

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

NPTEL Video Course - Aerospace Engineering - Introduction to Aerospace Propulsion

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

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Course Intro & Historical development of flights

Lecture 2 - Early development of aircraft propulsive devices

Lecture 3 - Development of Jet propulsion for aircraft

Lecture 4 - Introduction to thermodynamics, Scope and method, Basic concepts

Lecture 5 - Quasi-static processes, zeroth law of thermodynamics and temperature, concept of energy and its v

Lecture 6 - Specific heats at constant pressure and volume Work and heat transfers

Lecture 7 - Tutorial

Lecture 8 - First law of thermodynamics for closed systems

Lecture 9 - First law of thermodynamics for open systems/flow processes

Lecture 10 - Second law of thermodynamics, heat engines, refrigerators and heat pumps, Kelvin-Planck and Clau

Lecture 11 - Reversible and irreversible processes, concept of entropy

Lecture 12 - Increase of entropy principle, third law of thermodynamics, absolute entropy, perpetual motion m

Lecture 13 - Tutorial

Lecture 14 - Carnot cycle, Carnot principle, thermodynamic temperature scale

Lecture 15 - Exergy, availability and second law efficiency

Lecture 16 - Tutorial

Lecture 17 - Gas and vapour power cycles, Otto cycle, Diesel cycle, Dual cycle

Lecture 18 - Rankine cycle, Brayton cycle, Stirling and Ericsson cycles

Lecture 19 - Thermodynamic property relations, Jacobean and Legendre transformations, Maxwell's equations

Lecture 20 - Tutorial

Lecture 21 - Properties of gas and vapour mixtures

Lecture 22(A) - One-dimensional compressible flows, isentropic flows

Lecture 22(B) - Flows with friction and heat transfer, normal and oblique shocks

Lecture 23 - Piston-prop engines

Lecture 24 - IC Engines for aircraft application

Lecture 25 - Performance parameters of IC engines

Lecture 26 - Supercharging of aircraft IC engines

Lecture 27 - Tutorial

Lecture 28 - Propeller fundamentals

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

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NPTEL Video Course - Aerospace Engineering - Jet Aircraft Propulsion

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

Co-ordinating Institute - IIT - Bombay

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

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

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

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

NPTEL Video Course - Aerospace Engineering - Turbomachinery Aerodynamics

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

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction to Turbo machines Syllabus, References and Schedules

Lecture 2 - Axial Flow Compressors and Fans

Lecture 3 - A two dimensional analytical model

Lecture 4 - 2D losses in Axial flow Compressor Stage

Lecture 5 - Tutorial 1

Lecture 6 - 3D Flows in Blade Passages, Secondary Flows, Tip leakage Flow, Scrubbling

Lecture 7 - Three Dimensional Flow Analysis

Lecture 8 - Classical Blade Design Laws

Lecture 9 - Three Dimensional Flow Analysis in Axial Flow Compressor

Lecture 10 - Tutorial 2

Lecture 11 - Axial Compressor Characteristics

Lecture 12 - Instability in Axial Compressors

Lecture 13 - Inlet Distortion and Rotating Stall, Control of Instability

Lecture 14 - Transonic Compressors and Shock Structure Models, Transonic Compressor Characteristics

Lecture 15 - Axial Flow Compressor Design, Inter Spool Duct

Lecture 16 - Design of Compressor Blades, Aerofoil Design (Subsonic, Transonic, Supersonic Profiles)

Lecture 17 - Design of Compressor Blade

Lecture 18 - Noise Problem in Axial Compressors and Fans

Lecture 19 - Axial Flow Turbines

Lecture 20 - Axial Flow Turbines

Lecture 21 - Axial Flow Turbines

Lecture 22 - Axial Flow Turbines

Lecture 23 - Tutorial 3

Lecture 24 - Multi staging and Multi spooling of Turbine

Lecture 25 - 3D Flow in Turbine

Lecture 26 - Tutorial 4

Lecture 27 - Turbine Blade Cooling â Fundamentals of Heat Transfer, Blade Cooling Requirements

Lecture 28 - Turbine Blade Cooling Technologies

Lecture 29 - Turbine Blade Design

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- Lecture 30 - Turbine Blade Design
- Lecture 31 - Centrifugal Compressors
- Lecture 32 - Centrifugal Compressors
- Lecture 33 - Tutorial 5
- Lecture 34 - Design of Centrifugal Compressors
- Lecture 35 - Radial Turbines
- Lecture 36 - Tutorial 6
- Lecture 37 - Radial Turbine Characteristics and Design of Radial Turbines
- Lecture 38 - CFD for Turbomachinery
- Lecture 39 - CFD for Turbomachinery
- Lecture 40 - CFD for Turbomachinery

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Aerospace Engineering

Subject Co-ordinator - Prof. Rajkumar Pant

Co-ordinating Institute - IIT - Bombay

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

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

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

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Aircraft Design

Subject Co-ordinator - Prof. Rajkumar Pant

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - What is Aircraft Design
- Lecture 2 - Aircraft Design Process
- Lecture 3 - Design Stages
- Lecture 4 - Phases in Aircraft Design
- Lecture 5 - The Design Spiral
- Lecture 6 - Importance of Cost in Aircraft Design
- Lecture 7 - Basic Laws of Aircraft Design
- Lecture 8 - Requirements Capture
- Lecture 9 - Quality Function Deployment
- Lecture 10 - House of Quality Chart
- Lecture 11 - Example of HoQ for HALE UAV
- Lecture 12 - Illustration of HOQ-GA aircraft
- Lecture 13 - Airliners
- Lecture 14 - Key Issues in Design of Airliners
- Lecture 15 - Design Considerations - Future Airliners
- Lecture 16 - Supersonic Transport Aircraft
- Lecture 17 - Airliner and Supersonic Aircraft, some additional concepts
- Lecture 18 - Design Considerations - Cargo Aircraft
- Lecture 19 - Design Considerations - GA Aircraft
- Lecture 20 - Types of Military Aircraft
- Lecture 21 - Cargo, GA and Military Aircraft, Some additional concepts
- Lecture 22 - Aircraft Configuration Design
- Lecture 23 - Podded Engines on Wings
- Lecture 24 - Wing Sweep
- Lecture 25 - Canards and Flying Wing
- Lecture 26 - Three Surface Aircraft
- Lecture 27 - Winglets
- Lecture 28 - Thrust Vectoring
- Lecture 29 - Few Novel Concepts_01

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- Lecture 30 - Aircraft Configuration Design - Closing Remarks
- Lecture 31 - Choices in Aircraft Layout
- Lecture 32 - Wing Geometry Definitions
- Lecture 33 - Options for Wing layout
- Lecture 34 - Propulsion System Layout
- Lecture 35 - Tail Plane Layout
- Lecture 36 - Landing Gear Layout - Part 1
- Lecture 37 - Landing Gear Layout - Part 2
- Lecture 38 - Landing Gear of some Famous Aircraft
- Lecture 39 - Tutorial on OpenVSP
- Lecture 40 - Initial Sizing in Aircraft Design
- Lecture 41 - Estimation of Empty Weight Fraction
- Lecture 42 - Estimation of Mission Segment Weights
- Lecture 43 - Estimation of Fuel Weight Fractions
- Lecture 44 - Estimation of maximum L/D
- Lecture 45 - Estimation of engine parameters
- Lecture 46 - Estimation of Design gross weight
- Lecture 47 - Take-off weight build up
- Lecture 48 - Tutorial on Initial Sizing of Transport Aircraft
- Lecture 49 - Tutorial on Initial Sizing of Military Aircraft
- Lecture 50 - Subsonic Parasite Drag Estimation
- Lecture 51 - Component Buildup Method
- Lecture 52 - Drag Estimation of Military Aircraft
- Lecture 53 - Tutorial on Drag Polar Estimation of Military Aircraft
- Lecture 54 - Estimation of Lift Coefficient
- Lecture 55 - Estimation of Maximum Lift Coefficient
- Lecture 56 - Flaps as High Lift Devices
- Lecture 57 - Tutorial on Lift Coefficient Estimation of Transport Aircraft
- Lecture 58 - Tutorial on Lift Coefficient Estimation of Military Aircraft
- Lecture 59 - Constraint Analysis- Introductory Remarks
- Lecture 60 - Constraint Analysis- Transport Aircraft - Part 1
- Lecture 61 - Constraint Analysis- Transport Aircraft - Part 2
- Lecture 62 - Tutorial on Constraint Analysis of Transport Aircraft - Part 1
- Lecture 63 - Tutorial on Constraint Analysis of Transport Aircraft - Part 2
- Lecture 64 - Constraint Analysis- Military Aircraft
- Lecture 65 - Tutorial on Constraint Analysis of Military Aircraft - Part 1
- Lecture 66 - Tutorial on Constraint Analysis of Military Aircraft - Part 2
- Lecture 67 - Refined Sizing
- Lecture 68 - Tutorial on Refined Sizing of Jet Fighter Aircraft

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- Lecture 69 - Cost Estimation in Aircraft Conceptual Design
- Lecture 70 - Aircraft Life Cycle Cost Estimation
- Lecture 71 - Tutorial on RDT&E and Production Cost Estimation of Transport Aircraft
- Lecture 72 - Tutorial on DT&E and Production Cost Estimation of HALE UAV
- Lecture 73 - Estimation of Direct Operating Cost
- Lecture 74 - Fighter Aircraft Life Cycle Cost Estimation Model
- Lecture 75 - Range Payload Diagram - Part 1
- Lecture 76 - Range Payload Diagram - Part 2
- Lecture 77 - Tutorial on Range Payload Diagram of Transport Aircraft
- Lecture 78 - Environmental issues in Aircraft Design
- Lecture 79 - Limit Manoeuvre Envelope
- Lecture 80 - Effect of Gust
- Lecture 81 - Aircraft Loads
- Lecture 82 - Tutorial on V-n Diagram of Transport Aircraft
- Lecture 83 - High Altitude Long Endurance (HALE) Aircraft
- Lecture 84 - Morphing of Aircraft Configurations
- Lecture 85 - Guest Lecture on Air Power and Multi-role Fighter Aircraft - Part 1
- Lecture 86 - Guest Lecture on Air Power and Multi-role Fighter Aircraft - Part 2

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Launch Vehicle Analysis and Design

Subject Co-ordinator - Prof. Ashok Joshi

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction
Lecture 2 - Course Plan
Lecture 3 - Ascent Mission Basics
Lecture 4 - Force and Geometry Models - 1
Lecture 5 - Force and Geometry Models - 2
Lecture 6 - Idealized Performance
Lecture 7 - Trajectory Under Gravity
Lecture 8 - Impact of Gravity
Lecture 9 - Impact of Drag
Lecture 10 - Curvilinear Motion Concept
Lecture 11 - Constant Pitch Rate Solution
Lecture 12 - Constant Velocity Solution
Lecture 13 - Constant (T/m) Solution
Lecture 14 - Ascent Mission Design
Lecture 15 - Multi-stage Rocket Basics
Lecture 16 - Multi-stage Configuration Basics
Lecture 17 - Multi-stage Solution Basics
Lecture 18 - Multi-stage Problem Definition
Lecture 19 - Optimal Staging Strategy
Lecture 20 - Lagrange Solution
Lecture 21 - Approximate Staging Solution
Lecture 22 - Variant Concept
Lecture 23 - Variant Design Solution
Lecture 24 - Parallel Staging Concept
Lecture 25 - Parallel Staging Benefits
Lecture 26 - Jet Damping and Ballistic Missiles
Lecture 27 - Current Rocket Concepts
Lecture 28 - Launch Widow and SSTO Concepts
Lecture 29 - Reentry Concept

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- Lecture 30 - Ballistic Reentry Solution
- Lecture 31 - Lifting and Other Reentry Modes
- Lecture 32 - Concluding Remarks
- Lecture 33 - Rectilinear Trajectories
- Lecture 34 - Curvilinear Trajectories
- Lecture 35 - Multi-stage Rocket Concept
- Lecture 36 - Optimal Multi-stage Solutions

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

NPTEL Video Course - Aerospace Engineering - NOC:Lighter than Air Systems

Subject Co-ordinator - Prof. Rajkumar Pant

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction to the Course Content
- Lecture 2 - Differences between LTA and HTA systems
- Lecture 3 - The three conventional LTA systems
- Lecture 4 - LTA gases, Types of Airships and their components
- Lecture 5 - Introduction of Skyship 600 and USP of Airships
- Lecture 6 - Applications of Airships
- Lecture 7 - Tethered Aerostat systems
- Lecture 8 - Why use Aerostats
- Lecture 9 - Some Queries on Aerostats
- Lecture 10 - Historical developments of LTA systems - Part I
- Lecture 11 - Historical developments of LTA systems - Part II
- Lecture 12 - Historical developments of LTA systems - Part III
- Lecture 13 - Historical developments of LTA systems - Part IV
- Lecture 14 - Historical developments of LTA systems - Part V
- Lecture 15 - Historical developments of LTA systems - Part VI
- Lecture 16 - Overview of PADD
- Lecture 17 - Remote Controlled Airships
- Lecture 18 - Autonomous Airships
- Lecture 19 - Indoor Blimp Projects by students
- Lecture 20 - Biomimetic Airships
- Lecture 21 - Introduction to Buoyancy
- Lecture 22 - Basic Concepts of Aerostatics
- Lecture 23 - Ballasting, Weigh off and Fuel weight recovery
- Lecture 24 - In flight Ballast Collection methods
- Lecture 25 - Static Lift Prediction - Part I
- Lecture 26 - Static Lift Prediction - Part II
- Lecture 27 - Tutorial Problem 1 on Static Lift Estimation
- Lecture 28 - Effect of Humidity and Vapour Pressure
- Lecture 29 - Calculation of Ambient Air Density

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- Lecture 30 - Tutorial Problem 2 and 3 on Static Lift Estimation
- Lecture 31 - Effect of Lifting Gas Purity, Superpressure and Superheat
- Lecture 32 - Ballonet Air Weight Estimation
- Lecture 33 - Net Static Lift of non rigid airships
- Lecture 34 - Net Static Lift for other LTA systems
- Lecture 35 - Tutorial Problem 4 on Net Static Lift Estimation
- Lecture 36 - Parameters affecting Static Lift
- Lecture 37 - Effect of change in Atmospheric Pressure
- Lecture 38 - Tutorial Problem 5 on Change in Atmospheric Pressure
- Lecture 39 - Effect of Superpressure
- Lecture 40 - Tutorial Problem 6 on effect of Superpressure
- Lecture 41 - Effect of Slow change in Atmospheric Temperature and Superheat
- Lecture 42 - Effect of Rapid change in Atmospheric Temperature
- Lecture 43 - Tutorial Problem 7 on Change in Atmospheric Temperature and Superheat
- Lecture 44 - Revision and Tutorial Problem 08 and 09 on Affecting Parameters of Static Lift
- Lecture 45 - Effect of change in Relative Humidity
- Lecture 46 - Effect of change in Lifting Gas Purity
- Lecture 47 - Effect of change in Lifting Gas Volume
- Lecture 48 - Determination of Inflation Fraction
- Lecture 49 - Flight To Lower Ground Elevation
- Lecture 50 - Tutorial Problem 10 on Helium Addition
- Lecture 51 - Outdoor Hot Air Balloon
- Lecture 52 - Pressure Height
- Lecture 53 - Tutorial Problem 11 on Pressure Height Calculation
- Lecture 54 - Sea Level Inflation Fraction
- Lecture 55 - Flight above Pressure Height
- Lecture 56 - Effect of Change in Operating Altitude
- Lecture 57 - Tutorial Problem 12 on Lifting Gas Loss
- Lecture 58 - Descent Following Exceedance
- Lecture 59 - Pressure Height for other LTA Vehicles
- Lecture 60 - Discussion of Practice Questions
- Lecture 61 - Envelope Materials - Part I
- Lecture 62 - Envelope Materials - Part II
- Lecture 63 - Envelope Materials - Part III
- Lecture 64 - Fabric Testing Machines - Part I
- Lecture 65 - Fabric Testing Machines - Part II
- Lecture 66 - Need for Ground Handling
- Lecture 67 - Aerium Hanger for CL 160 Airship
- Lecture 68 - Ground Handling of Airships

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- Lecture 69 - Types of Mooring Masts and Design Requirements
- Lecture 70 - Nose Battens for Envelopes
- Lecture 71 - Need for Airship Design Methodology
- Lecture 72 - Overview of Airship Design Methodology ADM
- Lecture 73 - Details of Airship Design Methodology ADM
- Lecture 74 - Inputs to Airship Design Methodology - Part 1
- Lecture 75 - Inputs to Airship Design Methodology - Part 2
- Lecture 76 - Design Constants in Airship Design Methodology
- Lecture 77 - Outputs from Airship Design Methodology
- Lecture 78 - Statistical Data Used in Airship Design Methodology
- Lecture 79 - Validation of Airship Design Methodology
- Lecture 80 - Envelope Shapes for LTA Systems
- Lecture 81 - Example of Application of Airship Design Methodology
- Lecture 82 - Conclusions and Limitations of Airship Design Methodology
- Lecture 83 - Sizing Procedure for Indoor Remotely Controlled Airships - Part 1
- Lecture 84 - Sizing Procedure for Indoor Remotely Controlled Airships - Part 2
- Lecture 85 - Sizing Procedure for Indoor Remotely Controlled Airships - Part 3
- Lecture 86 - Tutorial on Sizing of an Indoor Non Rigid Remotely Controlled Airship
- Lecture 87 - Transportation Problems Faced by Remote Regions
- Lecture 88 - Airships vs Helicopters - Part I
- Lecture 89 - Airships vs Helicopters - Part II
- Lecture 90 - Chaar Dham Yatra - Part I
- Lecture 91 - Chaar Dham Yatra - Part II
- Lecture 92 - Chaar Dham Yatra - Part III
- Lecture 93 - Steam and IC engines for Airships
- Lecture 94 - Electric motors for Airships
- Lecture 95 - Turboprops for Airships
- Lecture 96 - Solar Propulsion and Thrust Vectoring on Airships
- Lecture 97 - Lectuer on Dynamics
- Lecture 98 - Lectuer on Drag
- Lecture 99 - Aerodynamic Stability
- Lecture 100 - Added Mass Effects
- Lecture 101 - Introduction to Aerostat Design Methodology
- Lecture 102 - Inputs for Aerostat Design Methodology
- Lecture 103 - Design Constants in Aerostat Design Methodology
- Lecture 104 - Overview of Aerostat Design Methodology
- Lecture 105 - Equilibrium Analysis of Aerostats - Part I
- Lecture 106 - Equilibrium Analysis of Aerostats - Part II
- Lecture 107 - Methodology for Tether Profile Estimation

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- Lecture 108 - Sizing of Reusable Indoor Hot Air Balloon
- Lecture 109 - Tutorial on Sizing of RIHAB
- Lecture 110 - Features of Hybrid Airships
- Lecture 111 - Technological challenges in HALE Platforms development - Part I
- Lecture 112 - Technological challenges in HALE Platforms development - Part II
- Lecture 113 - Initial sizing of Stratospheric Airships
- Lecture 114 - Introduction to Hybrid Airships
- Lecture 115 - Lockheed Martin's P 791 Hybrid Airship
- Lecture 116 - Aeroscraft ML 866 Hybrid Airship
- Lecture 117 - SkyCat Hybrid Airship
- Lecture 118 - Rotary and Winged Hybrid Airships
- Lecture 119 - Hybrid Ultra Heavy Lift Cargo Vehicle Transport
- Lecture 120 - Features of Hybrid Airships
- Lecture 121 - Solar Powered Airships

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NPTEL Video Course - Aerospace Engineering - NOC:Elements of Mechanical Vibration

Subject Co-ordinator - Prof. Ashish K Darpe

Co-ordinating Institute - IIT - Delhi

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 - LABORATORY SESSION (Introduction)
Lecture 29 - EXPERIMENT 1

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Lecture 30 - EXPERIMENT 2
Lecture 31 - EXPERIMENT No. 2
Lecture 32
Lecture 33
Lecture 34
Lecture 35 - LABORATORY SESSION #3
Lecture 36 - LABORATORY SESSION #4
Lecture 37 - LABORATORY SESSION #5
Lecture 38
Lecture 39
Lecture 40
Lecture 41 - LABORATORY SESSION #6
Lecture 42 - LABORATORY SESSION #7
Lecture 43 - LABORATORY SESSION #8
Lecture 44
Lecture 45
Lecture 46
Lecture 47
Lecture 48

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

NPTEL Video Course - Aerospace Engineering - Aero Elasticity

Subject Co-ordinator - Prof. C. Venkatesan

Co-ordinating Institute - IIT - Kanpur

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

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

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NPTEL Video Course - Aerospace Engineering - Foundation of Scientific Computing

Subject Co-ordinator - Prof. Tapan K. Sengupta

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1

Lecture 2

Lecture 3

Lecture 4

Lecture 5

Lecture 6

Lecture 7

Lecture 8

Lecture 9

Lecture 10

Lecture 11

Lecture 12

Lecture 13

Lecture 14

Lecture 15

Lecture 16

Lecture 17

Lecture 18

Lecture 19

Lecture 20

Lecture 21

Lecture 22

Lecture 23

Lecture 24 (Same as Lecture 23)

Lecture 25

Lecture 26

Lecture 27

Lecture 28

Lecture 29

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

Lecture 30
Lecture 31
Lecture 32
Lecture 33
Lecture 34
Lecture 35
Lecture 36
Lecture 37
Lecture 38
Lecture 39
Lecture 40

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

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

Subject Co-ordinator - Prof. Tapan K. Sengupta

Co-ordinating Institute - IIT - Kanpur

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

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

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

- Lecture 30 - Instability and Transition of Fluid Flows
- Lecture 31 - Instability and Transition of Fluid Flows
- Lecture 32 - Instability and Transition of Fluid Flows
- Lecture 33 - Instability and Transition of Fluid Flows
- Lecture 34 - Instability and Transition of Fluid Flows
- Lecture 35 - Instability and Transition of Fluid Flows
- Lecture 36 - Instability and Transition of Fluid Flows
- Lecture 37 - Instability and Transition of Fluid Flows
- Lecture 38 - Instability and Transition of Fluid Flows
- Lecture 39 - Instability and Transition of Fluid Flows

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

NPTEL Video Course - Aerospace Engineering - Introduction to Helicopter Aerodynamics and Dynamics

Subject Co-ordinator - Prof. A.R. Manjunath, Prof. C. Venkatesan

Co-ordinating Institute - IIT - Kanpur | HAL

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

Lecture 1 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 2 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 3 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 4 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 5 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 6 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 7 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 8 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 9 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 10 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 11 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 12 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 13 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 14 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 15 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 16 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 17 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 18 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 19 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 20 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 21 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 22 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 23 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 24 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 25 - Introduction to Helicopter Aerodynamics and Dynamics
Lecture 26 - Introduction to Helicopter Aerodynamics and Dynamics

