

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

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

Lecture 1 - Introduction
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 - Similarity Solns Velocity BL
Lecture 8 - Similarity Solns Temperature BL - I
Lecture 9 - Similarity Solns Temperature BL - II
Lecture 10 - Integral BL Equations
Lecture 11 - Integral Solns Laminar Velocity BL
Lecture 12 - Integral Solns Laminar Temperature BL
Lecture 13 - Superposition Theory
Lecture 14 - Laminar Internal Flows
Lecture 15 - Fully-Developed Laminar Flows - 1
Lecture 16 - Fully-Developed Laminar Flows - 2
Lecture 17 - Fully-Developed Laminar Flows Heat Transfer - 1
Lecture 18 - Fully-Developed Laminar Flows Heat Transfer - 2
Lecture 19 - Laminar Internal Developing Flows Heat Transfer
Lecture 20 - Superposition Technique
Lecture 21 - Nature of Turbulent Flows
Lecture 22A - Sustaining Mechanism of Turbulence - 1
Lecture 22B - Sustaining Mechanism of Turbulence - 1
Lecture 23 - Sustaining Mechanism of Turbulence - 2
Lecture 24 - Near-Wall Turbulent Flows - 1
Lecture 25 - Near-Wall Turbulent Flows - 2
Lecture 26 - Turbulence Models - 1
Lecture 27 - Turbulence Models - 2
Lecture 28 - Turbulence Models - 3

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- Lecture 29 - Prediction of Turbulent Flows
- Lecture 30 - Prediction of Turbulent Heat Transfer
- Lecture 31 - Convective Mass Transfer
- Lecture 32 - Stefan Flow Model
- Lecture 33 - Couette Flow Model
- Lecture 34 - Reynolds Flow Model
- Lecture 35 - Boundary Layer Flow Model
- Lecture 36 - Evaluation of g and Nw
- Lecture 37 - Diffusion Mass Transfer Problems
- Lecture 38 - Convective MT Couette Flow
- Lecture 39 - Convective MT Reynolds Flow Model - 1
- Lecture 40 - Convective MT Reynolds Flow Model - 2
- Lecture 41 - Natural Convection
- Lecture 42 - Diffusion Jet Flames

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

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
- Lecture 2 - Properties of Cryogenic Fluids - I
- Lecture 3 - Properties of Cryogenic Fluids - II
- Lecture 4 - Properties of Cryogenic
- Lecture 5 - Material Properties at Low Temperature - I
- Lecture 6 - Material Properties at Low Temperature - II
- Lecture 7 - Material Properties at Low Temperature - III
- Lecture 8 - Gas Liquefaction and Refrigeration Systems - I
- Lecture 9 - Gas Liquefaction and Refrigeration Systems - II
- Lecture 10 - Gas Liquefaction and Refrigeration Systems - III
- Lecture 11 - Gas Liquefaction and Refrigeration Systems - IV
- Lecture 12 - Gas Liquefaction and Refrigeration Systems - V
- Lecture 13 - Gas Liquefaction and Refrigeration Systems - VI
- Lecture 14 - Gas Liquefaction and Refrigeration Systems - VII
- Lecture 15 - Gas Liquefaction and Refrigeration Systems - VIII
- Lecture 16 - Gas Liquefaction and Refrigeration Systems - IX
- Lecture 17 - Gas Liquefaction and Refrigeration Systems - X
- Lecture 18 - Gas Separation - I
- Lecture 19 - Gas Separation - II
- Lecture 20 - Gas Separation - III
- Lecture 21 - Gas Separation - IV
- Lecture 22 - Gas Separation - V
- Lecture 23 - Gas Separation - VI
- Lecture 24 - Gas Separation - VII
- Lecture 25 - Gas Separation - VIII
- Lecture 26 - Cryocoolers
- Lecture 27 - Cryocoolers Ideal Stirling Cycle - I
- Lecture 28 - Cryocoolers Ideal Stirling Cycle - II
- Lecture 29 - Cryocoolers Ideal Stirling Cycle - III

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- Lecture 30 - Cryocoolers Ideal Stirling Cycle - IV
- Lecture 31 - Cryocoolers Ideal Stirling Cycle - V
- Lecture 32 - Cryocoolers
- Lecture 33 - Cryogenic Insulation - I
- Lecture 34 - Cryogenic Insulation - II
- Lecture 35 - Cryogenic Insulation - III
- Lecture 36 - Vacuum Technology - I
- Lecture 37 - Vacuum Technology - II
- Lecture 38 - Vacuum Technology - III
- Lecture 39 - Instrumentation in Cryogenics - I
- Lecture 40 - Instrumentation in Cryogenics - II
- Lecture 41 - Instrumentation in Cryogenics - III
- Lecture 42 - Safety in Cryogenics

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

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

Lecture 12 - Relation between Elastic Constants and Strain Energy Densities Recap of Lectures 1 to 11

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

Lecture 17 - Torsion of Non-Circular Shaft

Lecture 18 - Torsion of Non-Circular Shaft (Continued)

Lecture 19 - Membrane Analogy for Torsion

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 27 - Application of Griffith Theory, Irwin-Orowan Modification of Griffith Theory, Assessment of Effect of Flaws

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 Field
- Lecture 31 - Thermal Stress Distribution in Cylinders
- Lecture 32 - Unsymmetrical Bending
- Lecture 33 - Shear Centre
- Lecture 34 - Plate Bending
- Lecture 35 - Plate Bending (Continued)
- Lecture 36 - Examples on Plate Bending
- Lecture 37 - Approximate Solutions for Bending of Rectangular and Circular Plates
- Lecture 38 - Thin Shells of Revolution
- Lecture 39 - Beam on Elastic Foundation
- Lecture 40 - Application of Beam on Elastic Foundation Analysis to Pressure Vessels for Calculation of Displacements

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

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

Lecture 1 - Introduction to Heat and Mass Transfer

Lecture 2 - Introduction

Lecture 3 - Introduction

Lecture 4 - Heat Conduction - 1

Lecture 5 - Heat Conduction - 2

Lecture 6 - Heat Conduction - 3

Lecture 7 - Heat Conduction - 4

Lecture 8 - Heat Conduction - 5

Lecture 9 - Heat Conduction - 6

Lecture 10 - Thermal Radiation - 1

Lecture 11 - Thermal Radiation - 2

Lecture 12 - Thermal Radiation - 3

Lecture 13 - Thermal Radiation - 4

Lecture 14 - Thermal Radiation - 5

Lecture 15 - Thermal Radiation - 6

Lecture 16 - Review Of Fluid Mechanics - 1

Lecture 17 - Review Of Fluid Mechanics - 2

Lecture 18 - Forced Convection - 1

Lecture 19 - Forced Convection - 2

Lecture 20 - Forced Convection - 3

Lecture 21 - Forced Convection - 4

Lecture 22 - Natural Convection - 1

Lecture 23 - Natural Convection - 2

Lecture 24 - Natural Convection - 3

Lecture 25 - Heat Exchangers - 1

Lecture 26 - Heat Exchangers - 2

Lecture 27 - Heat Exchangers - 3

Lecture 28 - Heat Exchangers - 4

Lecture 29 - Boiling and Condensation - 1

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- Lecture 30 - Boiling and Condensation - 2
- Lecture 31 - Boiling and Condensation - 3
- Lecture 32 - Boiling and Condensation - 4
- Lecture 33 - Introduction to Mass Transfer - 1
- Lecture 34 - Introduction to Mass Transfer - 2
- Lecture 35 - Introduction to Mass Transfer - 3

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

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. Amar

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction to Robotics
- Lecture 2 - Technologies in Robots
- Lecture 3 - Industrial Robots
- Lecture 4 - Industrial Manipulators and its Kinematics
- Lecture 5 - Parallel Manipulators
- Lecture 6 - Grippers manipulators
- Lecture 7 - Electric Actuators
- Lecture 8 - Actuators - Electric, Hydraulic, Pneumatic
- Lecture 9 - Internal State Sensors
- Lecture 10 - Internal State Sensors
- Lecture 11 - External State Sensors
- Lecture 12 - Trajectory planning
- Lecture 13 - Trajectory planning
- Lecture 14 - Trajectory planning
- Lecture 15 - Trajectory planning
- Lecture 16 - Trajectory planning
- Lecture 17 - Trajectory planning
- Lecture 18 - Trajectory planning
- Lecture 19 - Trajectory planning
- Lecture 20 - Forward Position Control
- Lecture 21 - Inverse Problem
- Lecture 22 - Velocity Analysis
- Lecture 23 - Velocity Analysis
- Lecture 24 - Dynamic Analysis
- Lecture 25 - Image Processing
- Lecture 26 - Image Processing
- Lecture 27 - Image Processing
- Lecture 28 - Image Processing
- Lecture 29 - Image Processing

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- Lecture 30 - Image Processing
- Lecture 31 - Robot Dynamics and Control
- Lecture 32 - Robot Dynamics and Control
- Lecture 33 - Robot Dynamics and Control
- Lecture 34 - Robot Dynamics and Control
- Lecture 35 - Robot Dynamics and Control
- Lecture 36 - Robot Dynamics and Control
- Lecture 37 - Futuristic Topics in Robotics
- Lecture 38 - Robot Dynamic and Control-Case Studies
- Lecture 39 - Robot Dynamic and Control-Case Studies
- Lecture 40 - Futuristic Topics in Robotics

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

NPTEL Video Course - Mechanical Engineering - Tribology

Subject Co-ordinator - Dr. Harish Hirani

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Introduction
- Lecture 2 - Interdisciplinary Approach and Economic Benefits
- Lecture 3 - Friction
- Lecture 4 - Friction Estimation
- Lecture 5 - Friction Instability
- Lecture 6 - Wear
- Lecture 7 - Adhesive Wear
- Lecture 8 - Wear Mechanisms
- Lecture 9 - Wear Mechanisms - 2
- Lecture 10 - Wear Analysis
- Lecture 11 - Lubrication and Lubricants
- Lecture 12 - Boundary Lubrication
- Lecture 13 - Lubrication Mechanisms
- Lecture 14 - Hydrodynamic Lubrication
- Lecture 15 - Lubricant Classifications
- Lecture 16 - Solid and Semi Solid Lubricants
- Lecture 17 - Liquid Lubricants
- Lecture 18 - Lubricant Additives
- Lecture 19 - Fluid Film Lubrication
- Lecture 20 - Reynolds Equation
- Lecture 21 - Solution of Reynolds Equation
- Lecture 22 - Hybrid Solution Approach (to solve Reynolds Equation)
- Lecture 23 - Finite Difference Method to Solve Reynolds Equation
- Lecture 24 - Viscosity Variation
- Lecture 25 - Estimating Elastic Deformation
- Lecture 26 - Thermo Hydrodynamic Lubrication
- Lecture 27 - Application of Tribology
- Lecture 28 - Rolling Element Bearings
- Lecture 29 - Rolling Element Bearings (Continued...)

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- Lecture 30 - Rolling Element Bearings (Continued...)
- Lecture 31 - Selection of Rolling Element Bearings
- Lecture 32 - Friction of Rolling Element Bearing
- Lecture 33 - Bearing Clearance
- Lecture 34 - Bearing Lubrication
- Lecture 35 - Tribology of Gears
- Lecture 36 - Friction and Lubrication of Gears
- Lecture 37 - Friction and Lubrication of Gears (Continued...)
- Lecture 38 - Surface Fatigue of Spur Gears
- Lecture 39 - Journal Bearings
- Lecture 40 - Hydrostatic Bearings
- Lecture 41 - Hydrodynamic Journal Bearings
- Lecture 42 - Design of Hydrodynamic Journal Bearings

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

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

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

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
Lecture 13 - Hidden Surface Removal
Lecture 14- Hidden Surface Removal
Lecture 15 - Finite Element Method
Lecture 16 - Galerkin's Approach
Lecture 17 - Galerkin's Method
Lecture 18 - 1D Finite Element Problems
Lecture 19 - 1D Finite Element Problems
Lecture 20 - FE Problems
Lecture 21 - 1D - FE Problems
Lecture 22 - Penalty Approach and Multi Point Boundary
Lecture 23 - Quadratic Shape Functions
Lecture 24 - 2D - FE Problems
Lecture 25 - 2D - FE Problems (Continued.)
Lecture 26 - 3D - FE Problems
Lecture 27 - 3D - Tetrahedral and 2D - Quadrilateral Element
Lecture 28 - Mesh Preparation
Lecture 29 - Modeling of Curves

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- Lecture 30 - Modeling of Curves
- Lecture 31 - Modeling of Curves
- Lecture 32 - Modeling of B-Spline Curves
- Lecture 33 - Modeling of B-spline Curves
- Lecture 34 - Surface Modeling
- 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
- Lecture 40 - (Lecture Missing)
- Lecture 41 - Computer Aided Design
- Lecture 42 - Computer Aided Manufacturing
- Lecture 43 - What is CAD/CAM
- Lecture 44 - An Overview of Geometric Modeling
- Lecture 45 - Parametric Cubic Curve
- Lecture 46 - Parametric Bezier Curve
- Lecture 47 - B-Spline Curve
- Lecture 48 - Parametric Surfaces - Part-1
- Lecture 49 - Parametric Surfaces - Part-2
- Lecture 50 - Solid Modeling
- Lecture 51 - Geometric & Product Data Exchange
- Lecture 52 - Reverse Engineering

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

NPTEL Video Course - Mechanical Engineering - Project and Production Management

Subject Co-ordinator - Prof. Arun Kanda

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Project and Production Management - An Overview
- Lecture 2 - Project Management
- Lecture 3 - Project Identification and Screening
- Lecture 4 - Project Appraisal - Part I
- Lecture 5 - Project Appraisal - Part II
- 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
- Lecture 35 - The Analysis of Time Series
- Lecture 36 - Aggregate Production Planning
- Lecture 37 - Modelling Approaches
- Lecture 38 - Basic Inventory Principles
- Lecture 39 - Inventory Modelling
- Lecture 40 - Material Requirements Planning
- Lecture 41 - Scheduling of Job Shops

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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

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

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 Principle
- 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 Poincare's 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 Poincare's technique
- Lecture 21 - Stability and Bifurcation of Fixed-point response - 1
- Lecture 22 - Stability and Bifurcation of Fixed-point response - 2
- Lecture 23 - Stability and Bifurcation of Fixed-point response - 3
- Lecture 24 - Stability and Bifurcation of Fixed-point response - 4
- Lecture 25 - Stability Analysis of Periodic response
- Lecture 26 - Bifurcation of Periodic response And Introduction to quasi-periodic and Chaotic response
- 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
- Lecture 31 - Free Vibration of Single degree of freedom Nonlinear systems with Cubic and quadratic nonlinearities
- 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
- Lecture 38 - Nonlinear Vibration of Parametrically excited system
- Lecture 39 - Nonlinear Vibration of Parametrically excited system
- Lecture 40 - Nonlinear Vibration of Parametrically excited system with internal resonance

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

NPTEL Video Course - Mechanical Engineering - Theory and Practice of Rotor Dynamics

