance of spinors
Lecture 25 - Lorentz group classification of Dirac operators, Orthogonality and completeness of Dirac spinors
Lecture 26 - Propagator theory, Non-relativistic case and causality
Lecture 27 - Relativistic case, Particle and antiparticle contributions, Feynman prescription and the propagator
Lecture 28 - Interactions and formal perturbative theory, The S-matrix and Feynman diagrams
Lecture 29 - Trace theorems for products of Dirac matrices
Lecture 30 - Photons and the gauge symmetry
Lecture 31 - Abelian local gauge symmetry, The covariant derivative and invariants
Lecture 32 - Charge quantisation, Photon propagator, Current conservation and polarisations
Lecture 33 - Feynman rules for Quantum Electrodynamics, Nature of perturbative expansion
Lecture 34 - Dyson's analysis of the perturbation series, Singularities of the S-matrix, Elementary QED processes
Lecture 35 - The T-matrix, Coulomb scattering
Lecture 36 - Mott cross-section, Compton scattering
Lecture 37 - Klein-Nishina result for cross-section
Lecture 38 - Photon polarisation sums, Pair production through annihilation
Lecture 39 - Unpolarised and polarised cross-sections
Lecture 40 - Helicity properties, Bound state formation
Lecture 41 - Bound state decay, Non-relativistic potentials
Lecture 42 - Lagrangian formulation of QED, Divergences in Green's functions, Superficially divergent 1-loop diagrams
Lecture 43 - Infrared divergences due to massless particles, Renormalisation and finite physical results
Lecture 44 - Symmetry constraints on Green's functions, Furry's theorem, Ward-Takahashi identity, Spontaneous breaking of gauge symmetry
Lecture 45 - Status of QED, Organisation of perturbative expansion, Precision tests
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Physics - NOC:Control System Design

Subject Co-ordinator - Prof. G R Jayanth
Co-ordinating Institute - IISc - Bangalore
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction
Lecture 2 - Linear Systems
Lecture 3 - Homogeneous linear time invariant ordinary differential equations
Lecture 4 - In-homogeneous linear time invariant ordinary differential equations
Lecture 5 - Fourier transforms - Part 1
Lecture 6 - Fourier transforms - Part 2
Lecture 7 - Laplace transforms - Part 1
Lecture 8 - Laplace transforms - Part 2
Lecture 9 - Introduction to feedback control - Part 1
Lecture 10 - Introduction to feedback control - Part 2
Lecture 11 - Nyquist stability theory - Part 1
Lecture 12 - Nyquist stability theory - Part 2
Lecture 13 - Nyquist stability theory - Part 3
Lecture 14 - Bode plots
Lecture 15 - Steps for performing control design - Part 1
Lecture 16 - Steps for performing control design - Part 2
Lecture 17 - General controllers - Part 1
Lecture 18 - General controllers - Part 2
Lecture 19 - General controllers - Part 3
Lecture 20 - Bode plot-based control design - Part 1
Lecture 21 - Bode plot-based control design - Part 2
Lecture 22 - Introduction to root-locus
Lecture 23 - Control system design using root-locus
Lecture 24 - Control of systems with some known parameters - Part 1
Lecture 25 - Control of systems with some known parameters - Part 2
Lecture 26 - Limitations of 1-degree of freedom control
Lecture 27 - Introduction to 2-degree of freedom control
Lecture 28 - 2-Degree of freedom robust control design for plants with gain uncertainty - Part 1
Lecture 29 - 2-Degree of freedom robust control design for plants with uncertain gain - Part 2