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

NPTEL Video Course - Aerospace Engineering - Introduction to Propulsion

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

Co-ordinating Institute - IIT - Kanpur

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

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

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Lecture 30 - Fundamentals of Aerospace Propulsion
Lecture 31 - Fundamentals of Aerospace Propulsion
Lecture 32 - Fundamentals of Aerospace Propulsion
Lecture 33 - Fundamentals of Aerospace Propulsion
Lecture 34 - Fundamentals of Aerospace Propulsion
Lecture 35 - Fundamentals of Aerospace Propulsion
Lecture 36 - Fundamentals of Aerospace Propulsion
Lecture 37 - Fundamentals of Aerospace Propulsion
Lecture 38 - Fundamentals of Aerospace Propulsion
Lecture 39 - Fundamentals of Aerospace Propulsion
Lecture 40 - Fundamentals of Aerospace Propulsion

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

NPTEL Video Course - Aerospace Engineering - Jet and Rocket Propulsion

Subject Co-ordinator - Dr. A. Kushari

Co-ordinating Institute - IIT - Kanpur

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

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

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

Lecture 30 - Jet and Rocket Propulsion
Lecture 31 - Jet and Rocket Propulsion
Lecture 32 - Jet and Rocket Propulsion
Lecture 33 - Jet and Rocket Propulsion
Lecture 34 - Jet and Rocket Propulsion
Lecture 35 - Jet and Rocket Propulsion
Lecture 36 - Jet and Rocket Propulsion
Lecture 37 - Jet and Rocket Propulsion
Lecture 38 - Jet and Rocket Propulsion
Lecture 39 - Jet and Rocket Propulsion
Lecture 40 - Jet and Rocket Propulsion

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Airplane Performance

Subject Co-ordinator - Dr. A.K. Ghosh, Dr. Deepu Philip

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - General Introduction
Lecture 2 - George Cayley
Lecture 3 - Introduction to airplane and its components
Lecture 4 - Hansa 3 Aircraft and its Primary Systems
Lecture 5 - Concept of Lift Aerofoil
Lecture 6 - Drag Polar
Lecture 7 - Revision
Lecture 8 - Standard Atmosphere
Lecture 9 - Measuring Instruments
Lecture 10 - Equations of Motion
Lecture 11 - Thrust Required, Power Required
Lecture 12 - Excess Thrust and Power
Lecture 13 - Review
Lecture 14 - Thrust Required
Lecture 15 - Modeling of CL
Lecture 16 - A Closer Look
Lecture 17 - Estimation of Drag Polar Through Flight Test
Lecture 18 - Estimation of Rate of Climb
Lecture 19 - Revision.
Lecture 20 - Range and Endurance
Lecture 21 - Range and Endurance
Lecture 22 - Gliding Flight
Lecture 23 - Accelerated Flight
Lecture 24 - V-n Diagram
Lecture 25 - Revision..
Lecture 26 - V stall
Lecture 27 - Flaps
Lecture 28 - Take off
Lecture 29 - Take off Performance

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

- Lecture 30 - Take off Performance
- Lecture 31 - Revision...
- Lecture 32 - Landing Performance
- Lecture 33 - Landing Performance
- Lecture 34 - Challenges in Takeoff and Landing
- Lecture 35 - Introduction to Static Stability
- Lecture 36 - Positioning of Center of Pressure for Static Stability
- Lecture 37 - Revision.....
- Lecture 38 - Stability and Control
- Lecture 39 - Stability and Control
- Lecture 40 - Longitudinal Control
- Lecture 41 - Contribution of Wing and Tail
- Lecture 42 - Stability
- Lecture 43 - Control
- Lecture 44 - Control
- Lecture 45 - Control
- Lecture 46 - Design Basics
- Lecture 47 - Design Basics
- Lecture 48 - Revision.

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

NPTEL Video Course - Aerospace Engineering - NOC:Stability and control of aircraft

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

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Introduction
Lecture 2 - Introduction to Static Stability
Lecture 3 - Stability and Trim
Lecture 4 - Stability
Lecture 5 - Stability
Lecture 6 - Problems
Lecture 7 - Problems
Lecture 8 - Neutral Point and Fuselage Contribution Completed
Lecture 9 - Longitudinal Control Completed
Lecture 10 - Longitudinal Control (Continued...)
Lecture 11 - Control
Lecture 12 - CL_trim Vs α_{trim}
Lecture 13 - Neutral Point
Lecture 14 - Contribution of Engine towards Stability
Lecture 15 - Revision
Lecture 16 - Trim
Lecture 17 - Trim
Lecture 18 - Maneuvering Point
Lecture 19 - Numerical
Lecture 20 - Revision (Lecture20)
Lecture 21 - Directional Stability
Lecture 22 - Directional Control
Lecture 23 - Lateral Stability and Control
Lecture 24 - Numericals
Lecture 25 - Lecture - 25 Revision
Lecture 26 - Stick Free Stability
Lecture 27 - Stick Free Stability (Continued...)
Lecture 28 - Hinge Moment and Hinge Moment Derivative
Lecture 29 - Aircraft Handling Qualities

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

- Lecture 30 - Aircraft Handling Qualities (Continued...)
- Lecture 31 - Reversible Control
- Lecture 32 - Numericals
- Lecture 33 - Numericals
- Lecture 34 - Handling Qualities
- Lecture 35 - Determination of Neutral Point and Maneuvering Point by Flight Experiment
- Lecture 36 - Ponit Mass Equation of Motion
- Lecture 37 - Forces and Moments
- Lecture 38 - Aircraft Equations of Motion
- Lecture 39 - Six Degrees of Freedom of an Aircraft
- Lecture 40 - 6 DoF
- Lecture 41 - Vector in a Rotating Frame
- Lecture 42 - Euler Angles
- Lecture 43 - Small Perturbation Theory
- Lecture 44 - Small Perturbation Theory (Continued...)
- Lecture 45 - Perturbed Equations of Motion
- Lecture 46 - Perturbed Force
- Lecture 47 - Perturbed Force
- Lecture 48 - Perturbed Pitching Moment
- Lecture 49 - Longitudinal Dimensional Stability Derivatives
- Lecture 50 - Dynamic Stability
- Lecture 51 - Longitudinal Modes
- Lecture 52 - Short Period and Phugoid Approximations
- Lecture 53 - Pure Pitching Motion
- Lecture 54 - Stability Augmentation System (SAS)
- Lecture 55 - Lateral-Directional Motion
- Lecture 56 - Tutorial - 1
- Lecture 57 - Tutorial - 2
- Lecture 58 - Tutorial - 3
- Lecture 59 - Tutorial - 4
- Lecture 60 - History of Aviation

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

NPTEL Video Course - Aerospace Engineering - NOC:Engineering Thermodynamics

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

Co-ordinating Institute - IIT - Kanpur

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

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

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

- Lecture 30 - Vapor Power Cycle - 3
- Lecture 31 - Gas Power Cycles - 1
- Lecture 32 - Gas Power Cycles - 2
- Lecture 33 - Refrigeration Cycles
- Lecture 34 - Non-Reacting Mixture and Psychrometry
- Lecture 35 - Gas-Vapor Mixture and Air Conditioning - 1
- Lecture 36 - Gas-Vapor Mixture and Air Conditioning - 2
- Lecture 37 - Thermodynamic Property Relations - 1
- Lecture 38 - Thermodynamic Property Relations - 2

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

NPTEL Video Course - Aerospace Engineering - NOC:Aircraft Dynamic Stability and Design Stability Augmentation

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

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Dynamic Stability
- Lecture 2 - Spring-Mass-Damper System
- Lecture 3 - Spring-Mass-Damper System
- Lecture 4 - Laplace Transform
- Lecture 5 - Pitch Dynamics
- Lecture 6 - Numericals
- Lecture 7 - Aircraft Rigid Body Equation of Motion
- Lecture 8 - Six Degree of Freedom Equation of Motion
- Lecture 9 - Vector in Rotating Frame
- Lecture 10 - Forces and Moments on Aircraft
- Lecture 11 - Euler Angles
- Lecture 12 - Trajectory of the Aircraft
- Lecture 13 - Small Perturbation Theory
- Lecture 14 - Perturbed Aerodynamic Forces and Moments
- Lecture 15 - U-derivatives
- Lecture 16 - Alpha - derivatives
- Lecture 17 - Alpha Dot Derivatives
- Lecture 18 - q and delta Derivatives
- Lecture 19 - Dimensional Stability Derivatives
- Lecture 20 - Longitudinal Characteristic Equation
- Lecture 21 - Routh's Criteria and Longitudinal Dynamic Stability
- Lecture 22 - Longitudinal Modes
- Lecture 23 - Short period Mode Approximation
- Lecture 24 - Long Period Mode (Phugoid) Approximation
- Lecture 25 - Lateral Directional Stability Derivatives
- Lecture 26 - Lateral Directional Stability Derivatives (Continued...)
- Lecture 27 - Perturbed Equation of Motion for Lateral Dynamics
- Lecture 28 - Modes of Lateral Directional Dynamics
- Lecture 29 - Spiral and Dutch Roll modes Approximation

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

- Lecture 30 - Routh's Hurwitz Stability Criterion
- Lecture 31 - Introduction to Stability Augmentation
- Lecture 32 - Pure Yawing and Pure Rolling Motion
- Lecture 33 - SAS for Longitudinal Dynamics
- Lecture 34 - SAS for Lateral Dynamics
- Lecture 35 - Flight Handling Qualities
- Lecture 36 - Numericals
- Lecture 37 - Revision
- Lecture 38 - Mode Shape
- Lecture 39 - Mode Shape
- Lecture 40 - Numericals
- Lecture 41 - Stability Augmentation System
- Lecture 42 - Numericals
- Lecture 43 - Numericals

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Ancient Indian Technology

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

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Ancient Indian Civilization
- Lecture 2 - Ancient Indian Civilization's Gift to the World
- Lecture 3 - Why do we need to look at Ancient Indian Science and Technology?
- Lecture 4 - Glimpses of Ancient Indian Science and Technology
- Lecture 5 - Brief Review of Ancient Indian Scriptures
- Lecture 6 - Basic Principles of carrying out science and technology
- Lecture 7 - Arrays of Physics, chemistry and Indoor games
- Lecture 8 - Marvels of Ancient Indian Technology
- Lecture 9 - Introduction to Indian Agriculture
- Lecture 10 - Problems arising due to modern agricultural practices
- Lecture 11 - Pesticides and soil degradation
- Lecture 12 - Agriculture - A Primary Productive Activity
- Lecture 13 - An Agricultural Tools - A Plough
- Lecture 14 - Soil and seeds
- Lecture 15 - Sowing Methods
- Lecture 16 - Indigenous cattle and manuring
- Lecture 17 - Availability of Water and Freshwater
- Lecture 18 - Ancient Indian Wells
- Lecture 19 - Temple Water tanks and Dams
- Lecture 20 - Tank Irrigation system and Rainwater Harvesting
- Lecture 21 - Waterbodies - Lakes and Canals
- Lecture 22 - Sluices and Embankments
- Lecture 23 - Ancient Indian Textile Technology
- Lecture 24 - Handlooms and Charkha
- Lecture 25 - Different types of Handlooms
- Lecture 26 - Ancient Rural Indian Housing
- Lecture 27 - Thatched Roof House
- Lecture 28 - Rural Walls and Roof materials
- Lecture 29 - Indus Valley and Harappan Civilization

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

- Lecture 30 - First and Second of Indian Civilization
- Lecture 31 - Town topologies and Brick and Tile making process
- Lecture 32 - Cooling and Ventilation System in Building
- Lecture 33 - Temple Architecture in ancient India - Part 1
- Lecture 34 - Temple Architecture in ancient India - Part 2
- Lecture 35 - World of Materials
- Lecture 36 - Metals - Gold Silver Lead
- Lecture 37 - History of Copper
- Lecture 38 - Iron during Vedic period
- Lecture 39 - Iron smelting process in ancient India
- Lecture 40 - Iron and Steel crafts in ancient India
- Lecture 41 - Extraction and smelting of Zinc in Ancient India
- Lecture 42 - Wootz Steel Technology
- Lecture 43 - Metal Casting in Ancient India
- Lecture 44 - Glass Technology in Ancient India
- Lecture 45 - Environmental Consciousness in Ancient India
- Lecture 46 - Environmental Policy in Ancient India

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Experiments in Flight

Subject Co-ordinator - Prof. Mahendra Verma, Dr. A.K. Ghosh

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Weighment and Calculation of CG (Theory)
- Lecture 2 - Cruise Experiment (Theory)
- Lecture 3 - Weighment Experiment and cockpit panel description
- Lecture 4 - Drag Polar Experiment
- Lecture 5 - CG and Climb Experiment
- Lecture 6 - Calibration of Control Surface
- Lecture 7 - Calibration of Control Surfaces (Experiment)
- Lecture 8 - Introduction to Flight Data Recorder
- Lecture 9 - Sensors - Part I
- Lecture 10 - Sensors - Part II
- Lecture 11 - Data Acquisition using MEMS devices
- Lecture 12 - Estimation of Stick-Fixed Neutral Point
- Lecture 13 - Estimation of Stick-Free Neutral Point and Stick-Free Maneuvering Point
- Lecture 14 - Static
- Lecture 15 - Static
- Lecture 16 - Steady Coordinated Turn
- Lecture 17 - Introduction to Parameter Estimation
- Lecture 18 - Parameter Estimation using Least Squares Method
- Lecture 19 - Aerodynamic Parameter Estimation using Least Squares Method
- Lecture 20 - Aerodynamic Parameter Estimation using Delta Method
- Lecture 21 - Aerodynamic Parameter Estimation using Delta Method (Continued...)

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

NPTEL Video Course - Aerospace Engineering - NOC:Engineering Thermodynamics (2017)

Subject Co-ordinator - Dr. Jayant K. Singh

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Fundamental laws of nature, system definitions and applications
- Lecture 2 - Thermodynamic property, state, equilibrium and process
- Lecture 3 - Temperature scale and pressure
- Lecture 4 - Macroscopic and microscopic forms of energy
- Lecture 5 - Different forms of work, energy transfer and sign convention
- Lecture 6 - First law of thermodynamics and energy balance
- Lecture 7 - Efficiency of mechanical and electrical devices
- Lecture 8 - Examples on basic concept and energy balance
- Lecture 9 - Phase change of a pure substance
- Lecture 10 - Property diagrams of pure substances
- Lecture 11 - Thermodynamic properties of a pure substance from a property table
- Lecture 12 - Thermodynamic properties of a pure substance
- Lecture 13 - Equations of state and compressibility chart
- Lecture 14 - Examples on properties of pure substances
- Lecture 15 - Quasi equilibrium, moving boundary work
- Lecture 16 - Polytropic process
- Lecture 17 - Energy analysis of closed system and unrestrained expansion
- Lecture 18 - Internal energy, enthalpy, and specific heats of ideal gas
- Lecture 19 - Internal energy, enthalpy, and specific heats of solids and liquids
- Lecture 20 - Examples on energy balance for closed systems and moving boundary work
- Lecture 21 - Conservation of mass and steady flow processes
- Lecture 22 - Flow work and energy of flowing fluid
- Lecture 23 - Energy balance for steady flow devices
- Lecture 24 - Throttling valve, mixing chamber and heat exchanger
- Lecture 25 - Energy analysis of steady and unsteady flow devices
- Lecture 26 - Examples on mass and energy analysis of open systems
- Lecture 27 - Second law of thermodynamics, heat engine and cyclic devices
- Lecture 28 - COP of refrigerator and heat pump, second law statements
- Lecture 29 - Perpetual motion machines, reversible and irreversible processes, Carnot cycle

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- Lecture 30 - Carnot principles, thermodynamic temperature scale, Carnot HE and HP
- Lecture 31 - Examples on second law of thermodynamics
- Lecture 32 - Clausius inequality, application of second law
- Lecture 33 - Entropy, increase in entropy principle, isentropic process
- Lecture 34 - Change in entropy of solids, liquids and ideal gases
- Lecture 35 - Reversible flow work, multistage compressor, efficiency of pump and compressors
- Lecture 36 - Entropy balance in closed system and control volume
- Lecture 37 - Examples on entropy change in a system
- Lecture 38 - Exergy and second law efficiency
- Lecture 39 - Exergy of a fixed mass and flowing stream
- Lecture 40 - Exergy transfer due to heat, mass and work, exergy destruction
- Lecture 41 - Exergy balance and second law efficiency for closed systems and steady flow devices
- Lecture 42 - Examples related to exergy change and exergy destruction
- Lecture 43 - Gas power cycles and air-standard assumptions
- Lecture 44 - An overview of reciprocating engines and otto cycle
- Lecture 45 - Analysis of Diesel cycle
- Lecture 46 - Analysis of Brayton cycle
- Lecture 47 - Examples on gas power cycles such as Otto, Diesel and Brayton
- Lecture 48 - Rankin and Carnot vapour power cycles
- Lecture 49 - Ideal regenerative Rankin cycle and combined gas-vapour cycle
- Lecture 50 - Refrigeration cycles
- Lecture 51 - Examples on vapour power cycles
- Lecture 52 - Thermodynamic property relations
- Lecture 53 - Thermodynamic property relations
- Lecture 54 - Thermodynamic property relations
- Lecture 55 - Combustion and conservation of mass in a chemical reaction
- Lecture 56 - Energy balance for reacting systems
- Lecture 57 - Enthalpy of formation and combustion, adiabatic flame temperature
- Lecture 58 - Examples on property relations and reaction thermodynamics

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

NPTEL Video Course - Aerospace Engineering - NOC:Aircraft Design

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

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction
- Lecture 2 - Wing Loading and Thrust Loading
- Lecture 3 - Basic Design - Lift and Drag
- Lecture 4 - Range and Endurance
- Lecture 5 - Mission Requirements
- Lecture 6 - Range and Endurance
- Lecture 7 - Fuel Consumption
- Lecture 8 - L/D for Maximum Range and Endurance
- Lecture 9 - Range and endurance for Jet-driven Aircraft
- Lecture 10 - Estimation of Fuel for a Mission
- Lecture 11 - Design Considerations
- Lecture 12 - Design Considerations
- Lecture 13 - Design Considerations
- Lecture 14 - Wing Design
- Lecture 15 - Wing Design
- Lecture 16 - Wing Design
- Lecture 17 - Wing Design
- Lecture 18 - Wing Arrangements
- Lecture 19 - Tail Arrangements
- Lecture 20 - Tail Arrangements (Continued...)
- Lecture 21 - Aircraft Structure
- Lecture 22 - Wing Loading and Power Loading
- Lecture 23 - Thrust Loading and Wing Loading
- Lecture 24 - Thrust Loading
- Lecture 25 - Wing Loading
- Lecture 26 - Wing Loading
- Lecture 27 - Take off
- Lecture 28 - Take off
- Lecture 29 - Wing Loading

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- Lecture 30 - Revision (Wing Loading and Thrust Loading)
- Lecture 31 - Numerical
- Lecture 32 - Wing Loading
- Lecture 33 - Stability Considerations
- Lecture 34 - Static Stability Basics
- Lecture 35 - Wing and tail contribution to Longitudinal Static Stability
- Lecture 36 - Conceptual Design
- Lecture 37 - Conceptual design (Continued...)
- Lecture 38 - Elevator Effectiveness
- Lecture 39 - Elevator Effectiveness (Continued...)
- Lecture 40 - Numerical - Pitching moment
- Lecture 41 - Numerical - Elevator Effectiveness
- Lecture 42 - Aircraft Maintenance Guidelines
- Lecture 43 - Inspection for Aircraft
- Lecture 44 - Numerical of Weight Fraction
- Lecture 45 - Inspection of Sinus 912 Motor Glider
- Lecture 46 - Numericals

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

NPTEL Video Course - Aerospace Engineering - NOC:Fundamentals Of Combustion-I

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

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to fundamentals of combustion
- Lecture 2 - Scope and applications of combustion
- Lecture 3 - Scope of combustion (Continued...) and types of fuel and oxidizers
- Lecture 4 - Characterization of liquid and gaseous fuel
- Lecture 5 - Properties of liquid and solid fuels, various modes of combustion
- Lecture 6 - Thermodynamics of combustion
- Lecture 7 - Thermodynamics of combustion (Continued...)
- Lecture 8 - Laws of thermodynamics and Stoichiometry
- Lecture 9 - Stoichiometric calculations for air-gas mixture
- Lecture 10 - Mixture fraction calculation for diffusion flames
- Lecture 11 - Thermochemistry
- Lecture 12 - Heat of reaction and bond energy
- Lecture 13 - Adiabatic flame temperature
- Lecture 14 - Adiabatic flame temperature and its effect on various parameters
- Lecture 15 - Introduction to chemical equilibrium
- Lecture 16 - Chemical equilibrium and Gibbs free energy
- Lecture 17 - Equilibrium constants and Le chatlier principle
- Lecture 18 - Determination of chemical equilibrium composition
- Lecture 19 - Chemical and reaction kinetics
- Lecture 20 - Compact notation and reaction rate of chemical reaction
- Lecture 21 - Collision Theory
- Lecture 22 - Collision theory (Continued...)
- Lecture 23 - Collision frequency of molecules
- Lecture 24 - Specific reaction rate and Arrhenius law
- Lecture 25 - First order, Second order and Third-order reactions
- Lecture 26 - Classification of chemical reactions
- Lecture 27 - Elementary chain reactions
- Lecture 28 - Quasi-steady state and partial equilibrium approximation
- Lecture 29 - Physics of combustion

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- Lecture 30 - Transport equations and molecular model for transport process
- Lecture 31 - Mean free path length
- Lecture 32 - Lennard-Jones potential model for diffusivity
- Lecture 33 - Lennard-Jones potential model (Continued...)
- Lecture 34 - Mass conservation law
- Lecture 35 - Momentum conservation equation
- Lecture 36 - Introduction to mass transfer
- Lecture 37 - Species transport equation
- Lecture 38 - Energy conservation equation
- Lecture 39 - Conserved scalar approach for one dimensional flows
- Lecture 40 - Introduction to turbulent combustion

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

NPTEL Video Course - Aerospace Engineering - NOC:Aircraft Maintenance

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

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Rules and Regulations for Civil Aviation in India
- Lecture 2 - Rules and Regulations for Civil Aviation in India (Continued...)
- Lecture 3 - Aircraft Hydraulic System
- Lecture 4 - Aircraft Fuel System
- Lecture 5 - Aircraft Landing Gear System
- Lecture 6 - Aircraft Wheels
- Lecture 7 - Aircraft Brakes System
- Lecture 8 - Basic Aircraft Design
- Lecture 9 - Aircraft Electrical System
- Lecture 10 - Aircraft Electrical Circuit
- Lecture 11 - Inspection of Aircraft
- Lecture 12 - Maintenance Schedule
- Lecture 13 - Maintenance Schedule (Continued...)
- Lecture 14 - Inspection of Cessna 206

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

NPTEL Video Course - Aerospace Engineering - NOC:Fundamentals of Combustion - Part 2