Subject Co-ordinator - Prof. Rajiv Tiwari

Co-ordinating Institute - IIT - Guwahati

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

- 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 Anisotropic Springs as Bearings
- Lecture 8 - Rigid Rotor Mounted on Complex Anisotropic Bearings
- Lecture 9 - Flexible Shaft with a Rigid Disc Mounted on Anisotropic 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 30 - Finite Element Method - Part II
- Lecture 31 - Finite Element Method - Part III
- Lecture 32 - Instability in Rotor Systems
- Lecture 33 - Fluid-Film Bearings
- Lecture 34 - Internal Damping & Asymmetrical Shaft
- Lecture 35 - Steam Whirl and Seals
- Lecture 36 - Subcritical Speed Whirl
- Lecture 37 - Introduction to Rigid Rotor Balancing
- Lecture 38 - Dynamic Balancing of Rotors
- Lecture 39 - Dynamic Balancing of Rotors
- Lecture 40 - Dynamic Balancing of Rotors
- Lecture 41 - Common Faults & Vibration signatures
- Lecture 42 - Condition Based Monitoring

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

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
- Lecture 13 - Centroids Center of Mass
- 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

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- 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

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

NPTEL Video Course - Mechanical Engineering - Mechanical Vibrations

Subject Co-ordinator - Prof. S.K. Dwivedy, Prof. Rajiv Tiwari

Co-ordinating Institute - IIT - Guwahati

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

- 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 - Lagranges'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

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

- Lecture 30 - Transverse Vibration of Beams
- Lecture 31 - Rayleigh's Energy Method
- Lecture 32 - Matrix Iteration Method
- Lecture 33 - Durkerley, Rayleigh-Ritz and Galerkin Method
- Lecture 34 - Finite Element Formulation for Rods, Gear Train and Branched System
- Lecture 35 - Finite Element Formulation for Beams
- Lecture 36 - Global Finite Element Assembly and Imposition of Boundary Conditions
- Lecture 37 - Vibration Testing Equipments
- Lecture 38 - Vibration Testing Equipments
- Lecture 39 - Field Balancing of Rotors
- Lecture 40 - Condition Monitoring

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

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

NPTEL Video Course - Mechanical Engineering - NOC:Fundamentals of Nuclear Power Generation

Subject Co-ordinator - Prof. Dipankar N. Basu

Co-ordinating Institute - IIT - Guwahati

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

- 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

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

Lecture 30 - Disposal methodologies for HLW and IMW

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

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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

Lecture 30 - Hydraulic Turbine

Lecture 31 - Cavitation in Hydraulic Turbine

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

NPTEL Video Course - Mechanical Engineering - NOC:Introduction to Abrasive Machining and 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 Abrasive Machining and Finishing Processes
- Lecture 2 - Grinding Process
- Lecture 3 - Grinding Fluids and Its Additives
- Lecture 4 - Grinding Fluids and its Emissions
- Lecture 5 - Sustainable Grinding Process
- Lecture 6 - Sustainable Grinding Process
- Lecture 7 - Honing Process
- Lecture 8 - Lapping Process
- Lecture 9 - Super Finishing and Sand Blasting
- Lecture 10 - Vibratory Bowl Finishing, Rotary Barrel Finishing or Tumbling
- Lecture 11 - Drag Finishing, Ice-bonded Abrasive Finishing, Pitch Polishing, Pad Polishing
- Lecture 12 - Introduction to Surface Texture in abrasive Process
- Lecture 13 - Representation of Surface Roughness
- Lecture 14 - Abrasive Jet Machining (AJM)
- Lecture 15 - Abrasive Water Jet Machining (AWJM)
- Lecture 16 - Ultrasonic Machining (USM)
- Lecture 17 - EDM, Wire-EDM, EDG, EDDG, AW-EDG
- Lecture 18 - Elastic Emission Machining
- Lecture 19 - PMEDM and ECD and ELID, ECH
- Lecture 20 - Abrasive Flow Finishing
- Lecture 21 - Abrasive Flow Finishing
- Lecture 22 - Magnetic Field Assisted Abrasive Finishing
- Lecture 23 - Magneto Rheological Finishing and BE-MRF
- Lecture 24 - Magnetic Field Assisted Abrasive Finishing
- Lecture 25 - Summary of the Course

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

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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
Lecture 2 - Advanced Machining Processes
Lecture 3 - Advanced Machining Processes
Lecture 4 - Advanced Machining Processes
Lecture 5 - Advanced Machining Processes
Lecture 6 - Advanced Machining Processes
Lecture 7 - Advanced Machining Processes
Lecture 8 - Advanced Machining Processes
Lecture 9 - Advanced Machining Processes
Lecture 10 - Advanced Machining Processes
Lecture 11 - Advanced Machining Processes
Lecture 12 - Advanced Machining Processes
Lecture 13 - Advanced Machining Processes
Lecture 14 - Advanced Machining Processes
Lecture 15 - Advanced Machining Processes
Lecture 16 - Advanced Machining Processes
Lecture 17 - Advanced Machining Processes
Lecture 18 - Advanced Machining Processes
Lecture 19 - Advanced Machining Processes
Lecture 20 - Advanced Machining Processes
Lecture 21 - Advanced Machining Processes
Lecture 22 - Advanced Machining Processes
Lecture 23 - Advanced Machining Processes
Lecture 24 - Advanced Machining Processes
Lecture 25 - Advanced Machining Processes
Lecture 26 - Advanced Machining Processes
Lecture 27 - Advanced Machining Processes
Lecture 28 - Advanced Machining Processes
Lecture 29 - Advanced Machining Processes

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

- Lecture 30 - Advanced Machining Processes
- Lecture 31 - Advanced Machining Processes
- Lecture 32 - Advanced Machining Processes
- Lecture 33 - Advanced Machining Processes
- 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

Lecture 1

Lecture 2

Lecture 3

Lecture 4

Lecture 5

Lecture 6

Lecture 7

Lecture 8

Lecture 9

Lecture 10 (same as 9)

Lecture 11

Lecture 12 (Lecture Missing)

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 26

Lecture 27

Lecture 28

Lecture 29

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Lecture 39
Lecture 40

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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

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
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Lecture 26
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Lecture 29

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

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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
- Lecture 20 - Dynamics of Machines
- Lecture 21 - Dynamics of Machines
- Lecture 22 - Dynamics of Machines
- Lecture 23 - Dynamics of Machines
- Lecture 24 - Dynamics of Machines
- Lecture 25 - Dynamics of Machines
- Lecture 26 - Dynamics of Machines
- Lecture 27 - Dynamics of Machines
- Lecture 28 - Dynamics of Machines
- Lecture 29 - Rotating Vector Approach

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Finite Element Method

Subject Co-ordinator - Prof. C.S. Upadhyay

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

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

Module 10 - Lecture 1
Module 10 - Lecture 2
Module 11 - Lecture 1
Module 11 - Lecture 2
Module 12 - Lecture 1
Module 13 - Lecture 1
Module 13 - Lecture 2
Module 14 - Lecture 1
Module 14 - Lecture 2

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

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
Module 1 - Lecture 2
Module 1 - Lecture 3
Module 2 - Lecture 1
Module 2 - Lecture 2
Module 2 - Lecture 3
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 6 - Lecture 1
Module 6 - Lecture 2
Module 6 - Lecture 3
Module 7 - Lecture 1
Module 7 - Lecture 2
Module 7 - Lecture 3
Module 8 - Lecture 1
Module 8 - Lecture 2
Module 9 - Lecture 1
Module 9 - Lecture 2
Module 9 - Lecture 3
Module 9 - Lecture 4
Module 10 - Lecture 1
Module 10 - Lecture 2

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

Module 10 - Lecture 3
Module 11 - Lecture 1
Module 11 - Lecture 2
Module 11 - Lecture 3
Module 12 - Lecture 1
Module 12 - Lecture 2
Module 12 - Lecture 3
Module 13 - Lecture 1
Module 13 - Lecture 2
Module 13 - Lecture 3

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

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

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

Lecture 20
Lecture 21
Lecture 22
Lecture 23
Lecture 24
Lecture 25
Lecture 26
Lecture 27
Lecture 28

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

NPTEL Video Course - Mechanical Engineering - Engineering Drawing (Dr. Anupam Saxena)

Subject Co-ordinator - Dr. Anupam Saxena

Co-ordinating Institute - IIT - Kanpur

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

Lab Session 1

Lab Session 2

Lab Session 3

Lab Session 4

Lab Session 5

Lab Session 6

Lab Session 7

Lab Session 8

Lab Session 9

Lab Session 10

Lab Session 11

Lab Session 12

Lecture 1 - Technical Arts 101

Lecture 2 - Technical Arts 101

Lecture 3 - Technical Arts 101

Lecture 4 - Technical Arts 101

Lecture 5 - Technical Arts 101

Lecture 6 - Technical Arts 101

Lecture 7 - Technical Arts 101

Lecture 8 - Technical Arts 101

Lecture 9 - Technical Arts 101

Lecture 10 - Technical Arts 101

Lecture 11 - Technical Arts 101

Lecture 12 - Technical Arts 101

Lecture 13 - Technical Arts 101

Lecture 14 - Technical Arts 101

Lecture 15 - Technical Arts 101

Lecture 16 - Technical Arts 101

Lecture 17 - Technical Arts 101

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

Lecture 18 - Technical Arts 101
Lecture 19 - Technical Arts 101
Lecture 20 - Technical Arts 101
Lecture 21 - Technical Arts 101
Lecture 22 - Technical Arts 101
Lecture 23 - Technical Arts 101
Lecture 24 - Technical Arts 101
Lecture 25 - Technical Arts 101
Lecture 26 - Technical Arts 101
Lecture 27 - Technical Arts 101
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

Lecture 1 - Lecture 1
Lecture 2 - Lecture 2
Lecture 3 - Lecture 3
Lecture 4 - Review Lecture 1,2,3
Lecture 5 - Lecture 4
Lecture 6 - Lecture 5
Lecture 7 - Lecture 6
Lecture 8 - Review Lecture 4,5,6
Lecture 9 - Lecture 7
Lecture 10 - Lecture 8
Lecture 11 - Lecture 9-10
Lecture 12 - Lecture-11
Lecture 13 - Lecture-12
Lecture 14 - Lecture-13
Lecture 15 - Lecture-14
Lecture 16 - Lecture-15
Lecture 17 - Lecture-16
Lecture 18 - Lecture-17
Lecture 19 - Lecture-18
Lecture 20 - Lecture-19
Lecture 21 - Review Lecture 7 to 10
Lecture 22 - Review Lecture 11 to 13
Lecture 23 - Review Lecture 14 to 16
Lecture 24 - Lecture-20
Lecture 25 - Lecture-21
Lecture 26 - Lecture-22
Lecture 27 - Lecture-23
Lecture 28 - Lecture-24
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
Lecture 33 - Lecture-27
Lecture 34 - Lecture-28
Lecture 35 - Lecture-29
Lecture 36 - Lecture-30
Lecture 37 - Lecture-31
Lecture 38 - Lecture-32
Lecture 39 - Lecture-33
Lecture 40 - Review lecture 23,24,25
Lecture 41 - Review lecture 26,27,28
Lecture 42 - Review lecture 29 to 33

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

NPTEL Video Course - Mechanical Engineering - NOC:Manufacturing Systems Technology

Subject Co-ordinator - Dr. Shantanu Bhattacharya

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 26
Lecture 27
Lecture 28
Lecture 29

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Lecture 30
Lecture 31
Lecture 32
Lecture 33
Lecture 34
Lecture 35
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

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

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
Lecture 9 - Cost of quality and statistical quality control
Lecture 10 - Cost of quality and statistical quality control
Lecture 11 - Cost of quality and statistical quality control
Lecture 12 - Cost of quality and statistical quality control
Lecture 13 - Cost of quality and statistical quality control
Lecture 14 - Cost of quality and statistical quality control
Lecture 15 - Cost of quality and statistical quality control
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

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

NPTEL Video Course - Mechanical Engineering - NOC:Basics of Finite Element Analysis

Subject Co-ordinator - Prof. Nachiketa Tiwari

Co-ordinating Institute - IIT - Kanpur

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

- 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

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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 Tecnology
- 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 differnt 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 Recrysta
- 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 (Magnetostriction)
- 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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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

- 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 Bhattacharya

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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- Lecture 30 - Lesson 6 - Relations for Outward Travelling Spherical Acoustic Wave
- Lecture 31 - Lesson 1 - Specific Acoustic Impedance for a Closed Tube
- Lecture 32 - Lesson 2 - Specific Acoustic Impedance for an Open Tube and an Infinitely Long Tube
- Lecture 33 - Lesson 3 - Specific Acoustic Impedance for a Tube with Imperfect Termination
- Lecture 34 - Lesson 4 - Kundt's Tube
- Lecture 35 - Lesson 5 - Volume Velocity
- Lecture 36 - Lesson 6 - Comparison of Impedances for a Radially Propagating Wave and a Planar Wave
- Lecture 37 - Lesson 1 - Interference of sound sources - Part I
- Lecture 38 - Lesson 2 - Interference of sound sources - Part II
- Lecture 39 - Lesson 3 - Interference of sound sources - Part III
- Lecture 40 - Lesson 4 - Interference of sound sources - Part IV
- Lecture 41 - Lesson 5 - Directivity
- Lecture 42 - Lesson 6 - Complex power, pressure and velocity for a spherical source
- Lecture 43 - Lesson 1 - Noise reduction - Mass Attenuation Method
- Lecture 44 - Lesson 2 - Noise Reduction - Pressure Ratio
- Lecture 45 - Lesson 3 - Noise Reduction - Velocity of Wall
- Lecture 46 - Lesson 4 - 3 Media Problem - Introduction
- Lecture 47 - Lesson 5 - 3 Media Problem - Apply Boundary Conditions
- Lecture 48 - Lesson 6 - 3 Media Problem - Special cases
- Lecture 49 - Lesson 1 - Mufflers
- Lecture 50 - Lesson 2 - Designing of Reactive Mufflers
- Lecture 51 - Lesson 3 - Designing of Dissipative Mufflers
- Lecture 52 - Lesson 4 - Time and Frequency Domain Representation of a Signal
- Lecture 53 - Lesson 5 - Fourier Series
- Lecture 54 - Lesson 6 - Fourier Series
- Lecture 55 - Lesson 1 - Fourier Transform
- Lecture 56 - Lesson 2 - Fourier Transform
- Lecture 57 - Lesson 3 - Fourier Transform
- Lecture 58 - Lesson 4 - Discrete Fourier Transform (DFT)
- Lecture 59 - Lesson 5 - Discrete Fourier Transform (DFT)
- Lecture 60 - Lesson 6 - Discrete Fourier Transform (DFT)
- Lecture 61 - Lesson 1 - Measuring Sound Signals
- Lecture 62 - Lesson 2 - Microphones
- Lecture 63 - Lesson 3 - Microphones
- Lecture 64 - Lesson 4 - Weighting
- Lecture 65 - Lesson 5 - Loudness
- Lecture 66 - Lesson 6 - Loudness
- Lecture 67 - Lesson 1 - Octave Band Analysis - Part I
- Lecture 68 - Lesson 2 - Octave Band Analysis - Part II

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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 condens

Lecture 8 - Effect of different parameters on heat treatment and concept of saturation vapor pressure with ex

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 - $\hat{I} G$ for nucleation and overall transformation, concepts of solid state transformation including

Lecture 17 - Introduction to real solutions and expression of $\hat{I} H_{mix}$ based on the Quasi-Chemical Model (QCM)

Lecture 18 - Expression for $\hat{I} H_{mix}$ as a function of interaction energy and mole fraction, based on the QCM -

Lecture 19 - Expression for $\hat{I} H_{mix}$ as a function of interaction energy and mole fraction, based on the QCM -

Lecture 20 - Graphical representation of $\hat{I} G_{mix}$, $\hat{I} H_{mix}$, and $-T\hat{I} S_{mix}$ for real solutions and evolution of eut

Lecture 21 - Effect of $\hat{I} H_{mix}$ on determination of phase diagrams (same crystal structure)

Lecture 22 - Effect of $\hat{I} H_{mix}$ 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), $\hat{I} T$, $\hat{I} G_v$ and $\hat{I} G^*$ and, introducti

Lecture 28 - Growth kinetics (Continued...)