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Lecture 30 - 2-Degree of freedom robust control design for plants with uncertain pole
Lecture 31 - 2-Degree of freedom robust control design for plants with multiple uncertainties in their structure
Lecture 32 - Issues connected with 2-Degree of freedom control design using root-locus
Lecture 33 - Introduction to Nichols plot
Lecture 34 - Feedback control design using Nichols plot
Lecture 35 - Robust control design using Quantitative feedback theory - Part 1
Lecture 36 - Robust control design using Quantitative feedback theory - Part 2
Lecture 37 - Tutorial on QFT Toolbox software - Part 1
Lecture 38 - Tutorial on QFT Toolbox software - Part 2
Lecture 39 - Tutorial on QFT Toolbox software - Part 3
Lecture 40 - Fundamental properties of the loop gain - Part 1
Lecture 41 - Fundamental properties of the loop gain - Part 2
Lecture 42 - Ideal Bode Characteristic - Part 1
Lecture 43 - Ideal Bode Characteristic - Part 2
Lecture 44 - Introduction to nonminimum phase systems
Lecture 45 - Fundamental properties of nonminimum phase systems - Part 1
Lecture 46 - Fundamental properties of nonminimum phase systems - Part 2
Lecture 47 - Fundamental properties of unstable systems
Lecture 48 - Consequences of actuator bandwidth limitations while controlling unstable systems
Lecture 49 - Describing functions - Part 1
Lecture 50 - Describing functions - Part 2
NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Special Lecture Series - ACM Summer School on Graph Theory and Graph Algorithms

Subject Co-ordinator - Dr. N S. Narayanaswamy
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Graph Theory - Part 1
Lecture 2 - Introduction to Graph Theory - Part 2
Lecture 3 - Introduction to Graph Algorithms - Part 1
Lecture 4 - Introduction to Graph Algorithms - Part 2
Lecture 5 - Havel Hakimi Theorem - Part 1
Lecture 6 - Havel Hakimi Theorem - Part 2
Lecture 7 - Havel Hakimi Theorem - Part 3
Lecture 8 - Graph Traversals - Part 1
Lecture 9 - Graph Traversals - Part 2
Lecture 10 - Topological Sort and Mengers Theorem - Part 1
Lecture 11 - Topological Sort and Mengers Theorem - Part 2
Lecture 12 - Topological Sort and Mengers Theorem - Part 3
Lecture 13 - Hamiltonian Graphs - Part 1
Lecture 14 - Hamiltonian Graphs - Part 2
Lecture 15 - Shortest path Algorithms 1 - Part 1
Lecture 16 - Shortest path Algorithms 1 - Part 2
Lecture 17 - Shortest path Algorithms 1 - Part 3
Lecture 18 - Shortest path Algorithms 1 - Part 4
Lecture 19 - Matching in Graphs - Part 1
Lecture 20 - Matching in Graphs - Part 2
Lecture 21 - Some Graph Theoretic Puzzles - Part 1
Lecture 22 - Some Graph Theoretic Puzzles - Part 2
Lecture 23 - Network Flow Algorithms - Part 1
Lecture 24 - Network Flow Algorithms - Part 2
Lecture 25 - Network Flow Algorithms - Part 3
Lecture 26 - Network Flow Algorithms - Part 4
Lecture 27 - Network Flow Algorithms - Part 5
Lecture 28 - Network Flow Algorithms - Part 6
Lecture 29 - Network Flows - Part 1

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 Lecture 69 - Approximation Algorithms III - Part 2
 Lecture 70 - Spectral Graph Theory-VII - Part 1
 Lecture 71 - Spectral Graph Theory-VII - Part 2
 Lecture 72 - Exact Exponential Algorithms - Part 1
 Lecture 73 - Exact Exponential Algorithms - Part 2
 Lecture 74 - Interconnection Networks - Part 1
 Lecture 75 - Interconnection Networks - Part 2
 Lecture 76 - Kernelization - Part 1
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 Lecture 78 - Kernelization - Part 3
 Lecture 79 - Introduction to Parameterized Algorithms - Part 1
 Lecture 80 - Introduction to Parameterized Algorithms - Part 2
 Lecture 81 - Chardal Graphs - Part 1
 Lecture 82 - Chardal Graphs - Part 2
 Lecture 83 - Branching - Part 1
 Lecture 84 - Branching - Part 2
 Lecture 85 - Interval Graphs and Split Graphs - Part 1
 Lecture 86 - Interval Graphs and Split Graphs - Part 2
 Lecture 87 - Vertex cover linear vertex kernel using LP - Part 1
 Lecture 88 - Vertex cover linear vertex kernel using LP - Part 2
 Lecture 89 - Comparability Graphs - Part 1
 Lecture 90 - Comparability Graphs - Part 2
 Lecture 91 - Introduction to Randomized Algorithms and Karger's Min-cut Algorithm - Part 1
 Lecture 92 - Introduction to Randomized Algorithms and Karger's Min-cut Algorithm - Part 2
 Lecture 93 - Probability Methods to Ramsey Number - Part 2
 Lecture 94 - Probability Methods to Ramsey Number - Part 2
 Lecture 95 - Color Coding - Part 1
 Lecture 96 - Color Coding - Part 2
 Lecture 97 - Fast Min-cut Algorithm and its analysis - Part 1
 Lecture 98 - Fast Min-cut Algorithm and its analysis - Part 2
 Lecture 99 - Box Representations of Graphs - Part 1
 Lecture 100 - Box Representations of Graphs - Part 2
 Lecture 101 - Hardness for FPT - Part 1
 Lecture 102 - Hardness for FPT - Part 2
 Lecture 103 - Application of min-cut Algorithm