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

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Combustion Modes and Classification of Flames
- Lecture 2 - Analysis of One Dimensional Combustion Wave
- Lecture 3 - Analysis of One Dimensional Combustion Wave (Continued...)
- Lecture 4 - Introduction to Laminar Premixed Flame
- Lecture 5 - Structure of One Dimensional Premixed Flame
- Lecture 6 - Laminar Flame Theory for Premixed Flames
- Lecture 7 - Laminar Flame Theory for Premixed Flames (Continued...)
- Lecture 8 - Determination of Laminar Burning Velocity for Premixed Flames
- Lecture 9 - Flame Thickness and Burning Velocity Measurement Methods
- Lecture 10 - Stationary Flame Method for Burning Velocity Measurement
- Lecture 11 - Effects of Chemical and Physical Variables on Burning Velocity
- Lecture 12 - Effects of Chemical and Physical Variables on Burning Velocity (Continued...)
- Lecture 13 - Effect of Inert Additives on Burning Velocity and Flame Extinction
- Lecture 14 - Simplified Analysis for Quenching Diameter
- Lecture 15 - Flammability Limits and Flame Stabilization
- Lecture 16 - Ignition in Premixed Flames
- Lecture 17 - Introduction to Turbulent Premixed Flames
- Lecture 18 - Turbulent Burning Velocity and Premixed Flame Regimes
- Lecture 19 - Introduction to Gaseous Jet Diffusion Flame
- Lecture 20 - Phenomenological Analysis of a Laminar Jet Diffusion Flame
- Lecture 21 - Theoretical Analysis of a Two-Dimensional Diffusion Flame
- Lecture 22 - Theoretical Analysis of a Two-Dimensional Diffusion Flame (Continued...)
- Lecture 23 - Flame Height Estimation and Smoke point in Diffusion Flames
- Lecture 24 - Mechanism of Soot Formation and Introduction to Liquid Fuel Combustion
- Lecture 25 - Introduction to Droplet Combustion
- Lecture 26 - Liquid Droplet Combustion
- Lecture 27 - Droplet Combustion (Continued...)
- Lecture 28 - Droplet Combustion in Convective Environment
- Lecture 29 - Droplet Combustion in Convective Environment and Introduction to Spray Combustion Mode

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- Lecture 30 - Spray Combustion Model
- Lecture 31 - Introduction to Solid Fuel Combustion
- Lecture 32 - Solid Fuel Combustion (Continued...)
- Lecture 33 - Diffusional theory for Carbon Combustion
- Lecture 34 - Carbon Burning Rate
- Lecture 35 - Carbon Burning Rate (Continued...)
- Lecture 36 - Carbon Sphere in Convective Environment
- Lecture 37 - Combustion and Effects on Environment
- Lecture 38 - Chemicals from Combustion
- Lecture 39 - Emission Control Methods
- Lecture 40 - Combustion Modification Methods

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

NPTEL Video Course - Aerospace Engineering - NOC:Design of Fixed Wing Unmanned Aerial Vehicles

Subject Co-ordinator - Prof. Saderla Subrahmanyam

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction, course content and classification of UAVs
- Lecture 2 - Measurement of Flight Velocity and Standard Atmosphere
- Lecture 3 - Anatomy of Airplane and Airfoil Nomenclature
- Lecture 4 - Examples, Pitot and static tube and differential pressure sensor
- Lecture 5 - Generation of Lift and Drag
- Lecture 6 - Aerodynamic center and center of pressure, Various wing planform
- Lecture 7 - Lifting line theory, NACA airfoil nomenclature
- Lecture 8 - Airfoil and Finite wing, Various wing planform
- Lecture 9 - Interpreting airfoil data, C_l vs α and drag polar, selection of airfoil
- Lecture 10 - Introduction to Airplane performance, Equation of motion
- Lecture 11 - Thrust required and Power required
- Lecture 12 - Calculation of Performance parameters and selection of power plant
- Lecture 13 - Climb Performance, Engine Sizing and Power Plant selection
- Lecture 14 - Weight Estimation, Common propulsion systems
- Lecture 15 - Weight Estimation contd., Electric propulsion, Battery Sizing
- Lecture 16 - Iterative weight estimation and Wing sizing
- Lecture 17 - Wing Planform selection and sizing and Flight test of Cropped delta wing UAVs
- Lecture 18 - Effect of variation of CG location and Static Stability
- Lecture 19 - C.G. location and Longitudinal Static stability
- Lecture 20 - Tutorial 1
- Lecture 21 - Contribution of tail in static stability and Neutral point.
- Lecture 22 - Tutorial 2
- Lecture 23 - Tutorial 3

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Finite Volume Methods-I

Subject Co-ordinator - Prof. Ashoke De

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Finite Volume Method
- Lecture 2 - Governing Equations and Discretization
- Lecture 3 - Boundary Conditions and Classification of PDEs
- Lecture 4 - Mathematical Description of fluid flow - I
- Lecture 5 - Mathematical description of fluid flow - II
- Lecture 6 - Discretization Process - I
- Lecture 7 - Discretization Process - II
- Lecture 8 - Discretization Process - III
- Lecture 9 - Taylor Series - I
- Lecture 10 - Taylor Series - II
- Lecture 11 - Derivatives and Errors - I
- Lecture 12 - Derivatives and errors - II
- Lecture 13 - Grid Transformation
- Lecture 14 - Finite Volume Formulation - I
- Lecture 15 - Finite Volume Formulation - II
- Lecture 16 - Properties of discretized equations
- Lecture 17 - Introduction to Finite Volume Mesh
- Lecture 18 - Structured Mesh System
- Lecture 19 - Unstructured Mesh System - I
- Lecture 20 - Unstructured Mesh System - II
- Lecture 21 - Properties of Unstructured Mesh - I
- Lecture 22 - Properties of Unstructured Mesh - II
- Lecture 23 - Finite Volume discretization of Diffusion Equation - I
- Lecture 24 - Finite Volume discretization of Diffusion equation - II
- Lecture 25 - Finite Volume discretization of Diffusion equation - III
- Lecture 26 - Discretization of Diffusion Equation for Cartesian orthogonal systems - I
- Lecture 27 - Discretization of Diffusion Equation for Cartesian orthogonal systems - II
- Lecture 28 - Calculation of Diffusivity
- Lecture 29 - Discretization of Diffusion Equation for non-Cartesian orthogonal systems - I

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- Lecture 30 - Discretization of Diffusion Equation for non-orthogonal systems - I
- Lecture 31 - Discretization of Diffusion Equation for non-orthogonal systems - II
- Lecture 32 - Discretization of Diffusion Equation for non-orthogonal systems - III
- Lecture 33 - Gradient Calculation for Diffusion Equation - I
- Lecture 34 - Gradient Calculation for Diffusion Equation - II
- Lecture 35 - Gradient Calculation for Diffusion Equation - III
- Lecture 36 - Properties of matrices - I
- Lecture 37 - Properties of matrices - II
- Lecture 38 - Error Analysis - I
- Lecture 39 - Error Analysis - II
- Lecture 40 - Error Analysis - III

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

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

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

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Engines
- Lecture 2 - Introduction to Engines (Continued...)
- Lecture 3 - Construction of Reciprocating Engine
- Lecture 4 - Construction of Reciprocating Engine (Continued...)
- Lecture 5 - Construction of Reciprocating Engine (Continued...)
- Lecture 6 - Lubrication System
- Lecture 7 - Lubrication System Demonstration
- Lecture 8 - Lubrication System (Continued...)
- Lecture 9 - Induction System
- Lecture 10 - Induction System (Continued...)
- Lecture 11 - Cooling System
- Lecture 12 - Exhaust System
- Lecture 13 - Cooling and Exhaust System (Lab Session)
- Lecture 14 - Engine fuel and Fuel Metering Systems
- Lecture 15 - Engine Fuel and Fuel Metering Systems (Continued...)
- Lecture 16 - Engine Fuel and Fuel Metering Systems (Lab Session)
- Lecture 17 - Carburetor troubleshooting and Fuel Injection System
- Lecture 18 - Fuel injection Systems (Continued...)
- Lecture 19 - Fuel System
- Lecture 20 - Ignition system
- Lecture 21 - Ignition system (Continued...)
- Lecture 22 - Ignition system (Lab session)
- Lecture 23 - Basics of propeller and maintenance
- Lecture 24 - Aircraft Reciprocating Engine Inspection - Part 1
- Lecture 25 - Aircraft Reciprocating Engine Inspection - Part 2
- Lecture 26 - Aircraft Reciprocating Engine Inspection - Part 3
- Lecture 27 - Checklist for Aircraft Reciprocating Engine Maintenance
- Lecture 28 - Aircraft Maintenance (Aircraft Performance Point of View)

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Finite Volume Methods-II

Subject Co-ordinator - Prof. Ashoke De

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Linear solvers - I
Lecture 2 - Linear solvers - II
Lecture 3 - Linear solvers - III
Lecture 4 - Linear solvers - IV
Lecture 5 - Linear solvers - V
Lecture 6 - Linear solvers - VI
Lecture 7 - Linear solvers - VII
Lecture 8 - Linear solvers - VIII
Lecture 9 - Convection term discretisation - I
Lecture 10 - Convection term discretisation - II
Lecture 11 - Convection term discretisation - III (Private)
Lecture 12 - Convection term discretisation - IV (Private)
Lecture 13 - Convection term discretisation - V (Private)
Lecture 14 - Convection term discretisation - VI (Private)
Lecture 15 - Convection term discretisation - VII (Private)
Lecture 16 - Convection term discretisation - VIII
Lecture 17 - Convection term discretisation - IX
Lecture 18 - High Resolution Schemes - I
Lecture 19 - High Resolution Schemes - II
Lecture 20 - High Resolution Schemes - III
Lecture 21 - High Resolution Schemes - IV
Lecture 22 - High Resolution Schemes - V
Lecture 23 - High Resolution Schemes - VI
Lecture 24 - High Resolution Schemes - VII
Lecture 25 - Temporal discretisation - I
Lecture 26 - Temporal discretisation - II
Lecture 27 - Temporal discretisation - III
Lecture 28 - Temporal discretisation - IV
Lecture 29 - Discretisation of the Source Term, Relaxation and Other Details - I

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

- Lecture 30 - Discretisation of the Source Term, Relaxation and Other Details - II
- Lecture 31 - Fluid Flow Computation
- Lecture 32 - Fluid Flow Computation
- Lecture 33 - Fluid Flow Computation
- Lecture 34 - Fluid Flow Computation
- Lecture 35 - Fluid Flow Computation
- Lecture 36 - Fluid Flow Computation
- Lecture 37 - Fluid Flow Computation
- Lecture 38 - Fluid Flow Computation
- Lecture 39 - Fluid Flow Computation
- Lecture 40 - Some Advanced Topics - I

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Rocket Propulsion

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

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Introduction

Lecture 2 - A Brief History of Rocket Propulsion and ISRO

Lecture 3 - Types of Rocket Engine

Lecture 4 - Fundamentals of Aero-thermodynamics

Lecture 5 - Control Volume Analysis and Governing Equations

Lecture 6 - Adiabatic Steady 1-D flow and Speed of Sound

Lecture 7 - Basics of Thermochemistry

Lecture 8 - Adiabatic Flame Temperature and Chemical Equilibrium

Lecture 9 - Ideal Rocket Engine, Thrust Equation and Performance Parameters

Lecture 10 - Performance Parameters of Rocket Engine

Lecture 11 - Performance Parameters of Rocket Engine (Continued...)

Lecture 12 - Ideal Nozzle

Lecture 13 - Rocket Nozzle

Lecture 14 - Convergent Nozzle

Lecture 15 - Convergent-Divergent Nozzle and Shock Reflection

Lecture 16 - Effect of Back Pressure and Thrust Coefficient

Lecture 17 - Thrust Coefficient

Lecture 18 - Characteristics Velocity, Combustion Efficiency and Thrust Effectiveness

Lecture 19 - Actual Rocket Nozzle Characteristics

Lecture 20 - Flight Performance of a Rocket Vehicle

Lecture 21 - Flight Performance of a Rocket Vehicle

Lecture 22 - Flight Trajectory of Single Stage Rocket Vehicle

Lecture 23 - Orbital Mechanics

Lecture 24 - Types of Orbits

Lecture 25 - Orbital and Escape Velocity

Lecture 26 - Interplanetary Transfer Path

Lecture 27 - Multi-staging Rocket

Lecture 28 - Chemical Propellants-Characteristics and Classification

Lecture 29 - Solid and Composite Propellants

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- Lecture 30 - Composite Propellants and it's Manufacturing
- Lecture 31 - Classification of Liquid Propellants
- Lecture 32 - Solid Propellant Rocket Engine
- Lecture 33 - Propellant Burning Mechanism and Flame Structure
- Lecture 34 - Composite Propellant Combustion
- Lecture 35 - Regression Rate of Solid Propellant and Effect of Operating Parameters
- Lecture 36 - Characteristics of Solid Propellants
- Lecture 37 - Effect of Acceleration and Particle Size on Burning Rate
- Lecture 38 - Erosive Burning, Effect of Propellant Temperature and Thermal Model
- Lecture 39 - Chamber Pressure in Solid Propellant Rocket Engine
- Lecture 40 - Types of Propellant Grains
- Lecture 41 - Types of Solid Propellant Grains and Evolution of Burning Surface
- Lecture 42 - Burning Stability and Ignition System in SPRE
- Lecture 43 - Liquid Propellant Rocket Engine
- Lecture 44 - Injection System in LPRE
- Lecture 45 - Atomization of Liquid Propellants
- Lecture 46 - Types of Injection System in LPRE
- Lecture 47 - Analysis of Impinging Atomizer
- Lecture 48 - Injection Distributor and Combustion Process in LPRE
- Lecture 49 - Variation of Gas Specific Volume and Combustion Chamber Geometry
- Lecture 50 - Liquid Propellant Feed System in LPRE
- Lecture 51 - Turbo-Pump Feed Configuration
- Lecture 52 - Ignition System in LPRE
- Lecture 53 - Cooling of Thrust Chamber and Nozzle of a Rocket Engine
- Lecture 54 - Cooling System of Rocket Engine (Continued...)
- Lecture 55 - Modes of Heat Transfer through combustion Chamber Wall and Nozzle Wall
- Lecture 56 - Heat Transfer Analysis of Cooling System
- Lecture 57 - Hybrid Propellant Rocket Engine
- Lecture 58 - Regression Rate of Solid Fuel Grain in HPRE and Types of Port Configurations
- Lecture 59 - Non-Chemical Rocket Engine
- Lecture 60 - Electromagnetic Thruster, Nuclear and Solar Rocket Engine

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

NPTEL Video Course - Aerospace Engineering - NOC:UAV Design - Part II

Subject Co-ordinator - Prof. Saderla Subrahmanyam

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Design Algorithms
- Lecture 2 - Thrust Generation and Power Required
- Lecture 3 - Lift and Drag for Infinite Wing
- Lecture 4 - Lift and Drag for an Infinite Wing (Continued...)
- Lecture 5 - Relation between Aerodynamic center and Center of Pressure
- Lecture 6 - Aerodynamic Characteristics of Wing
- Lecture 7 - Stability and Criteria for Longitudinal Static Stability
- Lecture 8 - Numericals
- Lecture 9 - Longitudinal Static Stability - Wing Contribution
- Lecture 10 - Flight Demonstration of Flat Plate
- Lecture 11 - Numericals (Continued...)
- Lecture 12 - Example Problems for Wing alone Configuration
- Lecture 13 - Wing-Tail Contribution and Neutral Point
- Lecture 14 - Example problems of wing and tail combination
- Lecture 15 - Example problems of wing and tail combination (Continued...)
- Lecture 16 - Flight demonstration of same wing and tail combination
- Lecture 17 - Matlab Tutorial
- Lecture 18 - Trim Requirements of UAV
- Lecture 19 - Example on performance analysis of UAV
- Lecture 20 - Weight Estimation and wing Sizing with Example
- Lecture 21 - Power Plant Selection with Example
- Lecture 22 - Subroutine for takeoff performance (Powerplant selection)
- Lecture 23 - Subroutine for Climb Performance (Powerplant Selection)
- Lecture 24 - Subroutine for Weight Estimation
- Lecture 25 - Subroutine for Planform Geometry Selection
- Lecture 26 - Subroutine for Airfoil Selection

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NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Airbreathing Propulsion

Subject Co-ordinator - Prof. Ashoke De

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Introduction
Lecture 2 - Introduction (Continued...)
Lecture 3 - Introduction (Continued...)
Lecture 4 - Review of Fluid Mechanics
Lecture 5 - Review of Fluid Mechanics, Thermodynamics
Lecture 6 - Review of Compressible Flows
Lecture 7 - Review of Compressible Flows (Continued...)
Lecture 8 - Review of Compressible Flows (Continued...)
Lecture 9 - Review of Compressible Flows (Continued...)
Lecture 10 - Review of Compressible Flows (Continued...)
Lecture 11 - Introduction to gas turbine engines
Lecture 12 - Introduction to gas turbine engines (Continued...)
Lecture 13 - Introduction to gas turbine engines (Continued...)
Lecture 14 - Introduction to gas turbine engines (Continued...)
Lecture 15 - Introduction to gas turbine engines (Continued...)
Lecture 16 - Introduction to gas turbine engines (Continued...)
Lecture 17 - Introduction to gas turbine engines (Continued...)
Lecture 18 - Piston Engines and Propellers
Lecture 19 - Piston Engines and Propellers (Continued...)
Lecture 20 - Piston Engines and Propellers (Continued...)
Lecture 21 - Piston Engines and Propellers (Continued...)
Lecture 22 - Piston Engines and Propellers (Continued...)
Lecture 23 - Piston Engines and Propellers (Continued...)
Lecture 24 - Performance/cycle analysis
Lecture 25 - Performance/cycle analysis
Lecture 26 - Performance/cycle analysis
Lecture 27 - Performance/cycle analysis
Lecture 28 - Performance/cycle analysis
Lecture 29 - Performance/cycle analysis

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- Lecture 30 - Performance/cycle analysis
- Lecture 31 - Performance/cycle analysis
- Lecture 32 - Performance/cycle analysis
- Lecture 33 - Performance/cycle analysis
- Lecture 34 - Performance/cycle analysis
- Lecture 35 - Performance/cycle analysis
- Lecture 36 - Stationary components
- Lecture 37 - Stationary components
- Lecture 38 - Stationary components
- Lecture 39 - Introduction to turbomachinery
- Lecture 40 - Centrifugal compressor
- Lecture 41 - Centrifugal compressor (Continued...)
- Lecture 42 - Centrifugal compressor (Continued...)
- Lecture 43 - Centrifugal compressor (Continued...)
- Lecture 44 - Centrifugal compressor (Continued...)
- Lecture 45 - Centrifugal compressor (Continued...)
- Lecture 46 - Centrifugal compressor (Continued...)
- Lecture 47 - Axial compressor
- Lecture 48 - Axial compressor (Continued...)
- Lecture 49 - Axial compressor (Continued...)
- Lecture 50 - Axial compressor (Continued...)
- Lecture 51 - Axial compressor (Continued...)
- Lecture 52 - Axial compressor (Continued...)
- Lecture 53 - Axial compressor (Continued...)
- Lecture 54 - Axial compressor (Continued...)
- Lecture 55 - Axial turbine
- Lecture 56 - Axial turbine (Continued...)
- Lecture 57 - Axial turbine (Continued...)
- Lecture 58 - Axial turbine (Continued...)
- Lecture 59 - Axial turbine (Continued...)
- Lecture 60 - Radial Flow Turbine, Module Matching

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

NPTEL Video Course - Aerospace Engineering - NOC:Computational Science in Engineering

Subject Co-ordinator - Prof. Ashoke De

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Linear Algebra: Introduction
- Lecture 2 - Linear Algebra: Introduction (Continued...)
- Lecture 3 - Linear Algebra: Permutation Matrix, Existence of Solution
- Lecture 4 - Linear Algebra: Permutation Matrix, Existence of Solution (Continued...)
- Lecture 5 - Linear Algebra: Linear Independence, Basis Vector and Dimensions
- Lecture 6 - Linear Algebra: Null Space, Column Space, Row Space, Introduction to Orthogonal System
- Lecture 7 - Linear Algebra: Orthogonal System, Projection, Determinant
- Lecture 8 - Linear Algebra: Orthogonal System, Projection, Determinant (Continued...)
- Lecture 9 - Linear Algebra: Properties of Determinant, Cramer's Rule, Introduction to Eigen Values
- Lecture 10 - Linear Algebra: Eigen Values, Eigen Vectors, SVD
- Lecture 11 - Linear Algebra: Eigen Values, Eigen Vectors, SVD (Continued...)
- Lecture 12 - ODE: Introduction to ODEs, Initial Value Problem, Separation of Variables
- Lecture 13 - ODE: Solution of Exact ODEs, First Order Linear Systems
- Lecture 14 - ODE: Solution of Second Order Linear ODEs
- Lecture 15 - ODE: Existence and Uniqueness of Solution, Non-Homogeneous System
- Lecture 16 - ODE: Higher Order Linear ODEs, Variation of Parameters, System of ODEs
- Lecture 17 - ODE: Linear Systems, Superposition for Homogeneous Systems
- Lecture 18 - Fourier Analysis, Orthogonality of Trigonometric Systems, Euler's Formula
- Lecture 19 - Parseval's Theorem, Fourier Integrals, Laplace Transforms
- Lecture 20 - PDE: Introduction to PDEs, Solution of PDEs using Characteristics Curve
- Lecture 21 - PDE: First Order PDEs, Dilation Invariant Solution of Differential Equations
- Lecture 22 - PDE: Solution of Linear PDEs
- Lecture 23 - PDE: Separation of Variables, Eigenvalue Problem, Poisson Integral Representation
- Lecture 24 - PDE: Boundary Conditions, Solution of 2D systems
- Lecture 25 - Introduction to Numerical Methods, Mathematical Models, Errors
- Lecture 26 - Errors, Numerical Differentiation, Stability
- Lecture 27 - Roots of Equations: Graphical Method, Bi-Section Method, False-Position Method
- Lecture 28 - Secant Method, Brent's Method, Multipoint Iteration Method, Derivative Free Method
- Lecture 29 - Complex Roots, Birge-Vieta Method, Bairstow's method

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- Lecture 30 - Solution of Linear Algebraic Equations, Gauss Elimination Method
- Lecture 31 - Direct Methods: Gauss Elimination, Gauss-Jordan, Crout's Method, Cholesky Method, Iterative Methods
- Lecture 32 - Extrapolation Method, Eigenvalue Problem, Jacobi Method, Householder's Method for Symmetric Matrices
- Lecture 33 - Interpolation: Taylor's Series, Lagrange and Newton Interpolation, Iterated Interpolation, Hermite Interpolation
- Lecture 34 - Piecewise and Spline Interpolation, Bivariate Interpolation, Least Square Approximation, Uniform Approximation
- Lecture 35 - Numerical Differentiation and Intergration, Methods Based on Finite Differences, Methods based on Taylor's Series
- Lecture 36 - Numerical Integration: Newton-Cotes Method, Gaussian Integration Methods, Lobatto Integration Methods
- Lecture 37 - Double Integration: Trapezoidal Rule, Simpson's Rule, Solution of ODEs: Difference Equation, Single Step Methods
- Lecture 38 - Runge-Kutta Methods, Euler-Cauchy Method, Multi-step Methods, Predictor-Corrector Methods
- Lecture 39 - System of Differential Equations, Stability Analysis, Solution of Boundary Value Problem: Shooting Method
- Lecture 40 - Numerical Approach to Solution of PDEs: Heat Conduction Equation, Convergence and Stability