Lecture 29 - Growth rate variation with undercooling and kinetics of overall phase transformation

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

- Lecture 30 - Implication of Avrami's equation with example on excel spreadsheet
- Lecture 31 - Experimental verification of Avrami Equation
- Lecture 32 - Linear regression (least squares) method to find the value of n and k in Avrami equation
- Lecture 33 - In this lecture, method to determine the goodness of fit has been explained. Procedure to estimate
- Lecture 34 - Stereology and quantitative metallography - I
- Lecture 35 - Stereology and quantitative metallography - II
- Lecture 36 - Grain size measurements methods
- Lecture 37 - Statistical tools for analysis and reporting of obtained data with examples
- Lecture 38 - Evolution of TTT and CCT diagram from f vs. t plots
- Lecture 39 - TTT, CCT continue and hardenability of steel
- Lecture 40 - Importance of heat treatment practices in real life (with examples)

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

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

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

- 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...) and TTT curves
- Lecture 45 - TTT diagram
- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

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

NPTEL Video Course - Mechanical Engineering - NOC:Applied Ergonomics

Subject Co-ordinator - Dr. Shantanu Bhattacharya

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 26
Lecture 27
Lecture 28
Lecture 29

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Sustainability through Green Manufacturing Systems - An App

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

NPTEL Video Course - Mechanical Engineering - NOC:Noise Management and Control

Subject Co-ordinator - Prof. Nachiketa Tiwari

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Course Overview
Lecture 2 - Introduction
Lecture 3 - Nature Of Sound
Lecture 4 - Beats
Lecture 5 - The Decibel Scale
Lecture 6 - Key Terms in Acoustics
Lecture 7 - Decibel Scale - Part 1
Lecture 8 - Decibel Scale - Part 2
Lecture 9 - Decibel Scale - Part 3
Lecture 10 - Complex Numbers
Lecture 11 - Complex Time Function
Lecture 12 - Linear Systems
Lecture 13 - Transfer Functions
Lecture 14 - Introduction to One Dimensional Wave Equation
Lecture 15 - The Momentum Equation
Lecture 16 - The Continuity Equation and The Gas Law
Lecture 17 - One Dimensional Wave Equation
Lecture 18 - Solution for One Dimensional Wave Equation
Lecture 19 - Transmission Line Equations
Lecture 20 - One Dimensional Example Problems
Lecture 21 - Impedance
Lecture 22 - Pressure Wave Travels in a Closed Tube
Lecture 23 - Standing Wave Formation in a Closed Tube With Rigid Termination
Lecture 24 - Pressure Wave Travels in an Open Tube
Lecture 25 - 1-D sound wave propagation
Lecture 26 - 1-D sound wave propagation
Lecture 27 - Radially propagating sound waves in spherical coordinate system - I
Lecture 28 - Radially propagating sound waves in spherical coordinate system - II
Lecture 29 - Complex impedance for radially propagating sound waves in spherical coordinate system

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

- 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

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

NPTEL Video Course - Mechanical Engineering - NOC:Design Practice

Subject Co-ordinator - Dr. Shantanu Bhattacharya

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Brief introduction of Design systems
Lecture 2 - Product Development
Lecture 3 - Basic protocols of industrial design
Lecture 4 - Design thinking and innovation
Lecture 5 - Brain Storming
Lecture 6 - Design prototyping
Lecture 7 - Generic Phases of the Design
Lecture 8 - Configurational Design Aspects
Lecture 9 - Concurrent Engineering
Lecture 10 - Concurrent Engineering - 2
Lecture 11 - Concurrent Engineering Approaches
Lecture 12 - Concurrent Engineering Approaches - 2
Lecture 13 - Benefits of concurrent engineering
Lecture 14 - Concurrent engineering environment influencing dimensions
Lecture 15 - Concurrent engineering environment influencing dimensions - 2
Lecture 16 - Program and product Interface dimensions in Concurrent engineering
Lecture 17 - Product Development Methodology
Lecture 18 - Elements of concurrent engineering
Lecture 19 - Business relationships in concurrent engineering
Lecture 20 - Organizational elements in concurrent engineering
Lecture 21 - Techniques for the Implementation of concurrent engineering environment
Lecture 22 - Average quality loss
Lecture 23 - Robustness in Design
Lecture 24 - Robustness in Design - 2
Lecture 25 - Material selection in Engineering design
Lecture 26 - Material selection in Engineering Design.
Lecture 27 - Basic steps in Material Selection Process
Lecture 28 - Design of Work Systems
Lecture 29 - Motion Study

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- Lecture 30 - Axiomatic Design
- Lecture 31 - Introduction to group technology
- Lecture 32 - Failure Mode Effect Analysis

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

NPTEL Video Course - Mechanical Engineering - NOC:Introduction to Composites

Subject Co-ordinator - Prof. Nachiketa Tiwari

Co-ordinating Institute - IIT - Kanpur

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

- 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

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- Lecture 30 - Failure modes of unidirectional composite
- Lecture 31 - Failure of Unidirectional Lamina
- Lecture 32 - Minimum Volume Fraction and Critical Volume Fraction
- Lecture 33 - Example based on Failure of Composite Material
- Lecture 34 - Example based on Minimum and Critical Volume Fraction
- Lecture 35 - Transverse Modulus of Unidirectional Composite
- Lecture 36 - Halpin-Tsai Relation for Transverse Modulus
- Lecture 37 - Transverse modulus of unidirectional composites
- Lecture 38 - Transverse strength of unidirectional composites
- Lecture 39 - Poisson's ratio of unidirectional composites
- Lecture 40 - Failure modes of composite materials
- Lecture 41 - Failure modes of composite materials
- Lecture 42 - Other properties
- Lecture 43 - Concept of Tensor
- Lecture 44 - Stress Transformation (Two Dimensional)
- Lecture 45 - Analysis of Specially Orthotropic Lamina
- Lecture 46 - Analysis of Generally Orthotropic Lamina
- Lecture 47 - Transformation of Engineering Constants - Part I
- Lecture 48 - Transformation of Engineering Constants - Part II
- Lecture 49 - Variation of elastic constants with respect to fiber orientation for generally orthotropic lamina
- Lecture 50 - Generally orthotropic lamina
- Lecture 51 - Generalized Hooke's law for anisotropic materials
- Lecture 52 - Generalized Hooke's law for anisotropic materials
- Lecture 53 - Elastic constants for Specially orthotropic materials
- Lecture 54 - Elastic constants for Specially orthotropic materials in plane stress
- Lecture 55 - Relation Between Engineering Constants and Elements of Stiffness and Compliance Matrices - Part I
- Lecture 56 - Relation Between Engineering Constants and Elements of Stiffness and Compliance Matrices - Part II
- Lecture 57 - Stress Strain Relations for A Lamina With Arbitrary Orientation - Part I
- Lecture 58 - Stress- Strain Relation for A Lamina With Arbitrary Orientation - Part II
- Lecture 59 - Strength of An Orthotropic Lamina
- Lecture 60 - Importance of Sign of Shear Stress in context of Strength of A Unidirectional Lamina
- Lecture 61 - Strain displacement relations for a laminate
- Lecture 62 - Stress-strain relations for individual layers of a laminate
- Lecture 63 - Resultant forces and moments
- Lecture 64 - Relations between force and moment resultants and mid-plane strains and curvatures
- Lecture 65 - Physical significance of extensional stiffness matrix [A], coupling matrix [B] and bending stiffness matrix [D]
- Lecture 66 - Lamination sequence (standard laminate code)
- Lecture 67 - Calculation of A, B and D Matrices.
- Lecture 68 - Simplification of Stiffness Matrices - Part I

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

- 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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- Lecture 30 - Plant Layout Planning - Part 1
- Lecture 31 - Plant Layout Planning - Part 2
- Lecture 32 - Managing Competitiveness

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

NPTEL Video Course - Mechanical Engineering - NOC:Phase Equilibria in Materials - Nature and Properties of Ma

Subject Co-ordinator - Dr. Ashish Garg

Co-ordinating Institute - IIT - Kanpur

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

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...)

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- Lecture 30 - Boundary conditions associated with different edges of composite plate - Part 2
- Lecture 31 - Generalized Solution for Semi-Infinite Plate - Part I
- Lecture 32 - Generalized Solution for Semi-Infinite Plate - Part II
- Lecture 33 - Particular Solution for Semi-Infinite Plate
- Lecture 34 - Particular Solution for Semi-Infinite Plate
- Lecture 35 - Particular Solution for Semi-Infinite Plate
- Lecture 36 - Particular Solution for Semi-Infinite Plate
- Lecture 37 - Solution for governing equation related to semi-infinite composite plate
- Lecture 38 - Nature of displacement $u_0(x)$ and how it gets influence by important parameters of lamination sequence
- Lecture 39 - Semi-infinite plate loaded in the x-direction - Part 1
- Lecture 40 - Semi-infinite plate loaded in the x-direction - Part 2
- Lecture 41 - Thermal effects in composite laminates - Part 1
- Lecture 42 - Thermal effects in composite laminates - Part 2
- Lecture 43 - Thermal effects in composite laminates - Part 3
- Lecture 44 - Finite Rectangular Plate
- Lecture 45 - Different Boundary Conditions in Finite Rectangular Plate
- Lecture 46 - Example Based On a Finite Rectangular Plate
- Lecture 47 - Example Based On a Finite Rectangular Plate
- Lecture 48 - Example Based On a Finite Rectangular Plate
- Lecture 49 - Anticlastic curvature
- Lecture 50 - Principle of virtual work
- Lecture 51 - Virtual work method
- Lecture 52 - Virtual work method
- Lecture 53 - Beam (two term solution)
- Lecture 54 - 3rd Interpretation of special Galerkin method
- Lecture 55 - Role of D_{16} and D_{26} Terms On Laminated Plate Response
- Lecture 56 - Role of D_{16} and D_{26} Terms On Laminated Plate Response
- Lecture 57 - Role of D_{16} and D_{26} Terms On Laminated Plate Response
- Lecture 58 - Role of D_{16} and D_{26} Terms On Laminated Plate Response
- Lecture 59 - Free Vibration in Composite Plate
- Lecture 60 - Free Vibration in Composite Plate
- Lecture 61 - Buckling of composite plates
- Lecture 62 - Force equilibrium in z-direction for buckling of composite plates
- Lecture 63 - Moment equilibrium around x, y and z-directions for buckling of composite plates
- Lecture 64 - Buckling of an infinitely long composite plate
- Lecture 65 - Buckling of a simply supported finite plate
- Lecture 66 - Composite plate under bidirectional compression
- Lecture 67 - Shear Buckling in Rectangular Composite Plate
- Lecture 68 - Shear Buckling in Rectangular Composite Plate

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

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

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

- Lecture 30 - Fused Deposition Modeling
- Lecture 31 - LAB demonstration of Fused Deposition Modelling Techniques
- Lecture 32 - LAB demonstrtion of Fused Deposition Modelling Process
- Lecture 33
- Lecture 34
- Lecture 35
- Lecture 36
- Lecture 37

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.)

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

- 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

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

NPTEL Video Course - Mechanical Engineering - Fundamentals of Industrial Oil Hydraulics and Pneumatics

Subject Co-ordinator - Prof. R.N. Maiti

Co-ordinating Institute - IIT - Kharagpur

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

- 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 S)
- Lecture 21 - Analysis of an Axial - Piston Swash Plate type Hydrostatic unit (Pressure Ripple and Swash Plate
- 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

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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

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

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

- 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 Terrestria 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
- Lecture 29 - Long Term Solar Energy System Performance Simplified Design Methods (Continued.)

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- Lecture 30 - Monthly Average Daily Utilizability
- Lecture 31 - The $\phi(\bar{h}) - f$ chart method (Continued.)
- Lecture 32 - The $\phi(\bar{h}) - f$ chart method Tank Losses and Finite Heat Exchanger
- Lecture 33 - Exercise - 2
- Lecture 34 - Exercise - 2 (Continued.)
- Lecture 35 - Exercise - 2 (Continued.)
- Lecture 36 - Economic Analysis
- Lecture 37 - Life Cycle Savings
- Lecture 38 - Passive Devices
- Lecture 39 - Passive Architecture, Overhangs and Wing Walls
- Lecture 40 - Passive Architecture, Overhangs and Wing Walls (Continued.)
- Lecture 41 - Summary
- Lecture 42 - Summary (Continued.)
- Lecture 43 - Summary (Continued.)

