

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

NPTEL Video Course - Electrical Engineering - Nonlinear Dynamical Systems

Subject Co-ordinator - Prof. Harish K. Pillai, Prof. Madhu N. Belur

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction

Lecture 2 - First Order systems

Lecture 3 - Classification of Equilibrium points

Lecture 4 - Lipschitz Functions

Lecture 5 - Existence/uniqueness theorems

Lecture 6 - Existence/uniqueness of solutions to differential equations

Lecture 7 - Lyapunov theorem on stability

Lecture 8 - Extension of Lyapunov's Theorem in different contexts

Lecture 9 - LaSalle's Invariance principle, Barbashin and Krasovski theorems, periodic orbits

Lecture 10 - Bendixson criterion and Poincare-Bendixson criterion. Example

Lecture 11 - Bendixson and Poincare-Bendixson criteria van-der-Pol Oscillator

Lecture 12 - Scilab simulation of Lotka Volterra predator prey model, van-der-Pol Oscillator Review of linear

Lecture 13 - Signals, operators

Lecture 14 - Norms of signals, systems (operators), Finite gain L2 stable

Lecture 15 - Nyquist plots and Nyquist criterion for stability

Lecture 16 - Interconnection between linear system & non-linearity, passive filters

Lecture 17 - Passive filters, Dissipation equality, positive real lemma

Lecture 18 - Positive real lemma proof

Lecture 19 - Definition for positive realness and Kalman Yakubovich-Popov Theorem

Lecture 20 - Kalman-Yakubovich-Popov Lemma/theorem and memoryless nonlinearities

Lecture 21 - Loop transformations and circle criterion

Lecture 22 - Nonlinearities based on circle criterion

Lecture 23 - Limit cycles

Lecture 24 - Popov criterion continuous, frequency-domain theorem

Lecture 25 - Popov criterion continuous, frequency-domain theorem

Lecture 26 - Describing function method

Lecture 27 - Describing Function

Lecture 28 - Describing

Lecture 29 - Describing

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- Lecture 30 - Describing functions
- Lecture 31 - Describing functions
- Lecture 32 - Describing functions for nonlinearities
- Lecture 33 - Ideal relay with Hysteresis and dead zone
- Lecture 34 - Dynamical systems on manifolds-1
- Lecture 35 - Dynamical systems on manifolds-2

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

NPTEL Video Course - Electrical Engineering - Power System Dynamics and Control

Subject Co-ordinator - Dr. A.M. Kulkarni

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction

Lecture 2 - Introduction

Lecture 3 - Analysis of Dynamical Systems

Lecture 4 - Analysis of Dynamical Systems (Continued.)

Lecture 5 - Analysis of LINEAR Time Invariant Dynamical Systems

Lecture 6 - Analysis of LINEAR Time Invariant Dynamical Systems (Continued.)

Lecture 7 - Stiff Systems, Multi Time Scale Modeling

Lecture 8 - Numerical Integration

Lecture 9 - Numerical Integration (Continued.)

Lecture 10 - Numerical Integration (Continued.)

Lecture 11 - Modeling of Synchronous Machines

Lecture 12 - Modeling of Synchronous Machines (Continued.)

Lecture 13 - Modeling of Synchronous Machines (Continued.)

Lecture 14 - Modeling of Synchronous Machines. dq0 transformation (Continued.)

Lecture 15 - Modeling of Synchronous Machines. Standard Parameters

Lecture 16 - Modeling of Synchronous Machines. Standard Parameters

Lecture 17 - Synchronous Generator Models using Standard Parameters

Lecture 18 - Synchronous Generator Models using Standard Parameters. PER UNIT REPRESENTATION

Lecture 19 - Open Circuit Response of a Synchronous Generator

Lecture 20 - Synchronous Machine Modeling. Short Circuit Analysis (Continued.)

Lecture 21 - Synchronous Machine Modeling. Short Circuit Analysis (Continued.) Synchronization of a Synchronous Machine

Lecture 22 - Synchronization of a Synchronous Machine (Continued.)

Lecture 23 - Simplified Synchronous Machine Models

Lecture 24 - Excitation Systems

Lecture 25 - Excitation System Modeling

Lecture 26 - Excitation System Modeling. Automatic Voltage Regulator

Lecture 27 - Excitation System Modeling. Automatic Voltage Regulator (Continued.)

Lecture 28 - Excitation System Modeling. Automatic Voltage Regulator (Simulation)

Lecture 29 - Excitation System Modeling. Automatic Voltage Regulator (Simulation) â (Continued.)

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- Lecture 30 - Excitation System Modeling. Automatic Voltage Regulator. Linearized Analysis
- Lecture 31 - Load Modeling
- Lecture 32 - Induction Machines, Transmission Lines
- Lecture 33 - Transmission Lines. Prime Mover Systems
- Lecture 34 - Transmission Lines (Continued.) Prime Mover Systems
- Lecture 35 - Prime Mover Systems. Stability in Integrated Power System
- Lecture 36 - Stability in Integrated Power System
- Lecture 37 - Two Machine System (Continued.)
- Lecture 38 - Stability in Integrated Power System
- Lecture 39 - Frequency/Angular Stability Programs. Stability Phenomena
- Lecture 40 - Voltage Stability Example (Continued.). Fast Transients
- Lecture 41 - Torsional Transients
- Lecture 42 - Sub-Synchronous Resonance. Stability Improvement
- Lecture 43 - Stability Improvement
- Lecture 44 - Stability Improvement. Power System Stabilizers
- Lecture 45 - Stability Improvement (Large Disturbance Stability)

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

NPTEL Video Course - Electrical Engineering - Control Engineering (Prof. S.D. Agashe)

Subject Co-ordinator - Prof. S.D. Agashe

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - The Control Problem
- Lecture 2 - Some More Examples
- Lecture 3 - Different Kinds of Control Systems
- Lecture 4 - History of Feedback
- Lecture 5 - Modern Control Problems
- Lecture 6 - DC Motor Speed Control
- Lecture 7 - System Modelling, Analogy
- Lecture 8 - Causes of System Error
- Lecture 9 - Calculation of Error
- Lecture 10 - Control System Sensitivity
- Lecture 11 - Automatic Control of DC Motor
- Lecture 12 - Proportional Control
- Lecture 13 - Non-Unity Feedback
- Lecture 14 - Signal-Flow Graph
- Lecture 15 - Mason's Gain Formula
- Lecture 16 - Signal-Flow Graph for DC Motor Control
- Lecture 17 - Steady-State Calculations
- Lecture 18 - Differential Equation Model and Laplace Transformation Model
- Lecture 19 - D-Operator Method
- Lecture 20 - Second-Order System Response
- Lecture 21 - Frequency Response
- Lecture 22 - Laplace Transformation Theorems
- Lecture 23 - Final Value Theorem
- Lecture 24 - Transfer Function and Pole-Zero Diagram
- Lecture 25 - 'Good' Poles and 'Bad' Poles
- Lecture 26 - Signal Flow Graph with Transfer Functions
- Lecture 27 - s-Domain and t-Domain
- Lecture 28 - Second-Order System Response in s-Domain
- Lecture 29 - Integral Feedback

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- Lecture 30 - Root-Locus Method
- Lecture 31 - Root-Locus Rules
- Lecture 32 - Asymptotes of Root Locus
- Lecture 33 - Routh Array
- Lecture 34 - Singular Cases
- Lecture 35 - Closed Loop Poles
- Lecture 36 - Controller in the Forwarded Path
- Lecture 37 - Mapping of Control in the Complex-Plane
- Lecture 38 - Encirclement by a Curve
- Lecture 39 - Nyquist Criterion
- Lecture 40 - Application of the Nyquist Criterion
- Lecture 41 - Polar Plot and Bode Plots
- Lecture 42 - Logarithmic Scale for Frequency
- Lecture 43 - 'Asymptotic' DB Gain
- Lecture 44 - Compensating Network
- Lecture 45 - Nichols' Chart
- Lecture 46 - Time Domain Methods of Analysis and Design
- Lecture 47 - State-Variable Equations

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

NPTEL Video Course - Electrical Engineering - Power Electronics

Subject Co-ordinator - Prof. Kishore Chatterjee, Prof. B.G. Fernandes

Co-ordinating Institute - IIT - Bombay

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

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

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

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Lecture 30 - Power Electronics  
Lecture 31 - Power Electronics  
Lecture 32 - Power Electronics  
Lecture 33 - Power Electronics  
Lecture 34 - Power Electronics  
Lecture 35 - Power Electronics  
Lecture 36 - Power Electronics  
Lecture 37 - Power Electronics  
Lecture 38 - Power Electronics  
Lecture 39 - Power Electronics  
Lecture 40 - Power Electronics  
Lecture 41 - Power Electronics  
Lecture 42 - Power Electronics  
Lecture 43 - Power Electronics



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

NPTEL Video Course - Electrical Engineering - Fabrication of Silicon VLSI Circuits using the MOS technology