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to Aircraft Control System

Subject Co-ordinator - Prof. Dipak Kumar Gir

Co-ordinating Institute - IIT - Kanpur

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

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

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Lecture 60

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

NPTEL Video Course - Aerospace Engineering - NOC:Applied Computational Fluid Dynamics

Subject Co-ordinator - Prof. Rajesh Ranjan

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - CFD Introduction - I
Lecture 2 - CFD Introduction - II
Lecture 3 - CFD Introduction - III
Lecture 4 - CFD Approaches, Compressible Flows - I
Lecture 5 - CFD Approaches, Compressible Flows - II
Lecture 6 - Thermodynamics - I
Lecture 7 - Thermodynamics - II
Lecture 8 - Governing Equations - I
Lecture 9 - Governing Equations - II
Lecture 10 - Governing Equations - III
Lecture 11 - Governing Equations - IV
Lecture 12 - Governing Equations (Energy) - I
Lecture 13 - Governing Equations (Energy) - II
Lecture 14 - Non-dimensionalization - I
Lecture 15 - Non-dimensionalization - II
Lecture 16 - Classification of PDEs - I
Lecture 17 - Classification of PDEs - II
Lecture 18 - Numerical Discretization - I
Lecture 19 - Numerical Discretization - II
Lecture 20 - Compact Schemes - I
Lecture 21 - Compact Schemes - II
Lecture 22 - Model Equations - I
Lecture 23 - Model Equations - II
Lecture 24 - Numerical Schemes: MPDE - I
Lecture 25 - Numerical Schemes: MPDE - II
Lecture 26 - MPDE, Lax Theorem - I
Lecture 27 - MPDE, Lax Theorem - II
Lecture 28 - Stability
Lecture 29 - Dissipation/Dispersion Error - I

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- Lecture 30 - Dissipation/Dispersion Error - II
- Lecture 31 - Advanced Schemes - I
- Lecture 32 - Advanced Schemes - II
- Lecture 33 - Multistep Schemes, MATLAB Linear - I
- Lecture 34 - Multistep Schemes, MATLAB Linear - II
- Lecture 35 - Solution Nonlinear/Eulers equations, Shock Tube - I
- Lecture 36 - Solution Nonlinear/Eulers equations, Shock Tube - II
- Lecture 37 - Introduction to FV - I
- Lecture 38 - Introduction to FV - II
- Lecture 39 - Introduction to FV - III
- Lecture 40 - Introduction to FV - IV
- Lecture 41 - Introduction to FV - I
- Lecture 42 - Introduction to FV - II
- Lecture 43 - Turbulent Flows - I
- Lecture 44 - Turbulent Flows - II
- Lecture 45 - Incompressible RANS Equations
- Lecture 46 - RANS Equations, Eddy Viscosity Model - I
- Lecture 47 - RANS Equations, Eddy Viscosity Model - II
- Lecture 48 - Turbulence Models
- Lecture 49 - Advanced Turbulence Models - I
- Lecture 50 - Advanced Turbulence Models - II
- Lecture 51 - Boundary Conditions - I
- Lecture 52 - Boundary Conditions - II
- Lecture 53 - Boundary Conditions - III
- Lecture 54 - Boundary Conditions - IV
- Lecture 55 - LES/DNS
- Lecture 56 - LES
- Lecture 57
- Lecture 58
- Lecture 59
- Lecture 60
- Lecture 61
- Lecture 62

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

NPTEL Video Course - Aerospace Engineering - NOC:Advanced Aircraft Control Systems with MATLAB-SIMULINK

Subject Co-ordinator - Prof. Dipak Kumar Giri, Prof. Prabhjeet Singh

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction
- Lecture 2 - Basics of Linear Algebra
- Lecture 3 - State Space Equation and its Solution
- Lecture 4 - Example
- Lecture 5 - Linear Transformation of States
- Lecture 6 - Example of Linear Transformation
- Lecture 7 - State Space Analysis of Aircraft Longitudinal Dynamics
- Lecture 8 - Introduction to State Feedback Controller Design
- Lecture 9 - Controller Design in the Presence of Noise
- Lecture 10 - Tracking Controller Design
- Lecture 11 - Observability and Observer Design
- Lecture 12 - Example of Observer Design
- Lecture 13 - Ackermann's Formula
- Lecture 14 - Example to Demonstrate use of Ackermann's Formula
- Lecture 15 - Separation Principle
- Lecture 16 - Example of Separation Principle
- Lecture 17 - Example of Control Design for Aircraft System
- Lecture 18 - Example of Observer Design for Aircraft System
- Lecture 19 - Linear Quadratic Regulator
- Lecture 20 - Example of Linear Quadratic Regulator Design
- Lecture 21 - Stability Augmentation for Pitch Dynamics
- Lecture 22 - Stability Augmentation System for Short Period Longitudinal Dynamics
- Lecture 23 - Stability Augmentation System for full Longitudinal Dynamics
- Lecture 24 - Stability Augmentation for Lateral Dynamics
- Lecture 25 - Stability Augmentation for Lateral-Directional Dynamics
- Lecture 26 - Altitude Hold Auto-Pilot Design
- Lecture 27 - Introduction to Nonlinear Systems
- Lecture 28 - Stability of Nonlinear Systems
- Lecture 29 - Classification of Equilibrium Points of Planar Nonlinear Systems

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

- Lecture 30 - Limit Cycles
- Lecture 31 - Lyapunov's First Method
- Lecture 32 - Sign Definiteness of Scalar Functions
- Lecture 33 - Lyapunov Stability Theorem
- Lecture 34 - Krasovskii's Theorem
- Lecture 35 - Feedback Linearization
- Lecture 36 - Feedback Linearization (Continued...)
- Lecture 37 - Feedback Linearization Control for Longitudinal Dynamics
- Lecture 38 - Feedback Linearization Based Control for Lateral Dynamics
- Lecture 39 - Introduction to Backstepping Control
- Lecture 40 - Backstepping Controller (Continued...)
- Lecture 41 - Backstepping Controller (Continued...)
- Lecture 42 - Backstepping Controller for Longitudinal Dynamics of Aircraft
- Lecture 43 - Backstepping Control for Lateral-Directional Dynamics of Aircraft
- Lecture 44 - Introduction to Sliding Mode Control
- Lecture 45 - Chattering Reduction in Sliding Mode Control
- Lecture 46 - Sliding Mode Control for Longitudinal Dynamics of Aircraft
- Lecture 47 - Quasi-Sliding Mode control and Backstepping-Sliding Mode Control for Longitudinal Dynamics of Aircraft
- Lecture 48 - Adaptive Sliding Mode Control
- Lecture 49 - Adaptive Back-Stepping Control
- Lecture 50 - MATLAB Implementation of First Order Systems
- Lecture 51 - Second Order System and its Solution
- Lecture 52 - MATLAB Simulation of Mass Spring Damper System
- Lecture 53 - SIMULINK Implementation of Pendulum System
- Lecture 54 - SIMULINK Implementation of Pendulum System (Continued...)
- Lecture 55 - Aircraft Equations of Motion for SIMULINK Block
- Lecture 56 - MATLAB and SIMULINK Implementation of Aircraft Dynamics
- Lecture 57 - 6 Dof Aircraft Equations of Motion
- Lecture 58 - MATLAB and SIMULINK Implementation of Complete 6 Dof Aircraft Dynamics
- Lecture 59 - Recap and Conclusion

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

NPTEL Video Course - Aerospace Engineering - NOC:Wind Energy

Subject Co-ordinator - Prof. Ashoke De

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Renewable Energy
- Lecture 2 - Introduction to Renewable Energy (Continued...)
- Lecture 3 - Fluid Mechanics - Basics
- Lecture 4 - Fluid Mechanics - Integral Form of Conservation Equations
- Lecture 5 - Fluid Mechanics - Dimensional Similarity
- Lecture 6 - Fluid Mechanics - External Flows
- Lecture 7 - Fluid Mechanics - Boundary Layer and Turbulence
- Lecture 8 - Wind Turbine Basics
- Lecture 9 - Wind Turbine Basics (Continued...)
- Lecture 10 - Wind Turbine Technology
- Lecture 11 - Wind Turbine Technology (Continued...)
- Lecture 12 - Wind Turbine Technology (Continued...)
- Lecture 13 - Mechanics of Wind
- Lecture 14 - Mechanics of Wind (Continued...)
- Lecture 15 - Atmospheric Boundary Layer
- Lecture 16 - Atmospheric Boundary Layer (Continued...)
- Lecture 17 - Wind Velocity profile
- Lecture 18 - Wind Data Analysis
- Lecture 19 - Wind Data Analysis (Continued...)
- Lecture 20 - Turbine Calculations
- Lecture 21 - HAWT-History
- Lecture 22 - HAWT-Components
- Lecture 23 - Momentum Theory
- Lecture 24 - Momentum Theory with wake rotation
- Lecture 25 - BEM Theory
- Lecture 26 - BEM Example
- Lecture 27 - Airfoil Nomenclature
- Lecture 28 - Wake
- Lecture 29 - Blade Design with Momentum Theory

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- Lecture 30 - Rotor Blade Design
- Lecture 31 - Off-design Performance Issues
- Lecture 32 - Blade Shape Optimization
- Lecture 33 - HAWT Performance Calculation
- Lecture 34 - HAWT Optimum Performance Analysis
- Lecture 35 - VAWT
- Lecture 36 - VAWT (Continued...)
- Lecture 37 - VAWT Performance Calculation
- Lecture 38 - VAWT Performance Calculation (Continued...)
- Lecture 39 - Aerodynamic of Darrieus and Savonius Turbines
- Lecture 40 - Mechanics and Dynamics
- Lecture 41 - Mechanics: Beam Analysis
- Lecture 42 - Mechanics: Oscillations and Eigenmodes
- Lecture 43 - Mechanics: Dynamic Beam Analysis
- Lecture 44 - Mechanics: Tower Oscillations
- Lecture 45 - Mechanics: Blade Oscillations
- Lecture 46 - Mechanics: Linearized Analysis
- Lecture 47 - Mechanics: Wind Turbine Rotor Dynamics
- Lecture 48 - Mechanics: Simplified Hinge-Spring Model
- Lecture 49 - Mechanics: Flapping Blade Model (Free Motion)
- Lecture 50 - Mechanics: Flapping Blade Model (Forced Motion)
- Lecture 51 - Mechanics: Flapping Blade Model (Forced Motion) (Continued...)
- Lecture 52 - Mechanics: Linearized Aerodynamic Model
- Lecture 53 - Mechanics: Linearized Aerodynamic Model (Continued...)
- Lecture 54 - Mechanics: Full Flapping Blade Model
- Lecture 55 - Mechanics: Solution of Flapping Equation
- Lecture 56 - Mechanics: Solution of Flapping Equation (Continued...)
- Lecture 57 - Mechanics: General Solution of Flapping Equation
- Lecture 58 - Control and miscellaneous aspects of wind turbines
- Lecture 59 - CFD aspects of wind turbines
- Lecture 60 - CFD and Alternative Wind Energy Systems

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

NPTEL Video Course - Aerospace Engineering - NOC:Space Environment and its Effects on Orbital Spacecrafts

Subject Co-ordinator - Prof. Soumyabrata Chakrabarty

Co-ordinating Institute - IIT Kanpur

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

- Lecture 1 - Space environment and its Types, Space Weather Definition, Anatomy of Sun, Solar Activities as Sp
- Lecture 2 - Solar Activities, Solar Wind, Solar Flare, Coronal Mass Ejection and Solar Energetic Particles Ev
- Lecture 3 - Interplanetary Magnetic Field (IMF), Co-rotating Interaction Regimes Corona, Coronal Structures,
- Lecture 4 - Interplanetary Magnetic Field (IMF), Co-rotating Interaction Regions
- Lecture 5 - Coupling of Solar Wind to Earth's Magnetosphere and Ionosphere, Geomagnetic Storm, Geomagnetic Su
- Lecture 6 - Earth's Radiation Belt, Ring Current and South Atlantic Anomaly
- Lecture 7 - Satellite Orbits, Geometry, Velocity and Period, Orbital Parameters and Orbital Perturbations
- Lecture 8 - Different Types of Earth's Orbit for Useful Satellite Applications
- Lecture 9 - Satellite Segments, Space segments, Mechanical Main Frames, Structures and Thermal Control System
- Lecture 10 - Satellite Segments, Space segments, Mechanical Main Frames, Mechanisms, Propulsion System, Elect
- Lecture 11 - Satellite Segments, Space segments, Electrical Main Frame, TT and C, Attitude and Orbit Control
- Lecture 12 - Satellite Segments, Earth Segments, Receive-Only Earth Station, Transmit-Receive Earth Stations
- Lecture 13 - Characteristics of Vacuum Environment, The Effects on Spacecraft, Extreme Temperatures, Exposure
- Lecture 14 - Vacuum Environment, Outgassing, Outgassing Mechanism and Transport of Outgassed Material
- Lecture 15 - Outgassing of Spacecraft Materials, TML, CVCM, WVR and Its Significance, Ground Simulation of Va
- Lecture 16 - Vacuum Environment, The Effect of Exposure of UV Radiation on Spacecraft Material, Design Guidel
- Lecture 17 - Neutral Gas Flow Around a Spacecraft, Effects on Spacecraft, Atomic Oxygen Attack, Sputtering, C
- Lecture 18 - Neutral Space Environment, Atmospheric Drag, Drag Force and Satellite Orbital Parameters
- Lecture 19 - Neutral Space Environment, The Micrometeoroid/Orbital Debris Particulate Environment and Hyper V
- Lecture 20 - Spacecraft Induced Neutral Environment, Scattering of Electromagnetic (EM) Radiation from Partic
- Lecture 21 - Orbital Debris, Dealing with Space Debris- Management, International Cooperation, Monitoring, De
- Lecture 22 - Capturing of Orbital debris, Contact capturing method, Contactless capturing method and Removal
- Lecture 23 - Removal of Orbital debris, Space Environment based and Non-space Environment
- Lecture 24 - Removal of Orbital debris, Non-space Environment based methods and Mitigation strategies
- Lecture 25 - What is plasma and its nature, Behavior of plasma in external Electromagnetic field, Uniform mag
- Lecture 26 - Charge particle movement in a uniform magnetic field, Helical particle trajectory, Guiding cente
- Lecture 27 - Introduction to Plasma, Magnetic moment, $E \times B$ drift, Plasma Oscillations and plasma frequency a
- Lecture 28 - Debye Shielding, External charge introduced in plasma, Debye length and Debye volume
- Lecture 29 - Collective Behavior of plasma and Velocity, Energy, Temperature of plasma

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- Lecture 30 - Non-uniform magnetic field, Magnetic mirroring and Trapping of charged particles
- Lecture 31 - Plasma environment in earth's orbit, Origin of space plasma in earth's orbit, Effects on spacecraft
- Lecture 32 - Spacecraft charging, Capacitor charging, Probe theory, Langmuir probe, Physics of Spacecraft charging
- Lecture 33 - Spacecraft charging: probe theory, Langmuir probe, Langmuir probe equation for a sphere in the plasma
- Lecture 34 - Spacecraft charging, Spacecraft Equilibrium Potential, Repelling of Like Charges, Attraction of opposite charges
- Lecture 35 - Spacecraft charging, Current balance equation, Current collection in spacecrafts and Different types of spacecraft charging
- Lecture 36 - Spacecraft charging, Different Plasma Fluxes Affecting Spacecraft, Charging and Current balance
- Lecture 37 - Spacecraft charging, Lumped Circuit model of spacecraft, Different types of spacecraft charging
- Lecture 38 - Spacecraft charging, Analysis, design, testing, inspection and Mitigation strategies
- Lecture 39 - Numerical problems related to plasma physics
- Lecture 40 - What is radiation, What is space radiation environment and its classifications and origin
- Lecture 41 - Ionizing and non-ionizing Radiation, Ionizing radiation, Linear Energy Transfer, Total Ionizing Dose
- Lecture 42 - Radiation Energy: Classical Vs Relativistic, Bremsstrahlung Radiation, X- Rays, Gamma Rays, Photoelectric effect
- Lecture 43 - Displacement damage and Total Radiation Dose
- Lecture 44 - Single Event Effects, Single Event Upset (SEU), Single Event Latch-Up (SEL), Single Event Burnout (SEB)
- Lecture 45 - Effects of Space Radiations on Spacecrafts and Space Radiation Risks to Astronauts, Case Studies
- Lecture 46 - Modelling, Simulation and Testing and Mitigation towards Space Radiation Risks
- Lecture 47 - Ground Simulation of space environment and launch conditions, Test and Evaluation for Space qualification
- Lecture 48 - Reliability and Failure function, Failure probability density function and Failure or hazard rate
- Lecture 49 - Significance of hazard or failure rate, Reliability in terms of failure or hazard rate and Failure rate
- Lecture 50 - Failure rate and bathtub curve, Gaussian and Weibull probability density function, Mean time to failure
- Lecture 51 - Mean satellite lifetime, Satellite System Availability, Without backup and With backup
- Lecture 52 - Satellite System Availability, Without backup, With backup and System reliability
- Lecture 53 - System reliability, Subsystems in series and Redundant Subsystems
- Lecture 54 - System reliability, Redundant Subsystems (static redundancy), MTTF, Failure rate, n- sub-systems
- Lecture 55 - System reliability, Reliability if k out of n elements are necessary and Dynamic Redundant Subsystems
- Lecture 56 - System reliability, Dynamic redundancy (with switching), Generalized expression for system reliability
- Lecture 57 - Equipment redundancy taking account of the reliability of the switching element and Example: Redundant systems
- Lecture 58 - Equipment having several failure modes, Component Reliability and Quality assurance
- Lecture 59 - Component selection and Quality assurance
- Lecture 60 - Component selection and Quality assurance
- Lecture 61 - What is a space mission and its types and Mission Objectives and Planning
- Lecture 62 - Mission Planning, Satellite operation and Autonomous Satellite system

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

NPTEL Video Course - Aerospace Engineering - High Speed Aero Dynamics

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

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction and Review of Thermodynamics
- Lecture 2 - Review of Thermodynamics (Continued...)
- Lecture 3 - Review of Thermodynamics (Continued...)
- Lecture 4 - Review of Thermodynamics (Continued...)
- Lecture 5 - One-dimensional gas dynamics
- Lecture 6 - One-dimensional gas dynamics (Continued...)
- Lecture 7 - One-dimensional gas dynamics (Continued...)
- Lecture 8 - One-dimensional waves
- Lecture 9 - One-dimensional waves (Continued...)
- Lecture 10 - One-dimensional waves (Continued...)
- Lecture 11 - Waves and Supersonic Flow
- Lecture 12 - Waves and Supersonic Flow (Continued...)
- Lecture 13 - Waves and Supersonic Flow (Continued...)
- Lecture 14 - Waves and Supersonic Flow (Continued...)
- Lecture 15 - Shock Expansion Theory
- Lecture 16 - Flow through ducts and channels
- Lecture 17 - Flow in ducts
- Lecture 18 - Flow in ducts (Continued...)
- Lecture 19 - Adiabatic Flow in ducts with friction
- Lecture 20 - Adiabatic flow in ducts with friction (Continued...)
- Lecture 21 - Isothermal flow in ducts with friction
- Lecture 22 - Flow in uniform duct with heating
- Lecture 23 - Multi - dimensional flow problems
- Lecture 24 - Multi - dimensional flow problems (Continued...)
- Lecture 25 - Linearized flow problems
- Lecture 26 - Linearized flow problems (Continued...)
- Lecture 27 - Linearized flow problems (Continued...)
- Lecture 28 - Linearized flow problems (Continued...)
- Lecture 29 - Linearized flow problems (Continued...)

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- Lecture 30 - Linearized flow problems (Continued...)
- Lecture 31 - Linearized flow problems (Continued...)
- Lecture 32 - Linearized Problems - Forces on Slender Bodies
- Lecture 33 - Linearized Problems - Forces on Slender Bodies (Continued...)
- Lecture 34 - Similarity Rules for High Speed Flows
- Lecture 35 - Similarity Rules for High Speed Flows (Continued...)
- Lecture 36 - Similarity Rules for High Speed Flows (Continued...)
- Lecture 37 - Similarity Rules in Hypersonic Flow
- Lecture 38 - Transonic Flow
- Lecture 39 - Transonic Flow (Continued...)
- Lecture 40 - Transonic Flow (Continued...)