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Lecture 1 - Probability - Part 1
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Lecture 3 - Probability - Part 3
Lecture 4 - Math Foundation - Part 1
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Lecture 7 - Math Foundation 2 - Part 1
Lecture 8 - Math Foundation 2 - Part 2
Lecture 9 - Math Foundation 2 - Part 3
Lecture 10 - Introduction to probability for Data science - Part 1
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Lecture 34 - Linear Models For Classification - Part 1
Lecture 35 - Linear Models For Classification - Part 2
Lecture 36 - Linear Models For Classification - Part 3
Lecture 37 - Tree Based Methods - Part 1
Lecture 38 - Tree Based Methods - Part 2
Lecture 39 - SVMs - Part 1
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Lecture 41 - SVMs - Part 3
Lecture 42 - Ensemble Methods - Part 1
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Lecture 45 - Learning Theory - Part 1
Lecture 46 - Learning Theory - Part 2
Lecture 47 - Introduction to Probabilistic Modeling - Part 1
Lecture 48 - Introduction to Probabilistic Modeling - Part 2
Lecture 49 - Introduction to Probabilistic Modeling - Part 3
Lecture 50 - Probabilistic/Bayesian Models for Regression - Part 1
Lecture 51 - Probabilistic/Bayesian Models for Regression - Part 2
Lecture 52 - Probabilistic/Bayesian Models for Regression - Part 3
Lecture 53 - Probabilistic Classification, Latent Variable Models - Part 1
Lecture 54 - Probabilistic Classification, Latent Variable Models - Part 2
Lecture 55 - Probabilistic Classification, Latent Variable Models - Part 3
Lecture 56 - Deep Learning I - Part 1
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Lecture 67 - Reinforcement learning II - Part 1
Lecture 68 - Reinforcement learning II - Part 2
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Lecture 70 - Map-Reduce and Spark - Part 2
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Lecture 72 - Scalable Machine Learning - Part 1
Lecture 73 - Scalable Machine Learning - Part 2
NPTEL Video Course - Special Lecture Series - Topics in Theoritical Computer Science

Subject Co-ordinator - Dr. N S. Narayanaswamy

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Finite Automata
Lecture 2 - TMs, Halting Problems
Lecture 3 - Concurrency
Lecture 4 - Blockchain and Bitcoin
Lecture 5 - Complexity Theory
Lecture 6 - Lower Bounds, Dealing with NP hardness
Lecture 7 - Online and streaming algorithms
Lecture 8 - Zero Knowledge Proofs
Lecture 9 - Verification, Games
NPTEL Video Course - Special Lecture Series - Researching Anglo-Indians in India and the Diaspora