Subject Co-ordinator - Prof. A.N. Chandorkar

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction Micro to Nano A Journey into Intergrated Circuit Technology
- Lecture 2 - Introduction Micro to Nano A Journey into Intergrated Circuit Technology
- Lecture 3 - Crystal Properties and Silico Growth
- Lecture 4 - Crystal Properties and Silico Growth (Continued...)
- Lecture 5 - IC Fab Labs and Fabrication of IC
- Lecture 6 - Diffusion
- Lecture 7 - Diffusion (Continued...)
- Lecture 8 - Solid State Diffusion
- Lecture 9 - Solid State Diffusion (Continued...)
- Lecture 10 - Solid State Diffusion (Continued...)
- Lecture 11 - Thermal Oxidation of Silicons
- Lecture 12 - Thermal Oxidation of Silicons
- Lecture 13 - Thermal Oxidation of Silicons
- Lecture 14 - Thermal Oxidation of Silicons (Continued...)
- Lecture 15 - Thermal Oxidation of Silicons (Continued...)
- Lecture 16 - Lithography
- Lecture 17 - Lithography
- Lecture 18 - Lithography
- Lecture 19 - ION Implantation
- Lecture 20 - ION Implantation
- Lecture 21 - ION Implantation and Silicon IC Processing Flow for CMOS Technology
- Lecture 22 - ION Implantation and Silicon IC Processing Flow for CMOS Technology
- Lecture 23 - Silicon IC Processing Flow for CMOS Technology
- Lecture 24 - Thin Film Deposition
- Lecture 25 - Thin Film Deposition
- Lecture 26 - Thin Film Deposition
- Lecture 27 - Thin Film Deposition and Etching in VLSI Processing
- Lecture 28 - Etching in VLSI Processing and Back -End Technology

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

NPTEL Video Course - Electrical Engineering - NOC:Computational Electromagnetics and Applications

Subject Co-ordinator - Prof.Krish Sankaran

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Lecture 1  
Lecture 2 - Lecture 2  
Lecture 3 - Lecture 3  
Lecture 4 - Exercise 1  
Lecture 5 - Exercise 2  
Lecture 6 - Exercise 3  
Lecture 7 - Lab Tour 1  
Lecture 8 - Summary week 1  
Lecture 9 - Lecture 4  
Lecture 10 - Lecture 5  
Lecture 11 - Exercise 4  
Lecture 12 - Exercise 5  
Lecture 13 - Exercise 6  
Lecture 14 - Summary Week 2  
Lecture 15 - Lecture 6  
Lecture 16 - Lecture 7  
Lecture 17 - Lecture 8  
Lecture 18 - Exercise 7  
Lecture 19 - Exercise 8  
Lecture 20 - Summary Week 3  
Lecture 21 - Lecture 9  
Lecture 22 - Lecture 10  
Lecture 23 - Lecture 11  
Lecture 24 - Lecture 12  
Lecture 25 - Lecture 13  
Lecture 26 - Lecture 14  
Lecture 27 - Exercise 9  
Lecture 28 - Lab Tour - 2  
Lecture 29 - Summary Week 4

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Lecture 30 - Lecture 15  
Lecture 31 - Lecture 16  
Lecture 32 - Lecture 17  
Lecture 33 - Lecture 18  
Lecture 34 - Exercise 10  
Lecture 35 - Summary week 5  
Lecture 36 - Lecture 19  
Lecture 37 - Lecture 20  
Lecture 38 - Lecture 21  
Lecture 39 - Lecture 22  
Lecture 40 - Exercise 11  
Lecture 41 - Summary week 6  
Lecture 42 - Exercise 12  
Lecture 43 - Exercise 13  
Lecture 44 - Exercise 14  
Lecture 45 - Exercise 15  
Lecture 46 - Exercise 16  
Lecture 47 - Exercise 17  
Lecture 48 - Summary week 7  
Lecture 49 - Lecture 23  
Lecture 50 - Lecture 24  
Lecture 51 - Lecture 25  
Lecture 52 - Exercise 18  
Lecture 53 - Exercise 19  
Lecture 54 - Lab tour 3  
Lecture 55 - Summary week 8  
Lecture 56 - Lecture 26  
Lecture 57 - Lecture 27  
Lecture 58 - Lecture 28  
Lecture 59 - Lecture 29  
Lecture 60 - Lecture 30  
Lecture 61 - Lecture 31  
Lecture 62 - Lab tour 4  
Lecture 63 - Summary week 9  
Lecture 64 - Lecture 32  
Lecture 65 - Lecture 33  
Lecture 66 - Lecture 34  
Lecture 67 - Lecture 35  
Lecture 68 - Exercise 20

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Lecture 69 - Lab tour 5  
Lecture 70 - Summary week 10  
Lecture 71 - Lecture 36  
Lecture 72 - Lecture 37  
Lecture 73 - Lecture 38  
Lecture 74 - Lecture 39  
Lecture 75 - Lecture 40  
Lecture 76 - Summary week 11  
Lecture 77 - Lecture 41  
Lecture 78 - Lecture 42  
Lecture 79 - Lecture 43  
Lecture 80 - Lecture 44  
Lecture 81 - Exercise 21  
Lecture 82 - Exercise 22  
Lecture 83 - Summary week 12

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

NPTEL Video Course - Electrical Engineering - NOC:Basic Electronics

Subject Co-ordinator - Prof. Mahesh B. Patil

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - A brief history of electronics  
Lecture 2 - Superposition  
Lecture 3 - Useful circuit techniques - 1  
Lecture 4 - Useful circuit techniques - 2  
Lecture 5 - Phasors - 1  
Lecture 6 - Phasors - 2  
Lecture 7 - RC/RL circuits in time domain - 1  
Lecture 8 - RC/RL circuits in time domain - 2  
Lecture 9 - RC/RL circuits in time domain - 3  
Lecture 10 - RC/RL circuits in time domain - 4  
Lecture 11 - RC/RL circuits in time domain - 5  
Lecture 12 - Simulation of RC circuit  
Lecture 13 - Diode circuits - 1  
Lecture 14 - Diode circuits - 2  
Lecture 15 - Diode circuits - 3  
Lecture 16 - Diode circuits - 4  
Lecture 17 - Diode circuits - 5  
Lecture 18 - Diode circuits - 6  
Lecture 19 - Diode rectifiers - 1  
Lecture 20 - Diode rectifiers - 2  
Lecture 21 - Diode rectifiers - 3  
Lecture 22 - Bipolar Junction Transistor - 1  
Lecture 23 - Bipolar Junction Transistor - 2  
Lecture 24 - Bipolar Junction Transistor - 3  
Lecture 25 - BJT amplifier - 1  
Lecture 26 - BJT amplifier - 2  
Lecture 27 - BJT amplifier - 3  
Lecture 28 - BJT amplifier - 4  
Lecture 29 - BJT amplifier - 5

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

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- Lecture 30 - BJT amplifier - 6
- Lecture 31 - BJT amplifier - 7
- Lecture 32 - Introduction to op-amps
- Lecture 33 - Op-amp circuits - 1
- Lecture 34 - Op-amp circuits - 2
- Lecture 35 - Op-amp circuits - 3
- Lecture 36 - Difference amplifier
- Lecture 37 - Instrumentation amplifier - 1
- Lecture 38 - Instrumentation amplifier - 2
- Lecture 39 - Op-amp nonidealities - 1
- Lecture 40 - Op-amp nonidealities - 2
- Lecture 41 - Bode plots - 1
- Lecture 42 - Bode plots - 2
- Lecture 43 - Bode plots - 3
- Lecture 44 - Op-amp filters
- Lecture 45 - Simulation of op-amp filter
- Lecture 46 - Precision rectifiers - 1
- Lecture 47 - Precision rectifiers - 2
- Lecture 48 - Precision rectifiers - 3
- Lecture 49 - Simulation of triangle-to-sine converter
- Lecture 50 - Schmitt triggers - 1
- Lecture 51 - Schmitt triggers - 2
- Lecture 52 - Schmitt triggers - 3
- Lecture 53 - Sinusoidal oscillators - 1
- Lecture 54 - Sinusoidal oscillators - 2
- Lecture 55 - Introduction to digital circuits
- Lecture 56 - Boolean algebra
- Lecture 57 - Karnaugh maps
- Lecture 58 - Combinatorial circuits - 1
- Lecture 59 - Combinatorial circuits - 2
- Lecture 60 - Combinatorial circuits - 3
- Lecture 61 - Introduction to sequential circuits
- Lecture 62 - Latch and flip-flop
- Lecture 63 - JK flip-flop
- Lecture 64 - D flip-flop
- Lecture 65 - Shift registers
- Lecture 66 - Counters - 1
- Lecture 67 - Counters - 2
- Lecture 68 - Simulation of a synchronous counter

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- Lecture 69 - 555 timer
- Lecture 70 - Digital-to-analog conversion - 1
- Lecture 71 - Digital-to-analog conversion - 2
- Lecture 72 - Analog-to-digital conversion

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

NPTEL Video Course - Electrical Engineering - NOC:Antennas

Subject Co-ordinator - Prof. Girish Kumar

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Antenna Introduction - I  
Lecture 2 - Antenna Introduction - II  
Lecture 3 - Antenna Introduction - III  
Lecture 4 - Antenna Fundamentals - I  
Lecture 5 - Antenna Fundamentals - II  
Lecture 6 - Antenna Radiation Hazards - I  
Lecture 7 - Antenna Radiation Hazards - II  
Lecture 8 - Dipole Antennas - I  
Lecture 9 - Dipole Antennas - II  
Lecture 10 - Dipole Antennas - III  
Lecture 11 - Monopole Antennas - I  
Lecture 12 - Monopole Antennas - II  
Lecture 13 - Loop Antennas  
Lecture 14 - Slot Antennas  
Lecture 15 - Linear Arrays - I  
Lecture 16 - Linear Arrays - II  
Lecture 17 - Linear Arrays - III  
Lecture 18 - Planar Arrays  
Lecture 19 - Microstrip Antennas (MSA)  
Lecture 20 - Rectangular MSA  
Lecture 21 - MSA Parametric Analysis - I  
Lecture 22 - MSA Parametric Analysis - II  
Lecture 23 - Circular MSA  
Lecture 24 - Broadband MSA - I  
Lecture 25 - Broadband MSA - II  
Lecture 26 - Broadband MSA - III  
Lecture 27 - Broadband MSA - IV  
Lecture 28 - Broadband MSA - V  
Lecture 29 - Compact MSA - I