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

NPTEL Video Course - Aerospace Engineering - Space Flight Mechanics

Subject Co-ordinator - Dr. Manoranjan Sinha

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Space Flight Mechanics
- Lecture 2 - Particle Kinematics
- Lecture 3 - Particle Kinematics (Continued...)
- Lecture 4 - Conic Section
- Lecture 5 - Two Body Problem
- Lecture 6 - Two Body Problem (Continued...1)
- Lecture 7 - Two Body Problem (Continued...2)
- Lecture 8 - Two Body Problem (Continued...3)
- Lecture 9 - Two Body Problem (Continued...4)
- Lecture 10 - Two Body Problem (Continued...5)
- Lecture 11 - Two Body Problem (Continued...6)
- Lecture 12 - Two Body Problem (Continued...7) & Three Body Problem
- Lecture 13 - Three Body Problem (Continued...1)
- Lecture 14 - Three Body Problem (Continued...2)
- Lecture 15 - Three Body Problem (Continued...3)
- Lecture 16 - Three Body Problem (Continued...4)
- Lecture 17 - Three Body Problem (Continued...5)
- Lecture 18 - Three Body Problem (Continued...6)
- Lecture 19 - Three Body Problem (Continued...7)
- Lecture 20 - Three Body Problem (Continued...8)
- Lecture 21 - Trajectory Transfer
- Lecture 22 - Trajectory Transfer (Continued...1)
- Lecture 23 - Trajectory Transfer (Continued...2)
- Lecture 24 - Trajectory Transfer (Continued...3)
- Lecture 25 - Trajectory Transfer (Continued...4)
- Lecture 26 - Trajectory Transfer (Continued...5)
- Lecture 27 - Trajectory Transfer (Continued...6)
- Lecture 28 - Trajectory Transfer (Continued...7)
- Lecture 29 - Trajectory Transfer (Continued...8)

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- Lecture 30 - Trajectory Transfer (Continued...9)
- Lecture 31 - Trajectory Transfer (Continued...10)
- Lecture 32 - Trajectory Transfer (Continued...11) and Attitude Dynamics
- Lecture 33 - Attitude Dynamics (Continued...1)
- Lecture 34 - Attitude Dynamics (Continued...2)
- Lecture 35 - Attitude Dynamics (Continued...3)
- Lecture 36 - Attitude Dynamics (Continued...4)
- Lecture 37 - Attitude Dynamics (Continued...5)
- Lecture 38 - Attitude Dynamics (Continued...6)
- Lecture 39 - Attitude Dynamics (Continued...7)
- Lecture 40 - Attitude Dynamics (Continued...8)
- Lecture 41 - Attitude Dynamics (Continued...9)
- Lecture 42 - Propulsion
- Lecture 43 - Propulsion (Continued...1)
- Lecture 44 - Propulsion (Continued...2)
- Lecture 45 - Propulsion (Continued...3)

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

NPTEL Video Course - Aerospace Engineering - Introduction to Aerodynamics

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

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Aircraft and Aerodynamic Forces and Moments
- Lecture 2 - Aircraft and Aerodynamic Forces and Moments (Continued...)
- Lecture 3 - Fluids and Forces in Fluids
- Lecture 4 - Fluids and Forces in Fluids (Continued...)
- Lecture 5 - Forces in Fluids
- Lecture 6 - Forces in Fluids (Continued...)
- Lecture 7 - Kinematics of fluid motion
- Lecture 8 - Kinematics of fluid motion (Continued...)
- Lecture 9 - Kinematics of fluid motion (Continued...)
- Lecture 10 - Kinematics of fluid motion (Continued...)
- Lecture 11 - Kinematics of fluid motion - Velocity with specified extension and vorticity
- Lecture 12 - Kinematics of fluid motion - Velocity with specified extension and vorticity (Continued...)
- Lecture 13 - Kinematics of fluid motion - Vorticity Distribution
- Lecture 14 - Kinematics of fluid motion - Velocity without expansion and vorticity
- Lecture 15 - Irrotational Solenoidal Flow in Multiply Connected region
- Lecture 16 - Irrotational Solenoidal Flow in Multiply Connected region (Continued...)
- Lecture 17 - Equations of Fluid Motion - Navier - Stokes Equation
- Lecture 18 - Equations of Fluid Motion - Navier - Stokes Equation (Continued...)
- Lecture 19 - Equations of Fluid Motion - Navier - Stokes Equation (Continued...)
- Lecture 20 - Conservation of Energy and Energy Equation
- Lecture 21 - Equations of Motions
- Lecture 22 - Equations of Motion (Continued...)
- Lecture 23 - Exact Solution for Simple Problems
- Lecture 24 - Exact Solution for Simple Problems (Continued...)
- Lecture 25 - Non-dimensional Form of the Equations and Possible Simplifications
- Lecture 26 - High Reynolds Number Approximation
- Lecture 27 - Conditions for Incompressibility
- Lecture 28 - Potential Flow
- Lecture 29 - Potential Flow - Combination of Basic Solutions

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- Lecture 30 - Potential Flow - Combination of Basic Solutions (Continued...)
- Lecture 31 - Potential Flow - Combination of Basic Solutions (Continued...)
- Lecture 32 - Potential Flow - Combination of Basic Solutions (Continued...) - Lifting Cylinder
- Lecture 33 - Conformal Transformation
- Lecture 34 - Conformal Transformation (Continued...)
- Lecture 35 - Zhukovsky Transformation
- Lecture 36 - Zhukovsky Transformation (Continued...)
- Lecture 37 - Zhukovsky Transformation - Applications
- Lecture 38 - Zhukovsky Transformation - Applications (Continued...)
- Lecture 39 - Zhukovsky Transformation - Applications (Continued...)
- Lecture 40 - Transformation
- Lecture 41 - Transformation (Continued...)
- Lecture 42 - Boundary - Layer Theory
- Lecture 43 - Boundary - Layer Theory (Continued...)
- Lecture 44 - Boundary - Layer Theory (Continued...)
- Lecture 45 - Boundary - Layer Theory (Continued...)
- Lecture 46 - Boundary - Layer Theory (Continued...)

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

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

Subject Co-ordinator - Dr. Manoranjan Sinha

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Kinematics of Rotation
Lecture 2 - Kinematics of Rotation (Continued...)
Lecture 3 - Kinematics of Rotation (Continued...)
Lecture 4 - Kinematics of Rotation (Continued...)
Lecture 5 - Kinematics of Rotation (Continued...)
Lecture 6 - Kinematics of Rotation (Continued...)
Lecture 7 - Rotation
Lecture 8 - Rotation (Continued...)
Lecture 9 - Rotation (Continued...)
Lecture 10 - Rotation (Continued...)
Lecture 11 - Rotational Kinematics
Lecture 12 - Rotational Kinematics (Continued...)
Lecture 13 - Rotational Kinematics (Continued...)
Lecture 14 - Rotational Kinematics (Continued...)
Lecture 15 - Rotational Dynamics (Rigid Body Dynamics)
Lecture 16 - Rotational Dynamics (Rigid Body Dynamics) (Continued...)
Lecture 17 - Rotational Dynamics (Rigid Body Dynamics) (Continued...)
Lecture 18 - Rigid Body Dynamics
Lecture 19 - Rigid Body Dynamics (Continued...)
Lecture 20 - Rigid Body Dynamics (Continued...)
Lecture 21 - Rigid Body Dynamics (Continued...)
Lecture 22 - Rigid Body Dynamics (Continued...)
Lecture 23 - Rigid Body Dynamics (Continued...)
Lecture 24 - Rigid Body Dynamics (Continued...)
Lecture 25 - Rigid Body Dynamics (Continued...)
Lecture 26 - Stability of Torque Free Rotation
Lecture 27 - Stability of Torque Free Rotation (Continued...)
Lecture 28 - Gravity-gradient Satellite
Lecture 29 - Gravity-gradient Satellite (Continued...)

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

- Lecture 30 - Gravity-gradient Satellite (Continued...)
- Lecture 31 - Gravity-gradient Satellite (Continued...)
- Lecture 32 - Gravity-gradient Satellite (Continued...)
- Lecture 33 - Gravity-gradient Satellite (Continued...)
- Lecture 34 - Gravity-gradient Satellite (Continued...)
- Lecture 35 - Gravity-gradient Satellite (Continued...)
- Lecture 36 - Gravity-gradient Satellite (Continued...)
- Lecture 37 - Gravity-gradient Satellite (Continued...)
- Lecture 38 - Spin Stabilization
- Lecture 39 - Spin Stabilization (Continued...)
- Lecture 40 - Spin Stabilization (Continued...)
- Lecture 41 - Spin Stabilization (Continued...)
- Lecture 42 - Spin Stabilization (Continued...)
- Lecture 43 - Control Moment Gyroscope
- Lecture 44 - Control Moment Gyroscope (Continued...)
- Lecture 45 - Gyroscope/Top Motion
- Lecture 46 - Gyroscope/Top Motion (Continued...)
- Lecture 47 - Gyroscopic Motion
- Lecture 48 - Gyroscopic Motion (Continued...)
- Lecture 49 - Reaction Wheel/Gyrostat
- Lecture 50 - Reaction Wheel/Gyrostat (Continued...)
- Lecture 51 - Gyrostat
- Lecture 52 - Gyrostat (Continued...)
- Lecture 53 - Gyrostat (Continued...)
- Lecture 54 - Gyrostat (Continued...)
- Lecture 55 - Control Moment Gyro
- Lecture 56 - Control Moment Gyro (Continued...)
- Lecture 57 - Control Moment Gyro (Continued...)
- Lecture 58 - Control Moment Gyro (Continued...)
- Lecture 59 - Satellite Dynamics with Control Moment Gyro
- Lecture 60 - Satellite Dynamics with Control Moment Gyro (Continued...)
- Lecture 61 - Satellite Dynamics with Control Moment Gyro (Continued...)
- Lecture 62 - Simplified Control Gyro for Satellite Attitude Control
- Lecture 63 - Satellite Attitude Control using Magnetic Torquer
- Lecture 64 - Satellite Attitude Control using Magnetic Torquer (Continued...)
- Lecture 65 - Satellite Attitude Control using Magnetic Torquer (Continued...)
- Lecture 66 - Satellite Attitude Control using Magnetic Torquer (Continued...)
- Lecture 67 - Satellite Attitude Control using Magnetic Torquer (Continued...)
- Lecture 68 - Satellite Attitude Control using Lorentz Force

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

- Lecture 69 - Satellite Attitude Control using Thruster
- Lecture 70 - Atmospheric Drag on the Satellite
- Lecture 71 - Atmospheric Force and Moment on the Satellite
- Lecture 72 - Atmospheric Force and Moment on the Satellite (Continued...)
- Lecture 73 - Solar Radiation Force and Moment on the Satellite

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

NPTEL Video Course - Aerospace Engineering - NOC:Vibration and Structural Dynamics

Subject Co-ordinator - Prof. Mira Mitra

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Undamped Free Vibration
- Lecture 3 - Damped Free Vibration
- Lecture 4 - Damped Free Vibration (Continued...)
- Lecture 5 - Damped Free Vibration (Continued...)
- Lecture 6 - Force Vibration
- Lecture 7 - Harmonic Loading
- Lecture 8 - Harmonic Loading (Continued...)
- Lecture 9 - Harmonic Loading (Continued...)
- Lecture 10 - Harmonic Loading (Continued...)
- Lecture 11 - Impulse Load and Arbitrary Load
- Lecture 12 - Impulse Load and Arbitrary Load (Continued...)
- Lecture 13 - MDOF, 2-Dof System
- Lecture 14 - Normal Mode of Vib
- Lecture 15 - Natural Frequency and Mode Shapes
- Lecture 16 - Mode Shapes of MDOF
- Lecture 17 - Mode Shapes and Free Vibration Response of MDOF
- Lecture 18 - Example on MDOF
- Lecture 19 - Example on MDOF (Continued...)
- Lecture 20 - Modal Expansion Theorem, Generalized Coordinate
- Lecture 21 - Examples on Modal Analysis
- Lecture 22 - Damping
- Lecture 23 - Rigid Body Modes
- Lecture 24 - Numerical Time Integration
- Lecture 25 - Continuous System
- Lecture 26 - Axial Vibration of Bar
- Lecture 27 - Axial Vibration of Bar (Continued...)
- Lecture 28 - Bending Vibration in Beam
- Lecture 29 - Bending Vibration in Beam (Continued...)

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

- Lecture 30 - Bending Vibration in Beam (Continued...)
- Lecture 31 - Modal Analysis
- Lecture 32 - Modal Analysis (Continued...)
- Lecture 33 - Modal Analysis of Continuous System
- Lecture 34 - Modal Analysis of Continuous System (Continued...)
- Lecture 35 - Approximate Method
- Lecture 36 - Approximate Methods (Continued...)
- Lecture 37 - Collocation Method
- Lecture 38 - Analytical Methods
- Lecture 39 - Analytical Methods (Continued...)
- Lecture 40 - Analytical Methods (Continued...)

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

NPTEL Video Course - Aerospace Engineering - NOC:Space Flight Mechanics

Subject Co-ordinator - Dr. Manoranjan Sinha

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Conic Section
- Lecture 2 - Conic Section (Continued...)
- Lecture 3 - Conic Section (Continued...)
- Lecture 4 - Central Force Motion
- Lecture 5 - Gravitational Central Force Motion
- Lecture 6 - Gravitational Central Force Motion (Continued...)
- Lecture 7 - Gravitational Central Force Motion (Continued...)
- Lecture 8 - 2-Body Problem
- Lecture 9 - 2-Particle System Motion Under Mutual Gravitational Attraction
- Lecture 10 - 2-Particle Body Problem
- Lecture 11 - 2-Particle Body System
- Lecture 12 - Classical Orbital Elements / Parameters
- Lecture 13 - Classical Orbital Elements / Parameters (Continued...)
- Lecture 14 - Classical Orbital Elements / Parameters (Continued...)
- Lecture 15 - Classical Orbital Elements and Its Inverse Problems
- Lecture 16 - Inverse Problem of Orbit Determination (Classical Orbital Elements)
- Lecture 17 - Problem Solving on 2-Body Problem Related to Orbit and Orbital Elements
- Lecture 18 - Problem Related to Orbital Elements
- Lecture 19 - Kepler's Equation / Kepler's Problem
- Lecture 20 - Kepler's Problem (Continued...)
- Lecture 21 - Kepler's Problem (Continued...)
- Lecture 22 - Kepler's Equation
- Lecture 23 - Kepler's Equation (Continued...)
- Lecture 24 - Kepler's Equation (Continued...)
- Lecture 25 - Kepler's Equation (Continued...)
- Lecture 26 - Kepler's Equation (Continued...)
- Lecture 27 - Kepler's Equation (Continued...)
- Lecture 28 - Kepler's Equation (Continued...)
- Lecture 29 - 3-Body Problem

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

- Lecture 30 - 3-Body Problem (Continued...)
- Lecture 31 - 3-Body Problem (Continued...)
- Lecture 32 - 3-Body Problem (Continued...)
- Lecture 33 - 3-Body Problem (Continued...)
- Lecture 34 - Restricted 3-Body Problem
- Lecture 35 - Restricted 3-Body Problem (Continued...)
- Lecture 36 - Restricted 3-Body Problem (Continued...)
- Lecture 37 - Restricted 3-Body Problem (Continued...)
- Lecture 38 - Restricted 3-Body Problem (Continued...)
- Lecture 39 - Restricted 3-Body Problem (Continued...)
- Lecture 40 - Restricted 3-Body Problem (Continued...)
- Lecture 41 - Restricted 3-Body Problem (Continued...)
- Lecture 42 - Restricted 3-Body Problem (Continued...)
- Lecture 43 - Restricted 3-Body Problem (Continued...)
- Lecture 44 - Restricted 3-Body Problem (Continued...)
- Lecture 45 - Restricted 3-Body Problem (Continued...)
- Lecture 46 - Restricted 3-Body Problem (Continued...)
- Lecture 47 - General Perturbation Theory
- Lecture 48 - General Perturbation Theory (Continued...)
- Lecture 49 - General Perturbation Theory (Continued...)
- Lecture 50 - General Perturbation Theory (Continued...)
- Lecture 51 - General Perturbation Theory (Continued...)
- Lecture 52 - General Orbit Perturbation Theory
- Lecture 53 - General Orbit Perturbation Theory (Continued...)
- Lecture 54 - General Orbit Perturbation Theory (Continued...)
- Lecture 55 - General Orbit Perturbation Theory (Continued...)
- Lecture 56 - General Orbit Perturbation Theory (Continued...)
- Lecture 57 - General Orbit Perturbation Theory (Continued...)
- Lecture 58 - General Orbit Perturbation Theory (Continued...)
- Lecture 59 - General Orbit Perturbation Theory (Continued...)
- Lecture 60 - General Orbit Perturbation Theory (Continued...)
- Lecture 61 - General Orbit Perturbation Theory (Continued...)
- Lecture 62 - General Orbit Perturbation Theory (Continued...)
- Lecture 63 - General Orbit Perturbation Theory (Continued...)
- Lecture 64 - General Orbit Perturbation Theory (Continued...)
- Lecture 65 - General Orbit Perturbation Theory (Continued...)
- Lecture 66 - General Orbit Perturbation Theory (Continued...)
- Lecture 67 - General Orbit Perturbation Theory (Continued...)
- Lecture 68 - Orbit Determination

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

- Lecture 69 - Orbit Determination (Continued...)
- Lecture 70 - Orbit Determination (Continued...)
- Lecture 71 - Orbit Determination (Continued...)
- Lecture 72 - Transformation from Celestial to Earth Fixed Reference Frame
- Lecture 73 - Time
- Lecture 74 - Time (Continued...)
- Lecture 75 - Orbit Determination
- Lecture 76 - Orbit Determination (Continued...)
- Lecture 77 - Orbit Determination (Continued...)
- Lecture 78 - Orbit Determination (Continued...)
- Lecture 79 - Trajectory Transfer
- Lecture 80 - Trajectory Transfer (Continued...)
- Lecture 81 - Trajectory Transfer (Continued...)
- Lecture 82 - Trajectory Transfer (Continued...)
- Lecture 83 - Trajectory Transfer (Continued...)
- Lecture 84 - Trajectory Transfer (Continued...)
- Lecture 85 - Trajectory Transfer (Continued...)
- Lecture 86 - Trajectory Transfer (Continued...)
- Lecture 87 - Interplanetary Transfer
- Lecture 88 - Interplanetary Transfer (Continued...)
- Lecture 89 - Interplanetary Transfer (Continued...)
- Lecture 90 - Patched Conic Section Method for Interplanetary Transfer
- Lecture 91 - Interplanetary Mission
- Lecture 92 - Interplanetary Mission (Continued...)
- Lecture 93 - Interception in Coplanar Orbit
- Lecture 94 - Interception in Coplanar Orbit (Continued...)
- Lecture 95 - Interception in non-coplanar Orbit
- Lecture 96 - Interception in non-coplanar Orbit (Continued...)
- Lecture 97 - Interception in non-coplanar Orbit (Continued...)
- Lecture 98 - Non Coplanar Transfer
- Lecture 99 - Sphere of Influence

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

NPTEL Video Course - Aerospace Engineering - NOC:Aircraft Structures - I

Subject Co-ordinator - Dr. Anup Ghosh

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 - Load Encountered by a Typical Aircraft
- Lecture 5 - Conceptual Structural Details of a Typical Aircraft
- Lecture 6 - Airworthiness of An Aircraft
- Lecture 7 - Aerodynamic Loads and Load Factors
- Lecture 8 - Loads From A Symmetric Manoeuvre Of An Aircraft
- Lecture 9 - Shear and Moment on Wing An Aircraft
- Lecture 10 - Distribution Of Load On The Fuselage
- Lecture 11 - Unit Load Analysis Of Fuselage
- Lecture 12 - Truss System
- Lecture 13 - Truss System (Continued...)
- Lecture 14 - Space Structures
- Lecture 15 - Space Structures (Continued...)
- Lecture 16 - Wing Truss System
- Lecture 17 - Introduction to Energy Methods
- Lecture 18 - Dummy and Unit Load Method
- Lecture 19 - Dummy and Unit Load Method - Examples
- Lecture 20 - Castigliano's Theorems
- Lecture 21 - Rayleigh - Ritz Method
- Lecture 22 - Statically Indeterminate Structures
- Lecture 23 - Theory of Elasticity - Stress
- Lecture 24 - Theory of Elasticity - Equilibrium
- Lecture 25 - Stress Transformation and Principal Stress
- Lecture 26 - Theory of Elasticity - Principal Stress Boundary Condition
- Lecture 27 - Shear Stresses
- Lecture 28 - Introduction of Strain
- Lecture 29 - Introduction of strain - Equations of compatibility

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

- Lecture 30 - Formulation of Elasticity Problems
- Lecture 31 - Inverse Method of Solution
- Lecture 32 - Semi-Inverse Method of Solution
- Lecture 33 - Equilibrium Equation in Polar Coordinate System
- Lecture 34 - Compatibility Condition in Polar Coordinate System
- Lecture 35 - Effects of Circular Hole on Stress Distributions in a Plate
- Lecture 36 - Effects of Circular Hole on Stress Distributions in a Plate
- Lecture 37 - Effects of Circular Hole on Stress Distributions in a Plate
- Lecture 38 - Theory of Elasticity - Torsion Problems
- Lecture 39 - Theory of Elasticity - Torsion Problems (Continued...)
- Lecture 40 - Torsion of an Elliptical Bar
- Lecture 41 - Membrane Analogy for Torsion Problem
- Lecture 42 - Membrane Analogy for Torsion Problem (Continued...)

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

NPTEL Video Course - Aerospace Engineering - NOC:Introduction to CFD

Subject Co-ordinator - Prof. Arnab Roy

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Brief Overview of CFD
- Lecture 2 - Governing Equations of Fluid Flow
- Lecture 3 - Governing Equations of Fluid Flow (Continued...)
- Lecture 4 - Classification of PDEs
- Lecture 5 - Classification of PDEs (Continued...)
- Lecture 6 - Methods for Approximate Solution of PDEs
- Lecture 7 - Finite Difference Method
- Lecture 8 - Methods for Approximate Solution of PDEs (Continued...)
- Lecture 9 - Methods for Approximate Solution of PDEs (Continued...)
- Lecture 10 - Methods for Approximate Solution of PDEs (Continued...)
- Lecture 11 - Methods for Approximate Solution of PDEs (Continued...)
- Lecture 12 - Taylor Table Approach for Constructing Finite Difference Schemes
- Lecture 13 - Taylor Table Approach for Constructing Finite Difference Schemes (Continued...)
- Lecture 14 - Taylor Table Approach for Constructing Finite Difference Schemes (Continued...)
- Lecture 15 - Taylor Table Approach for Constructing Finite Difference Schemes (Continued...)
- Lecture 16 - Taylor Table Approach for Constructing Finite Difference Schemes (Continued...)
- Lecture 17 - Numerical Solution of Steady State Heat Conduction (Elliptic PDE)
- Lecture 18 - Numerical Solution of Steady State Heat Conduction (Elliptic PDE) (Continued...)
- Lecture 19 - Numerical Solution of Steady State Heat Conduction (Elliptic PDE) (Continued...)
- Lecture 20 - Numerical Solution of Steady State Heat Conduction (Elliptic PDE) (Continued...)
- Lecture 21 - Numerical Solution of Steady State Heat Conduction (Elliptic PDE) (Continued...)
- Lecture 22 - Numerical Solution of Unsteady Heat Conduction (Parabolic PDE)
- Lecture 23 - Numerical Solution of Unsteady Heat Conduction (Parabolic PDE) (Continued...)
- Lecture 24 - Numerical Solution of Unsteady Heat Conduction (Parabolic PDE) (Continued...)
- Lecture 25 - Numerical Solution of Unsteady Heat Conduction (Parabolic PDE) (Continued...)
- Lecture 26 - Numerical Solution of Unsteady Heat Conduction (Parabolic PDE) (Continued...)
- Lecture 27 - Numerical Solution of Linear Wave Equation (Hyperbolic PDE)
- Lecture 28 - Numerical Solution of Linear Wave Equation (Hyperbolic PDE) (Continued...)
- Lecture 29 - Numerical Solution of Linear Wave Equation (Hyperbolic PDE) (Continued...)

