

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

NPTEL Video Course - Electrical Engineering - NOC:Linear System Theory

Subject Co-ordinator - Prof. Ramakrishna Pasumarthi

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to Linear Systems
Lecture 2 - System Models
Lecture 3 - System Models - Part 1
Lecture 4 - System Models - Part 2
Lecture 5 - General Representation
Lecture 6 - Sets, Functions and Fields
Lecture 7 - Linear Algebra - Vector Spaces and Metric Spaces
Lecture 8 - Linear Algebra - Span, Basis and Subspaces
Lecture 9 - Linear Algebra - Linear Maps and Matrices
Lecture 10 - Linear Algebra - Fundamental Subspaces and Rank-Nullity
Lecture 11 - Tutorial 1 on Linear Algebra
Lecture 12 - Linear Algebra - Change of Basis and Similarity Transformation
Lecture 13 - Linear Algebra - Invariant Subspaces, Eigen Values and Eigen Vectors
Lecture 14 - Linear Algebra - Diagonalization and Jordan Forms
Lecture 15 - Linear Algebra - Eigen Decomposition and Singular Value Decomposition
Lecture 16 - Tutorial 2 on Linear Algebra
Lecture 17 - Solutions to LTI Systems
Lecture 18 - State Transition Matrix for LTI systems
Lecture 19 - Forced Reponse of Continuous and Discrete LTI system
Lecture 20 - State Transition Matrix and Solutions to LTV systems
Lecture 21 - Equilibrium Points
Lecture 22 - Limit Cycles and Linearisation
Lecture 23 - Stability Analysis and Types of Stability
Lecture 24 - Lyapunov Stability
Lecture 25 - Stability of Discrete Time Systems
Lecture 26 - Supplementary Lecture
Lecture 27 - Controllability and Reachability
Lecture 28 - Controllability Matrix and Controllable Systems
Lecture 29 - Controllability Tests

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- Lecture 30 - Controllability of Discrete Time Systems
- Lecture 31 - Controllable Decomposition
- Lecture 32 - Stabilizability
- Lecture 33 - Observability
- Lecture 34 - Gramians and Duality
- Lecture 35 - Observability for Discrete Time Systems and Observability Tests
- Lecture 36 - Observable Decomposition and Detectability
- Lecture 37 - Kalman Decomposition and Minimal Realisation
- Lecture 38 - Canonical Forms and State Feedback Control
- Lecture 39 - Control Design using Pole Placement
- Lecture 40 - Tutorial for Modules 9 and 10
- Lecture 41 - State Estimation and Output Feedback
- Lecture 42 - Design of Observer and Observer based Controller
- Lecture 43 - Optimal Control and Linear Quadratic Regulator (LQR)
- Lecture 44 - Feedback Invariant and Algebraic Ricatti Equation
- Lecture 45 - Tutorial for Module 11
- Lecture 46 - Linear Matrix Inequalities
- Lecture 47 - Properties of LMIs and Delay LMIs