

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

NPTEL Video Course - Mechanical Engineering - NOC:Dynamics and Control of Mechanical Systems

Subject Co-ordinator - Prof. Ashitava Ghosal

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction to Course
- Lecture 2 - Position and Orientation of a Rigid Body
- Lecture 3 - Homogenous Transformation
- Lecture 4 - Linear and angular velocity of rigid body
- Lecture 5 - Motion of Rigid Body and Particles
- Lecture 6 - Introduction to multi-body systems
- Lecture 7 - Joints, Degrees of Freedom and Constraints
- Lecture 8 - Position, Velocity and Acceleration in Multi-body Systems
- Lecture 9 - Mass and Inertia of a Rigid Body
- Lecture 10 - External forces and moments
- Lecture 11 - Angular momentum, Spinning tops and Gyroscopes
- Lecture 12 - Free-body diagram and Equations of motion
- Lecture 13 - Newton-Euler Formulation for Serial Chains
- Lecture 14 - Lagrangian Formulation
- Lecture 15 - Examples of Equations of Motion
- Lecture 16 - Equations of Motion Using Computer Tools
- Lecture 17 - Introduction and Examples of equations of motion
- Lecture 18 - Inverse dynamics and Simulations of equations Of motion
- Lecture 19 - Simulation using Computer Tools
- Lecture 20 - Introduction and Goal of control
- Lecture 21 - State Space Formulation
- Lecture 22 - Solution of State Equations
- Lecture 23 - Stability of Dynamical Systems
- Lecture 24 - Controllability and Observability of Linear Systems
- Lecture 25 - Examples of Controllability and Observability
- Lecture 26 - Introduction to Classical Control
- Lecture 27 - Root Locus
- Lecture 28 - Frequency Domain Approach
- Lecture 29 - PID Control

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- Lecture 30 - Root Locus based Controller Design
- Lecture 31 - State Space Design
- Lecture 32 - 3 Case Studies