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

- Lecture 30 - Numerical Solution of Linear Wave Equation (Hyperbolic PDE) (Continued...)
- Lecture 31 - Numerical Solution of Linear Wave Equation (Hyperbolic PDE) (Continued...)
- Lecture 32 - Numerical Solution of Linear Wave Equation (Hyperbolic PDE) (Continued...)
- Lecture 33 - Numerical Solution of One Dimensional Convection - Diffusion Equation
- Lecture 34 - Numerical Solution of One Dimensional Convection - Diffusion Equation (Continued...)
- Lecture 35 - Numerical Solution of One Dimensional Convection - Diffusion Equation (Continued...)
- Lecture 36 - Numerical Solution of One Dimensional Convection - Diffusion Equation (Continued...)
- Lecture 37 - Numerical Solution of One Dimensional Convection - Diffusion Equation (Continued...)
- Lecture 38 - Numerical Solution of One Dimensional Convection - Diffusion Equation (Continued...)
- Lecture 39 - Numerical Solution of Two Dimensional Incompressible Navier Stokes Equations
- Lecture 40 - Numerical Solution of Two Dimensional Incompressible Navier Stokes Equations (Continued...)
- Lecture 41 - Numerical Solution of Two Dimensional Incompressible Navier Stokes Equations (Continued...)
- Lecture 42 - Numerical Solution of Two Dimensional Incompressible Navier Stokes Equations (Continued...)
- Lecture 43 - Numerical Solution of Two Dimensional Incompressible Navier Stokes Equations (Continued...)
- Lecture 44 - Numerical Solution of Two Dimensional Incompressible Navier Stokes Equations (Continued...)
- Lecture 45 - Numerical Solution of One Dimensional Euler Equation for Shock Tube Problem
- Lecture 46 - Numerical Solution of One Dimensional Euler Equation for Shock Tube Problem (Continued...)
- Lecture 47 - Numerical Solution of One Dimensional Euler Equation for Shock Tube Problem (Continued...)
- Lecture 48 - Numerical Solution of One Dimensional Euler Equation for Shock Tube Problem (Continued...)
- Lecture 49 - Numerical Solution of One Dimensional Euler Equation for Shock Tube Problem (Continued...)
- Lecture 50 - Basics of Interface Capturing Methods for Applications in Multiphase Flow
- Lecture 51 - Basics of Interface Capturing Methods for Application in Multiphase Flow (Continued...)
- Lecture 52 - Basics of Interface Capturing Methods for Application in Multiphase Flow (Continued...)
- Lecture 53 - Basics of Interface Capturing Methods for Application in Multiphase Flow (Continued...)
- Lecture 54 - Basics of Interface Capturing Methods for Application in Multiphase Flow (Continued...)
- Lecture 55 - Basics of Turbulence Modeling
- Lecture 56 - Basics of Turbulence Modeling (Continued...)
- Lecture 57 - Basics of Turbulence Modeling (Continued...)
- Lecture 58 - Basics of Turbulence Modeling (Continued...)
- Lecture 59 - Basics of Turbulence Modeling (Continued...)
- Lecture 60 - Basics of Turbulence Modeling (Continued...)
- Lecture 61 - Structured and Unstructured Grid Generation
- Lecture 62 - Structured and Unstructured Grid Generation (Continued...)
- Lecture 63 - Structured and Unstructured Grid Generation (Continued...)
- Lecture 64 - Structured and Unstructured Grid Generation (Continued...)
- Lecture 65 - Structured and Unstructured Grid Generation (Continued...)

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

NPTEL Video Course - Aerospace Engineering - NOC:Fundamentals of Theoretical and Experimental Aerodynamics

Subject Co-ordinator - Prof. Arnab Roy

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction on Aerodynamics-its relevance and applications
- Lecture 2 - Atmosphere
- Lecture 3 - Flow velocity, pressure, skin friction
- Lecture 4 - Generation of aerodynamic forces and moments on an aircraft
- Lecture 5 - Generation of aerodynamic forces and moments on an aircraft (Continued...)
- Lecture 6 - Generation of aerodynamic forces and moments on an aircraft (Continued...)
- Lecture 7 - Eulerian and Lagrangian perspectives of flow: Fluid element trajectories
- Lecture 8 - Fluid element trajectories, Angular velocity, and vorticity
- Lecture 9 - Irrotational and Rotational flow, Strain of a fluid element, Gradient
- Lecture 10 - Line Surface and Volume Integrals, Circulation, Velocity
- Lecture 11 - Conservation equations of mass, momentum and energy
- Lecture 12 - Conservation equations of momentum and energy
- Lecture 13 - Inviscid and viscous flows
- Lecture 14 - Inviscid and viscous flows (Continued...)
- Lecture 15 - Bernoulli's equation and its applications
- Lecture 16 - Bernoulli's equation applications; Potential flow; Boundary layer flow
- Lecture 17 - Boundary layer flow
- Lecture 18 - Boundary Layer (Continued...) and Laminar and turbulent flow
- Lecture 19 - Airfoil Geometry, forces and moments acting on an airfoil
- Lecture 20 - Pressure distribution on an airfoil, Airfoil nomenclature and characteristics
- Lecture 21 - Airfoil characteristics; Aerodynamic center; Some more elementary flows
- Lecture 22 - Elementary flows- Doublet and Point Vortex; Vortex sheet
- Lecture 23 - Kutta condition; Kelvin's circulation theorem; Introduction to thin airfoil theory
- Lecture 24 - Results of thin airfoil theory for symmetric
- Lecture 25 - Multi element airfoils, Laminar and turbulent
- Lecture 26 - Finite wing geometry and flow features
- Lecture 27 - Biot Savart Law; Prandtl's lifting line theory
- Lecture 28 - Prandtl lifting theory for finite wings
- Lecture 29 - Finite wing aerodynamics; Delta wing aerodynamics

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

- Lecture 30 - Delta wing aerodynamics; Unsteady aerodynamics
- Lecture 31 - Fundamentals of high speed flows
- Lecture 32 - Velocity potential equation and its application; Finite Waves
- Lecture 33 - Normal shocks
- Lecture 34 - Normal shocks, Mach waves and oblique shocks
- Lecture 35 - Oblique shock; Prandtl Meyer expansion
- Lecture 36 - Shock expansion theory; Flow through converging diverging nozzle
- Lecture 37 - Flow through converging diverging nozzle under different back pressure
- Lecture 38 - Preliminary concepts of hypersonic flow; Shock tube
- Lecture 39 - Computing aerodynamic flows - trying to connect with the theory
- Lecture 40 - Computing aerodynamic flows - trying to connect with the theory (Continued...)
- Lecture 41 - Some more on flow physics; The different steps involved in flow computations
- Lecture 42 - An introduction to Panel Method
- Lecture 43 - Panel method and Vortex Lattice Method
- Lecture 44 - Mathematical classification of PDEs and their physical behavior
- Lecture 45 - Basics of grid and discretization of governing PDEs
- Lecture 46 - Different aspects of numerical schemes
- Lecture 47 - Basics of Euler Equation
- Lecture 48 - Basics of Compressible Navier Stokes Equations
- Lecture 49 - Wind tunnel-an experimental tool in aerodynamics; Types of wind tunnels
- Lecture 50 - Wind Tunnel design basics - Subsonic Wind Tunnels
- Lecture 51 - Wind Tunnel design basics - Subsonic wind tunnels (Continued...)
- Lecture 52 - Wind Tunnel design basics - Supersonic wind tunnels
- Lecture 53 - Continuous closed circuit supersonic wind tunnel
- Lecture 54 - Scaling of wind tunnel models; Safety issues in wind tunnel handling
- Lecture 55 - Flow visualization techniques
- Lecture 56 - Schlieren and Shadowgraph techniques
- Lecture 57 - Measurement of Pressure using mechanical instruments
- Lecture 58 - Rayleigh Pitot tube; Drag measurement using wake survey and direct weighing method
- Lecture 59 - Mechanical balance
- Lecture 60 - Electronic transducers
- Lecture 61 - Wheatstone bridge circuits for force and moment measurement
- Lecture 62 - Strain gauge based balances; Electronic pressure gauges
- Lecture 63 - Absolute-Gauge-Differential pressure sensors; Data Acquisition System
- Lecture 64 - Measurement error and uncertainty
- Lecture 65 - Velocity measurement using Particle Image Velocimetry
- Lecture 66 - Velocity measurement using Particle Image Velocimetry (Continued...)
- Lecture 67 - Particle image velocimetry (Continued...)
- Lecture 68 - How wind tunnel and associated instrumentation are used

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

Lecture 69 - Quick recapitulation of course content and closure

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

NPTEL Video Course - Aerospace Engineering - NOC:Aerodynamic Design of Axial Flow Compressors and Fans

Subject Co-ordinator - Prof. Chetankumar Sureshbhai Mistry

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 - Stage Configurations and Parameters
Lecture 8 - Stage Configurations and Parameters (Continued...)
Lecture 9 - Stage Configurations and Parameters (Continued...)
Lecture 10 - Stage Configurations and Parameters (Continued...)
Lecture 11 - Stage Configurations and Parameters (Continued...)
Lecture 12 - Stage Configurations and Parameters (Continued...)
Lecture 13 - Stage Configurations and Parameters (Continued...)
Lecture 14 - Stage Configurations and Parameters (Continued...)
Lecture 15 - Stage Configurations and Parameters (Continued...)
Lecture 16 - Design Concepts
Lecture 17 - Design Concepts (Continued...)
Lecture 18 - Design Concepts (Continued...)
Lecture 19 - Design Concepts (Continued...)
Lecture 20 - Design Concepts (Continued...)
Lecture 21 - Design Concepts (Continued...)
Lecture 22 - Design Concepts (Continued...)
Lecture 23 - Cascade Aerodynamics
Lecture 24 - Cascade Aerodynamics (Continued...)
Lecture 25 - Cascade Aerodynamics (Continued...)
Lecture 26 - Cascade Aerodynamics (Continued...)
Lecture 27 - Cascade Aerodynamics (Continued...)
Lecture 28 - Selection of Design Parameters
Lecture 29 - Selection of Design Parameters (Continued...)

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

- Lecture 30 - Selection of Design Parameters (Continued...)
- Lecture 31 - Selection of Design Parameters (Continued...)
- Lecture 32 - Selection of Design Parameters (Continued...)
- Lecture 33 - Design Strategies
- Lecture 34 - Design Strategies (Continued...)
- Lecture 35 - Design Strategies (Continued...)
- Lecture 36 - Design Strategies (Continued...)
- Lecture 37 - Design of Low Speed Compressor
- Lecture 38 - Design of Low Speed Compressor (Continued...)
- Lecture 39 - Design of Low Speed Compressor (Continued...)
- Lecture 40 - Design of Low Speed Compressor (Continued...)
- Lecture 41 - Design of Low Speed Compressor (Continued...)
- Lecture 42 - Design of Low Speed Compressor (Continued...)
- Lecture 43 - Design of Low Speed Contra rotating Fan
- Lecture 44 - Design of Low Speed Contra rotating Fan (Continued...)
- Lecture 45 - Design of Low Speed Contra rotating Fan (Continued...)
- Lecture 46 - Design of Low Speed Contra rotating Fan (Continued...)
- Lecture 47 - Design of Low Speed Contra rotating Fan (Continued...)
- Lecture 48 - Design of Low Speed Contra rotating Fan (Continued...)
- Lecture 49 - Transonic Compressors
- Lecture 50 - Transonic Compressors (Continued...)
- Lecture 51 - Transonic Compressors (Continued...)
- Lecture 52 - Transonic Compressors (Continued...)
- Lecture 53 - Transonic Compressors (Continued...)
- Lecture 54 - Design of Transonic Compressor
- Lecture 55 - Design of Transonic Compressor (Continued...)
- Lecture 56 - Design of Transonic Compressor (Continued...)
- Lecture 57 - Design of Transonic Compressor (Continued...)
- Lecture 58 - Design of Transonic Compressor (Continued...)
- Lecture 59 - Design of Transonic Compressor (Continued...)
- Lecture 60 - Design of Industrial fan
- Lecture 61 - Design of Industrial fan (Continued...)
- Lecture 62 - Design of Industrial fan (Continued...)
- Lecture 63 - Design of Industrial fan (Continued...)
- Lecture 64 - Design of Industrial fan (Continued...)
- Lecture 65 - CFD application to Design and Performance assessment
- Lecture 66 - CFD application to Design and Performance assessment (Continued...)
- Lecture 67 - CFD application to Design and Performance assessment (Continued...)
- Lecture 68 - CFD application to Design and Performance assessment (Continued...)

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

Lecture 69 - CFD application to Design and Performance assessment (Continued...)

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

NPTEL Video Course - Aerospace Engineering - NOC:Smart Structures

Subject Co-ordinator - Prof. Mohammed Rabiun Sunny

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Smart Structures (Continued...)
- Lecture 2 - Introduction to Smart Structures (Continued...)
- Lecture 3 - Introduction to Smart Structures (Continued...)
- Lecture 4 - Introduction to Piezoelectric Materials
- Lecture 5 - Introduction to Piezoelectric Materials (Continued...)
- Lecture 6 - Mathematical Preliminaries
- Lecture 7 - 3D Constitutive Modeling of Piezoelectric Materials - 1
- Lecture 8 - 3D Constitutive Modeling of Piezoelectric Materials - 2
- Lecture 9 - 3D Constitutive Modeling of Piezoelectric Materials - 3
- Lecture 10 - 3D Constitutive Modeling of Piezoelectric Materials - 4
- Lecture 11 - Piezoelectric Sensors and Actuators
- Lecture 12 - Numerical Problems and Solutions
- Lecture 13 - Induced Strain Actuation - Static Analysis
- Lecture 14 - Induced Strain Actuation - Static Analysis (Continued...)
- Lecture 15 - Induced Strain Actuation - Static Analysis
- Lecture 16 - Induced Strain Actuation - Static Analysis (Continued...)
- Lecture 17 - Induced Strain Actuation - Static Analysis (Continued...)
- Lecture 18 - Induced Strain Actuation - Static Analysis - Numerical Examples
- Lecture 19 - Introduction to Energy Principles for Structural Analysis
- Lecture 20 - Introduction to Energy Principles for Structural Analysis (Continued...)
- Lecture 21 - Static Analysis of beam for Induced Strain Actuation using Energy Principles
- Lecture 22 - Static Analysis of beam for Induced Strain Actuation using Energy Principles (Continued...)
- Lecture 23 - Static Analysis of beam for Induced Strain Actuation using Energy Principles (Continued...)
- Lecture 24 - Static Analysis of beam for Induced strain Actuation using Energy Principles Numerical
- Lecture 25 - Dynamic Analysis of Beam for Induced Strain Actuation Using Energy Principle
- Lecture 26 - Dynamic Analysis of Beam for Induced Strain Actuation Using (Continued...)
- Lecture 27 - Energy Harvesting and Vibration Control
- Lecture 28 - Energy Harvesting and Vibration Control (Continued...)
- Lecture 29 - Solution of Coupled Linear Ordinary Differential Equations

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

- Lecture 30 - Introduction to Fibre Reinforced Plastic Composites
- Lecture 31 - Constitutive Relation of Unidirectional FRP Composite Ply
- Lecture 32 - Constitutive Relation of Unidirectional FRP Composite Ply (Continued...)
- Lecture 33 - Constitutive Relation of Unidirectional FRP Composite Ply (Continued...)
- Lecture 34 - Mechanics of FRP Composite Laminate Numerical Examples
- Lecture 35 - Mechanics of FRP Composite Laminate Numerical Examples (Continued...)
- Lecture 36 - Analysis of composite laminate with piezoelectric patches (Continued...)
- Lecture 37 - Analysis of composite laminate with piezoelectric patches (Continued...)
- Lecture 38 - Analysis of composite laminate with piezoelectric patches (Continued...)
- Lecture 39 - Analysis of composite laminate with piezoelectric patches (Continued...)
- Lecture 40 - Analysis of composite laminate with piezoelectric patches - computer programming
- Lecture 41 - Introduction to Shape Memory Alloys
- Lecture 42 - Temperature and Stress Dependent Phase Transformation Modeling
- Lecture 43 - Temperature and Stress Dependent Phase Transformation Modeling (Continued...)
- Lecture 44 - Stress-strain Curve at Low Temperature, Pseudo elasticity Two Way Shape Memory Effect
- Lecture 45 - Constitutive Relations of Shape Memory Alloys
- Lecture 46 - Constitutive Relations of Shape Memory Alloys (Continued...)
- Lecture 47 - Constitutive Relations of Shape Memory Alloys (Continued...)
- Lecture 48 - Constitutive Relations of Shape Memory Alloys (Continued...)
- Lecture 49 - Constitutive Relations of Shape Memory Alloys (Continued...)
- Lecture 50 - Finite Element Formulation of Euler - Bernoulli Beam
- Lecture 51 - Finite Element Formulation of Euler - Bernoulli Beam (Continued...)
- Lecture 52 - Analysis of a Beam with Shape Memory Alloy Wire
- Lecture 53 - Analysis of a Beam with Shape Memory Alloy Wire (Continued...)
- Lecture 54 - Introduction to Electro and Magneto Rheological Fluids
- Lecture 55 - Analysis of Electro and Magneto Rheological Fluid Flow
- Lecture 56 - Analysis of Electro and Magneto Rheological Fluid Flow (Continued...)
- Lecture 57 - Analysis of Electro and Magneto Rheological Fluid Flow (Continued...)
- Lecture 58 - Analysis of Electro and Magneto Rheological Fluid Flow (Continued...)
- Lecture 59 - Analysis of Electro and Magneto Rheological Fluid Flow
- Lecture 60 - Analysis of Electro and Magneto Rheological Fluid Flow (Continued...)
- Lecture 61 - Analysis of Electro and Magneto Rheological Fluid Flow (Continued...)
- Lecture 62 - Analysis of a Beam with ER/MR Fluid Layer

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

NPTEL Video Course - Aerospace Engineering - NOC:Aeroengine Gas Turbine Cycles

Subject Co-ordinator - Prof. Chetankumar Sureshbhai Mistry

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 - Component Performance
Lecture 8 - Component Performance (Continued...)
Lecture 9 - Component Performance (Continued...)
Lecture 10 - Component Performance (Continued...)
Lecture 11 - Component Performance (Continued...)
Lecture 12 - Turbojet Engine - I
Lecture 13 - Turbojet Engine - I (Continued...)
Lecture 14 - Turbojet Engine - I (Continued...)
Lecture 15 - Turbojet Engine - I (Continued...)
Lecture 16 - Turbojet Engine - I (Continued...)
Lecture 17 - Turbojet Engine - I (Continued...)
Lecture 18 - Turbojet Engine - II
Lecture 19 - Turbojet Engine - II (Continued...)
Lecture 20 - Turbojet Engine - II (Continued...)
Lecture 21 - Turbojet Engine - II (Continued...)
Lecture 22 - Turbojet Engine - II (Continued...)
Lecture 23 - Turbofan Engine - I
Lecture 24 - Turbofan Engine - I (Continued...)
Lecture 25 - Turbofan Engine - I (Continued...)
Lecture 26 - Turbofan Engine - I (Continued...)
Lecture 27 - Turbofan Engine - I (Continued...)
Lecture 28 - Turbofan Engine - II
Lecture 29 - Turbofan Engine - II (Continued...)

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

- Lecture 30 - Turbofan Engine - II (Continued...)
- Lecture 31 - Turbofan Engine - II (Continued...)
- Lecture 32 - Turbofan Engine - II (Continued...)
- Lecture 33 - Turbofan Engine - III
- Lecture 34 - Turbofan Engine - III (Continued...)
- Lecture 35 - Turbofan Engine - III (Continued...)
- Lecture 36 - Turbofan Engine - III (Continued...)
- Lecture 37 - Turbofan Engine - III (Continued...)
- Lecture 38 - Turbofan Engine - IV
- Lecture 39 - Turbofan Engine - IV (Continued...)
- Lecture 40 - Turbofan Engine - IV (Continued...)
- Lecture 41 - Turbofan Engine - IV (Continued...)
- Lecture 42 - Turbofan Engine - IV (Continued...)
- Lecture 43 - Turbofan Engine - IV (Continued...)
- Lecture 44 - Recent Advances in Turbofan Engines
- Lecture 45 - Recent Advances in Turbofan Engines (Continued...)
- Lecture 46 - Recent Advances in Turbofan Engines (Continued...)
- Lecture 47 - Recent Advances in Turbofan Engines (Continued...)
- Lecture 48 - Recent Advances in Turbofan Engines (Continued...)
- Lecture 49 - Recent Advances in Turbofan Engines (Continued...)
- Lecture 50 - Turboprop Engine
- Lecture 51 - Turboprop Engine (Continued...)
- Lecture 52 - Turboprop Engine (Continued...)
- Lecture 53 - Turboprop Engine (Continued...)
- Lecture 54 - Turboprop Engine (Continued...)
- Lecture 55 - Turboshaft Engine
- Lecture 56 - Turboshaft Engine (Continued...)
- Lecture 57 - Turboshaft Engine (Continued...)
- Lecture 58 - Turboshaft Engine (Continued...)
- Lecture 59 - Turboshaft Engine (Continued...)
- Lecture 60 - Component Matching and Testing
- Lecture 61 - Component Matching and Testing (Continued...)
- Lecture 62 - Component Matching and Testing (Continued...)
- Lecture 63 - Component Matching and Testing (Continued...)
- Lecture 64 - Aircraft Engine Testing

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

NPTEL Video Course - Aerospace Engineering - NOC:Combustion of Solid Fuels and Propellants

Subject Co-ordinator - Prof. Srinibas Karmakar

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Basic Principle of Rocket
- Lecture 2 - Basic Principle of Rocket (Continued...)
- Lecture 3 - Performance Parameters
- Lecture 4 - Performance Parameters (Continued...)
- Lecture 5 - Performance Parameters (Example problems)
- Lecture 6 - Solid Propellant Rocket - Brief Description
- Lecture 7 - Solid Propellants - Introduction
- Lecture 8 - Solid Propellants - Selection Criteria
- Lecture 9 - Solid Propellants - Selection Criteria (Continued...)
- Lecture 10 - Solid Propellants - Selection Criteria (Continued...)
- Lecture 11 - Propellants Ingredients (Continued...) and Classification of Solid Propellants
- Lecture 12 - Tutorial Problems
- Lecture 13 - Combustion of Solid Propellants - Introduction
- Lecture 14 - Combustion of Double-Base Propellants
- Lecture 15 - Combustion of Double-Base Propellants (Continued...)
- Lecture 16 - Combustion of Double-Base Propellants (Continued...)
- Lecture 17 - Evaluation of Burn Rate of DB Propellants
- Lecture 18 - Evaluation of Burn Rate of DB Propellants (Continued...)
- Lecture 19 - Combustion of Composite Propellants - Introduction
- Lecture 20 - Combustion of Composite Propellants (Continued...)
- Lecture 21 - Evaluation of Burn Rate of Composite Propellants
- Lecture 22 - Effect of Various Parameters on Burn Rate of Composite Propellants
- Lecture 23 - Effect of Transients, Vehicle Acceleration, Binder, Catalysts on Burning Rate of CP
- Lecture 24 - Effect of Catalysts on Burning Rate of CP (Continued...)
- Lecture 25 - Combustion of Nitra mine Composite Propellants
- Lecture 26 - Combustion of CMDB Propellants
- Lecture 27 - Choice of Pressure Index (n); Tutorial Problems
- Lecture 28 - Metal Combustion Classification-Introduction
- Lecture 29 - Metal Combustion Classification (Continued...)