Subject Co-ordinator - Prof. Merin Simi Raj
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Keynote Address
Lecture 2 - A Synopsis of 'Two Cheers'
Lecture 3 - Higher Education Among Anglo-Indians
Lecture 4 - Perception of trust, risk and intimacy among elderly Anglo-Indians living in Tollygunge home in Kolkata
Lecture 5 - The Daunting Spirit and the Empowering Voice of Eunice De Souza
Lecture 6 - Origin Myth and Anglo-Indian Identity
Lecture 7 - Keynote Address
Lecture 8 - Shame and Guilt in Alison McQueens The Secret Children
Lecture 9 - Re-visiting McCluskieganj
Lecture 10 - The Imaging of the Anglo-Indian Woman in Colonialist Literature
Lecture 11 - Expostulating Celluloid Stereotypes
Lecture 12 - Chutney Mary
Lecture 13 - In Search of a New Home
Lecture 14 - (Re)discovering Anglo-Indians of Visakhapatnam - An Overview
Lecture 15 - Genealogy of Sporting Culture through a Study of Anglo-Indian Institutions of Asansol
Lecture 16 - Keynote Address
Lecture 17 - Crowdsourcing as a Research Tool
Lecture 18 - Researching Community, Writing Cultures
Lecture 19 - Revisiting the Anglo-Indian Community
Lecture 20 - Minoritizing English
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NPTEL Video Course - Special Lecture Series - ACM Summer School in Data Science (Bangalore)

Subject Co-ordinator - Unknown
Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Web Browser Security
Lecture 2 - Trusted Computing
Lecture 3 - Buffer Overflow Vulnerability and Protection Techniques
Lecture 4 - Secure Software Engineering
Lecture 5 - Challenges and Opportunities with Cloud Security
Lecture 6 - Cognitive Security with Watson
Lecture 7 - IBM MaaS360 Architecture Overview
Lecture 8 - Unified Risk Management Approach
Lecture 9 - Data Encryption and Post Quantum Cryptography (PQC)
Lecture 10 - Network Security - I
Lecture 11 - Network Security - II
Lecture 12 - Network Security - III
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Lecture 16 - Security
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Lecture 19 - Security Gap Analysis - I
Lecture 20 - Security Gap Analysis - II
Lecture 1 - Introduction to Stable Matchings
Lecture 2 - Men-Optimality of the Men-Proposing Gale-Shapley Algorithm
Lecture 3 - GS
Lecture 4 - GS
Lecture 5 - The Hospital Residents Problem
Lecture 6 - Popular Matchings in the stable marriage problem
Lecture 7 - Popularity in the House Allocation Problem - 1
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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Special Lecture Series - ACM Summer School on Algorithmic and Theoretical Aspects of Machine Learning

Subject Co-ordinator - Meenakshi D'Souza
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Textile Engineering - Theory of Yarn Structures

Subject Co-ordinator - Prof. Bohuslav Neckar

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Textile Engineering - NOC: Science of Clothing Comfort

Subject Co-ordinator - Dr. Apurba Das

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Course - Textile Engineering - NOC:Yarn Manufacture-I: Principle of Carding and Drawing

Subject Co-ordinator - Prof. Ravi Chattopadhyay

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Card Feed Zone
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Lecture 4 - Analysis of flat action
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Lecture 8 - Card Setting, Draft, Production
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Lecture 21 - Process Monitoring and Control
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Lecture 23 - Card Autoleveller
Lecture 24 - Numericals on Drawing

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NPTEL Video Course - Textile Engineering - NOC:Evaluations of Textile Materials

Subject Co-ordinator - Dr. Apurba Das
Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Textile Engineering - NOC: Testing of Functional and Technical Textiles

Subject Co-ordinator - Dr. Apurba Das
Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable  |  MP3 Audio Lectures - Available / Unavailable

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Lecture 23 - Testing of Compression Bandages
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NPTEL Video Course – Textile Engineering – NOC: Theory of Yarn Structure

Subject Co-ordinator – Dr. Dipayan Das

Co-ordinating Institute – IIT – Delhi

Sub-Titles – Available / Unavailable  |  MP3 Audio Lectures – Available / Unavailable

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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Textile Engineering - NOC: Advanced Textile Printing Technology

Subject Co-ordinator - Prof. Kushal Sen
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Colourants
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Lecture 9 - Sublimation Transfer Printing
Lecture 10 - Free path length and mechanism of transfer
Lecture 11 - Transfer Printing Machines and Other Transfer Methods
Lecture 12 - Introduction to Digital Textile Printing
Lecture 13 - Revision and Doubt Clarification Session - 1
Lecture 14 - Digital Textile Printing
Lecture 15 - Inkjet Technologies
Lecture 16 - Revision and Doubt Clarification Session - 2
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Lecture 18 - Inkjet Printing
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NPTEL Video Course - Textile Engineering - NOC: Textured Yarn Technology