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- Lecture 30 - Compact MSA - II
- Lecture 31 - Compact MSA - III
- Lecture 32 - Tunable MSA - I
- Lecture 33 - Tunable MSA - II
- Lecture 34 - Circularly Polarized MSA - I
- Lecture 35 - Circularly Polarized MSA - II
- Lecture 36 - Circularly Polarized MSA - III
- Lecture 37 - MSA Arrays - I
- Lecture 38 - MSA Arrays - II
- Lecture 39 - MSA Arrays - III
- Lecture 40 - Helical Antennas - I
- Lecture 41 - Helical Antennas - II
- Lecture 42 - Helical Antennas - III
- Lecture 43 - Helical Antennas - IV
- Lecture 44 - Helical Antennas - V
- Lecture 45 - Horn Antennas - I
- Lecture 46 - Horn Antennas - II
- Lecture 47 - Horn Antennas - III
- Lecture 48 - Horn Antennas - IV
- Lecture 49 - Horn Antennas - V
- Lecture 50 - Yagi-Uda and Log-Periodic Antennas - I
- Lecture 51 - Yagi-Uda and Log-Periodic Antennas - II
- Lecture 52 - Yagi-Uda and Log-Periodic Antennas - III
- Lecture 53 - IE3D Session TA - I
- Lecture 54 - IE3D Session TA - II
- Lecture 55 - IE3D Session TA - III
- Lecture 56 - Reflector Antennas - I
- Lecture 57 - Reflector Antennas - II
- Lecture 58 - Reflector Antennas - III
- Lecture 59 - Reflector Antennas - IV
- Lecture 60 - Lab Session

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

NPTEL Video Course - Electrical Engineering - NOC:Fundamentals of Wavelets, Filter Banks and Time Frequency Analysis

Subject Co-ordinator - Prof. V.M. Gadre

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Module 1 - Lecture 1 - Introduction  
Lecture 2 - Module 1 - Lecture 2 - Origin of Wavelets  
Lecture 3 - Module 1 - Lecture 3 - Haar Wavelet  
Lecture 4 - Module 2 - Lecture 1 - Dyadic Wavelet  
Lecture 5 - Module 2 - Lecture 2 - Dilates and Translates of Haar Wavelets  
Lecture 6 - Module 2 - Lecture 3 - L2 Norm of a Function  
Lecture 7 - Module 3 - Lecture 1 - Piecewise Constant Representation of a Function  
Lecture 8 - Module 3 - Lecture 2 - Ladder of Subspaces  
Lecture 9 - Module 3 - Lecture 3 - Scaling Function for Haar Wavelet Demo  
Lecture 10 - Demonstration 1  
Lecture 11 - Module 4 - Lecture 1 - Vector Representation of Sequences  
Lecture 12 - Module 4 - Lecture 2 - Properties of Norm  
Lecture 13 - Module 4 - Lecture 3 - Parseval's Theorem  
Lecture 14 - Module 5 - Lecture 1 - Equivalence of sequences and functions  
Lecture 15 - Module 5 - Lecture 2 - Angle between Functions and their Decomposition  
Lecture 16 - Demonstration 2  
Lecture 17 - Module 6 - Lecture 1 - Introduction to filter banks  
Lecture 18 - Module 6 - Lecture 2 - Haar Analysis Filter Bank in Z-domain  
Lecture 19 - Module 6 - Lecture 3 - Haar Synthesis Filter Bank in Z-domain  
Lecture 20 - Module 7 - Lecture 1 - Moving from Z-domain to frequency domain  
Lecture 21 - Module 7 - Lecture 2 - Frequency Response of Haar Analysis Low pass Filter bank  
Lecture 22 - Module 7 - Lecture 3 - Frequency Response of Haar Analysis High pass Filter bank  
Lecture 23 - Module 8 - Lecture 1 - Ideal two-band filter bank  
Lecture 24 - Module 8 - Lecture 2 - Disqualification of Ideal filter bank  
Lecture 25 - Module 8 - Lecture 3 - Realizable two-band filter bank  
Lecture 26 - Demonstration 3  
Lecture 27 - Module 9 - Lecture 1 - Relating Fourier transform of scaling function to filter bank  
Lecture 28 - Module 9 - Lecture 2 - Fourier transform of scaling function  
Lecture 29 - Module 9 - Lecture 3 - Construction of scaling and wavelet functions from filter bank

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- Lecture 30 - Demonstration 4
- Lecture 31 - Module 10 - Lecture 1 - Introduction to upsampling and down sampling as Multirate operations
- Lecture 32 - Module 10 - Lecture 2 - Up sampling by a general factor M- a Z-domain analysis.
- Lecture 33 - Module 10 - Lecture 3 - Down sampling by a general factor M- a Z-domain analysis
- Lecture 34 - Module 11 - Lecture 1 - Z domain analysis of 2 channel filter bank.
- Lecture 35 - Module 11 - Lecture 2 - Effect of X (-Z) in time domain and aliasing
- Lecture 36 - Module 11 - Lecture 3 - Consequences of aliasing and simple approach to avoid it
- Lecture 37 - Module 12 - Lecture 1 - Revisiting aliasing and the Idea of perfect reconstruction
- Lecture 38 - Module 12 - Lecture 2 - Applying perfect reconstruction and alias cancellation on Haar MRA
- Lecture 39 - Module 12 - Lecture 3 - Introduction to Daubechies family of MRA
- Lecture 40 - Module 13 - Lecture 1 - Power Complementarity of low pass filter
- Lecture 41 - Module 13 - Lecture 2 - Applying perfect reconstruction condition to obtain filter coefficient
- Lecture 42 - Module 14 - Lecture 1 - Effect of minimum phase requirement on filter coefficients
- Lecture 43 - Module 14 - Lecture 2 - Building compactly supported scaling functions
- Lecture 44 - Module 14 - Lecture 3 - Second member of Daubechies family
- Lecture 45 - Module 15 - Lecture 1 - Fourier transform analysis of Haar scaling and Wavelet functions
- Lecture 46 - Module 15 - Lecture 2 - Revisiting Fourier Transform and Parseval's theorem
- Lecture 47 - Module 15 - Lecture 3 - Transform Analysis of Haar Wavelet function
- Lecture 48 - Module 16 - Lecture 1 - Nature of Haar scaling and Wavelet functions in frequency domain
- Lecture 49 - Module 16 - Lecture 2 - The Idea of Time-Frequency Resolution
- Lecture 50 - Module 16 - Lecture 3 - Some thoughts on Ideal time- frequency domain behavior
- Lecture 51 - Module 17 - Lecture 1 - Defining Probability Density function
- Lecture 52 - Module 17 - Lecture 2 - Defining Mean, Variance and  $\hat{A}$  containment in a given domain $\hat{A}$
- Lecture 53 - Module 17 - Lecture 3 - Example
- Lecture 54 - Module 17 - Lecture 4 - Variance from a slightly different perspective
- Lecture 55 - Module 18 - Lecture 1 - Signal transformations
- Lecture 56 - Module 18 - Lecture 2 - Time-Bandwidth product and its properties
- Lecture 57 - Module 18 - Lecture 3 - Simplification of Time-Bandwidth formulae
- Lecture 58 - Module 19 - Lecture 1 - Introduction
- Lecture 59 - Module 19 - Lecture 2 - Evaluation of Time-Bandwidth product
- Lecture 60 - Module 19 - Lecture 3 - Optimal function in the sense of Time-Bandwidth product
- Lecture 61 - Module 20 - Lecture 1 - Discontent with the  $\hat{A}$  Optimal function $\hat{A}$  .
- Lecture 62 - Module 20 - Lecture 2 - Journey from infinite to finite Time-Bandwidth product of Haar scaling f
- Lecture 63 - Module 20 - Lecture 3 - More insights about Time-Bandwidth product
- Lecture 64 - Module 20 - Lecture 4 - Time-frequency plane
- Lecture 65 - Module 20 - Lecture 5 - Tiling the Time-frequency plane
- Lecture 66 - Module 21 - Lecture 1 - STFT
- Lecture 67 - Module 21 - Lecture 2 - STFT
- Lecture 68 - Module 21 - Lecture 3 - STFT

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

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- Lecture 69 - Module 21 - Lecture 4 - Continuous Wavelet Transform (CWT)
- Lecture 70 - Demonstration 5
- Lecture 71 - Student's Presentation

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

NPTEL Video Course - Electrical Engineering - NOC:Analog Circuits (2017)

Subject Co-ordinator - Prof. Jayanta Mukherjee

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Module 1 - Introduction  
Lecture 2 - Module 2 - Poles and zeros  
Lecture 3 - Module 3 - OP-AMPS  
Lecture 4 - Module 4 - Application of Op-Amps  
Lecture 5 - Module 5 - Inverting amplifier and Non Inverting amplifier  
Lecture 6 - Module 1 - Non Idealities in Op-AMP (Finite Gain, Finite Bandwidth and Slew Rate)  
Lecture 7 - Module 2 - Non Idealities in Op-AMP (Offset Voltage and Bias Current)  
Lecture 8 - Module 3 - Bode Plot  
Lecture 9 - Module 4 - Frequency Response  
Lecture 10 - Module 1 - Frequency Response (High Frequency Response)  
Lecture 11 - Module 2 - Frequency Response example  
Lecture 12 - Module 3 - Feedback  
Lecture 13 - Module 4 - Effects of Feedback  
Lecture 14 - Tutorial 1 and 2  
Lecture 15 - Module 1 - Effect of feedback and stability  
Lecture 16 - Module 2 - Stability  
Lecture 17 - Module 3 - Stability and pole location  
Lecture 18 - Module 4 - Stability and Pole location continuation  
Lecture 19 - Tutorial 3  
Lecture 20 - Module 1 - Gain Margin  $\hat{A}$  An example  
Lecture 21 - Module 2 - Frequency Compensation  
Lecture 22 - Module 3 - Filters  
Lecture 23 - Module 4 - Filter prototypes  
Lecture 24 - Tutorial 4  
Lecture 25 - Tutorial 5  
Lecture 26 - Tutorial 6  
Lecture 27 - Module 1 - Chebyshev Prototype, Filter transformation  
Lecture 28 - Module 2 - Filter Transformations (Continued....)  
Lecture 29 - Module 3 - Active Filters