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- Lecture 30 - Metal Combustion Classification (Continued...)
- Lecture 31 - Metal Particle Combustion Regimes
- Lecture 32 - Metal Particle Combustion Regimes (Continued...)
- Lecture 33 - Combustion Times for Diffusion and Kinetic Controlled Regimes
- Lecture 34 - Ignition and Combustion of Boron Particle
- Lecture 35 - Ignition and Combustion of Boron Particle (Continued...)
- Lecture 36 - Ignition and Combustion of Aluminum Particle, Recent Future Developments on Metal Fuels
- Lecture 37 - Erosive Burning in Solid Propellant Rockets - Introduction
- Lecture 38 - Methods for Determination of Erosive Function
- Lecture 39 - Methods for Determination of Erosive Function (Continued...)
- Lecture 40 - Erosive Burning Theories

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

NPTEL Video Course - Aerospace Engineering - NOC:Aerospace Structural Analysis

Subject Co-ordinator - Prof. Mira Mitra

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Aerospace Structures
Lecture 2 - Introduction to Aerospace Structures
Lecture 3 - Recap of Theory of Elasticity
Lecture 4 - Torsion of Circular Cross-Section Shaft
Lecture 5 - Torsion of Non-Circular Cross-Section Shaft
Lecture 6 - Torsion of Non-Circular Cross-Section Shaft
Lecture 7 - Torsion of Non-Circular Cross-Section Shaft
Lecture 8 - Torsion of Non-Circular Cross-Section Shaft
Lecture 9 - Membrane Analogy
Lecture 10 - Membrane Analogy
Lecture 11 - Torsion of Thin-Walled Cross-Section
Lecture 12 - Torsion of Thin-Walled Cross-Section
Lecture 13 - Torsion of Thin-Walled Closed Cross-Section
Lecture 14 - Torsion of Thin-Walled Closed Cross-Section
Lecture 15 - Torsion of Thin-Walled Closed Cross-Section
Lecture 16 - Bi-directional Bending
Lecture 17 - Bi-directional Bending
Lecture 18 - Bi-directional Bending
Lecture 19 - Deflection in Bi-directional Bending
Lecture 20 - Deflection in Bi-directional Bending
Lecture 21 - Shear Stresses due to Shear Forces
Lecture 22 - Shear Stresses due to Shear Forces
Lecture 23 - Shear Stresses due to Shear Forces
Lecture 24 - Shear Center
Lecture 25 - Shear Center
Lecture 26 - Shear Flow in Thin-walled Closed Cross-Section due to Shear Force
Lecture 27 - Shear Flow in Thin-walled Closed Cross-Section due to Shear Force
Lecture 28 - Shear Flow in Thin-walled Closed Cross-Section due to Shear Force
Lecture 29 - Shear Flow in Thin-walled Closed Cross-Section due to Shear Force

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

- Lecture 30 - Skin-Stringer Idealization
- Lecture 31 - Skin-Stringer Idealization
- Lecture 32 - Skin-Stringer Idealization
- Lecture 33 - Skin-Stringer Idealization
- Lecture 34 - Skin-Stringer Idealization
- Lecture 35 - Skin-Stringer Idealization
- Lecture 36 - Buckling of Column
- Lecture 37 - Buckling of Column
- Lecture 38 - Buckling of Column with Initial Imperfection
- Lecture 39 - Buckling of Column with Different Boundary Conditions
- Lecture 40 - Buckling of Column with Different Boundary Conditions

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

NPTEL Video Course - Aerospace Engineering - NOC:Fundamentals of Supersonic and Hypersonic Flow

Subject Co-ordinator - Prof. Arnab Roy

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to supersonic and hypersonic flows
- Lecture 2 - Introduction to supersonic and hypersonic flows (Continued...)
- Lecture 3 - Characteristics of these two flow regimes
- Lecture 4 - Characteristics of these two flow regimes (Continued...)
- Lecture 5 - Where do these flows occur
- Lecture 6 - Basic Concepts and Governing Equations of Compressible Flow
- Lecture 7 - Basic Concepts and Governing Equations of Compressible Flow (Continued...)
- Lecture 8 - Basic Concepts and Governing Equations of Compressible Flow (Continued...)
- Lecture 9 - Basic Concepts and Governing Equations of Compressible Flow (Continued...)
- Lecture 10 - Basic Concepts and Governing Equations of Compressible Flow (Continued...)
- Lecture 11 - Brief introduction to waves
- Lecture 12 - Shocks and Expansion waves
- Lecture 13 - Shock and expansion wave relations in the high Mach number limit
- Lecture 14 - Revisiting Waves, Conservation Equations and Shocks
- Lecture 15 - More on shock and expansion wave relations
- Lecture 16 - Introduction to viscous compressible flow
- Lecture 17 - Introduction to viscous compressible flow - boundary layer equations
- Lecture 18 - Compressible Boundary Layer Equations (Continued...)
- Lecture 19 - Compressible Boundary Layer Equations (Continued...)
- Lecture 20 - Compressible Boundary Layer Equations - aerodynamic heating and drag
- Lecture 21 - Introduction to High Temperature Gas Dynamics
- Lecture 22 - Introduction to High Temperature Gas Dynamics (Continued...)
- Lecture 23 - Introduction to High Temperature Gas Dynamics (Continued...)
- Lecture 24 - Thermodynamics and chemistry of high temperature gases
- Lecture 25 - Equilibrium chemically reacting gas mixture
- Lecture 26 - Introduction to Statistical Thermodynamics
- Lecture 27 - Macrostates and Microstates and counting of microstates
- Lecture 28 - Most probable macrostate - Boltzmann Distribution
- Lecture 29 - Partition function and its role in finding thermodynamic properties of a single

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- Lecture 30 - Equilibrium composition of high temperature air
- Lecture 31 - Introduction to Hypersonic Non Equilibrium Flows
- Lecture 32 - Basics of Kinetic Theory of Gases
- Lecture 33 - Kinetic Theory of Gases (Continued...)
- Lecture 34 - Vibrational Nonequilibrium
- Lecture 35 - Chemical Nonequilibrium
- Lecture 36 - Inviscid High Temperature Equilibrium Flow
- Lecture 37 - Inviscid High Temperature Equilibrium Flow (Continued...)
- Lecture 38 - Governing equations of Inviscid High Temperature Equilibrium Flow
- Lecture 39 - Inviscid High Temperature Equilibrium Flow-normal and oblique shock
- Lecture 40 - Inviscid High Temperature Equilibrium Flow-flow through CD nozzle
- Lecture 41 - Inviscid High Temperature Non Equilibrium Flow - Introduction
- Lecture 42 - Inviscid High Temperature Non Equilibrium Flow - Introduction (Continued...)
- Lecture 43 - Inviscid High Temperature Non Equilibrium Flow - Governing Equations
- Lecture 44 - Inviscid High Temperature Non Equilibrium Flow - frozen, equilibrium
- Lecture 45 - Inviscid High Temperature Non Equilibrium Flow - shocks, nozzle flow
- Lecture 46 - Viscous High Temperature Flows - Introduction
- Lecture 47 - Viscous High Temperature Flows - Introduction (Continued...)
- Lecture 48 - Transport properties and Governing Equations of Viscous High Temperature Flows
- Lecture 49 - Governing Equations of Viscous High Temperature Flows, Boundary layer Equations
- Lecture 50 - Introduction to radiative heat transfer, computational results on viscous
- Lecture 51 - Recapitulating the basics of high speed aerodynamics from an application perspective
- Lecture 52 - Recapitulating the basics of high speed aerodynamics from an application perspective
- Lecture 53 - Supersonic and Hypersonic Shock Interactions
- Lecture 54 - Supersonic and hypersonic shock interactions (Continued...); Hypersonic Flight
- Lecture 55 - Hypersonic Flight Trajectories (Continued...), Basics of wave rider, Recapitulation
- Lecture 56 - Reference Temperature Method; Brief discussion on boundary layer transition
- Lecture 57 - Recapitulation of the Reference Temperature Method; Governing equations
- Lecture 58 - Some numerical simulations on shock diffraction, shock wave boundary
- Lecture 59 - High speed intakes; scramjet engines; other applications of shock waves
- Lecture 60 - Other applications of shock waves - astrophysical flows, a quick

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

NPTEL Video Course - Aerospace Engineering - NOC:Industrial Aerodynamics

Subject Co-ordinator - Prof. Sunil Manohar Dash

Co-ordinating Institute - IIT Kharagpur

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

- Lecture 1 - Atmosphere and Atmospheric Circulation
- Lecture 2 - Atmospheric Circulation (Continued...)
- Lecture 3 - Atmospheric condition monitoring devices
- Lecture 4 - Equation of the wind motion
- Lecture 5 - Tutorial - 1
- Lecture 6 - Atmospheric wind types
- Lecture 7 - Description of wind
- Lecture 8 - Tutorial - 2
- Lecture 9 - Atmospheric boundary layer
- Lecture 10 - Atmospheric boundary layer structure
- Lecture 11 - Governing equations of atmospheric boundary layer
- Lecture 12 - Atmospheric boundary layer velocity profile
- Lecture 13 - Modification of the atmospheric boundary layer velocity profile
- Lecture 14 - Air pollutations
- Lecture 15 - Air pollutants (Continued...)
- Lecture 16 - Adverse effects of air pollution
- Lecture 17 - Measurement Methods of Air Pollutants
- Lecture 18 - Air Quality Standards
- Lecture 19 - Atmospheric Dispersion and Stability
- Lecture 20 - Exhaust Plume Types
- Lecture 21 - Motion of the Buoyant Plume
- Lecture 22 - Motion of the Buoyant Plume (Continued...)
- Lecture 23 - Gaussian Plume Dispersion Model
- Lecture 24 - Gaussian Plume Dispersion Model (Continued...)
- Lecture 25 - Tutorial - 3
- Lecture 26 - Bluff-Body Aerodynamics Review of Flow Types
- Lecture 27 - Bluff-Body Aerodynamics Review of Aerodynamic Forces
- Lecture 28 - Definition of the Bluff- Bodies
- Lecture 29 - Tutorial - 4

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

- Lecture 30 - Flow Regime around a Single Circular Cylinder
- Lecture 31 - Flow Regime around a Single Square Cylinder
- Lecture 32 - Flow Regime and Aerodynamic Forces of Different Bluff Bodies
- Lecture 33 - Flow Regime around Multiple Cylinders
- Lecture 34 - Flow-Induced Vibration
- Lecture 35 - Passive Flow Separation Control Methods
- Lecture 36 - Active Flow Separation Control Methods
- Lecture 37 - Building Aerodynamics
- Lecture 38 - Wind Flow Regime around a Tall Building
- Lecture 39 - Wind Flow Regime around a Tall Building (Continued...)
- Lecture 40 - Wind Flow Regime in a Building Complex
- Lecture 41 - Tutorial - 5
- Lecture 42 - Building Design Modifications
- Lecture 43 - Renewable Wind Energy Harvesting
- Lecture 44 - Historical Background of Wind Energy Harvesting
- Lecture 45 - Energy Contained in the Wind
- Lecture 46 - Betz Limit of Wind Energy Harvesting
- Lecture 47 - Betz Limit of Wind Energy Harvesting (Continued...)
- Lecture 48 - Actuator Disc Theory with Wake Rotation
- Lecture 49 - Actuator Disc Theory with Wake Rotation (Continued...)
- Lecture 50 - Airfoil Aerodynamics of the Wind Turbine Blade
- Lecture 51 - Wind Turbine Blade Element Theory
- Lecture 52 - Horizontal Axis Wind Turbine
- Lecture 53 - Vertical Axis Wind Turbine
- Lecture 54 - Tutorial - 6
- Lecture 55 - Industrial Aerodynamic Testing Facilities
- Lecture 56 - Wind Tunnel Instrumentations - I
- Lecture 57 - Wind Tunnel Instrumentations - II
- Lecture 58 - Wind Tunnel Instrumentations - III
- Lecture 59 - Wind Tunnel Instrumentations - IV
- Lecture 60 - Concluding Remarks

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

NPTEL Video Course - Aerospace Engineering - NOC:Mechanics of Composite Materials and Structures

Subject Co-ordinator - Prof. Mohammed Rabiuss Sunny

Co-ordinating Institute - IIT Kharagpur

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

- Lecture 1 - Introduction to Composite Materials
- Lecture 2 - Fabrication of FRP Composites
- Lecture 3 - Applications of FRP Composites
- Lecture 4 - Introduction to Energy/Virtual Work Method
- Lecture 5 - Introduction to Energy/Virtual Work Method (Continued...)
- Lecture 6 - Micromechanics of Composite Plies - 1
- Lecture 7 - Micromechanics of Composite Plies - 2
- Lecture 8 - Micromechanics of Composite Plies - 3
- Lecture 9 - Micromechanics of Composite Plies - 4
- Lecture 10 - Micromechanics of Composite Plies - 5
- Lecture 11 - Micromechanics of Composite Plies - 6
- Lecture 12 - Macromechanics - Anisotropic Elastic Materials (3D)
- Lecture 13 - Macromechanics - Anisotropic Elastic Materials (3D) (Continued...)
- Lecture 14 - Macromechanics - Anisotropic Elastic Materials (3D) (Continued...)
- Lecture 15 - Macromechanics - Anisotropic Elastic Materials (3D) (Continued...)
- Lecture 16 - Macromechanics - Anisotropic Elastic Materials (3D) (Continued...)
- Lecture 17 - Macromechanics - Orthotropic Plies (2D)
- Lecture 18 - Macromechanics - Orthotropic Plies (2D) (Continued...)
- Lecture 19 - Macromechanics - Orthotropic Plies (2D) (Continued...)
- Lecture 20 - Macromechanics - Orthotropic Plies (2D) (Continued...)
- Lecture 21 - Macromechanics - Orthotropic Plies (2D) (Continued...)
- Lecture 22 - Macromechanics of Composite Laminates Laminates of Various Types
- Lecture 23 - Macromechanics of Composite Laminates Laminates of Various Types (Continued...)
- Lecture 24 - Macromechanics of Composite Laminates Laminates of Various Types (Continued...)
- Lecture 25 - Macromechanics of Composite Laminates Laminates of Various Types (Continued...)
- Lecture 26 - Macromechanics of Composite Laminates Laminates of Various Types (Continued...)
- Lecture 27 - Macromechanics of Composite Laminates Laminates of Various Types (Continued...)
- Lecture 28 - Macromechanics of Composite Laminates Laminates of Various Types (Continued...)
- Lecture 29 - Static Analysis of Composite Laminates

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- Lecture 30 - Static Analysis of Composite Laminates (Continued...)
- Lecture 31 - Static Analysis of Composite Laminates (Continued...)
- Lecture 32 - Static Analysis of Composite Laminates (Continued...)
- Lecture 33 - Static Analysis of Composite Laminates (Continued...)
- Lecture 34 - Static Analysis of Composite Laminates (Continued...)
- Lecture 35 - Buckling Analysis of Composite Laminates
- Lecture 36 - Buckling Analysis of Composite Laminates (Continued...)
- Lecture 37 - Buckling Analysis of Composite Laminates (Continued...)
- Lecture 38 - Buckling Analysis of Composite Laminates (Continued...)
- Lecture 39 - Buckling Analysis of Composite Laminates (Continued...)
- Lecture 40 - Vibration of Composite Laminates
- Lecture 41 - Vibration of Composite Laminates (Continued...)
- Lecture 42 - Vibration of Composite Laminates (Continued...)
- Lecture 43 - Vibration of Composite Laminates (Continued...)
- Lecture 44 - Vibration of Composite Laminates (Continued...)
- Lecture 45 - Shear Deformation Theories
- Lecture 46 - Shear Deformation Theories (Continued...)
- Lecture 47 - Shear Deformation Theories (Continued...)
- Lecture 48 - Shear Deformation Theories (Continued...)
- Lecture 49 - Shear Deformation Theories (Continued...)
- Lecture 50 - Hydro-thermal Analysis of Composites
- Lecture 51 - Hydro-thermal Analysis of Composites (Continued...)
- Lecture 52 - Hydro-thermal Analysis of Composites (Continued...)
- Lecture 53 - Hydro-thermal Analysis of Composites (Continued...)
- Lecture 54 - Hydro-thermal Analysis of Composites (Continued...)
- Lecture 55 - Failure Analysis of Composite Plies and Laminates
- Lecture 56 - Failure Analysis of Composite Plies and Laminates (Continued...)
- Lecture 57 - Failure Analysis of Composite Plies and Laminates (Continued...)
- Lecture 58 - Failure Analysis of Composite Plies and Laminates (Continued...)
- Lecture 59 - Failure Analysis of Composite Plies and Laminates (Continued...)
- Lecture 60 - Failure Analysis of Composite Plies and Laminates (Continued...)
- Lecture 61 - Analysis of Composite Beams
- Lecture 62 - Analysis of Composite Beams
- Lecture 63 - Testing of Composite Materials
- Lecture 64 - Composite Joints, Sandwich Composites

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

NPTEL Video Course - Aerospace Engineering - Acoustic Instabilities in Aerospace Propulsion

Subject Co-ordinator - Prof. R.I. Sujith

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to Thermoacoustic Instabilities
Lecture 2 - Part I
Lecture 3 - Wave Equation and its Solution in Time Domain
Lecture 4 - Part I
Lecture 5 - Standing Waves - 1
Lecture 6 - Standing Waves - 2
Lecture 7 - Power Flow and Acoustic Admittance
Lecture 8 - Impedance Tube Technique
Lecture 9 - Admittance and Standing Waves
Lecture 10 - Admittance, Stability and Attenuation
Lecture 11 - Attenuation
Lecture 12 - Sound Propagation Through Inhomogeneous Media - 2
Lecture 13 - Sound Propagation Through Inhomogeneous Media - 3
Lecture 14 - Multidimensional Acoustic Fields - 1
Lecture 15 - Multidimensional Acoustic Fields - 2
Lecture 16 - Interaction between Sound and Combustion
Lecture 17 - Reference Books Derivation of Rayleigh Criteria
Lecture 18 - Effect of Heat release on the Acoustic Field
Lecture 19 - Modal Analysis of Thermoacoustic Instability - 1
Lecture 20 - Modal Analysis of Thermoacoustic Instability - 2
Lecture 21 - Active Control of Thermoacoustic Instability
Lecture 22 - Toy model for a Rijke tube in Time Domain
Lecture 23 - Galerkin Technique for Thermoacoustics
Lecture 24 - Evolution Equation for Thermoacoustics
Lecture 25 - Non linear analysis of Thermoacoustic Instability
Lecture 26 - Non-normality, Transient Growth and Triggering Instability - 1
Lecture 27 - Non-normality, Transient Growth and Triggering Instability - 2
Lecture 28 - Non-normality, Transient Growth and Triggering Instability - 3
Lecture 29 - Bifurcations

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

- Lecture 30 - Premixed Flame Acoustic Interaction - 1
- Lecture 31 - Premixed Flame Acoustic Interaction - 2
- Lecture 32 - Combustion instability due to Equivalence Ratio Fluctuation
- Lecture 33 - Role of Hydrodynamic Instabilities - 1
- Lecture 34 - Role of Hydrodynamic Instabilities - 2
- Lecture 35 - Role of Hydrodynamic Instabilities - 3
- Lecture 36 - Active Control of Thermoacoustic Instability Revisited
- Lecture 37 - Solid Propellant Combustion Instability - 1
- Lecture 38 - Solid Propellant Combustion Instability - 2
- Lecture 39 - Response of a Diffusion Flame to Acoustic Oscillations - 1
- Lecture 40 - Response of a Diffusion Flame to Acoustic Oscillations - 2
- Lecture 41 - Response of a Diffusion Flame to Acoustic Oscillations - 3

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

NPTEL Video Course - Aerospace Engineering - Aerospace Propulsion

Subject Co-ordinator - Dr. P.A. Ramakrishna

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction
- Lecture 2 - Air breathing Engines - Turbojet I
- Lecture 3 - Air breathing Engines - Turbojet II
- Lecture 4 - Air breathing Engines - Turboprop & Turbofan
- Lecture 5 - Air breathing Engines - Ramjet & Scramjet
- Lecture 6 - Non-air breathing Engines I
- Lecture 7 - Non-air breathing Engines II
- Lecture 8 - General Performance Parameters I
- Lecture 9 - General Performance Parameters II
- Lecture 10 - Cycle Analysis - Ramjet
- Lecture 11 - Cycle Analysis - Turbojet I
- Lecture 12 - Cycle Analysis - Turbojet II
- Lecture 13 - Cycle Analysis - Turbojet III
- Lecture 14 - Cycle Analysis - Turbojet IV
- Lecture 15 - Cycle Analysis - Turbojet V
- Lecture 16 - Cycle Analysis - Turbojet VI
- Lecture 17 - Cycle Analysis - Turbofan
- Lecture 18 - Rocket Nozzles - 1D Analysis I
- Lecture 19 - Rocket Nozzles - 1D Analysis II
- Lecture 20 - Rocket Nozzles - 1D Analysis III
- Lecture 21 - Rocket Nozzles - Real Effects I
- Lecture 22 - Rocket Nozzles - Real Effects II
- Lecture 23 - Rocket Nozzles - Thrust Vectoring
- Lecture 24 - Solid Rockets - Propellants
- Lecture 25 - Solid Rockets - Burn rate
- Lecture 26 - Solid Rockets - Performance
- Lecture 27 - Solid Rockets - Grain
- Lecture 28 - Solid Rockets - Ignition, Quenching
- Lecture 29 - Solid Rockets - Igniter, Depressurization

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

- Lecture 30 - Propellant Combustion - Combustion Modelling
- Lecture 31 - Liquid Rocket - Propellants
- Lecture 32 - Liquid Rocket - Nozzle Cooling I
- Lecture 33 - Liquid Rocket - Nozzle Cooling II
- Lecture 34 - Liquid Rocket - Nozzle Cooling III
- Lecture 35 - Liquid Rocket - Pressure fed system
- Lecture 36 - Liquid Rocket - Pump fed system
- Lecture 37 - Liquid Rocket - Pumps
- Lecture 38 - Liquid Rocket - Fuel Injection
- Lecture 39 - Hybrid Rocket - Basics
- Lecture 40 - Hybrid Rocket Performance
- Lecture 41 - Hybrid Rocket Combustion
- Lecture 42 - Chemical Equilibrium Analyser - SP 273

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

NPTEL Video Course - Aerospace Engineering - Combustion

Subject Co-ordinator - Prof. S.R. Chakravarthy

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction

Lecture 2 - Chemical Reactions, Heats of Reaction and Formation

Lecture 3 - Sensible Enthalpy and Adiabatic Flame Temperature

Lecture 4 - Dissociation of Products, Role of Pressure

Lecture 5 - Numerical Calculation of Adiabatic Flame Temperature, Chemical Kinetics 1