Subject Co-ordinator - Prof. Kushal Sen

Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 3 - General principles involved in the manufacture of textured yarns (Continued...)
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Lecture 6 - Thermo-mechanical texturing
Lecture 7 - Characterization and optimization
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NPTEL Video Course - Textile Engineering - NOC: Principles of Combing, Roving preparation and Ring spinning

Subject Co-ordinator - Prof. Ravi Chattopadhyay
Co-ordinating Institute - IIT - Delhi
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 30 - End Breaks
NPTEL Video Course - Textile Engineering - NOC: Science and Technology of Weft and Warp Knitting

Subject Co-ordinator - Prof. Bipin Kumar
Co-ordinating Institute - IIT - Delhi

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Knitting
Lecture 2 - Knitting Glossary
Lecture 3 - Loop Formation in Weft Knitting
Lecture 4 - Lab Demo 1
Lecture 5 - Automation in Loop Formation
Lecture 6 - Flat Bed Machine Needle/Cam Interaction
Lecture 7 - Circular Knitting
Lecture 8 - Single Bed Weft Knitting-Flat and Circular M/C
Lecture 9 - Lab Demo 2
Lecture 10 - Lab Demo 3
Lecture 11 - Single Bed Weft Knitting Fabric Curling
Lecture 12 - Weft Knitting Double Flat Beds
Lecture 13 - Weft Knitting Double Circular Beds
Lecture 14 - Weft Knitting V-Bed Machine
Lecture 15 - Analysis of a Double Jersey Fabric
Lecture 16 - Single and Double Jersey Construction
Lecture 17 - Weft Knit Stitches - Loop, Tuck and Float
Lecture 18 - Lab Demo 6 (Part 1) Knitting Notations
Lecture 19 - Lab Demo 6 (Part 2) Knitting Notations
Lecture 20 - Fabric Analysis - Influence of Loop Length
Lecture 21 - Fabric Design - Float and Tuck Formation
Lecture 22 - Fabric Analysis - Influence of Float and Tuck Stitches
Lecture 23 - Fabric Analysis - Shrinkage (Relaxation)
Lecture 24 - Fabric Analysis - Extensibility and Recovery
Lecture 25 - Knitting Calculation - Yarn Selection
Lecture 26 - Knitting Calculation - Production (Circular)
Lecture 27 - Knitting Calculation - Production (Flat)
Lecture 28 - Knitting Calculation - Fabric Calculations
Lecture 29 - Knitting Calculation - Geometrical Modeling

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Lecture 30 - Knitting Calculation - Fabric Spirality in Single Jersy (Tubular)
Lecture 31 - Advancement in Knitting Technology
Lecture 32 - Knitting Designs Possibilities
Lecture 33 - Knitting Designs Possibilities - 1
Lecture 34 - Design Software
Lecture 35 - Weft Knitting- Revision
Lecture 36 - Introduction to Warp Knitting
Lecture 37 - Warp Knitting Technology- Loop Formation
Lecture 38 - Swinging and Shogging Motions (Overlap and Underlap)
Lecture 39 - Warp Knit - Structural Identification
Lecture 40 - Warp Knit Fabric Notation - Lapping Diagram and Lapping Plan
Lecture 41 - Warp Knit Structure - Design Principles
Lecture 42 - Single Bar Warp Knit Constructions
Lecture 43 - Double Bar Warp Knit Constructions
Lecture 44 - Lapping Plan Execution - Pattern Disc and Pattern Drum
Lecture 45 - Chain Links Arrangement - Single and Double Bar Constructions
Lecture 46 - Warp Knits
Lecture 47 - Warp Knits
Lecture 48 - Weft and Warp Knitting - Summary
Lecture 49 - Technical Applications of Knitting
Lecture 50 - Technical Applications of Knitting (Continued...)

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NPTEL Video Course - Textile Engineering - Natural Dyes

Subject Co-ordinator - Dr. Padma S Vankar

Co-ordinating Institute - IIT - Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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