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

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- Lecture 30 - Module 4 - Non Linear Applications of OPAMPS
- Lecture 31 - Module 5 - Limiter, Diodes
- Lecture 32 - Module 1 - Oscillators
- Lecture 33 - Module 2 - Oscillator Amplitude Control , Quadrature Oscillator
- Lecture 34 - Module 3 - Multivibrators
- Lecture 35 - Module 4 - Multivibrators (Continued...)
- Lecture 36 - Module 5 - Monostable Multivibrator
- Lecture 37 - Module 1 - Zener Effect, Rectifiers
- Lecture 38 - Module 2 - Rectifiers
- Lecture 39 - Module 3 - Clamper, Peak Rectifier, Super diodes
- Lecture 40 - Module 4 - BJT DC Circuits
- Lecture 41 - Module 5 - Current Mirror

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

NPTEL Video Course - Electrical Engineering - NOC: Microwave Theory and Techniques

Subject Co-ordinator - Prof. Girish Kumar

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Microwave Theory and Techniques Introduction - I  
Lecture 2 - Microwave Theory and Techniques Introduction - II  
Lecture 3 - Microwave Theory and Techniques Introduction - III  
Lecture 4 - Effects of Microwaves on Human Body - I  
Lecture 5 - Effects of Microwaves on Human Body - II  
Lecture 6 - Waveguides - I  
Lecture 7 - Waveguides - II  
Lecture 8 - Waveguides - III  
Lecture 9 - Transmission Lines - I  
Lecture 10 - Transmission Lines - II  
Lecture 11 - Smith Chart and Impedance Matching - I  
Lecture 12 - Smith Chart and Impedance Matching - II  
Lecture 13 - Smith Chart and Impedance Matching - III  
Lecture 14 - ABCD - Parameters  
Lecture 15 - S - Parameters  
Lecture 16 - Power Dividers - I  
Lecture 17 - Power Dividers - II  
Lecture 18 - Microwave Couplers - I  
Lecture 19 - Microwave Couplers - II  
Lecture 20 - Microwave Couplers - III  
Lecture 21 - Microwave Filters - I  
Lecture 22 - Microwave Filters - II  
Lecture 23 - Microwave Filters - III  
Lecture 24 - Microwave Filters - IV  
Lecture 25 - Microwave Filters - V  
Lecture 26 - Microwave Diodes  
Lecture 27 - Microwave Attenuators  
Lecture 28 - Microwave RF Switches  
Lecture 29 - Series and Shunt SPDT Switches and Introduction to Phase Shifters

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

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- Lecture 30 - Microwave Phase Shifters
- Lecture 31 - Microwave Transistors
- Lecture 32 - Microwave Amplifiers - I
- Lecture 33 - Microwave Amplifiers - II
- Lecture 34 - Microwave Amplifiers - III
- Lecture 35 - Low Noise Amplifiers - I
- Lecture 36 - Low Noise Amplifiers - II
- Lecture 37 - Power Amplifiers
- Lecture 38 - Microwave Tubes - I
- Lecture 39 - Microwave Tubes - II
- Lecture 40 - Microwave Tubes - III
- Lecture 41 - Microwave Oscillators - I
- Lecture 42 - Microwave Oscillators - II
- Lecture 43 - Microwave Mixers - I
- Lecture 44 - Microwave Mixers - II
- Lecture 45 - Microwave Mixers - III
- Lecture 46 - Fundamentals of Antennas
- Lecture 47 - Dipole, Monopole, loop and Slot Antennas
- Lecture 48 - Linear and Planar Arrays
- Lecture 49 - Microstrip Antennas
- Lecture 50 - Horn and Helical Antennas
- Lecture 51 - Yagi - Uda, Log-Periodic and Reflector Antennas
- Lecture 52 - RF MEMS and Microwave Imaging
- Lecture 53 - Microwave Systems
- Lecture 54 - Microwave Measurements and Lab Demonstration
- Lecture 55 - CST Software Introduction with Filter Design
- Lecture 56 - Power Divider and Combiner Design in CST
- Lecture 57 - Hybrid Coupler Design
- Lecture 58 - Antenna Design and Amplifier Simulation in CST
- Lecture 59 - Mixer Design in NI AWR Software - I
- Lecture 60 - Mixer Design in NI AWR Software - II



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

NPTEL Video Course - Electrical Engineering - NOC:Principles of Digital Communications

Subject Co-ordinator - Prof. S.N. Merchant

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Course Overview
- Lecture 2 - Introduction to Information Theory
- Lecture 3 - Entropy and its properties
- Lecture 4 - Lossless Source Coding Theorem
- Lecture 5 - Prefix Codes and Kraft's Inequality
- Lecture 6 - Huffman Coding
- Lecture 7 - Discrete Memory-less Channels
- Lecture 8 - Channel Capacity - I
- Lecture 9 - Channel Capacity - II
- Lecture 10 - Channel Coding Theorem
- Lecture 11 - Differential Entropy - I
- Lecture 12 - Differential Entropy - II
- Lecture 13 - Channel Capacity - III
- Lecture 14 - Channel Capacity - IV
- Lecture 15 - Summary of Information Theory
- Lecture 16 - Signal Space Representations - I
- Lecture 17 - Signal Space Representations - II
- Lecture 18 - Vector Representation of a Random Process
- Lecture 19 - AWGN Vector Channel
- Lecture 20 - Basics of Signal Detection
- Lecture 21 - ML,MAP Detectors for AWGN Channel
- Lecture 22 - Optimal Receiver
- Lecture 23 - Probability of error for Optimal Receiver
- Lecture 24 - Probability of Error for M-ary Scheme
- Lecture 25 - Pulse Code Modulation
- Lecture 26 - Uniform Quantizer
- Lecture 27 - Step Size and Quantization Noise
- Lecture 28 - Non-uniform Quantizer (Lloyd-Max Quantizer)
- Lecture 29 - Companded Quantization - I

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

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- Lecture 30 - Companded Quantization - II
- Lecture 31 - Differential Pulse Code Modulation DPCM - I
- Lecture 32 - DPCM-II (Linear Prediction)
- Lecture 33 - Delta Modulation
- Lecture 34 - M-ary PCM/PAM - I
- Lecture 35 - M-ary PCM/PAM - II
- Lecture 36 - Line Coding - I
- Lecture 37 - Line Coding - II
- Lecture 38 - Line Coding - III
- Lecture 39 - Pulse Shaping for Zero ISI - I
- Lecture 40 - Pulse Shaping for Zero ISI - II
- Lecture 41 - Pulse Shaping for Zero ISI - III
- Lecture 42 - Partial Response Signaling - I
- Lecture 43 - Partial Response Signaling - II
- Lecture 44 - Principle of Invariance of Probability of Error
- Lecture 45 - Binary ASK and PSK
- Lecture 46 - Binary Frequency Shift Keying - I
- Lecture 47 - Binary Frequency Shift Keying - II
- Lecture 48 - Quadrature Phase Shift Keying - I
- Lecture 49 - Quadrature Phase Shift Keying - II
- Lecture 50 - Quadrature Phase Shift Keying - III
- Lecture 51 - Continuous Phase Frequency Shift Keying
- Lecture 52 - Minimum Shift Keying - I
- Lecture 53 - Minimum Shift Keying - II
- Lecture 54 - M-ary Coherent ASK (M-ASK)
- Lecture 55 - M-ary PSK
- Lecture 56 - M-ary Quadrature Amplitude Modulation (M-QAM)
- Lecture 57 - M-ary FSK
- Lecture 58 - Comparison of M-ary Schemes
- Lecture 59 - Non-coherent BFSK
- Lecture 60 - Differential Phase Shift Keying
- Lecture 61 - Channel Coding - I
- Lecture 62 - Channel Coding - II
- Lecture 63 - Channel Coding - III
- Lecture 64 - Channel Coding
- Lecture 65 - Channel Coding

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

NPTEL Video Course - Electrical Engineering - NOC:Fundamental of Power Electronics

Subject Co-ordinator - Prof. Vivek Agarwal

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Familiarization with Power Electronic Systems
- Lecture 2 - Overview of Basic Power Electronic Circuits from Laymans Point of View
- Lecture 3 - Applications, Definitions, and Nature of Power Electronic Circuits
- Lecture 4 - Components of a Power Electronic System
- Lecture 5 - Analysis of Switched Networks
- Lecture 6 - Review of engineering maths for power electronic circuit analysis
- Lecture 7 - Review of semiconductor physics
- Lecture 8 - P-N Junction
- Lecture 9 - Power Diodes
- Lecture 10 - Thyristors
- Lecture 11 - Motivation for rectifier capacitor filter
- Lecture 12 - Circuit Operation
- Lecture 13 - Designing the circuit
- Lecture 14 - Simulation setup for NgSpice and gEDA schematic capture
- Lecture 15 - Simulating the circuit
- Lecture 16 - Practicals
- Lecture 17 - Inrush current limiting - Intro
- Lecture 18 - Inrush current limiting - Resistor solution
- Lecture 19 - Inrush current limiting - Thermistor solution
- Lecture 20 - Inrush current limiting - Transformer solution
- Lecture 21 - Inrush current limiting - MOSFET solution
- Lecture 22 - Inrush current limiting - Relay, contactor
- Lecture 23 - Three phase rectifier capacitor filter
- Lecture 24 - Simulation - 3 phase rectifier capacitor filter
- Lecture 25 - Power factor - Motivation
- Lecture 26 - Power factor - Discussion
- Lecture 27 - Power factor - Sinusoidal
- Lecture 28 - Power factor for rectifier cap filter
- Lecture 29 - Passive power improvement circuit

