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
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