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

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

- Lecture 1 - Introduction
- Lecture 2 - CVD Reaction
- Lecture 3 - Adhesion of Surface Coating
- Lecture 4 - CVD System
- Lecture 5 - CDV of Tic
- Lecture 6 - Chemical Vapour Deposition of Nitride Coating
- Lecture 7 - Chemical Vapour Deposition of Carbo-Nitride Coating
- Lecture 8 - Chemical Vapour Deposition of Chromium
- Lecture 9 - Chemical Vapour Deposition of Aluminium Oxide
- Lecture 10 - Chemical Vapour Deposition of Diamond
- Lecture 11 - Vacuum Evaporation Deposition
- Lecture 12 - Reactive Evaporation Deposition
- Lecture 13 - Cathodic Arc Evaporation Deposition
- Lecture 14 - Sputtering
- Lecture 15 - Magnetron Sputtering
- Lecture 16 - Unbalanced Magnetron Sputtering
- Lecture 17 - Radio frequency and pulsed DC sputtering
- Lecture 18 - Sputter Deposition of Nitride Coating
- Lecture 19 - Sputter Deposition of Molybdenum Di Sulphide Coating
- Lecture 20 - Influence of Architecture of Sputter Deposited Molybdenum Di Sulphide Coating
- Lecture 21 - Electro Plating, Anodizing and Electro-Less Plating
- Lecture 22 - Coating of Monolayer Abrasive Grain by Electro Plating
- Lecture 23 - Mechanism of Wetting
- Lecture 24 - Coating on Ceramics by Wetting
- Lecture 25 - Coating of Monolayer Abrasive Grain by Wetting
- Lecture 26 - Coating on Abrasive Grain
- Lecture 27 - Combustion Spray Process
- Lecture 28 - Plasma Spray Process
- Lecture 29 - Mechanical, Chemical and Ion-Assisted Method

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

- Lecture 30 - Combustion Spray Process
- Lecture 31 - Production of Low Vacuum
- Lecture 32 - Production of High Vacuum
- Lecture 33 - Measurement of Low Pressure and Gas Flow in Coating Deposition System
- Lecture 34 - Physical Characterization
- Lecture 35 - Assessment of Coating Hardness
- Lecture 36 - Assessment of Friction and Wear of Coating
- Lecture 37 - Assessment of Surface Roughness and Thickness of Coating
- Lecture 38 - Assessment of Adhesion of Coating
- Lecture 39 - Performance Evaluation of TiN Coated Tool
- Lecture 40 - Performance Evaluation of HFCVD Diamond Coated Tool

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

NPTEL Video Course - Mechanical Engineering - Vibration of Structures

Subject Co-ordinator - Prof. A. Dasgupta

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Transverse Vibrations of Strings - I
- Lecture 2 - Transverse Vibrations of Strings - II
- Lecture 3 - Axial and Torsional Vibrations of Bars
- Lecture 4 - Variational Formulation - I
- Lecture 5 - Variational Formulation - II
- Lecture 6 - Modal Analysis - I
- Lecture 7 - Modal Analysis - II
- Lecture 8 - Properties of the Eigenvalue Problem
- Lecture 9 - Modal Analysis
- Lecture 10 - Modal Analysis
- Lecture 11 - The Initial Value Problem
- Lecture 12 - Forced Vibration Analysis - I
- Lecture 13 - Forced Vibration Analysis - II
- Lecture 14 - Forced Vibration Analysis - III
- Lecture 15 - Damping in Structures
- Lecture 16 - Axially Translating Strings
- Lecture 17 - d' Alembert's Solution - I
- Lecture 18 - d' Alembert's Solution - II
- Lecture 19 - Harmonic Waves and Energetics of Wave Motion
- Lecture 20 - Scattering of Waves
- Lecture 21 - Applications of Wave Solution - I
- Lecture 22 - Applications of Wave Solution - II
- Lecture 23 - Beam Models - I
- Lecture 24 - Beam Models - II
- Lecture 25 - Modal Analysis of Beams
- Lecture 26 - Applications of Modal Solution
- Lecture 27 - Approximate Methods
- Lecture 28 - Topic in Beam Vibration - I
- Lecture 29 - Topic in Beam Vibration - II

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

- Lecture 30 - Wave Propagation in Beams
- Lecture 31 - Dynamics of Curved Beams
- Lecture 32 - Vibrations of Rings and Arches
- Lecture 33 - Dynamics of Membranes
- Lecture 34 - Vibrations of Rectangular Membrane
- Lecture 35 - Vibrations of Circular Membrane
- Lecture 36 - Special Problems in Membrane Vibrations
- Lecture 37 - Dynamics of Plates
- Lecture 38 - Vibrations of Rectangular Plates
- Lecture 39 - Vibrations of Circular Plates
- Lecture 40 - Special Problems in Plate Vibrations

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

NPTEL Video Course - Mechanical Engineering - Basic Thermodynamics

Subject Co-ordinator - Prof. S.K. Som

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction and Fundamental Concepts
Lecture 2 - Zeroth Law and Fundamental Concepts
Lecture 3 - Different Kind of Energy and First Law - I
Lecture 4 - First Law - II
Lecture 5 - First Law - III
Lecture 6 - Second Law and Its Corollaries - I
Lecture 7 - Second Law and Its Corollaries - II
Lecture 8 - Second Law and Its Corollaries - III
Lecture 9 - Second Law and Its Corollaries - IV
Lecture 10 - Second Law and Available Energy - I
Lecture 11 - Second Law and Available Energy - II
Lecture 12 - Second Law and Available Energy - III
Lecture 13 - Thermodynamic Property Relations - I
Lecture 14 - Thermodynamic Property Relations - II
Lecture 15 - Joule-Kelvin Expansion
Lecture 16 - Properties of Pure Substances - I
Lecture 17 - Properties of Pure Substances - II
Lecture 18 - Properties of Pure Substances
Lecture 19 - Properties of Ideal Gases
Lecture 20 - Vapors Power Cycle - I
Lecture 21 - Vapor Power Cycle - II
Lecture 22 - Vapor Power Cycle - III
Lecture 23 - Vapor Power Cycle - IV
Lecture 24 - Gas Power Cycle - I
Lecture 25 - Gas Power Cycle - II
Lecture 26 - Gas Power Cycle - III
Lecture 27 - Thermodynamics of Reacting System - I
Lecture 28 - Thermodynamics of Reacting System - II
Lecture 29 - Thermodynamics of Reacting System - III

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

- Lecture 30 - Thermodynamics of Multi Component System - I
- Lecture 31 - Thermodynamics of Multi Component System - II
- Lecture 32 - Thermodynamics of Multi Component System - III

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

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

Lecture 1 - Design Philosophy
Lecture 2 - Design And Manufacturing
Lecture 3 - Engineering Materials
Lecture 4 - Engineering Materials
Lecture 5 - Simple Stresses In Machine Elements
Lecture 6 - Simple Stresses In Machine Elements
Lecture 7 - Compound Stresses In Machine Elements
Lecture 8 - Design For Strength
Lecture 9 - Design for Strength
Lecture 10 - Design For Strength
Lecture 11 - Design for Strength
Lecture 12 - Design for Strength
Lecture 13 - Design of Fasteners - I
Lecture 14 - Design of Fasteners - II
Lecture 15 - Design Of Keys and Splines
Lecture 16 - Threaded Fasteners
Lecture 17 - Design Of Threaded Fasteners
Lecture 18 - Power Screws
Lecture 19 - Design Of Power Screws
Lecture 20 - Shaft Coupling - I
Lecture 21 - Shaft Coupling - II
Lecture 22 - Rivet Joints
Lecture 23 - Design of Welded Joints - I
Lecture 24 - Design of Welded Joints - II
Lecture 25 - Design of Joints With Eccentric Loading
Lecture 26 - Design of Joints With Variable Loading
Lecture 27 - Design of Springs
Lecture 28 - Design Of Springs
Lecture 29 - Design Of Springs

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

- Lecture 30 - Belt Drives
- Lecture 31 - Belt Drives
- Lecture 32 - Belt Drives
- Lecture 33 - Design for Strength
- Lecture 34 - Design of Shafts
- Lecture 35 - Design of Machine Elements - I (V & W)
- Lecture 36 - Design of Machine Elements - II (V & W)
- Lecture 37 - Design of Cylinders & Pressure Vessels - II
- Lecture 38 - Design of Cylinders & Pressure Vessels - III
- Lecture 39 - Design of Brakes - I
- Lecture 40 - Design of Brakes - II

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

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

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

Lecture 1 - Instructional Objectives - I (Manufacturing Process II)

Lecture 2 - Instructional Objectives - II

Lecture 3 - On Tool Geometry

Lecture 4 - Interrelations Among The Tool Angles

Lecture 5 - Mechanism of Chip Formation

Lecture 6 - Orthogonal and Oblique Cutting

Lecture 7 - Use of Chip Breaker in Machining

Lecture 8 - Machining Forces

Lecture 9 - Analytical and Experimental

Lecture 10 - Dynamometers for Measuring Cutting Forces

Lecture 11 - CTCEAC

Lecture 12 - CCTCFA

Lecture 13 - Concept of Machinability and its Improvement

Lecture 14 - Tool Life

Lecture 15 - Conventional Cutting Tool Maths

Lecture 16 - Advanced Tool Materials

Lecture 17 - Kinematics System of Centre Lathe

Lecture 18 - General Purpose Machine Tool Drills

Lecture 19 - Kinematic Systems and Operations

Lecture 20 - Configuration and Kinematic System

Lecture 21 - Mounting of jobs and Cutting Tools in Machine

Lecture 22 - Mounting of jobs and Cutting Tools in Machine

Lecture 23 - Construction, Operation and Tool Layout

Lecture 24 - Use of Attachments In Machine Tools

Lecture 25 - Forces Developing and Acting In Machine Tools

Lecture 26 - Estimation of Machining Time

Lecture 27 - Broaching - Principle Systems and Applications

Lecture 28 - Grinding Principle and Application

Lecture 29 - Abrasive Processes

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

- Lecture 30 - Abrasive Processes (Grinding)
- Lecture 31 - Super finishing Processes
- Lecture 32 - Production of Screw Threads
- Lecture 33 - Gear Manufacturing
- Lecture 34 - Jigs and Fixtures For Machine Shops
- Lecture 35 - Design and Applications of Jigs and Fixtures
- Lecture 36 - Non Traditional Manufacturing
- Lecture 37 - Ultrasonic Machining
- Lecture 38 - Water Jet Machining and Abrasive Water Jet
- Lecture 39 - Electro - Chemical Machining
- Lecture 40 - Electro - Discharge Machining
- Lecture 41 - EBM and LBM

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

NPTEL Video Course - Mechanical Engineering - Refrigeration and Air Conditioning

Subject Co-ordinator - Prof. M. Ramgopal, Prof. R.C. Arora

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - History of Refrigeration
- Lecture 2 - Refrigerant Compressors & Development
- Lecture 3 - Applications of RTAC
- Lecture 4 - Review of Fundamentals Thermodynamics - I
- Lecture 5 - Review of Fundamentals
- Lecture 6 - Fundamentals of Fluid Flow
- Lecture 7 - Fundamentals of Heat Transfer
- Lecture 8 - Methods of Producing low Temperatures
- Lecture 9 - Air Cycle Refrigeration Systems
- Lecture 10 - Vapour Compression Refrigeration Systems
- Lecture 11 - Vapour Compression Refrigeration Systems (Continued...)
- Lecture 12 - Vapour Compression Refrigeration Systems (Continued...)
- Lecture 13 - Vapour Compression Refrigeration Systems (Continued...)
- Lecture 14 - Vapour Absorption Refrigeration Systems
- Lecture 15 - Vapour Absorption Refrigeration System
- Lecture 16 - Vapour Absorption Refrigeration Systems (Continued...)
- Lecture 17 - Vapour Absorption Refrigeration Systems (Continued...)
- Lecture 18 - Worked Out Examples - I
- Lecture 19 - Worked Out Examples - II
- Lecture 20 - Refrigeration System Components
- Lecture 21 - Refrigeration System Components
- Lecture 22 - Refrigeration System Components
- Lecture 23 - Refrigeration System Components
- Lecture 24 - Refrigeration System Components
- Lecture 25 - Refrigeration System Components
- Lecture 26 - Refrigeration System Components
- Lecture 27 - Refrigeration System Components
- Lecture 28 - Refrigeration System Components
- Lecture 29 - Refrigeration System Components

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

- Lecture 30 - Refrigeration System Components
- Lecture 31 - Refrigeration System Components
- Lecture 32 - Analysis of Complete Vapour Compression System
- Lecture 33 - Refrigerants
- Lecture 34 - Psychrometry
- Lecture 35 - Psychrometric Processes
- Lecture 36 - Inside Design Condition Thermal Comfort
- Lecture 37 - Psychrometry of Air Conditioning Systems
- Lecture 38 - Air Conditioning Systems
- Lecture 39 - Cooling and Heating Load Calculation
- Lecture 40 - Cooling and Heating Load Calculations
- Lecture 41 - Cooling and Heating Load Calculations (Continued...)
- Lecture 42 - Cooling and Heating Load Calculations (Continued...)
- Lecture 43 - Selection of Air Conditioning Systems
- Lecture 44 - Transmission and Distribution of Air
- Lecture 45 - Transmission and Distribution of Air (Continued..)
- Lecture 46 - Space Air Distribution

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

NPTEL Video Course - Mechanical Engineering - Fluid Mechanics

Subject Co-ordinator - Prof. S.K. Som

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction and Fundamental Concepts - Part I
- Lecture 2 - Introduction and Fundamental Concepts - Part II
- Lecture 3 - Introduction and Fundamental Concepts - Part III
- Lecture 4 - Fluid Statics - Part I
- Lecture 5 - Fluid Statics - Part II
- Lecture 6 - Fluid Statics - Part III
- Lecture 7 - Fluid Statics - Part IV
- Lecture 8 - Fluid Statics - Part V
- Lecture 9 - Fluid Statics - Part VI
- Lecture 10 - Kinematics of Fluid - Part I
- Lecture 11 - Kinematics of Fluid - Part II
- Lecture 12 - Kinematics of Fluid - Part III
- Lecture 13 - Conservation Equations in Fluid Flow - Part I
- Lecture 14 - Conservation Equations in Fluid Flow - Part II
- Lecture 15 - Conservation Equations in Fluid Flow - Part III
- Lecture 16 - Conservation Equations in Fluid Flow - Part IV
- Lecture 17 - Conservation Equations in Fluid Flow - Part V
- Lecture 18 - Conservation Equations in Fluid Flow - Part VI
- Lecture 19 - Conservation Equations in Fluid Flow - Part VII
- Lecture 20 - Conservation Equations in Fluid Flow - Part VIII
- Lecture 21 - Conservation Equations in Fluid Flow - Part IX
- Lecture 22 - Fluid Flow Applications - Part I
- Lecture 23 - Fluid Flow Applications - Part II
- Lecture 24 - Fluid Flow Applications - Part III
- Lecture 25 - Fluid Flow Applications - Part IV
- Lecture 26 - Fluid Flow Applications - Part V
- Lecture 27 - Fluid Flow Applications - Part VI
- Lecture 28 - Fluid Flow Applications - Part VII
- Lecture 29 - Incompressible Viscous Flows - Part I

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

- Lecture 30 - Incompressible Viscous Flows - Part II
- Lecture 31 - Incompressible Viscous Flows - Part III
- Lecture 32 - Incompressible Viscous Flows - Part IV
- Lecture 33 - Application of ViscousFlow Through Pipes - Part I
- Lecture 34 - Application of ViscousFlow Through Pipes - Part II
- Lecture 35 - Application of ViscousFlow Through Pipes - Part III
- Lecture 36 - Principles of Similarity - Part I
- Lecture 37 - Principles of Similarity - Part II
- Lecture 38 - Principles of Similarity - Part III
- Lecture 39 - Flow of Ideal Fluids - Part I
- Lecture 40 - Flow of Ideal Fluids - Part II
- Lecture 41 - Flows with a Free Surface - Part I
- Lecture 42 - Flows with a Free Surface - Part II
- Lecture 43 - Flows with a Free Surface - Part III
- Lecture 44 - A Few Unsteady Flow Phenomena in Practice - Part I
- Lecture 45 - A Few Unsteady Flow Phenomena in Practice - Part II
- Lecture 46 - Introduction to Laminar Boundary Layer - Part I
- Lecture 47 - Introduction to Laminar Boundary Layer - Part II
- Lecture 48 - Introduction to Turbulent Flow - Part I
- Lecture 49 - Introduction to Turbulent Flow - Part II

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

NPTEL Video Course - Mechanical Engineering - Introduction to Fluid Machines and Compressible Flow