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

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- Lecture 30 - Simulation - power factor improvement
- Lecture 31 - Linear regulators - Intro
- Lecture 32 - Shunt regulator
- Lecture 33 - Example on shunt regulator
- Lecture 34 - Non-ideality and solution
- Lecture 35 - Applications of shunt regulator
- Lecture 36 - Series regulator
- Lecture 37 - Efficiency of series
- Lecture 38 - Negative and dual voltage regulators
- Lecture 39 - Over current limiting circuits
- Lecture 40 - Improvements to series regulator
- Lecture 41 - Regulator performance parameters
- Lecture 42 - Datasheet of few IC regulators
- Lecture 43 - Common IC regulator circuits
- Lecture 44 - Practicals 1
- Lecture 45 - Switched mode DC-DC converter intro
- Lecture 46 - Volt-sec and Amp-sec balance
- Lecture 47 - Input-output relationship
- Lecture 48 - Buck converter - operation and waveforms
- Lecture 49 - Buck converter - component selection
- Lecture 50 - Primary configurations
- Lecture 51 - Boost converter
- Lecture 52 - Buck-Boost converter
- Lecture 53 - Simulating the primary converters
- Lecture 54 - Forward converter
- Lecture 55 - Core reset in forward converter
- Lecture 56 - Simulating with lossy core reset
- Lecture 57 - Simulating with lossless core reset
- Lecture 58 - Flyback converter
- Lecture 59 - Simulating the flyback converter
- Lecture 60 - Octave mfile for design
- Lecture 61 - Magnetics design intro
- Lecture 62 - Magnetics review
- Lecture 63 - Permeance
- Lecture 64 - Inductor value and energy storage
- Lecture 65 - Inductor area product
- Lecture 66 - Inductor design
- Lecture 67 - Inductor example
- Lecture 68 - Transformer design

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

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- Lecture 69 - Transformer example
- Lecture 70 - Forward converter design mfile
- Lecture 71 - Pushpull converter
- Lecture 72 - Flux walking in pushpull
- Lecture 73 - PWM generation
- Lecture 74 - Simulation of pushpull converter
- Lecture 75 - Half bridge converter
- Lecture 76 - Simulation of halfbridge converter
- Lecture 77 - Full bridge converter
- Lecture 78 - Simulation of fullbridge converter
- Lecture 79 - Area products and mfiles
- Lecture 80 - Intro for drive circuits
- Lecture 81 - BJT base drive
- Lecture 82 - BJT base drive example
- Lecture 83 - Multi-stage base drive
- Lecture 84 - Base drive with speed-up circuit
- Lecture 85 - Base drive with isolation
- Lecture 86 - MOSFET gate drive
- Lecture 87 - MOSFET drive with isolation
- Lecture 88 - Over-current protection
- Lecture 89 - Snubber circuits
- Lecture 90 - Intro for close loop control
- Lecture 91 - Close looping dc-dc converters
- Lecture 92 - Simulation of close loop control
- Lecture 93 - Current control for battery charger application
- Lecture 94 - Instability in current control and slope compensation
- Lecture 95 - Slope compensated current control
- Lecture 96 - Simulation of current control
- Lecture 97 - Single phase inverter with sinusoidal pwm
- Lecture 98 - Simulation of sinusoidal PWM

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

NPTEL Video Course - Electrical Engineering - Circuit Theory

Subject Co-ordinator - Prof. S.C. Dutta Roy

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Review of Signals and Systems  
Lecture 2 - Review of Signals and Systems  
Lecture 3 - Network Equations; Initial and Final Conditions  
Lecture 4 - Problem Session 1  
Lecture 5 - Step, Impulse and Complete Responses  
Lecture 6 - 2nd Order Circuits  
Lecture 7 - Transformer Transform Domain Analysis  
Lecture 8 - Problem Session 2  
Lecture 9 - Network Theorems and Network Functions  
Lecture 10 - Network Functions (Continued.)  
Lecture 11 - Amplitude and Phase of Network Functions  
Lecture 12 - Problem Session 3  
Lecture 13 - Poles, Zeros and Network Response  
Lecture 14 - Single Tuned Circuits  
Lecture 15 - Single Tuned Circuits (Continued.)  
Lecture 16 - Double Tuned Circuits  
Lecture 17 - Double Tuned Circuits (Continued.)  
Lecture 18 - Problem Session 4  
Lecture 19 - Double Tuned Circuits (Continued.)  
Lecture 20 - Concept of Delay and Introduction  
Lecture 21 - Two-port Networks (Continued.)  
Lecture 22 - Problem Session 5  
Lecture 23 - Minor - 1  
Lecture 24 - The Hybrid & Transmission Parameters of 2 ports  
Lecture 25 - Problem Session 6  
Lecture 26 - Two - port Network parameters  
Lecture 27 - Two-port Interconnections  
Lecture 28 - Interconnection of Two-port Networks (Continued.)  
Lecture 29 - Problem Session 7

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

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- Lecture 30 - Scattering Matrix
- Lecture 31 - Scattering Parameters of a Two-port
- Lecture 32 - Problem Session 8
- Lecture 33 - Solutions of Minor - 2 Problems
- Lecture 34 - Insertion Loss
- Lecture 35 - Example of Insertion Loss and Elements
- Lecture 36 - Elements of Realizability Theory (Continued.)
- Lecture 37 - Positive Real Functions
- Lecture 38 - Testing of Positive Real Functions
- Lecture 39 - Problem Session 9
- Lecture 40 - More on PRF's and their Synthesis
- Lecture 41 - LC Driving Point Functions
- Lecture 42 - LC Driving Point Synthesis (Continued.)
- Lecture 43 - RC and RL Driving Point Synthesis
- Lecture 44 - Problem Session 10
- Lecture 45 - RC & RL One-port Synthesis (Continued.)
- Lecture 46 - Elementary RLC One-port Synthesis
- Lecture 47 - Properties and Synthesis of Transfer Parameters
- Lecture 48 - Resistance Terminated LC Ladder
- Lecture 49 - Resistance Terminated LC Ladder (Continued.)
- Lecture 50 - Problem session 11
- Lecture 51 - Network Transmission Criteria

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

NPTEL Video Course - Electrical Engineering - Control Engineering (Prof. M. Gopal)

Subject Co-ordinator - Prof. M. Gopal

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Introduction to control problem  
Lecture 2 - Basic Feedback Structure  
Lecture 3 - Introduction to Control Problem (Continued.)  
Lecture 4 - Dynamic Systems and Dynamic Response  
Lecture 5 - Dynamic Systems and Dynamic Response (Continued.)  
Lecture 6 - Dynamic Systems and Dynamic Response (Continued.)  
Lecture 7 - Dynamic Systems and Dynamic Response (Continued.)  
Lecture 8 - Dynamic Systems and Dynamic Response (Continued.)  
Lecture 9 - Dynamic Systems and Dynamic Response (Continued.)  
Lecture 10 - Models of Industrial Control Devices and Systems  
Lecture 11 - Models of Industrial Control Devices and Systems (Continued.)  
Lecture 12 - Models of Industrial Control Devices and Systems( Continued.)  
Lecture 13 - Models of Industrial Control Devices and Systems( Continued.)  
Lecture 14 - Models of Industrial Control Devices and Systems( Continued.)  
Lecture 15 - Models of Industrial Control Devices and Systems( Continued.)  
Lecture 16 - Models of Industrial Control Devices and Systems (Continued.)  
Lecture 17 - Models of Industrial Control Devices and Systems (Continued.)  
Lecture 18 - Models of Industrial Control Devices and Systems (Continued.)  
Lecture 19 - Basic Principles of Feedback Control  
Lecture 20 - Basic Principles of Feedback Control (Continued.)  
Lecture 21 - Basic Principles of Feedback Control (Continued.)  
Lecture 22 - Basic Principles of Feedback Control (Continued.)  
Lecture 23 - Concepts of stability and Routh Stability Criterion  
Lecture 24 - Concepts of stability and Routh Stability Criterion (Continued.)  
Lecture 25 - Concepts of stability and Routh Stability Criterion (Continued.)  
Lecture 26 - The Performance of Feedback Systems  
Lecture 27 - The Performance of Feedback Systems (Continued.)  
Lecture 28 - The Performance of Feedback Systems (Continued.)  
Lecture 29 - The Performance of Feedback Systems (Continued.)

