

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