Subject Co-ordinator - Prof. S.K. Som

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Fluid Machines 1
- Lecture 2 - Energy Transfer in Fluid Machines Part - I
- Lecture 3 - Energy Transfer in Fluid Machines Part - II
- Lecture 4 - Energy Transfer - impulse and Reaction Machines, efficiencies of Fluid Machines
- Lecture 5 - Principles of Similarity in Fluid Machines
- Lecture 6 - Concept of specific speed and introduction to Impulse Hydraulic Turbine
- Lecture 7 - Analysis of force on the Bucket of Pelton wheel and Power Generation
- Lecture 8 - Specific speed, Governing and Limitation of a Pelton Turbine
- Lecture 9 - Introduction to reaction Type of Hydraulic Turbine - A Francis Turbine
- Lecture 10 - Analysis of Force on Francis Runner and Power Generation
- Lecture 11 - Axial Flow Machine and Draft Tube
- Lecture 12 - Governing of Reaction Turbine
- Lecture 13 - Introduction to Rotodynamic Pumps
- Lecture 14 - Flow and Energy Transfer in a Centrifugal Pump
- Lecture 15 - Characteristics of a Centrifugal Pump
- Lecture 16 - Matching of Pump and System Characteristics
- Lecture 17 - Diffuser and Cavitation
- Lecture 18 - Axial Flow Pump
- Lecture 19 - Reciprocating Pump - Part I
- Lecture 20 - Reciprocating Pump - Part II
- Lecture 21 - Centrifugal Compressor - Part I
- Lecture 22 - Centrifugal Compressor - Part II
- Lecture 23 - Centrifugal Compressor - Part III
- Lecture 24 - Axial Flow Compressor - Part I
- Lecture 25 - Axial Flow Compressor - Part II
- Lecture 26 - Introduction to Compressible Flow - Part I
- Lecture 27 - Introduction to Compressible Flow - Part II
- Lecture 28 - Thermodynamic Relations and Speed of Sound
- Lecture 29 - Disturbance propagation, Stagnation and Sonic Properties

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- Lecture 30 - Effects of Area Variation on Properties in an Isentropic Flow
- Lecture 31 - Choking in a Converging Nozzle
- Lecture 32 - Isentropic Flow through Convergent - Divergent Duct
- Lecture 33 - Normal Shock - Part I
- Lecture 34 - Normal Shock - Part II
- Lecture 35 - Normal Shock - Part III
- Lecture 36 - Normal Shock - Part IV
- Lecture 37 - Normal Shock - Part V
- Lecture 38 - Oblique Shock - Part I
- Lecture 39 - Oblique Shock - Part II
- Lecture 40 - Introduction to Expansion Wave and Prandtl Meyer Flow

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

NPTEL Video Course - Mechanical Engineering - Introduction to Fluid Mechanics and Fluid Engineering

Subject Co-ordinator - Prof. S. Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introductory Concepts

Lecture 2 - Introductory Concepts (Continued...)

Lecture 3 - Introductory Concepts (Continued...)

Lecture 4 - Viscosity

Lecture 5 - Viscosity (Continued...)

Lecture 6 - Viscosity (Continued...) and Surface Tension

Lecture 7 - Surface Tension (Continued...) and Fluid Statics

Lecture 8 - Fluid Statics (Continued...)

Lecture 9 - Fluid Statics (Continued...)

Lecture 10 - Fluid Statics (Continued...) and Fluid Under Rigid Body Motion

Lecture 11 - Fluid Kinematics

Lecture 12 - Fluid Kinematics (Continued...)

Lecture 13 - Fluid Kinematics (Continued...)

Lecture 14 - Fluid Kinematics (Continued...)

Lecture 15 - Fluid Kinematics (Continued...)

Lecture 16 - Dynamics of Inviscid Flows

Lecture 17 - Dynamics of Inviscid Flows (Continued...)

Lecture 18 - Dynamics of Inviscid Flows (Continued...)

Lecture 19 - Dynamics of Inviscid Flows (Continued...)

Lecture 20 - Dynamics of Inviscid Flows (Continued...)

Lecture 21 - Integral Forms of Control Volume Conservation Equations (Reynolds Transport Theorem)

Lecture 22 - Integral Forms of Control Volume Conservation Equations (Reynolds Transport Theorem) (Continued...)

Lecture 23 - Integral Forms of Control Volume Conservation Equations (Reynolds Transport Theorem) (Continued...)

Lecture 24 - Integral Forms of Control Volume Conservation Equations (Reynolds Transport Theorem) (Continued...)

Lecture 25 - Integral Forms of Control Volume Conservation Equations (Reynolds Transport Theorem) (Continued...)

Lecture 26 - Integral Forms of Control Volume Conservation Equations (Reynolds Transport Theorem) (Continued...)

Lecture 27 - Integral Forms of Control Volume Conservation Equations (Reynolds Transport Theorem) (Continued...)

Lecture 28 - Dynamics of Viscous Flows

Lecture 29 - Dynamics of Viscous Flows

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

- Lecture 30 - Some Exact Solutions of Navier Stokes Equation
- Lecture 31 - Some Exact Solutions of Navier Stokes Equation (Continued...)
- Lecture 32 - Some Exact Solutions of Navier Stokes Equation (Continued...)
- Lecture 33 - Introduction to Turbulence
- Lecture 34 - Introduction to Turbulence (Continued...)
- Lecture 35 - Introduction to Turbulence (Continued...)
- Lecture 36 - Introduction to Turbulence (Continued...)
- Lecture 37 - Boundary Layer Theory
- Lecture 38 - Boundary Layer Theory (Continued...)
- Lecture 39 - Boundary Layer Theory (Continued...)
- Lecture 40 - Boundary Layer Theory (Continued...) and Flow Past Immersed Bodies
- Lecture 41 - Flow past Immersed Bodies (Continued...)
- Lecture 42 - Potential Flow Past Immersed Bodies
- Lecture 43 - Potential Flow (Continued...) and Flow Past Immersed Bodies of Special Shapes
- Lecture 44 - Flow Past Immersed Bodies (Continued...) and Sports Ball Aerodynamics
- Lecture 45 - Pipe Flow
- Lecture 46 - Pipe Flow (Continued...)
- Lecture 47 - Pipe Flow (Continued...)
- Lecture 48 - Principles of Similarity and Dimensional Analysis
- Lecture 49 - Introduction to Fluid Machines
- Lecture 50 - Introduction to Fluid Machines (Continued...)
- Lecture 51 - Introduction to Fluid Machines (Continued...)
- Lecture 52 - Introduction to Fluid Machines (Continued...)
- Lecture 53 - Introduction to Fluid Machines (Continued...)
- Lecture 54 - Compressible Flows
- Lecture 55 - Compressible Flows (Continued...)
- Lecture 56 - Compressible Flows (Continued...)
- Lecture 57 - Compressible Flows (Continued...)
- Lecture 58 - Compressible Flows (Continued...)

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

NPTEL Video Course - Mechanical Engineering - Micro fluidics

Subject Co-ordinator - Prof. S. Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Microfluidics

Lecture 2 - Microfluidics

Lecture 3 - Microfluidics

Lecture 4 - Equations of Conservation

Lecture 5 - Navier Stokes Equation

Lecture 6 - Navier Stokes Equation (Continued...)

Lecture 7 - Energy Equation

Lecture 8 - Energy Equation (Continued...) and Species Conservation Equation

Lecture 9 - Pressure-driven Microflows

Lecture 10 - Pressure-driven Microflows (Continued...)

Lecture 11 - Pressure-driven Microflows (Continued...)

Lecture 12 - Pressure-driven Microflows (Continued...)

Lecture 13 - Pressure -driven Microflows (Continued...)

Lecture 14 - Some Examples of Unsteady Flows

Lecture 15 - Some Examples of Unsteady Flows (Continued...)

Lecture 16 - Some Examples of Unsteady Flows (Continued...)

Lecture 17 - Stokes Drag on a Sphere

Lecture 18 - Stokes Drag on a Sphere (Continued...) and Introduction to Lubrication Theory

Lecture 19 - Lubrication Theory (Continued...)

Lecture 20 - Lubrication Theory (Continued...)

Lecture 21 - Boundary Condition in Fluid Mechanics

Lecture 22 - Boundary Condition in Fluid Mechanics

Lecture 23 - Surface Tension Driven Flows

Lecture 24 - Surface Tension Driven Flows (Continued...)

Lecture 25 - Surface Tension Driven Flows (Continued...)

Lecture 26 - Surface Tension Driven Flows (Continued...)

Lecture 27 - Surface Tension Driven Flows (Continued...) and Modulating Surface Tension

Lecture 28 - Modulating Surface Tension (Continued...)

Lecture 29 - Thin Film Dynamics

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

- Lecture 30 - Thin Film Dynamics (Continued...)
- Lecture 31 - Thin Film Dynamics (Continued...)
- Lecture 32 - Thin Film Dynamics (Continued...)
- Lecture 33 - Lab on a CD
- Lecture 34 - Lab on a CD (Continued...)
- Lecture 35 - Introduction to Microfabrication
- Lecture 36 - Electrokinetics
- Lecture 37 - Electrokinetics (Continued...)
- Lecture 38 - Electrokinetics (Continued...)
- Lecture 39 - Electrokinetics (Continued...)
- Lecture 40 - Electrokinetics (Continued...)
- Lecture 41 - Electrokinetics (Continued...)
- Lecture 42 - Dispersion
- Lecture 43 - Introduction to Nanofluidics
- Lecture 44 - Introduction to Nanofluidics (Continued...) and Molecular Dynamics Simulations
- Lecture 45 - Introduction to Molecular Dynamics Simulations (Continued...)
- Lecture 46 - Biomicrofluidics
- Lecture 47 - Biomicrofluidics (Continued...)
- Lecture 48 - Nanofluidic Energy Conversion

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

NPTEL Video Course - Mechanical Engineering - NOC:Conduction and Convection Heat Transfer

Subject Co-ordinator - Prof. S.K. Som, Prof. S. Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction and Fundamental Concepts - I
- Lecture 2 - Introduction and Fundamental Concepts - II
- Lecture 3 - Heat Conduction Equation
- Lecture 4 - Heat Conduction Equation and Different Types of Boundary Conditions
- Lecture 5 - 1D Steady State Heat Conduction In Plane Wall Without Generation of Thermal Energy
- Lecture 6 - 1D Steady State Heat Conduction In Plane Wall With Generation of Thermal Energy
- Lecture 7 - Problems on 1D Steady State Heat Conduction In Plane Wall
- Lecture 8 - 1D Steady State Heat Conduction In Cylindrical Geometry
- Lecture 9 - 1D Steady State Heat Conduction In Cylindrical Geometry (Continued...)
- Lecture 10 - 1D Steady State Heat Conduction in Spherical Geometry
- Lecture 11 - Heat Transfer from Extended Surfaces (Fins)
- Lecture 12 - Heat Transfer from Extended Surfaces (Continued...)
- Lecture 13 - Two-dimensional Steady State Heat Conduction
- Lecture 14 - Unsteady State Heat Conduction
- Lecture 15 - Unsteady State Heat Conduction (Continued...)
- Lecture 16 - One Dimensional Unsteady State Heat Conduction - I
- Lecture 17 - One Dimensional Unsteady State Heat Conduction - II
- Lecture 18 - Introduction to Convection
- Lecture 19 - Convection - I
- Lecture 20 - Review of Fluid Mechanics - I
- Lecture 21 - Review of Fluid Mechanics - II
- Lecture 22 - Review of Fluid Mechanics - III
- Lecture 23 - Review of Fluid Mechanics - IV
- Lecture 24 - Review of Fluid Mechanics - V
- Lecture 25 - Review of Fluid Mechanics - VI
- Lecture 26 - Review of Fluid Mechanics - VIII
- Lecture 27 - Energy Equation - I
- Lecture 28 - Energy Equation - II and Thermal Boundary Layer - I
- Lecture 29 - Thermal Boundary Layer - II

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- Lecture 30 - Integral Method for Thermal BL Analysis
- Lecture 31 - Internal Forced Convection - I
- Lecture 32 - Internal Forced Convection - II
- Lecture 33 - Internal Forced Convection - III
- Lecture 34 - Internal Forced Convection - IV
- Lecture 35 - Free Convection - I (Natural Convection)
- Lecture 36 - Free Convection - II (Natural Convection)
- Lecture 37 - Boiling and Condensation - I
- Lecture 38 - Boiling and Condensation - II
- Lecture 39 - Heat Exchanger - I
- Lecture 40 - Heat Exchanger - II
- Lecture 41 - Heat Exchanger - II (Continued...)

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

NPTEL Video Course - Mechanical Engineering - NOC:Vibrations of Structures

Subject Co-ordinator - Prof. A. Dasgupta

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Transverse Vibrations of Strings - I
Lecture 2 - Transverse Vibrations of Strings - II
Lecture 3 - Axial and Torsional Vibrations of Bars
Lecture 4 - Variational Formulation - I
Lecture 5 - Variational Formulation - II
Lecture 6 - Modal Analysis - I
Lecture 7 - Modal Analysis - II
Lecture 8 - Properties of the Eigenvalue Problem
Lecture 9 - Modal Analysis
Lecture 10 - Modal Analysis
Lecture 11 - The Initial Value Problem
Lecture 12 - Forced Vibration Analysis - I
Lecture 13 - Forced Vibration Analysis - II
Lecture 14 - Forced Vibration Analysis - III
Lecture 15 - Damping in Structures - I
Lecture 16 - Damping in Structures - II
Lecture 17 - Beam Models - I
Lecture 18 - Beam Models - II
Lecture 19 - Modal Analysis of Beams
Lecture 20 - Application of Modal Solution
Lecture 21 - Approximate Methods
Lecture 22 - Topics in Beam Vibrations - I
Lecture 23 - Topics in Beam Vibrations - II
Lecture 24 - Dynamics of Curved Beams
Lecture 25 - Vibrations of Rings and Arches - I
Lecture 26 - Vibrations of Rings and Arches - II
Lecture 27 - Dynamics of Membranes
Lecture 28 - Vibrations of Rectangular Membranes
Lecture 29 - Vibrations of Circular Membranes - I

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

- Lecture 30 - Vibrations of Circular Membranes - II
- Lecture 31 - Dynamics of Plates
- Lecture 32 - Vibrations of Rectangular Plates
- Lecture 33 - Vibrations of Circular Plates
- Lecture 34 - Special Problems in Plate Vibrations - I
- Lecture 35 - Special Problems in Plate Vibrations - II

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

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

- Lecture 30 - Basic Principles and Energy Transfer in Centrifugal Compressor - Part I
- Lecture 31 - Basic Principles and Energy Transfer in Centrifugal Compressor - Part II
- Lecture 32 - Basic Principles and Energy Transfer in Centrifugal Compressor - Part III
- Lecture 33 - Basic Principles and Energy Transfer in Centrifugal Compressor - Part IV and Losses in Centrifugal Compressor
- Lecture 34 - Performance Characteristics of Centrifugal Compressors - Part I
- Lecture 35 - Performance Characteristics of Centrifugal Compressors - Part II
- Lecture 36 - Basic Principles and Energy Transfer in Axial Flow Compressor - Part I
- Lecture 37 - Basic Principles and Energy Transfer in Axial Flow Compressor - Part II
- Lecture 38 - Fans and Blowers - Part I
- Lecture 39 - Fans and Blowers - Part II

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

NPTEL Video Course - Mechanical Engineering - NOC:Computer numerical control (CNC) of machine tools and processes

Subject Co-ordinator - Prof. Asimava Roy Choudhury

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to computer control & role of computers in automation