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

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- Lecture 30 - Compensator Design Using Root Locus Plots
- Lecture 31 - Compensator Design Using Root Locus Plots (Continued.)
- Lecture 32 - Compensator Design Using Root Locus Plots (Continued.)
- Lecture 33 - Compensator Design Using Root Locus Plots (Continued.)
- Lecture 34 - Compensator Design Using Root Locus Plots (Continued.)
- Lecture 35 - The Nyquist Stability Criterion and Stability Margins
- Lecture 36 - The Nyquist Stability Criterion and Stability Margins (Continued.)
- Lecture 37 - The Nyquist Stability Criterion and Stability Margins (Continued.)
- Lecture 38 - The Nyquist Stability Criterion and Stability Margins (Continued.)
- Lecture 39 - Feedback System Performance Based on the Frequency Response
- Lecture 40 - Feedback System Performance Based on the Frequency Response (Continued.)
- Lecture 41 - Compensator Design Using Frequency Response Plots

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

NPTEL Video Course - Electrical Engineering - Embedded Systems

Subject Co-ordinator - Prof. Santanu Chaudhary

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Embedded Systems
- Lecture 2 - Embedded Hardware
- Lecture 3 - PIC
- Lecture 4 - PIC Peripherals On Chip
- Lecture 5 - ARM Processor
- Lecture 6 - More ARM Instructions
- Lecture 7 - ARM
- Lecture 8 - Digital Signal Processors
- Lecture 9 - More on DSP Processors
- Lecture 10 - System On Chip (SOC)
- Lecture 11 - Memory
- Lecture 12 - Memory Organization
- Lecture 13 - Virtual Memory and Memory Management Unit
- Lecture 14 - Bus Structure
- Lecture 15 - Bus Structure - 2
- Lecture 16 - Bus Structure - 3 Serial Interfaces
- Lecture 17 - Serial Interfaces
- Lecture 18 - Power Aware Architecture
- Lecture 19 - Software for Embedded Systems
- Lecture 20 - Fundamentals of Embedded Operating Systems
- Lecture 21 - Scheduling Policies
- Lecture 22 - Resource Management
- Lecture 23 - Embedded - OS
- Lecture 24 - Networked Embedded Systems - I
- Lecture 25 - Networked Embedded Systems - II
- Lecture 26 - Networked Embedded Systems - III
- Lecture 27 - Networked Embedded Systems - IV
- Lecture 28 - Designing Embedded Systems - I
- Lecture 29 - Designing Embedded Systems - II

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

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- Lecture 30 - Designing Embedded Systems- III
- Lecture 31 - Embedded System Design - IV
- Lecture 32 - Designing Embedded Systems - V
- Lecture 33 - Platform Based Design
- Lecture 34 - Compilers for Embedded Systems
- Lecture 35 - Developing Embedded Systems
- Lecture 36 - Building Dependable Embedded Systems
- Lecture 37 - Pervasive and Ubiquitous Computing

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

NPTEL Video Course - Electrical Engineering - Power System Generation, Transmission and Distribution (Encapsu

Subject Co-ordinator - Prof. D.P. Kothari

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Electric Energy Systems A Perspective
- Lecture 2 - Structure of Power Systems
- Lecture 3 - Conventional Sources of Electric Energy
- Lecture 4 - Hydroelectric Power Generation
- Lecture 5 - Non Conventional Energy Sources
- Lecture 6 - Renewable Energy (Continued.)
- Lecture 7 - Energy Storage
- Lecture 8 - Deregulation
- Lecture 9 - Air Pollutants
- Lecture 10 - Transmission Line Parameters
- Lecture 11 - Capacitance of Transmission Lines
- Lecture 12 - Characteristics and Performance of Transmission Lines
- Lecture 13 - Voltage Regulation (VR)
- Lecture 14 - Power Flow through a Line
- Lecture 15 - Methods of Voltage Control
- Lecture 16 - Compensation of Transmission Lines
- Lecture 17 - Compensation of Transmission Lines (Continued.)
- Lecture 18 - Underground Cables
- Lecture 19 - Cables (Continued.)
- Lecture 20 - Insulators for Overhead Lines
- Lecture 21 - HVDC
- Lecture 22 - HVDC (Continued.)
- Lecture 23 - Distribution Systems
- Lecture 24 - Automatic Generation Control
- Lecture 25 - Automatic Generation Control (Continued.)
- Lecture 26 - Load Flow Studies
- Lecture 27 - Load Flow Problem
- Lecture 28 - Load Flow Analysis (Continued.), Gauss Siedel Method
- Lecture 29 - Newton Raphson (NR), Load Flow Method

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

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- Lecture 30 - Fast Decoupled Load Flow
- Lecture 31 - Control of Voltage Profile
- Lecture 32 - Optimal System Operation (Economic Operation)
- Lecture 33 - Optimal Unit Commitment
- Lecture 34 - Optimal Generation Scheduling
- Lecture 35 - Optimal Load Flow (Continued.) and Hydro Thermal Scheduling

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

NPTEL Video Course - Electrical Engineering - Power System Dynamics

Subject Co-ordinator - Dr. M.L. Kothari

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Introduction to Power System Stability Problem - Part-1
- Lecture 2 - Introduction to Power System Stability Problem - Part-2
- Lecture 3 - Introduction to Power System Stability Problem - Part-3
- Lecture 4 - Solution of Switching Equation
- Lecture 5 - The Equal Area Criterion for Stability - Part-1
- Lecture 6 - The Equal Area Criterion for Stability - Part-2
- Lecture 7 - Transient Stability Analysis of a Multi Machine System
- Lecture 8 - Modeling of Synchronous Machine - Part-1
- Lecture 9 - Modeling of Synchronous Machine - Part-2
- Lecture 10 - Modeling of Synchronous Machine - Part-3
- Lecture 11 - Modeling of Synchronous Machine - Part-4
- Lecture 12 - Synchronous Machine Representation for Stability Studies - Part-1
- Lecture 13 - Synchronous Machine Representation for Stability Studies - Part-2
- Lecture 14 - Excitation Systems - Part-1
- Lecture 15 - Excitation Systems - Part-2
- Lecture 16 - Modeling of Excitation Systems - Part-1
- Lecture 17 - Modeling of Excitation Systems - Part-2
- Lecture 18 - Small Signal Stability of a Single Machine Infinite Bus System - Part-1
- Lecture 19 - Small Signal Stability of a Single Machine Infinite Bus System - Part-2
- Lecture 20 - Small Signal Stability of a Single Machine Infinite Bus System - Part-3
- Lecture 21 - Small Signal Stability of a Single Machine Infinite Bus System - Part-4
- Lecture 22 - Small Signal Stability of a Single Machine Infinite Bus System - Part-5
- Lecture 23 - Dynamic Modeling of Steam turbines and Governors
- Lecture 24 - Dynamic modeling of Hydro Turbines and Governors
- Lecture 25 - Load modeling for Stability Studies
- Lecture 26 - Numerical Integration Methods for Solving a Set of Ordinary Nonlinear Differential Equation
- Lecture 27 - Simulation of Power System Dynamic Response
- Lecture 28 - Dynamic Equivalents for Large Scale Systems - Part-1
- Lecture 29 - Dynamic Equivalents for Large Scale Systems - Part-2

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

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- Lecture 30 - Dynamic Equivalents for Large Scale Systems - Part-3
- Lecture 31 - Direct Method of Transient Stability Analysis - Part-1
- Lecture 32 - Direct Method of Transient Stability Analysis - Part-2
- Lecture 33 - Sub Synchronous Oscillations - Part-1
- Lecture 34 - Sub Synchronous Oscillations - Part-2
- Lecture 35 - Voltage Stability - Part-1
- Lecture 36 - Voltage Stability - Part-2
- Lecture 37 - Voltage Stability - Part-3
- Lecture 38 - Voltage Stability - Part-4
- Lecture 39 - Methods of Improving Stability - Part-1
- Lecture 40 - Methods of Improving Stability - Part-2

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

NPTEL Video Course - Electrical Engineering - Analog Electronic Circuits

Subject Co-ordinator - Prof. S.C. Dutta Roy

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Review of DC Models of Diodes & BJT's
- Lecture 2 - Review of DC Models of BJT (Continued...) and FET
- Lecture 3 - FET Characteristics and Models
- Lecture 4 - Problem Session-1 on DC Analysis of BJT Circuits
- Lecture 5 - BJT Biasing and Bias Stability
- Lecture 6 - BJT Bias Stability (Continued...)
- Lecture 7 - FET Biasing, Current Sources
- Lecture 8 - Problem Session-2 on FET and BJT Characteristics and Biasing
- Lecture 9 - Current Mirrors; BJT Small Signal Models
- Lecture 10 - Small Signal Amplifiers
- Lecture 11 - Mid Frequency Analysis of the CE and CB Amplifier
- Lecture 12 - Problem Session-3 on Mid- Frequency Analysis of CE Amplifiers
- Lecture 13 - Midband Analysis of CB and CC Amplifiers
- Lecture 14 - Midband Analysis of FET Amplifiers
- Lecture 15 - Problem Session-4 on Midband Analysis of Amplifiers
- Lecture 16 - High Frequency Response of Small Signal Amplifiers
- Lecture 17 - High Frequency Response of Small Signal Amplifiers (Continued...)
- Lecture 18 - Low Frequency Response of Small Signal Amplifiers
- Lecture 19 - Problem Session-5 on Frequency Response of Small Signal Amplifiers
- Lecture 20 - Differential Amplifiers
- Lecture 21 - Differential Amplifiers (Continued...)
- Lecture 22 - Discussion on Minor-1 Problems and Differential Amplifiers (Continued...)
- Lecture 23 - Problem Session-6 on Frequency Response of Small Signal Amplifiers (Continued...) and Differential
- Lecture 24 - Use of Current Mirrors in Differential Amplifiers
- Lecture 25 - FET Differential Amplifiers and Introduction to Power Amplifiers
- Lecture 26 - Class B, Class AB and Class A Power Amplifiers
- Lecture 27 - Class A Power Amplifiers; Efficiency Considerations
- Lecture 28 - Problem Session-7 on Deferential and Power Amplifiers
- Lecture 29 - Introduction to Feedback Amplifiers

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

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- Lecture 30 - Advantages of Negative Feedback Amplifiers
- Lecture 31 - Analysis of Feedback Amplifiers
- Lecture 32 - Analysis of the Series - Series and Other Feedback Configurations
- Lecture 33 - Problem Session-8 on Feedback Amplifiers
- Lecture 34 - Sinusoidal Oscillators
- Lecture 35 - More on Oscillators
- Lecture 36 - Solutions to Minor-2 Exam and Concluding Discussions on Oscillators
- Lecture 37 - Problem Session-9 on Oscillators
- Lecture 38 - Tuned (or Narrowband) Amplifiers
- Lecture 39 - Widebanding Techniques
- Lecture 40 - Widebanding By Using an Inductance
- Lecture 41 - Problem Session-10 on Tuned Amplifiers
- Lecture 42 - Widebanding by Using Compound Devices
- Lecture 43 - Cascode Configuration as Wideband Amplifier
- Lecture 44 - Widebanding by Local Feedback
- Lecture 45 - Problem Session-11 on Minor-3 Problems & Widebanding by Compound Devices
- Lecture 46 - Widebanding by Local Feedback and Feedback Cascades
- Lecture 47 - Widebanding by Overall Feedback and Dual Loop Feedback
- Lecture 48 - The Differential Pair and the Gilbert Cell as Wideband Amplifiers
- Lecture 49 - Correction to Gilbert Cell Analysis and Operational Amplifier Imperfections
- Lecture 50 - Op-Amp offsets, Compensation and Slew Rate
- Lecture 51 - Op-Amp Compensation, Slew Rate and Some Problems