Lecture 6 - Chemical Kinetics 2

Lecture 7 - Equilibrium Reactions, Global Kinetics, Order of Reaction

Lecture 8 - Reduced Chemistry, Steady State Approximation

Lecture 9 - Steady State Approximation, Partial Equilibrium Approximation

Lecture 10 - Partial Equilibrium Approximation, Chemical Explosions

Lecture 11 - Combining Chemical and Thermal Processes 1

Lecture 12 - Combining Chemical and Thermal Processes 2

Lecture 13 - Combining Chemical and Thermal Processes 3

Lecture 14 - Combining Chemical and Thermal Processes 4

Lecture 15 - Mass and Molar Diffusion, Fick's Law

Lecture 16 - Conservation Equations for Multi-Component Mixtures

Lecture 17 - Multi-Component Diffusion Equation

Lecture 18 - Multi-Component Momentum Equation

Lecture 19 - Energy Equation

Lecture 20 - One Dimensional Steady Flow

Lecture 21 - Schvab-Zeldovich Formulation 1

Lecture 22 - Schvab-Zeldovich Formulation 2

Lecture 23 - Rankine-Hugoniot Relations 1

Lecture 24 - Rankine-Hugoniot Relations 2

Lecture 25 - Rankine-Hugoniot Relations 3

Lecture 26 - Velocity, Temperature and Entropy Variation along Hugoniot Curve

Lecture 27 - Laminar Premixed Flames

Lecture 28 - Laminar Premixed Flames - Corrections

Lecture 29 - Laminar Premixed Flames - Rigorous Analysis 1

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

- Lecture 30 - Laminar Premixed Flames - Rigorous Analysis 2
- Lecture 31 - Flame Speed Dependencies, G-Equation
- Lecture 32 - Bunsen Burner 1
- Lecture 33 - Bunsen Burner 2
- Lecture 34 - Flame Stabilisation 1
- Lecture 35 - Flame Stabilisation 2
- Lecture 36 - Ignition
- Lecture 37 - Burke-Schumann Problem 1
- Lecture 38 - Burke-Schumann Problem 2
- Lecture 39 - Burke-Schumann Problem 3
- Lecture 40 - Flame Structure
- Lecture 41 - Mixture Fraction Formulation 1
- Lecture 42 - Mixture Fraction Formulation 2
- Lecture 43 - Droplet Burning 1
- Lecture 44 - Droplet Burning 2
- Lecture 45 - Spray Combustion 1
- Lecture 46 - Spray Combustion 2
- Lecture 47 - Turbulent Combustion 1
- Lecture 48 - Turbulent Combustion 2
- Lecture 49 - Combustion Instabilities
- Lecture 50 - Detonations
- Lecture 51 - Detonation Wave - ZND Structure

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

NPTEL Video Course - Aerospace Engineering - Flight Dynamics II (Stability)

Subject Co-ordinator - Dr. Nandan Kumar Sinha

Co-ordinating Institute - IIT - Madras

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

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

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

- Lecture 30 - Linear Model and Aircraft Dynamics Modes
- Lecture 31 - Short Period, Phugoid (Lanchester's formulation)
- Lecture 32 - Short period mode approximation
- Lecture 33 - Flying and Handling Qualities, Cooper Harper Scale
- Lecture 34 - Pure rolling motion, Pure yawing motion, Spiral approximation
- Lecture 35 - Spiral, Roll, Dutch roll Mode approximations
- Lecture 36 - Lateral directional Flying Qualities, Routh's Stability criterion
- Lecture 37 - Stability in Steady Roll Maneuver
- Lecture 38 - Wind Effect on Aircraft Pure Plunging Motion
- Lecture 39 - Wind Profiles, Longitudinal Mode Response to Wind Shear
- Lecture 40 - Stability control/Augmentation
- Lecture 41 - Autopilots, Automatic Landing System

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

NPTEL Video Course - Aerospace Engineering - Gas Dynamics

Subject Co-ordinator - Dr. T.M. Muruganandam

Co-ordinating Institute - IIT - Madras

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

Lecture 1
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Lecture 29

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Lecture 54

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

NPTEL Video Course - Aerospace Engineering - Introduction to CFD

Subject Co-ordinator - Prof. M. Ramakrishna

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction, Why and how we need computers
- Lecture 2 - Representing Arrays and functions on computers
- Lecture 3 - Representing functions - Box functions
- Lecture 4 - Representing functions - Polynomials and Hat functions
- Lecture 5 - Hat functions, Quadratic and Cubic representations
- Lecture 6 - Demo - Hat functions, Aliasing
- Lecture 7 - Representing Derivatives - finite differences
- Lecture 8 - Finite differences, Laplace equation
- Lecture 9 - Laplace equation - Jacobi iterations
- Lecture 10 - Laplace equation - Iteration matrices
- Lecture 11 - Laplace equation - convergence rate
- Lecture 12 - Laplace equation - convergence rate Continued
- Lecture 13 - Demo - representation error, Laplace equation
- Lecture 14 - Demo - Laplace equation, SOR
- Lecture 15 - Laplace equation - final, Linear Wave equation
- Lecture 16 - Linear wave equation - Closed form and numerical solution, stability analysis
- Lecture 17 - Generating a stable scheme and Boundary conditions
- Lecture 18 - Modified equation
- Lecture 19 - Effect of higher derivative terms on Wave equation
- Lecture 20 - Artificial dissipation, upwinding, generating schemes
- Lecture 21 - Demo - Modified equation, Wave equation
- Lecture 22 - Demo - Wave equation / Heat Equation
- Lecture 23 - Quasi-linear One-Dimensional. wave equation
- Lecture 24 - Shock speed, stability analysis, Derive Governing equations
- Lecture 25 - One-Dimensional Euler equations - Attempts to decouple
- Lecture 26 - Derive Eigenvectors, Writing Programs
- Lecture 27 - Applying Boundary conditions
- Lecture 28 - Implicit Boundary conditions
- Lecture 29 - Flux Vector Splitting, setup froms averaging

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- Lecture 30 - Roes averaging
- Lecture 31 - Demo - One Dimensional flow
- Lecture 32 - Accelerating convergence - Preconditioning, dual time stepping
- Lecture 33 - Accelerating convergence - Intro to Multigrid method
- Lecture 34 - Multigrid method
- Lecture 35 - Multigrid method - final, Parallel Computing
- Lecture 36 - Calculus of Variations - Three Lemmas and a Theorem
- Lecture 37 - Calculus of Variations - Application to Laplace Equation
- Lecture 38 - Calculus of Variations - Final and Random Walk
- Lecture 39 - Overview and Recap of the course

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

NPTEL Video Course - Aerospace Engineering - NOC:Rocket Propulsion

Subject Co-ordinator - Prof. K. Ramamurthi, Prof. S. Varunkumar

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

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

Lecture 12 - Characteristic Velocity and Thrust Coefficient

Lecture 13 - Divergence Loss in Conical Nozzles and the Bell Nozzles

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 - Factors Influencing Choice of Chemical Propellants

Lecture 19 - Low energy liquid propellants and Hybrid propellants Chapter 5

Lecture 20 - Introduction to Solid Propellant Rockets

Lecture 21 - Burn Rate of Solid Propellants and Equilibrium Pressure in Solid Propellant Rockets

Lecture 22 - Design Aspects of Solid Propellant Rockets

Lecture 23 - Burning Surface Area of Solid Propellant Grains

Lecture 24 - Ignition of Solid Propellant Rockets

Lecture 25 - Review of Solid Propellant Rockets

Lecture 26 - Feed Systems for Liquid Propellant Rockets

Lecture 27 - Feed System Cycles for Pump Fed Liquid Propellant Rockets

Lecture 28 - Analysis of Gas Generator and Staged combustion cycles and introduction to injectors

Lecture 29 - Injectors, Cooling of Chambers and Mixture Ratio Distribution

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

- Lecture 30 - Efficiencies due to mixture ratio distribution and incomplete vaporization
- Lecture 31 - Pumps and Turbines
- Lecture 32 - Review of Liquid Bi-propellant Rockets and Introduction to Mono-propellant Rockets
- Lecture 33 - Introduction to Hybrid Rockets and a Simple Illustration of Combustion instability in Liquid Prop
- Lecture 34 - Principles of Electrostatic and Electromagnetic Rockets
- Lecture 35 - Electrical Thrusters
- Lecture 36 - Electrical and Nuclear Rockets; Advanced Propulsion

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

NPTEL Video Course - Aerospace Engineering - Advanced Control System Design for Aerospace Vehicles

Subject Co-ordinator - Dr. Radhakant Padhi

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction and Motivation for Advanced Control Design
- Lecture 2 - Classical Control Overview - I
- Lecture 3 - Classical Control Overview - II
- Lecture 4 - Classical Control Overview - III
- Lecture 5 - Classical Control Overview - IV
- Lecture 6 - Basic Principles of Atmospheric Flight Mechanics
- Lecture 7 - Overview of Flight Dynamics - I
- Lecture 8 - Overview of Flight Dynamics - II
- Lecture 9 - Representation of Dynamical Systems - I
- Lecture 10 - Representation of Dynamical Systems - II
- Lecture 11 - Representation of Dynamical Systems - III
- Lecture 12 - Review of Matrix Theory - I
- Lecture 13 - Review of Matrix Theory - II
- Lecture 14 - Review of Matrix Theory - III
- Lecture 15 - Review of Numerical Methods
- Lecture 16 - Linearization of Nonlinear Systems
- Lecture 17 - First and Second Order Linear Differential Equations
- Lecture 18 - Time Response of Linear Dynamical Systems
- Lecture 19 - Stability of Linear Time Invariant Systems
- Lecture 20 - Controllability and Observability of linear Time Invariant Systems
- Lecture 21 - Pole Placement Control Design
- Lecture 22 - Pole Placement Observer Design
- Lecture 23 - Static Optimization
- Lecture 24 - Calculus of Variations
- Lecture 25 - Optimal Control Formulation using Calculus of Variations
- Lecture 26 - Classical Numerical Methods for Optimal Control
- Lecture 27 - Linear Quadratic Regulator (LQR) Design - 1
- Lecture 28 - Linear Quadratic Regulator (LQR) Design - 2
- Lecture 29 - Linear Control Design Techniques in Aircraft Control - I

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

- Lecture 30 - Linear Control Design Techniques in Aircraft Control - II
- Lecture 31 - Lyapunov Theory - I
- Lecture 32 - Lyapunov Theory - II
- Lecture 33 - Constructions of Lyapunov Functions
- Lecture 34 - Dynamic Inversion - I
- Lecture 35 - Dynamic Inversion - II
- Lecture 36 - Neuro-Adaptive Design - I
- Lecture 37 - Neuro-Adaptive Design - II
- Lecture 38 - Neuro-Adaptive Design for Flight Control
- Lecture 39 - Integrator Back-Stepping; Linear Quadratic (lQ) Observer
- Lecture 40 - An Overview of Kalman Filter Theory

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

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

Subject Co-ordinator - Dr. Radhakant Padhi

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Introduction, Motivation and Overview

Lecture 2 - Overview of SS Approach and Matrix Theory

Lecture 3 - Review of Numerical Methods

Lecture 4 - An Overview of Static Optimization - I

Lecture 5 - An Overview of Static Optimization - II

Lecture 6 - Review of Calculus of Variations - I

Lecture 7 - Review of Calculus of Variations - II

Lecture 8 - Optimal Control Formulation Using Calculus of Variations

Lecture 9 - Classical Numerical Methods to Solve Optimal Control Problems

Lecture 10 - Linear Quadratic Regulator (LQR) - I

Lecture 11 - Linear Quadratic Regulator (LQR) - II

Lecture 12 - Linear Quadratic Regulator (LQR) - III

Lecture 13 - Linear Quadratic Regulator (LQR) - III

Lecture 14 - Discrete-time Optimal Control

Lecture 15 - Overview of Flight Dynamics - I

Lecture 16 - Overview of Flight Dynamics - II

Lecture 17 - Overview of Flight Dynamics - III

Lecture 18 - Linear Optimal Missile Guidance using LQR

Lecture 19 - SDRE and \hat{I} , - D Designs

Lecture 20 - Dynamic Programming

Lecture 21 - Approximate Dynamic Programming (ADP), Adaptive Critic (AC) and Single Network Adaptive Critic (SNA-C)

Lecture 22 - Transcription Method to Solve Optimal Control Problems

Lecture 23 - Model Predictive Static Programming (MPSP) and Optimal Guidance of Aerospace Vehicles

Lecture 24 - MPSP for Optimal Missile Guidance

Lecture 25 - Model Predictive Spread Control (MPSC) and Generalized MPSP (G-MPSP) Designs

Lecture 26 - Linear Quadratic Observer & An Overview of State Estimation

Lecture 27 - Review of Probability Theory and Random Variables

Lecture 28 - Kalman Filter Design - I

Lecture 29 - Kalman Filter Design - II

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

- Lecture 30 - Kalman Filter Design - III
- Lecture 31 - Integrated Estimation, Guidance & Control - I
- Lecture 32 - Integrated Estimation, Guidance & Control - II
- Lecture 33 - LQG Design; Neighboring Optimal Control & Sufficiency Condition
- Lecture 34 - Constrained Optimal Control - I
- Lecture 35 - Constrained Optimal Control - II
- Lecture 36 - Constrained Optimal Control - III
- Lecture 37 - Optimal Control of Distributed Parameter Systems - I
- Lecture 38 - Optimal Control of Distributed Parameter Systems - II
- Lecture 39 - Take Home Material
- Lecture 40 - Take Home Material

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

NPTEL Video Course - Aerospace Engineering - NOC:Combustion in Air Breathing Aero Engines

Subject Co-ordinator - Prof. Swetaprovo Chaudhuri

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction
- Lecture 2 - Chemical Equilibrium - I
- Lecture 3 - Chemical Equilibrium - II
- Lecture 4 - Chemical Kinetics - I
- Lecture 5 - Chemical Kinetics - II
- Lecture 6 - Chemical Kinetics - III
- Lecture 7 - Chemical Kinetics - IV
- Lecture 8 - Oxidation Mechanism of Fuels - I
- Lecture 9 - Oxidation Mechanism of Fuels - II
- Lecture 10 - Oxidation Mechanism of Fuels - III
- Lecture 11 - Oxidation Mechanism of Fuels - IV
- Lecture 12 - Transport Phenomena
- Lecture 13 - Governing Equations - I
- Lecture 14 - Governing Equations - II
- Lecture 15 - Governing Equations - III
- Lecture 16 - Governing Equations - IV
- Lecture 17 - Governing Equations - V
- Lecture 18 - Laminar Non-Premixed Flames - I
- Lecture 19 - Laminar Non-Premixed Flames - II
- Lecture 20 - Laminar Non-Premixed Flames - III
- Lecture 21 - Laminar Non-Premixed Flames - IV
- Lecture 22 - Laminar Premixed Flames - I
- Lecture 23 - Laminar Premixed Flames - II
- Lecture 24 - Laminar Premixed Flames - III
- Lecture 25 - Laminar Premixed Flames - IV
- Lecture 26 - Laminar Premixed Flames - V
- Lecture 27 - Laminar Premixed Flames - VI
- Lecture 28 - Laminar Premixed Flames - VII
- Lecture 29 - Limit Phenomena - I

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

- Lecture 30 - Limit Phenomena - II
- Lecture 31 - Introduction to turbulent flows
- Lecture 32 - Non-reacting turbulent flows - I
- Lecture 33 - Non-reacting turbulent flows - II
- Lecture 34 - Reacting turbulent flows - III
- Lecture 35 - Reacting turbulent flows - IV
- Lecture 36 - Reacting turbulent flows - V
- Lecture 37 - Reacting turbulent flows - VI
- Lecture 38 - Reacting turbulent flows - VII
- Lecture 39 - Turbulent Non-Premixed Flames - I
- Lecture 40 - Turbulent Non-Premixed Flames - II
- Lecture 41 - Turbulent Non-Premixed Flames - III
- Lecture 42 - Turbulent Premixed Flames - I
- Lecture 43 - Turbulent Premixed Flames - II
- Lecture 44 - Turbulent Premixed Flames - III
- Lecture 45 - Turbulent Premixed Flames - IV
- Lecture 46 - Turbulent Premixed Flames - V
- Lecture 47 - Turbulent Premixed Flames - VI
- Lecture 48 - Aero Gas Turbine Combustors - I
- Lecture 49 - Aero Gas Turbine Combustors - II
- Lecture 50 - Aero Gas Turbine Combustors - III
- Lecture 51 - Aero Gas Turbine Combustors - IV
- Lecture 52 - Aero Gas Turbine Combustors - V
- Lecture 53 - Flame Stabilization and Blow off - I
- Lecture 54 - Flame Stabilization and Blow off - II
- Lecture 55 - Flame Stabilization and Blow off - III
- Lecture 56 - Flame Stabilization and Blow off - IV
- Lecture 57 - Flame Stabilization and Blow off - V
- Lecture 58 - Combustion in Scramjets - I
- Lecture 59 - Combustion in Scramjets - II
- Lecture 60 - Combustion in Scramjets - III
- Lecture 61 - Combustion in Scramjets - IV
- Lecture 62 - Review

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

NPTEL Video Course - Aerospace Engineering - NOC:Gasdynamics: Fundamentals and Applications

Subject Co-ordinator - Prof. Srisha Rao M V

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Introduction
Lecture 2 - Flow Regimes
Lecture 3 - Thermodynamics - 1
Lecture 4 - Thermodynamics - 2
Lecture 5 - Thermodynamics - Numerical
Lecture 6 - Flow equations - Integral Form
Lecture 7 - Flow equations - Differential Form
Lecture 8 - Quasi-1D Assumption
Lecture 9 - Speed of Sound
Lecture 10 - Speed of Sound - Numerical
Lecture 11 - Stagnation properties
Lecture 12 - Pitot tube
Lecture 13 - Sonic/Star properties
Lecture 14 - Numerical
Lecture 15 - Normal Shock - I
Lecture 16 - Normal Shock - II-a
Lecture 17 - Normal Shock - II-b
Lecture 18 - Normal Shock - III
Lecture 19 - Normal Shock - IV
Lecture 20 - Normal Shock - Numerical
Lecture 21 - The Shock Tube
Lecture 22 - Waves of infinitesimal Amplitude
Lecture 23 - Waves of finite amplitude
Lecture 24 - Shock Tube Relations
Lecture 25 - Unsteady Flows - Numerical
Lecture 26 - Oblique Shock Waves
Lecture 27 - Expansion waves
Lecture 28 - Shock Expansion Method
Lecture 29 - Shock Reflection

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- Lecture 30 - Oblique Shock and Expansion waves - Numerical
- Lecture 31 - Varying Area Duct Flows - I
- Lecture 32 - Varying Area Duct Flows - II
- Lecture 33 - Converging Nozzle and Chocking
- Lecture 34 - Converging and Diverging Nozzle Operation
- Lecture 35 - Varying area flow- Numericals - I
- Lecture 36 - Diffusers Intakes/Inlets
- Lecture 37 - Experimental facilities
- Lecture 38 - Varying area flow - Numericals - II
- Lecture 39 - Varying area flow - Numericals - III
- Lecture 40 - Varying area flow - Numericals - IV
- Lecture 41 - 1D flow with friction - Fanno flow - I
- Lecture 42 - 1D flow with friction - Fanno flow - II
- Lecture 43 - 1D flow with friction - Fanno flow - III
- Lecture 44 - 1D flow with friction - Fanno flow - Numericals
- Lecture 45 - 1D Flows with Heat Addition: Rayleigh Flows - I
- Lecture 46 - 1D Flows with Heat Addition: Rayleigh Flows - II
- Lecture 47 - 1D Flows with Heat Addition: Rayleigh Flows - Numericals
- Lecture 48 - Generalized 1D Flows
- Lecture 49 - Small perturbation theory - I
- Lecture 50 - Small perturbation theory - II
- Lecture 51 - Small perturbation theory - III
- Lecture 52 - Method of Characteristics: 2D Supersonic Flow - I
- Lecture 53 - Method of Characteristics: 2D Supersonic Flow - II
- Lecture 54 - Method of Characteristics: Applications
- Lecture 55 - Hypersonic Flows - I
- Lecture 56 - Hypersonic Flows - II
- Lecture 57 - Edney Shock Interaction
- Lecture 58 - Shock Boundary Layer Interaction - I
- Lecture 59 - Shock Boundary Layer Interaction - II
- Lecture 60 - Concluding Remarks

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

NPTEL Video Course - Aerospace Engineering - NOC:Drone Systems and Control

Subject Co-ordinator - Prof. Suresh Sundaram

Co-ordinating Institute - IISc Bangalore

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

Lecture 1 - Introduction to the course
Lecture 2 - Basics of drone operations
Lecture 3 - Tutorial 1: Vectors and coordinates
Lecture 4 - Tutorial 2: Vectors and coordinate transformations
Lecture 5 - Coordinate frames and transformations
Lecture 6 - Rigid body transformations
Lecture 7 - Dynamic model of multirotors
Lecture 8 - Drone sensors
Lecture 9 - Drone sensors - Context
Lecture 10 - MATLAB demonstration - drone sensors
Lecture 11 - Basics of Estimation
Lecture 12 - Kalman filtering Technique
Lecture 13 - Extended Kalman Filters (EKF)
Lecture 14 - Matlab Demonstration of Kalman Filtering
Lecture 15 - Matlab Demonstration of EKF
Lecture 16 - Introduction to Control Systems
Lecture 17 - Laplace Transforms
Lecture 18 - Matlab Demonstration of Laplace Transforms
Lecture 19 - Transfer Function Representation
Lecture 20 - Matlab Demonstration of Transfer Functions
Lecture 21 - Transient Response
Lecture 22 - Matlab Demonstration of Transient Response
Lecture 23 - Eigenvalues and Eigenvectors
Lecture 24 - State Space Representations
Lecture 25 - Matlab Demonstration of State Space Representations
Lecture 26 - Canonical Forms, State Transition Matrix (STM), Controllability, Observability
Lecture 27 - Examples on STM, Controllability and Observability
Lecture 28 - Pole Placement Methods
Lecture 29 - PID Controller

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- Lecture 30 - Drone Autopilot Design
- Lecture 31 - Drone Autopilot Design
- Lecture 32 - Drone Autopilot Design
- Lecture 33 - MATLAB Demonstration of Autopilot Design
- Lecture 34 - Global Path Planning
- Lecture 35 - A* Algorithm for Global Path Planning
- Lecture 36 - RRT & RRT* Algorithms Global Path Planning
- Lecture 37 - Introduction to Sense-and-Avoidance (SaA)
- Lecture 38 - Sensor for SAA, Trajectory Prediction, Decision making
- Lecture 39 - Artificial Potential Field (APF)
- Lecture 40 - Control Barrier Function (CBF)
- Lecture 41 - Trajectory tracking with PID Control
- Lecture 42 - Scenario Generation for UAV Operations
- Lecture 43 - Scenario Generation with MATLAB Demonstrations
- Lecture 44 - Autonomous Drone
- Lecture 45 - Essential of Neural Network for Aerial Perception
- Lecture 46 - Recurrent Neural Network (RNN) for Trajectory Prediction
- Lecture 47 - Memory Neural Network (MNN) for Trajectory Prediction
- Lecture 48 - Emerging Technology in UAV Swarm
- Lecture 49 - Cooperative Multi-swarm UAV Operation for Forest Fire Fighting
- Lecture 50 - Advanced Drones - Variable Pitch propeler Quadcopter