Lecture 2 - Introduction (Continued...) - binary logic and logic gates

Lecture 3 - Classification of Computer numerical control (CNC) & 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

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

NPTEL Video Course - Mechanical Engineering - NOC:Introduction to Fluid Mechanics

Subject Co-ordinator - Dr. Suman Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

- 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

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

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

NPTEL Video Course - Mechanical Engineering - NOC:Laws of Thermodynamics

Subject Co-ordinator - Prof. Suman Chakraborty, Prof. S.K. Som

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction, Definition of System, Properties and State of a System
- Lecture 2 - Properties of pure substances
- Lecture 3 - Properties of pure substances (Continued...)
- Lecture 4 - Heat and Work
- Lecture 5 - Tutorial 1
- Lecture 6 - Zeroth Law of Thermodynamics
- Lecture 7 - First law of thermodynamics for closed systems - Part I
- Lecture 8 - First law of thermodynamics for closed systems - Part II, some examples
- Lecture 9 - Tutorial 2
- Lecture 10 - First law of thermodynamics for open systems
- Lecture 11 - Tutorial 3
- Lecture 12 - Second law and its corollaries - Part I
- Lecture 13 - Second law and its corollaries - Part II
- Lecture 14 - Second law and its corollaries - Part III
- Lecture 15 - Definition of entropy and entropy change in closed systems
- Lecture 16 - Entropy change in closed systems (Continued...)
- Lecture 17 - Tutorial 4
- Lecture 18 - Entropy and its transport
- Lecture 19 - Tutorial 5
- Lecture 20 - Introduction to Third Law
- Lecture 21 - Review of learning concepts

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

NPTEL Video Course - Mechanical Engineering - NOC:Energy Conservation and Waste Heat Recovery

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

- Lecture 30 - Heat Exchanger (Continued...)
- Lecture 31 - Heat Exchanger (Continued...)
- Lecture 32
- Lecture 33
- Lecture 34
- Lecture 35
- Lecture 36
- Lecture 37 - Heat Pipe - Part I
- Lecture 38 - Heat Pipe - Part II
- Lecture 39 - Heat Pipe - Part III
- Lecture 40 - Direct Conversion - Introduction to TEG
- Lecture 41 - Thermoelectric Generators - Functioning and Applications
- Lecture 42 - TEG - performance analysis
- Lecture 43 - TEG - performance optimization
- Lecture 44 - Direct Conversion - Magneto Hydro dynamics (MHD)
- Lecture 45 - Direct Conversion - Thermo-Ionic generation
- Lecture 46 - Direct Conversion - Thermo Photo Voltaic generation (TPV)
- Lecture 47 - Heat Pumps - I
- Lecture 48 - Heat Pumps - II
- Lecture 49 - Heat Pumps - III
- Lecture 50 - Waste Heat Recovery from Incinerator Plants
- Lecture 51 - Energy Storage Systems - I
- Lecture 52 - Energy Storage Systems - II
- Lecture 53 - Energy Storage Systems - III
- Lecture 54 - Energy Storage Systems - IV
- Lecture 55 - Energy Storage Systems - V
- Lecture 56 - Energy Storage Systems - VI
- Lecture 57
- Lecture 58
- Lecture 59
- Lecture 60
- Lecture 61
- Lecture 62
- Lecture 63
- Lecture 64
- Lecture 65
- Lecture 66
- Lecture 67
- Lecture 68 - Corrigendum

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

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

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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 Lecture Topic List - Created by LinuXpert Systems, Chennai

- Lecture 30 - Development of Plan and Elevation of Gear Reduction Unit - III
- Lecture 31
- Lecture 32
- Lecture 33 - Involute Spur Gear Tooth Correction
- Lecture 34 - Involute Spur Gear Tooth Correction
- Lecture 35 - Involute Spur Gear Tooth Correction
- Lecture 36 - Involute Spur Gear Tooth Correction
- Lecture 37 - Involute Spur Gear Tooth Correction
- Lecture 38 - Tooth Tip Interference, Avoidance and Contact Ratio in Involute Internal Gearing
- Lecture 39
- Lecture 40
- Lecture 41
- Lecture 42
- Lecture 43
- Lecture 44
- Lecture 45 - Live Session

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

NPTEL Video Course - Mechanical Engineering - NOC:Traditional and Non-Traditional Optimization Tools

Subject Co-ordinator - Prof. Dilip Kumar Pratihari

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 Lecture Topic List - Created by LinuXpert Systems, Chennai

- Lecture 30 - A Practical Optimization Problem (Continued...)
- Lecture 31 - A Practical Optimization Problem (Continued...)
- Lecture 32 - A Practical Optimization Problem (Continued...)
- Lecture 33 - A Practical Optimization Problem (Continued...)
- Lecture 34 - A Practical Optimization Problem (Continued...)
- Lecture 35 - A Practical Optimization Problem (Continued...)
- Lecture 36 - A Practical Optimization Problem (Continued...)
- Lecture 37 - Genetic Algorithm as Evolution Tool
- Lecture 38 - Genetic Algorithm as Evolution Tool (Continued...)
- Lecture 39 - Genetic Algorithm as Evolution Tool (Continued...)
- Lecture 40 - Genetic Algorithm as Evolution Tool (Continued...)
- Lecture 41 - Genetic Algorithm as Evolution Tool (Continued...)
- Lecture 42 - Genetic Algorithm as Evolution Tool (Continued...)
- Lecture 43 - Summary 1
- Lecture 44 - Summary 2
- Lecture 45 - Summary 3

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

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

- 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

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

NPTEL Video Course - Mechanical Engineering - NOC:Heat Exchangers: Fundamentals and Design Analysis

Subject Co-ordinator - Prof. Prasanta Kr Das, Prof. Somnath Roy

Co-ordinating Institute - IIT - Kharagpur

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

- 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

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

- 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...)

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

NPTEL Video Course - Mechanical Engineering - NOC:Robotics

Subject Co-ordinator - Prof. Dilip Kumar Pratihari

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Robots and Robotics
Lecture 2 - Introduction to Robots and Robotics (Continued...)
Lecture 3 - Introduction to Robots and Robotics (Continued...)
Lecture 4 - Introduction to Robots and Robotics (Continued...)
Lecture 5 - Introduction to Robots and Robotics (Continued...)
Lecture 6 - Introduction to Robots and Robotics (Continued...)
Lecture 7 - Introduction to Robots and Robotics (Continued...)
Lecture 8 - Introduction to Robots and Robotics (Continued...)
Lecture 9 - Introduction to Robots and Robotics (Continued...)
Lecture 10 - Introduction to Robots and Robotics (Continued...)
Lecture 11 - Robot Kinematics
Lecture 12 - Robot Kinematics (Continued...)
Lecture 13 - Robot Kinematics (Continued...)
Lecture 14 - Robot Kinematics (Continued...)
Lecture 15 - Robot Kinematics (Continued...)
Lecture 16 - Robot Kinematics (Continued...)
Lecture 17 - Robot Kinematics (Continued...)
Lecture 18 - Robot Kinematics (Continued...)
Lecture 19 - Robot Kinematics (Continued...)
Lecture 20 - Robot Kinematics (Continued...)
Lecture 21 - Trajectory Planning
Lecture 22 - Trajectory Planning (Continued...)
Lecture 23 - Singularity Checking
Lecture 24 - Robot Dynamics
Lecture 25 - Robot Dynamics (Continued...)
Lecture 26 - Robot Dynamics (Continued...)
Lecture 27 - Robot Dynamics (Continued...)
Lecture 28 - Robot Dynamics (Continued...)
Lecture 29 - Robot Dynamics (Continued...)

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 - 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 Polariscopes

Lecture 16 - Jones Calculus

Lecture 17 - Circular Polariscopes

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 Lecture Topic List - Created by LinuXpert Systems, Chennai

- Lecture 30 - Analysis of Brittle Coatings
- Lecture 31 - Introduction to Strain Gauges
- Lecture 32 - Strain Sensitivity of a Strain Gauge, Bridge Sensitivity, Rosettes
- Lecture 33 - Strain Gauge Alloys, Carriers and Adhesives
- Lecture 34 - Performance of Strain Gauge System
- Lecture 35 - Temperature Compensation, Two-wire and Three-wire Circuits
- Lecture 36 - Strain Gauge Selection
- Lecture 37 - Bonding of a Strain Gauge
- Lecture 38 - Soldering, Accounting for Transverse Sensitivity Effects
- Lecture 39 - Correction Factors for Special Applications
- Lecture 40 - Special Gauges
- Lecture 41 - Questions and Answers

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

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

- 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 g 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 Prop
- Lecture 36 - Combustion Instability in Solid Propellant and Liquid Propellant Rockets $\hat{=}$ 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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
Lecture 2 - Advanced Finite Elements Analysis
Lecture 3 - Advanced Finite Elements Analysis
Lecture 4 - Advanced Finite Elements Analysis
Lecture 5 - Advanced Finite Elements Analysis
Lecture 6 - Advanced Finite Elements Analysis
Lecture 7 - Advanced Finite Elements Analysis
Lecture 8 - Advanced Finite Elements Analysis
Lecture 9 - Advanced Finite Elements Analysis
Lecture 10 - Advanced Finite Elements Analysis
Lecture 11 - Advanced Finite Elements Analysis
Lecture 12 - Advanced Finite Elements Analysis
Lecture 13 - Advanced Finite Elements Analysis
Lecture 14 - Advanced Finite Elements Analysis
Lecture 15 - Advanced Finite Elements Analysis
Lecture 16 - Advanced Finite Elements Analysis
Lecture 17 - Advanced Finite Elements Analysis
Lecture 18 - Advanced Finite Elements Analysis
Lecture 19 - Advanced Finite Elements Analysis
Lecture 20 - Advanced Finite Elements Analysis
Lecture 21 - Advanced Finite Elements Analysis
Lecture 22 - Advanced Finite Elements Analysis
Lecture 23 - Advanced Finite Elements Analysis
Lecture 24 - Advanced Finite Elements Analysis
Lecture 25 - Advanced Finite Elements Analysis
Lecture 26 - Advanced Finite Elements Analysis
Lecture 27 - Advanced Finite Elements Analysis
Lecture 28 - Advanced Finite Elements Analysis
Lecture 29 - Advanced Finite Elements Analysis

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

Lecture 30 - Advanced Finite Elements Analysis

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

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Fundamentals of 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 to Linear Programming Formulations

Lecture 2 - Linear Programming Formulations (Continued...)

Lecture 3 - Linear Programming Solutions- Graphical Methods

Lecture 4 - Linear Programming Solutions - Simplex Algorithm

Lecture 5 - Simplex Algorithm-Minimization Problems

Lecture 6 - Simplex Algorithm - Initialization and Iteration

Lecture 7 - Simplex Algorithm - Termination

Lecture 8 - Introduction to Duality

Lecture 9 - Primal Dual Relationships, Duality Theorems

Lecture 10 - Dual Variables and the Simplex Tables

Lecture 11 - Simplex Algorithm in Matrix Form Introduction to Sensitivity Analysis

Lecture 12 - Sensitivity Analysis Transportation Problem (Introduction)

Lecture 13 - Transportation Problem, Methods for Initial Basic Feasible Solutions

Lecture 14 - Transportation Problem-Optimal Solutions

Lecture 15 - Transportation Problem - Other Issues

Lecture 16 - Assignment Problem - Hungarian Algorithm

Lecture 17 - Assignment Problem - Other Issues Introduction to Dynamic Programming

Lecture 18 - Dynamic Programming - Examples Involving Discrete Variables

Lecture 19 - Dynamic Programming - Continuous Variables

Lecture 20 - Dynamic Programming - Examples to Solve Linear & Integer Programming Problems

Lecture 21 - Inventory Models - Deterministic Models

Lecture 22 - Inventory Models - Discount Models, Constrained Inventory Problems, Lagrangean Multipliers, Conco

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

NPTEL Video Course - Mechanical Engineering - Introduction to Finite Element Method

Subject Co-ordinator - Dr. R. Krishnakumar

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to Finite Element Method
Lecture 2 - Introduction to Finite Element Method
Lecture 3 - Introduction to Finite Element Method
Lecture 4 - Introduction to Finite Element Method
Lecture 5 - Introduction to Finite Element Method
Lecture 6 - Introduction to Finite Element Method
Lecture 7 - Introduction to Finite Element Method
Lecture 8 - Introduction to Finite Element Method
Lecture 9 - Introduction to Finite Element Method
Lecture 10 - Introduction to Finite Element Method
Lecture 11 - Introduction to Finite Element Method
Lecture 12 - Introduction to Finite Element Method
Lecture 13 - Introduction to Finite Element Method
Lecture 14 - Introduction to Finite Element Method
Lecture 15 - Introduction to Finite Element Method
Lecture 16 - Introduction to Finite Element Method
Lecture 17 - Introduction to Finite Element Method
Lecture 18 - Introduction to Finite Element Method
Lecture 19 - Introduction to Finite Element Method
Lecture 20 - Introduction to Finite Element Method
Lecture 21 - Introduction to Finite Element Method
Lecture 22 - Introduction to Finite Element Method
Lecture 23 - Introduction to Finite Element Method
Lecture 24 - Introduction to Finite Element Method
Lecture 25 - Introduction to Finite Element Method
Lecture 26 - Introduction to Finite Element Method
Lecture 27 - Introduction to Finite Element Method
Lecture 28 - Introduction to Finite Element Method
Lecture 29 - Introduction to Finite Element Method

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

- Lecture 30 - Introduction to Finite Element Method
- Lecture 31 - Introduction to Finite Element Method
- Lecture 32 - Introduction to Finite Element Method
- Lecture 33 - Introduction to Finite Element Method

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

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
- Lecture 15 - Measurement of Transient Temperature and Resistance Thermometry
- 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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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - Principles of Mechanical Measurements

Subject Co-ordinator - Prof. R. Raman

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Principles Of Mechanical Measurements
Lecture 2 - Principles Of Mechanical Measurements
Lecture 3 - Principles Of Mechanical Measurements
Lecture 4 - Principles Of Mechanical Measurements
Lecture 5 - Principles Of Mechanical Measurements
Lecture 6 - Principles Of Mechanical Measurements
Lecture 7 - Principles Of Mechanical Measurements
Lecture 8 - Principles Of Mechanical Measurements
Lecture 9 - Principles Of Mechanical Measurements
Lecture 10 - Principles of Mechanical Measurements
Lecture 11 - Principles Of Mechanical Measurements
Lecture 12 - Principles Of Mechanical Measurements
Lecture 13 - Principles Of Mechanical Measurements
Lecture 14 - Principles Of Mechanical Measurements
Lecture 15 - Principles Of Mechanical Measurements
Lecture 16 - Principles Of Mechanical Measurements
Lecture 17 - Principles Of Mechanical Measurements
Lecture 18 - Principles Of Mechanical Measurements
Lecture 19 - Principles Of Mechanical Measurements
Lecture 20 - Principles Of Mechanical Measurements
Lecture 21 - Principles Of Mechanical Measurements
Lecture 22 - Principles Of Mechanical Measurements
Lecture 23 - Principles Of Mechanical Measurements
Lecture 24 - Principles Of Mechanical Measurements
Lecture 25 - Principles Of Mechanical Measurements
Lecture 26 - Principles Of Mechanical Measurements