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

NPTEL Video Course - Electrical Engineering - Digital Communication

Subject Co-ordinator - Prof. Surendra Prasad

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Introduction to the Course
- Lecture 2 - Digital Representation of Analog Signals, Delta Modulation
- Lecture 3 - Digital Representation of Analog Signals, Pulse Code Modulation
- Lecture 4 - Digital Representation of Analog Signals
- Lecture 5 - Quantization Noise in Delta Modulation (Continued...) and Time Division Multiplexing
- Lecture 6 - Introduction to Line Coding
- Lecture 7 - Spectral Properties of Line Codes
- Lecture 8 - Spectral Properties of Line Codes
- Lecture 9 - Spectral Properties of Line Codes
- Lecture 10 - Baseband Pulse Shaping
- Lecture 11 - Baseband Pulse Shaping; Raised Cosine Family of Pulses
- Lecture 12 - Partial Response Signalling
- Lecture 13 - Precoding for Duobinary and Modified Duobinary Systems
- Lecture 14 - Precoding for Modified Duobinary Systems (Continued...) and General Partial Response Signalling
- Lecture 15 - Binary Baseband Digital Modulation Techniques
- Lecture 16 - Mâ ary Baseband Digital Modulation Techniques
- Lecture 17 - Passband Digital Modulations - I
- Lecture 18 - Passband Digital Modulations - II
- Lecture 19 - Passband Digital Modulations - III
- Lecture 20 - Passband Digital Modulations - IV
- Lecture 21 - Passband Modulations for Band Limited Channels
- Lecture 22 - Baseband and Passband Digital Demodulations
- Lecture 23 - Digital Modulation Part - II Matched Filters
- Lecture 24 - Matched Filters and Coherent Demodulation-I
- Lecture 25 - Coherent Demodulation for Binary Wave Form
- Lecture 26 - Demodulators for Binary Waveforms (Continued...)
- Lecture 27 - Performance Analysis of Binary Digital Modulations
- Lecture 28 - Error Rates for Binary Signalling
- Lecture 29 - Performance of Non Coherent FSK and Differential Phase Shift Keying

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

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- Lecture 30 - Demodulation of DPSK and M<sup>ary</sup> Signals
- Lecture 31 - Performance of M<sup>ary</sup> Digital Modulations
- Lecture 32 - Performance of M<sup>ary</sup> Digital Modulations (Continued...)
- Lecture 33 - Introduction to Information Theory, Part-1
- Lecture 34 - Source Coding
- Lecture 35 - Error Free Communication Over a Noisy Channel
- Lecture 36 - The Concept of Channel Capacity
- Lecture 37 - Error Correcting Codes
- Lecture 38 - Error Correcting Codes (Continued...)

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

NPTEL Video Course - Electrical Engineering - Introduction To Electronic Circuits

Subject Co-ordinator - Prof. S.C. Dutta Roy

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Introduction to the Course and Basic Electrical Quantity
- Lecture 2 - R.L.C. Components, Energy Considerations, Sources and Circuit Laws
- Lecture 3 - KCL, KVL and Network Analysis
- Lecture 4 - Networks Theorems ( Thevenin's Norton's )
- Lecture 5 - Source Transformation; Super Position Theorem and Non-Linear One-Ports
- Lecture 6 - Signal Wave Forms
- Lecture 7 - Periodic Wave Forms and Elements of Amplifiers
- Lecture 8 - Operational Amplifiers and Diodes
- Lecture 9 - Rectifiers and Power Supplies
- Lecture 10 - Wave Shaping Circuits
- Lecture 11 - More on Wave Shaping Circuits and Introduction to Natural Response of Circuits
- Lecture 12 - Natural Response (Continued...)
- Lecture 13 - Natural Response of 2nd Order Circuit
- Lecture 14 - Natural Response of 2nd Order Circuit (Continued...)
- Lecture 15 - Impedance Functions, Poles, Zeros and their Applications
- Lecture 16 - Natural Response and Poles and Zeros and Introduction to Forced Response
- Lecture 17 - Phasors and their Applications in AC Ckts, analysis
- Lecture 18 - More About Phasors and Introduction to Complete Response
- Lecture 19 - Complete Response of Electrical Circuits
- Lecture 20 - AC Circuit Analysis
- Lecture 21 - Filter Circuits and Resonance
- Lecture 22 - Resonance (Continued...)
- Lecture 23 - General Network Analysis
- Lecture 24 - Two-Port Networks
- Lecture 25 - Semiconductor Physics
- Lecture 26 - Semiconductor Physics (Continued...)
- Lecture 27 - More About Diodes Including Zener Diodes
- Lecture 28 - Bipolar Junction Transistors
- Lecture 29 - Transistors Characteristics and Biasing

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

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- Lecture 30 - BJT Biasing and Introduction to Power Amplifiers
- Lecture 31 - BJT Power Amplifiers
- Lecture 32 - Power Amplifier
- Lecture 33 - Power Amplifiers (Continued...) and an Introduction to Small Signal Modelling of BJT
- Lecture 34 - Small Signal Model and Small Signal Amplifiers
- Lecture 35 - Small Signal Amplifiers (Continued...)
- Lecture 36 - Small Signal Amplifier (Continued...)
- Lecture 37 - Small Signal Amplifiers (Continued...)
- Lecture 38 - Negative Feedback
- Lecture 39 - Digital Circuits
- Lecture 40 - Digital Circuits (Continued...)

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

NPTEL Video Course - Electrical Engineering - NOC:Analog Electronic Circuit

Subject Co-ordinator - Dr. Shouribrata Chatterjee

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Introduction to Analog Circuits Introduction to the Diode
- Lecture 2 - Diodes, Introduction to The Transistor
- Lecture 3 - MOS Device, Characteristics
- Lecture 4 - DC operating point
- Lecture 5 - DC operating point, amplifier design
- Lecture 6 - Common source amplifier, small signal analysis
- Lecture 7 - Common gate, common drain
- Lecture 8 - Common gate circuit
- Lecture 9 - Source degenerated amplifier
- Lecture 10 - Swing limits
- Lecture 11 - Swing limits (Continued...), multi transistor amplifiers
- Lecture 12 - Multi-transistor amplifiers
- Lecture 13 - Introduction to current sources
- Lecture 14 - Current sources/mirrors (Continued...)
- Lecture 15 - Current sources, biasing
- Lecture 16 - Differential circuits
- Lecture 17 - Differential amplifiers-I
- Lecture 18 - Differential amplifiers-II
- Lecture 19 - Differential amplifiers-III
- Lecture 20 - Self biased active load diff. amp
- Lecture 21 - Diff. Cascode amplifier, two stage amplifiers
- Lecture 22 - Two stage diff. amps, op-amps
- Lecture 23 - Op-amps, OTAs
- Lecture 24 - Circuits with op-amps
- Lecture 25 - Capacitance in MOS devices
- Lecture 26 - Common source, drain, gate-revisited
- Lecture 27 - Common gate, common drain with capacitances
- Lecture 28 - Cascode, cascade-revisit with capacitance
- Lecture 29 - Cascade amplifier (with capacitance)

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

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- Lecture 30 - Diversion
- Lecture 31 - Diversion Continued
- Lecture 32 - Compensation
- Lecture 33 - Op-amp Design with Compensation
- Lecture 34 - Unity Gain Bandwidth
- Lecture 35 - Power Amplification
- Lecture 36 - Power Amplifiers-2
- Lecture 37 - Power Amplifiers- Class A,B,AB,C ClassD
- Lecture 38 - Class D Amplifiers, Push-pull Amplifiers
- Lecture 39 - Introduction to Voltage Regulators
- Lecture 40 - Voltage Regulators- line, load; Conclusion Regulation

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

NPTEL Video Course - Electrical Engineering - NOC:Nonlinear and Adaptive Control

Subject Co-ordinator - Prof. Shubhendu Bhasin

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Introduction

Lecture 2 - Preliminaries

Lecture 3 - Model Reference Adaptive Control - Part 1

Lecture 4 - Model Reference Adaptive Control - Part 2

Lecture 5 - Model Reference Adaptive Control - Part 3

Lecture 6 - Adaptive Command Tracking

Lecture 7 - Robust Model Reference Adaptive Control - Part 1

Lecture 8 - Robust Model Reference Adaptive Control - Part 2

Lecture 9 - Robust Model Reference Adaptive Control - Part 3

Lecture 10 - Robust Model Reference Adaptive Control - Part 4



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

NPTEL Video Course - Electrical Engineering - NOC:Information Theory, Coding and Cryptography