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

NPTEL Video Course - Mechanical Engineering - Spray Theory and Applications

Subject Co-ordinator - Prof. Mahesh Panchagnula, Dr. Paul E. Sojka

Co-ordinating Institute - IIT - Madras | Purdue University

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

- Lecture 1 - Introduction to sprays and their applications
- Lecture 2 - Spatial versus Temporal Sampling
- Lecture 3 - Spatial Vs Temporal Sampling example problem
- Lecture 4 - Steady vs unsteady spray
- Lecture 5 - Statistical measures on spray
- Lecture 6 - Discussion on pdf and moments
- Lecture 7 - Size velocity correlation
- Lecture 8 - Discussion on Interfacial tension
- Lecture 9 - Introduction to Atomizers and their design - 1
- Lecture 10 - Introduction to Atomizers and their design - 2
- Lecture 11 - Simple measurement techniques
- Lecture 12 - Selection of atomizers
- Lecture 13 - Spray measurement characteristics
- Lecture 14 - Spray measurements techniques
- Lecture 15 - Non-intrusive spray measurements techniques
- Lecture 16 - Non-intrusive spray measurements techniques
- Lecture 17 - Linear stability analysis â Introduction
- Lecture 18 - Linear stability analysis- Kelvin-Helmholtz instability - 1
- Lecture 19 - Linear stability analysis- Kelvin-Helmholtz instability - 2
- Lecture 20 - Linear stability analysis- Kelvin-Helmholtz instability - 3
- Lecture 21 - Linear stability analysis procedure
- Lecture 22 - Linear stability analysis - Cylindrical jet instability - 1
- Lecture 23 - Linear stability analysis - Cylindrical jet instability - 2
- Lecture 24 - Linear stability analysis - Planar Liquid Sheet instability - 1
- Lecture 25 - Linear stability analysis - Planar Liquid Sheet instability - 2
- Lecture 26 - Design of pressure swirl atomizer - 1
- Lecture 27 - Design of pressure swirl atomizer - 2
- Lecture 28 - Design of pressure swirl atomizer - 3
- Lecture 29 - Design of pressure swirl atomizer - 4

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

- Lecture 30 - Secondary atomization-Dimensionless parameters
- Lecture 31 - Secondary atomization-Modes of breakup - 1
- Lecture 32 - Secondary atomization-Modes of breakup - 2
- Lecture 33 - Multiphase modelling
- Lecture 34 - Multiphase modelling
- Lecture 35 - Multiphase flow modelling basics
- Lecture 36 - Multiphase modelling â Selection of model - 1
- Lecture 37 - Multiphase modelling â Selection of model - 2
- Lecture 38 - Multiphase modelling - Governing equations
- Lecture 39 - Droplet evaporation
- Lecture 40 - Droplet combustion
- Lecture 41 - Spray combustion

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

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 $\hat{I}_\lambda \cdot$ and $\hat{T}_\lambda \cdot$ 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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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

- 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...)

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

NPTEL Video Course - Mechanical Engineering - Gas Dynamics and Propulsion

Subject Co-ordinator - Prof. V. Babu

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction
Lecture 2 - Introduction / Fundamental Ideas
Lecture 3 - Fundamental Ideas
Lecture 4 - Fundamental Ideas
Lecture 5 - Fundamental Ideas / Normal Shock Waves
Lecture 6 - Normal Shock Waves
Lecture 7 - Normal Shock Waves / Rayleigh Flow
Lecture 8 - Rayleigh Flow
Lecture 9 - Rayleigh Flow
Lecture 10 - Rayleigh Flow / Fanno Flow
Lecture 11 - Fanno Flow
Lecture 12 - Fanno Flow
Lecture 13 - Fanno Flow / Quasi One Dimensional Flows
Lecture 14 - Quasi One Dimensional Flows
Lecture 15 - Quasi One Dimensional Flows
Lecture 16 - Quasi One Dimensional Flows
Lecture 17 - Quasi One Dimensional Flows
Lecture 18 - Quasi One Dimensional Flows
Lecture 19 - Quasi One Dimensional Flows
Lecture 20 - Oblique Shock Waves
Lecture 21 - Oblique Shock Waves
Lecture 22 - Oblique Shock Waves
Lecture 23 - Oblique Shock Waves / Prandtl Meyer Waves
Lecture 24 - Prandtl Meyer Waves
Lecture 25 - Prandtl Meyer Waves
Lecture 26 - Propulsion - an Introduction
Lecture 27 - Components of the Gas Turbine Engine
Lecture 28 - Components of the Gas Turbine Engine
Lecture 29 - Components of the Gas Turbine Engine

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

- Lecture 30 - Components of the Gas Turbine Engine
- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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...)
- Lecture 11 - Capillary Flows
- Lecture 12 - Capillary Flows (Continued...)
- Lecture 13 - Capillary Flows and Electrokinetics
- Lecture 14 - Electrokinetics
- Lecture 15 - Electrokinetics (Continued...)
- Lecture 16 - Electrokinetics (Continued...)
- Lecture 17 - Electrokinetics (Continued...)
- Lecture 18 - Electrokinetics (Continued...)
- Lecture 19 - Electrokinetics (Continued...)
- Lecture 20 - Electrokinetics and Magnetophoresis
- Lecture 21 - Microfabrication Techniques
- Lecture 22 - Microfabrication Techniques (Continued...)
- Lecture 23 - Microfabrication Techniques (Continued...)
- Lecture 24 - Microfabrication Techniques (Continued...)
- Lecture 25 - Microfabrication Techniques (Continued...)
- Lecture 26 - Microfabrication Techniques (Continued...)
- Lecture 27 - Microfabrication Techniques (Continued...)
- Lecture 28 - Microfabrication Techniques (Continued...)
- Lecture 29 - Micropump

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

- Lecture 30 - Micropump (Continued...)
- Lecture 31 - Microvalve
- 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

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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

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

NPTEL Video Course - Mechanical Engineering - Metrology

Subject Co-ordinator - Dr. K. Sadashivappa

Co-ordinating Institute - IIT - Madras

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

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

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

- 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

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

NPTEL Video Course - Mechanical Engineering - NOC:Engineering Mechanics Statics and Dynamics

Subject Co-ordinator - Prof. Mahesh Panchagnula

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to the course
Lecture 2 - Newton's laws
Lecture 3 - Equilibrium
Lecture 4 - Example 1 - Statics
Lecture 5 - Example 2 - Rigid Body Systems
Lecture 6 - Example 3 - Rigid Body Systems
Lecture 7 - Structural Systems with rigid bodies
Lecture 8 - Types of 1-D Structural Elements
Lecture 9 - Axial members
Lecture 10 - Analysis of the truss system
Lecture 11 - Stability of Structural systems
Lecture 12 - Beams - Example 1
Lecture 13 - Beams - BMD and SFD
Lecture 14 - Beams - Loading, Shear and Bending Moment Relations
Lecture 15 - Static Friction
Lecture 16 - Friction - Solving Problems
Lecture 17 - Particle Kinematics - 1
Lecture 18 - Particle Kinematics - 2 (Example)
Lecture 19 - Particle Kinematics - Curvilinear Coordinates
Lecture 20 - Rigid Body Kinematics
Lecture 21 - Rotational Motion (Example 1)
Lecture 22 - Rotational Motion (Example 2)
Lecture 23 - Dynamics (Introduction)
Lecture 24 - Dynamics - Example 1
Lecture 25 - Dynamics - Example 2
Lecture 26 - Dynamics - Example 3
Lecture 27 - Dynamics - Example 4
Lecture 28 - Center of Percussion - Example
Lecture 29 - Impulse / Momentum - Example 1

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

- 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

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

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

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- 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

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

NPTEL Video Course - Mechanical Engineering - NOC:Fundamentals of Gas Dynamics

Subject Co-ordinator - Prof.A. Sameen

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction
- Lecture 2 - Basics of Thermodynamics
- Lecture 3 - Tutorial 1
- Lecture 4 - Control Volume Approach
- Lecture 5 - Conservation Equations
- Lecture 6 - Tutorial 2
- Lecture 7 - Energy Equation
- Lecture 8 - Concept of stagnation
- Lecture 9 - Discussion on stagnation
- Lecture 10 - Velocity of sound
- Lecture 11 - Discussion on velocity of sound and mach number
- Lecture 12 - Wave propagation
- Lecture 13 - Mach wave
- Lecture 14 - Mach number relations
- Lecture 15 - Variable Area Adiabatic flow
- Lecture 16 - Variable Area Adiabatic flow (Continued...)
- Lecture 17 - * reference quantities and their relations
- Lecture 18 - Importance of stagnation temperature in relation to v
- Lecture 19 - Discussion on variable area adiabatic flow and * reference quantities
- Lecture 20 - Gas tables
- Lecture 21 - Converging nozzle
- Lecture 22 - Condition of choked flow and associated properties
- Lecture 23 - Area ratio and pressure ratio in converging nozzles
- Lecture 24 - Discussion on converging nozzles
- Lecture 25 - Converging - Diverging (C-D) nozzles
- Lecture 26 - More on C-D nozzles
- Lecture 27 - Discussion on C-D nozzles - 1
- Lecture 28 - Discussion on C-D nozzles - 2
- Lecture 29 - Examples and applications of flow through C-D nozzles

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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 Lecture Topic List - Created by LinuXpert Systems, Chennai

Lecture 30 - Lecture 6 - Tutorial
Lecture 31 - Lecture 1 - Introduction to compressible flow
Lecture 32 - Lecture 2 - Steam and Gas Turbine
Lecture 33 - Lecture 3 - Steam and Gas Turbine
Lecture 34 - Lecture 4 - Tutorial

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

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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 - Frequency Analysis - 1
Lecture 10 - Module 5 - Frequency 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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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

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
Lecture 41 - Tutorial 3
Lecture 42 - Tutorial 4

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

NPTEL Video Course - Mechanical Engineering - NOC:Steel Quality - Role of Secondary Refining and Continuous C

Subject Co-ordinator - Prof. Santanu Kr. Ray

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Concept of Steel Quality

Lecture 2 - Control of Residuals and Impact on Quality

Lecture 3 - Non-Metallic Inclusions

Lecture 4 - Evaluation of Residuals and Inclusions

Lecture 5 - Cleanliness Requirements for Different applications

Lecture 6 - Limitation of Primary Steelmaking and Importance of secondary Refining

Lecture 7 - Deoxidation

Lecture 8 - Prevention of Slag carryover

Lecture 9 - Desulphurisation

Lecture 10 - Degassing

Lecture 11 - Secondary Refining Processes

Lecture 12 - Injection of Calcium

Lecture 13 - Different Routes and Temperature Control

Lecture 14 - Decarburisation

Lecture 15 - Cleanliness Measures in Ladle and Tundish

Lecture 16 - Cleanliness Measures in Mould

Lecture 17 - Nature and Distribution of Entrapments in Casting

Lecture 18 - Genesis of Entrapment

Lecture 19 - Effect of Vertical vis-a-vis Curved Mould

Lecture 20 - Quality of Cast Product

Lecture 21 - Role of Concast Process, Caster Design and Steel Grade

Lecture 22 - Primary Cooling in Caster Mould

Lecture 23 - Heat Transfer in Mould

Lecture 24 - Role of Mould Oscillation

Lecture 25 - Cast Structure and Dendrite Size

Lecture 26 - Role of Chemistry - Part I

Lecture 27 - Role of Chemistry - Part II

Lecture 28 - Role of Segregation - Part I

Lecture 29 - Role of Segregation - Part II

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

- Lecture 30 - Deleterious Effect of Phosphorus
- 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

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

NPTEL Video Course - Mechanical Engineering - NOC:X-ray Crystallography and Diffraction

Subject Co-ordinator - Prof. Ranjit Kumar Ray

Co-ordinating Institute - IEST - Shibpur

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

Lecture 1 - Geometry of Crystals

Lecture 2 - Geometry of Crystals (Continued...)

Lecture 3 - Tutorial-1

Lecture 4 - Reciprocal Lattice

Lecture 5 - Stereographic Projection

Lecture 6 - Tutorial-2

Lecture 7 - Point Groups and Space Groups

Lecture 8 - Point Groups and Space Groups (Continued...)

Lecture 9 - Tutorial-3

Lecture 10 - Point Groups and Space Groups (Continued...)

Lecture 11 - Basics of X-Rays

Lecture 12 - Production and Detection of X-Rays

Lecture 13 - Production and Detection of X-Rays (Continued...)

Lecture 14 - Principles of X-Ray Diffraction

Lecture 15 - X-Ray Diffraction Methods

Lecture 16 - Debye Sherrer Camera

Lecture 17 - Diffractometer Measurements

Lecture 18 - Tutorial-4

Lecture 19 - Intensity of Diffracted Beams

Lecture 20 - Intensity of Diffracted Beams (Continued...)

Lecture 21 - Determination of Crystal Structures

Lecture 22 - Precise Lattice Parameter Determination

Lecture 23 - XRD - Lab Demonstration

Lecture 24 - Discussion - Based on Forum Queries - 1

Lecture 25 - Phase Diagram Determination

Lecture 26 - Ordered Disordered Transformation

Lecture 27 - Ordered Disordered Transformation (Continued...)

Lecture 28 - Qualitative Phase Analysis

Lecture 29 - Quantitative Phase Analysis - 1

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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 Polariscope
- Lecture 13 - Jones Calculus
- Lecture 14 - Circular Polariscope
- Lecture 15 - Determination of Photoelastic Parameters at an Arbitrary Point
- Lecture 16 - Tardy'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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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

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

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

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

NPTEL Video Course - Mechanical Engineering - Advanced Manufacturing Processes

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

Co-ordinating Institute - IIT - Roorkee

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

- Lecture 1 - Manufacturing and Manufacturing Systems
- Lecture 2 - Manufacturing Trends and Challenges
- Lecture 3 - Manufacturing Aspects, Selection and Classification
- Lecture 4 - Description and Taxonomy of the Mfg. Processes
- Lecture 5 - Metal Casting basics, Gating and Riser design
- Lecture 6 - Evaporative Pattern Casting Process (EPC)
- Lecture 7 - Continuous, Permanent mold, Centrifugal and Pressure Die Casting
- Lecture 8 - Hybrid EPC Processes and Vacuum EPC Process
- Lecture 9 - Set-up of VEPC and Investment Casting Processes
- Lecture 10 - Ceramic Shell Investment Casting Process
- Lecture 11 - Shell Molding Process
- Lecture 12 - Abrasive Flow Machining
- Lecture 13 - Mechanism of Material Removal in AFM and Variant processes in AFM
- Lecture 14 - Abrasive Jet Machining (AJM)
- Lecture 15 - Water Jet and Abrasive Water Jet Machining
- Lecture 16 - Ultrasonic Machining Process (USM)
- Lecture 17 - Mechanism, Processes Variants and applications of USM
- Lecture 18 - Micro USM and advances in USM
- Lecture 19 - Electric Discharge Machining (EDM) Process
- Lecture 20 - Die-Sinker EDM and Wire Cut Electric Discharge Machining (WEDM)
- Lecture 21 - Variant Processes in EDM
- Lecture 22 - Electro Chemical Discharge Machining (ECDM)
- Lecture 23 - Laser Beam Machining (LBM)
- Lecture 24 - Equipment and Process Parameters in LBM
- Lecture 25 - Electrochemical Machining (ECM)
- Lecture 26 - ECM Kinematics and Tool Design
- Lecture 27 - The Subsystems in ECM, advantages and applications
- Lecture 28 - Variant Processes in ECM
- Lecture 29 - Electron Beam, Plasma Beam and Ion Beam Machining

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

- Lecture 30 - Submerged Arc Welding (SAW)
- Lecture 31 - Resistance Welding Process
- 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

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

NPTEL Video Course - Mechanical Engineering - Computational Fluid Dynamics (Dr. K.M. Singh)

Subject Co-ordinator - Dr. K.M. Singh

Co-ordinating Institute - IIT - Roorkee

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

- 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
- Lecture 14 - Approximation of Mixed Derivatives and Multi-Dimensional F.D. Formulae
- Lecture 15 - Implementation of Boundary Conditions and Finite Difference Algebraic System
- Lecture 16 - Applications of FDM to Scalar Transport Problems - 1
- Lecture 17 - Applications of FDM to Scalar Transport Problems - 2
- Lecture 18 - Application of FDM to Advection-Diffusion and Computer Implementation Aspects
- Lecture 19 - Computer Implementation of FDM for Steady State Heat Diffusion Problems - 1
- Lecture 20 - Computer Implementation of FDM for Steady State Heat Diffusion Problems - 2
- Lecture 21 - Computer Implementation of FDM for Steady State Heat Diffusion Problems - 3
- Lecture 22 - Solution of Discrete Algebraic Systems
- Lecture 23 - Direct and Basic Iterative Methods for Linear Systems
- Lecture 24 - Accelerated Iterative Methods for Linear Systems
- Lecture 25 - Two Level and Multi-Level Methods for First Order IVPs - 1
- Lecture 26 - Two Level and Multi-Level Methods for First Order IVPs - 2
- Lecture 27 - Application to Unsteady Transport Problems
- Lecture 28 - Introduction to Finite Volume Method
- Lecture 29 - Finite Volume Interpolation Schemes

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

- Lecture 30 - Application of FVM to Scalar Transport
- Lecture 31 - Introduction to Finite Element Method
- Lecture 32 - Finite Element Shape Functions and Numerical Integration - 1
- Lecture 33 - Finite Element Shape Functions and Numerical Integration - 2
- Lecture 34 - Application of FEM to Scalar Transport
- Lecture 35 - Special Features of Navier-Stokes Equations
- 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

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

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 Riser System - 1
Lecture 14 - Design of Riser System - 2
Lecture 15 - Design of Riser System - 3
Lecture 16 - Design of Riser System - 4
Lecture 17 - Design of Riser 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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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

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

- 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

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

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
Lecture 23 - Strength of Materials
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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

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

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 - Vpouir Absorption Systems - 1
Lecture 19 - Vpouir Absorption Systems - 2
Lecture 20 - Vpouir 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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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

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

NPTEL Video Course - Mechanical Engineering - NOC:Introduction to Mechanical Vibration

Subject Co-ordinator - Prof. Anil Kumar

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Lesson 1 - Introduction
Lecture 2 - Lesson 2 - Addition of two harmonic motions and beat phenomenon
Lecture 3 - Lesson 3 - Fourier series and harmonic analysis
Lecture 4 - Lesson 4 - Vibration analysis procedure
Lecture 5 - Lesson 5 - Numerical problems
Lecture 6 - Lesson 1 - Undamped free vibration
Lecture 7 - Lesson 2 - Energy method
Lecture 8 - Lesson 3 - Damped free vibration
Lecture 9 - Lesson 4 - Viscous damped systems and logarithmic decrement
Lecture 10 - Lesson 5 - Coulomb damping
Lecture 11 - Lesson 1 - Harmonic excitations
Lecture 12 - Lesson 2 - Magnification factor and frequency response curve
Lecture 13 - Lesson 3 - Rotating unbalance
Lecture 14 - Lesson 4 - Excitation of the support
Lecture 15 - Lesson 5 - Energy input and dissipation by viscous damping
Lecture 16 - Lesson 1 - Coulomb damping and equivalent viscous damping
Lecture 17 - Lesson 2 - Structural damping and equivalent viscous damping
Lecture 18 - Lesson 3 - Vibration isolation and force transmissibility
Lecture 19 - Lesson 4 - Motion transmissibility
Lecture 20 - Lesson 5 - Numerical problems
Lecture 21 - Lesson 1 - Transducers and vibration pickup
Lecture 22 - Lesson 2 - Vibrometer
Lecture 23 - Lesson 3 - Accelerometer
Lecture 24 - Lesson 4 - Velocity pickup or Velometer
Lecture 25 - Lesson 5 - Phase distortion and frequency measurement
Lecture 26 - Lesson 1 - Undamped free vibration
Lecture 27 - Lesson 2 - Principal modes of vibration
Lecture 28 - Lesson 3 - Combined rectilinear and angular modes
Lecture 29 - Lesson 4 - Damped free vibration

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

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

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

- 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

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

NPTEL Video Course - Mechanical Engineering - NOC:Steam and Gas Power Systems

Subject Co-ordinator - Prof. Ravi Kumar

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Review of Thermodynamics

Lecture 2 - Rankine Cycle

Lecture 3 - Performance of Rankine Cycle

Lecture 4 - Binary vapour cycle and co-generation

Lecture 5 - Problem Solving (Rankine Cycle)

Lecture 6 - Steam Generators

Lecture 7 - Fire Tube Boilers

Lecture 8 - Water Tube Boilers

Lecture 9 - Boiler Mountings and Accessories

Lecture 10 - High Pressure Boilers (Part-1)

Lecture 11 - High Pressure Boilers (Part-2)

Lecture 12 - Draught

Lecture 13 - Performance of Boiler

Lecture 14 - Combustion of Fuel

Lecture 15 - Combustion of Fuel (Problem Solving)

Lecture 16 - Boiler Trial

Lecture 17 - Nozzles and Diffusers - Momentum and Continuity Equations

Lecture 18 - Nozzles and Diffusers - Efficiency and Critical Pressure

Lecture 19 - Nozzles and Diffusers - General Relationships and Supersaturated Flow

Lecture 20 - Problem Solving (Nozzles and diffusers)

Lecture 21 - Steam Turbine

Lecture 22 - Compounding of Steam Turbine

Lecture 23 - Impulse Steam Turbine

Lecture 24 - Impulse Steam Turbine Performance

Lecture 25 - Problem solving (Impulse Steam Turbine)

Lecture 26 - Impulse Reaction Steam Turbine

Lecture 27 - Impulse Reaction Steam Turbine Performance

Lecture 28 - Energy Losses in Steam Turbine

Lecture 29 - Condensers

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

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

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

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Processing of Polymers and Polymer Composites

Subject Co-ordinator - Dr. Inderdeep Singh

Co-ordinating Institute - IIT - Roorkee

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

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

- 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)

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

NPTEL Video Course - Mechanical Engineering - NOC:Theory of Production Processes

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 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 - Riser design methods
- Lecture 15 - Problem solving on gating design and riser design 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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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

- 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 ana
- 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 eviden
- 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
- 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 Lecture Topic List - Created by LinuXpert Systems, Chennai

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

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

- 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

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

NPTEL Video Course - Mechanical Engineering - NOC:Fundamentals of Surface Engineering: Mechanisms, Processes

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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- Lecture 30 - Surface modification techniques
- Lecture 31 - Surface modification techniques
- Lecture 32 - Surface modification techniques
- Lecture 33 - Surface modification techniques
- Lecture 34 - Surface modification techniques
- Lecture 35 - Surface modification techniques
- Lecture 36 - Surface modification techniques
- Lecture 37 - Surface modification techniques
- Lecture 38 - Surface modification techniques
- Lecture 39 - Surface modification techniques
- Lecture 40 - Surface modification techniques
- Lecture 41 - Surface modification techniques
- Lecture 42 - Surface modification techniques
- Lecture 43 - Surface modification techniques
- Lecture 44 - Surface modification techniques
- Lecture 45 - Surface modification techniques
- Lecture 46 - Surface modification techniques
- Lecture 47 - Surface modification techniques
- Lecture 48 - Surface modification techniques
- Lecture 49 - Surface modification techniques
- Lecture 50 - Surface modification techniques
- Lecture 51 - Surface modification techniques
- Lecture 52 - Surface modification techniques
- Lecture 53 - Surface modification techniques
- Lecture 54 - Surface modification techniques
- Lecture 55 - Characterization of modified surfaces
- Lecture 56 - Characterization of modified surfaces
- Lecture 57 - Characterization of modified surfaces
- Lecture 58 - Characterization of modified surfaces
- Lecture 59 - Characterization of modified surfaces
- Lecture 60 - Characterization of modified surfaces

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

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

- 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

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

NPTEL Video Course - Mechanical Engineering - NOC:Principles of Metal Forming 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 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

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

- 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

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

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

- 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

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

NPTEL 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 Frechet 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) constraints in calculus of variations - Part I
- Lecture 24 - Local (finite subsidiary) constraints 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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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

- Lecture 30 - General variation of a functional, transversality conditions. Broken extremals, Wierstrass-Erdma
- Lecture 31 - General variation of a functional, transversality conditions. Broken extremals, Wierstrass-Erdma
- 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 Grubler'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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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

- 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 user-specifications
- 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
- Lecture 48 - Designing compliant suspensions using kinetoelastic maps
- Lecture 49 - Instant centre method for designing compliant mechanisms
- Lecture 50 - Stiffness and compliance ellipsoids
- Lecture 51 - Building block method of designing compliant mechanisms
- Lecture 52 - Comparative analysis of different methods for designing compliant mechanisms
- Lecture 53 - Aspects of Mechanical advantage of compliant mechanisms
- Lecture 54 - Mechanical advantage of rigid-body and compliant mechanisms
- Lecture 55 - Bistability in elastic systems
- Lecture 56 - Analysis of bistable arches
- Lecture 57 - Compliant mechanisms with bistable arches
- Lecture 58 - Static balancing and zero-free-length springs
- Lecture 59 - Static balance of a compliant mechanism using a linkage
- Lecture 60 - Static balancing method for compliant mechanisms
- Lecture 61 - A catalogue of compliant mechanisms
- Lecture 62 - Compliant suspension mechanism in microsystems (MEMS)
- Lecture 63 - Micromechanical signal processors using compliant mechanisms
- Lecture 64 - A few special concepts of compliant mechanisms
- Lecture 65 - Materials and prototyping of compliant mechanisms
- Lecture 66 - Summary of the course
- Lecture 67 - Micromachined accelerometers with Displacement-amplifying Compliant Mechanisms (DaCMs)
- Lecture 68 - Miniature compliant mechanisms as cell-manipulation tools

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

- Lecture 69 - Micro-newton force sensor
- Lecture 70 - Compliant tissue cutting mechanism
- Lecture 71 - A compliant pipe-crawling robots
- Lecture 72 - A compliant easy-chair for the elderly

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

NPTEL Video Course - Mechanical Engineering - NOC:Heat Transfer and Combustion in Multiphase Systems

Subject Co-ordinator - Prof. Saptarshi Basu

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction to Multiphase
- Lecture 2 - Thermodynamics of Multiphase systems
- Lecture 3 - Thermodynamics of Interface - I
- Lecture 4 - Thermodynamics of Interface - II
- Lecture 5 - Interfacial phenomena key concepts - I
- Lecture 6 - Interfacial phenomena key concepts - II
- Lecture 7 - Interfacial heat and mass transfer - I - Interfacial mass, momentum and energy balance, Surface t
- Lecture 8 - Interfacial heat and mass transfer - II - Interfacial dynamics, Instabilities of the interface
- Lecture 9 - Interfacial heat and mass transfer - III - Evaporation from thin films
- Lecture 10 - Governing equations and interfacial conditions
- Lecture 11 - Governing equations
- Lecture 12 - Governing equations
- Lecture 13 - Governing equations
- Lecture 14 - Interface shapes
- Lecture 15 - Transport processes at interface with key concepts - I
- Lecture 16 - Transport processes at interface with key concepts - II
- Lecture 17 - Interfacial transport
- Lecture 18 - Interfacial transport including dynamic behavior
- Lecture 19 - Interface behavior
- Lecture 20 - Heat transfer and evaporation in droplets
- Lecture 21 - Droplet vaporization models - I
- Lecture 22 - Droplet vaporization models - II
- Lecture 23 - Droplet vaporization dynamics - I
- Lecture 24 - Droplet vaporization dynamics - II
- Lecture 25 - Droplet liquid phase transport
- Lecture 26 - Comprehensive droplet vaporization model and correlations - I
- Lecture 27 - Comprehensive droplet vaporization model and correlations - II
- Lecture 28 - Comparison of droplet vaporization models
- Lecture 29 - Species transport in droplet

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

- Lecture 30 - Heat transfer and transport processes in sessile droplets
- Lecture 31 - Introduction to atomization
- Lecture 32 - Atomization principles and governing parameters
- Lecture 33 - Spray / droplet breakup models \hat{A} I (TAB model)
- Lecture 34 - Spray / droplet breakup models \hat{A} II (WAVE model)
- Lecture 35 - Droplet combustion - I
- Lecture 36 - Droplet combustion - II
- Lecture 37 - Regimes in spray combustion
- Lecture 38 - Boiling - I
- Lecture 39 - Boiling - II (Bubble dynamics)
- Lecture 40 - Boiling - II (Bubble dynamics and critical heat flux)

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

NPTEL Video Course - Mechanical Engineering - NOC:Convective Heat Transfer (2018)

Subject Co-ordinator - Prof. Saptarshi Basu

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Introduction to convective heat transfer
Lecture 2 - Governing equations I - Momentum Conservation
Lecture 3 - Governing equations II - Energy Conservation
Lecture 4 - Introduction to external forced convection
Lecture 5 - Scaling Analysis - Momentum
Lecture 6 - Scaling Analysis - Energy I
Lecture 7 - Scaling Analysis - Energy II
Lecture 8 - Similarity solution - Momentum
Lecture 9 - Similarity solution - Energy
Lecture 10 - Integral solutions - Momentum
Lecture 11 - Integral solutions - Energy
Lecture 12 - Suction and Blowing
Lecture 13 - Falkner-Skan solution
Lecture 14 - Arbitrary Wall temperature
Lecture 15 - Internal forced convection - Developing flow
Lecture 16 - Hydrodynamic fully developed flow
Lecture 17 - Mean temperature in fully developed flow
Lecture 18 - Uniform heat flux
Lecture 19 - Uniform wall temperature
Lecture 20 - Tube surrounded by isothermal flow
Lecture 21 - Heat transfer to fully developed flow - I
Lecture 22 - Heat transfer to fully developed flow - II
Lecture 23 - Laminar slug flow
Lecture 24 - Power law fluids
Lecture 25 - Forced convection - Tutorial I
Lecture 26 - Forced convection - Tutorial II
Lecture 27 - Forced convection - Tutorial III
Lecture 28 - Introduction to external natural convection
Lecture 29 - Scaling analysis - I

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