Subject Co-ordinator - Prof. Ranjan Bose

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Introduction to Information Theory
- Lecture 2 - Entropy, Mutual Information, Conditional and Joint Entropy
- Lecture 3 - Measures for Continuous, Random Variable, Relative Entropy
- Lecture 4 - Variable Length Codes, Prefix Codes
- Lecture 5 - Source Coding Theorem
- Lecture 6 - various source coding Techniques
- Lecture 7 - Optimum Quantizer, Practical Application of Source Coding
- Lecture 8 - Introduction to Super Information
- Lecture 9 - Channel Models and Channel Capacity
- Lecture 10 - Noisy Channel Coding Theorem
- Lecture 11 - Gaussian Channel and Information Capacity Theorem
- Lecture 12 - Capacity of MIMO Channels
- Lecture 13 - Introduction to Error Control Coding
- Lecture 14 - Introduction to Galois Field
- Lecture 15 - Equivalent Codes, Generator Matrix and Parity Check Matrix
- Lecture 16 - Systematic Codes, Error Detections and Correction
- Lecture 17 - Erasure and Errors, Standard Array and Syndrome Decoding
- Lecture 18 - Probability of Error, Coding Gain and Hamming Bound
- Lecture 19 - Hamming Codes, LDPC Codes and MDS Codes
- Lecture 20 - Introduction to Cyclic Codes
- Lecture 21 - Generator Polynomial, Syndrome Polynomial and Matrix Representation
- Lecture 22 - Fire Code, Golay Code, CRC Codes and Circuit Implementation of Cyclic Codes
- Lecture 23 - Introduction to BCH Codes
- Lecture 24 - Multiple Error Correcting BCH Codes, Decoding of BCH Codes
- Lecture 25 - Introduction to Reed Solomon (RS) Codes
- Lecture 26 - Introduction to Convolutional Codes
- Lecture 27 - Trellis Codes
- Lecture 28 - Vitrebi Decoding and Known good Convolutional Codes
- Lecture 29 - Introduction to Turbo Codes

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

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- Lecture 30 - Introduction to Trellis Coded Modulation (TCM)
- Lecture 31 - Ungerboeck's Design Rules and Performance Evaluation of TCM Schemes
- Lecture 32 - TCM for Fading Channel and Space Time Trellis Codes (STTC)
- Lecture 33 - Introduction to Space Time Block Codes (STBC)
- Lecture 34 - Space Time Codes
- Lecture 35 - Space Time Codes (Continued...)
- Lecture 36 - Introduction to Cryptography
- Lecture 37 - Some Well-Known Algorithms
- Lecture 38 - Introduction to Physical Layer Security
- Lecture 39 - Secrecy Outage Capacity, Secrecy Outage Probability, Cooperative Jamming

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

NPTEL Video Course - Electrical Engineering - NOC:Principles of Digital Communications (2018)

Subject Co-ordinator - Prof. Abhishek Dixit

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Introduction  
Lecture 2 - Signal Spaces  
Lecture 3 - Inner Product and Orthogonal Expansion  
Lecture 4 - Signal Spaces  
Lecture 5 - Signal Spaces  
Lecture 6 - Signal Spaces  
Lecture 7 - Random Variables and Random Processes  
Lecture 8 - Random Variables and Random Processes  
Lecture 9 - Random Variables and Random Processes  
Lecture 10 - Random Variables and Random Processes  
Lecture 11 - Random Variables and Random Processes  
Lecture 12 - Random Variables and Random Processes  
Lecture 13 - Random Variables and Random Processes  
Lecture 14 - Random Variables and Random Processes  
Lecture 15 - Random Variables and Random Processes  
Lecture 16 - Random Variables and Random Processes  
Lecture 17 - Random Variables and Random Processes  
Lecture 18 - Waveform Coding  
Lecture 19 - Modulation  
Lecture 20 - Modulation  
Lecture 21 - Modulation  
Lecture 22 - Modulation  
Lecture 23 - Modulation  
Lecture 24 - Modulation  
Lecture 25 - Modulation  
Lecture 26 - Modulation  
Lecture 27 - Modulation  
Lecture 28 - Modulation  
Lecture 29 - Modulation

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

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Lecture 30 - Detection  
Lecture 31 - Detection  
Lecture 32 - Detection  
Lecture 33 - Detection  
Lecture 34 - Detection  
Lecture 35 - Detection  
Lecture 36 - Detection  
Lecture 37 - Detection  
Lecture 38 - Detection

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

NPTEL Video Course - Electrical Engineering - NOC:Electric Vehicles - Part 1

Subject Co-ordinator - Prof. Amit Jain

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Intro EV Historical\_Background  
Lecture 2 - Intro EV Benefits of Using Evs  
Lecture 3 - Intro EV Overview of types of Evs and its Challenges  
Lecture 4 - Intro EV Motor Drive Technologies  
Lecture 5 - Intro EV Energy Source Technologies  
Lecture 6 - Intro EV Battery Charging Technologies  
Lecture 7 - Intro EV Vehicle to Grid  
Lecture 8 - Intro EV Subsystems and Configurations  
Lecture 9 - Intro HEV Subsystems and Configurations  
Lecture 10 - Intro HEV Subsystems and Modes of Operation  
Lecture 11 - Vehicle\_Dynamics\_intro\_and\_tractive\_effort  
Lecture 12 - Vehicle\_Dynamics\_and\_dynamic\_equation  
Lecture 13 - Vehicle Dynamics simulation dynamic equation constant Fte  
Lecture 14 - Vehicle Dynamics dynamic equation variable Fte  
Lecture 15 - Vehicle Dynamics simulation dynamic equation variable Fte  
Lecture 16 - Vehicle Dynamics Modelling and simulation in Simulink  
Lecture 17 - Summary Electric Vehicles Part 1 Course

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

NPTEL Video Course - Electrical Engineering - Advanced Control Systems

Subject Co-ordinator - Prof. S. Majhi

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Introduction
- Lecture 2 - Control structures and performance measures
- Lecture 3 - Time and frequency domain performance measures
- Lecture 4 - Design of controller
- Lecture 5 - Design of controller for SISO system
- Lecture 6 - Controller design for TITO processes
- Lecture 7 - Limitations of PID controllers
- Lecture 8 - PI-PD controller for SISO system
- Lecture 9 - PID-P controller for Two Input Two Output system
- Lecture 10 - Effects of measurement noise and load
- Lecture 11 - Identification of dynamic models of plants
- Lecture 12 - Relay control system for identification
- Lecture 13 - Off-line identification of process dynamics
- Lecture 14 - On-line identification of plant dynamics
- Lecture 15 - State space based identification
- Lecture 16 - State space analysis of systems
- Lecture 17 - State space based identification of systems - 1
- Lecture 18 - State space based identification of systems - 2
- Lecture 19 - Identification of simple systems
- Lecture 20 - Identification of FOPDT model
- Lecture 21 - Identification of second order plus dead time model
- Lecture 22 - Identification of SOPDT model
- Lecture 23 - Steady state gain from asymmetrical relay test
- Lecture 24 - Identification of SOPDT model with pole multiplicity
- Lecture 25 - Existence of limit cycle for unstable system
- Lecture 26 - Identification procedures
- Lecture 27 - Identification of underdamped systems
- Lecture 28 - Off-line identification of TITO systems
- Lecture 29 - On-line identification of TITO systems

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

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- Lecture 30 - Review of time domain based identification
- Lecture 31 - DF based analytical expressions for on-line identification
- Lecture 32 - Model parameter accuracy and sensitivity
- Lecture 33 - Improved identification using Fourier series and wavelet transform
- Lecture 34 - Reviews of DF based identification
- Lecture 35 - Advanced Smith predictor controller
- Lecture 36 - Design of controllers for the advanced Smith predictor
- Lecture 37 - Model-free controller design
- Lecture 38 - Model Based PID controller Design - I
- Lecture 39 - Model Based PI-PD controller Design - II
- Lecture 40 - Tuning of reconfigurable PID controllers

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

NPTEL Video Course - Electrical Engineering - NOC:Optimization Techniques for Digital VLSI Design

Subject Co-ordinator - Dr. Santosh Biswas, Prof. Chandan Karfa

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Introduction to Digital VLSI Design Flow
- Lecture 2 - High-level Synthesis (HLS) flow with an example
- Lecture 3 - Automation of High-level Synthesis Steps
- Lecture 4 - Impact of Coding Style on HLS Results
- Lecture 5 - Impact of Compiler Optimizations on HLS Results
- Lecture 6 - RTL Optimizations for Timing
- Lecture 7 - Retiming
- Lecture 8 - RTL Optimizations for Area
- Lecture 9 - RTL Optimizations for Power
- Lecture 10 - High Level Synthesis
- Lecture 11 - Overview of FPGA Technology Mapping
- Lecture 12 - Introduction to Physical Synthesis
- Lecture 13 - Introduction to Digital VLSI Testing - I
- Lecture 14 - Introduction to Digital VLSI Testing - II
- Lecture 15 - Optimization Techniques for ATPG - Part I
- Lecture 16 - Optimization Techniques for ATPG - Part II
- Lecture 17 - Optimization Techniques for Design for Testability
- Lecture 18 - High-level fault modeling and RTL level Testing
- Lecture 19 - LTL/CTL based Verification
- Lecture 20 - Verification of Large Scale Systems
- Lecture 21 - BDD based verification
- Lecture 22 - Verification
- Lecture 23 - Verification
- Lecture 24 - Verification

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

NPTEL Video Course - Electrical Engineering - NOC:Advanced Topics in Probability and Random Processes

Subject Co-ordinator - Prof. Prabin K Bora

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Probability Basics
- Lecture 2 - Random Variable - I
- Lecture 3 - Random Variable - II
- Lecture 4 - Random Vectors and Random Processes
- Lecture 5 - Infinite Sequence of Events - I
- Lecture 6 - Infinite Sequence of Events - II
- Lecture 7 - Convergence of Sequence of Random Variables
- Lecture 8 - Weak Convergence - I
- Lecture 9 - Weak Convergence - II
- Lecture 10 - Laws of Large Numbers
- Lecture 11 - Central Limit Theorem
- Lecture 12 - Large Deviation Theory
- Lecture 13 - Crammer's Theorem for Large Deviation
- Lecture 14 - Introduction to Markov Processes
- Lecture 15 - Discrete Time Markov Chain - 1
- Lecture 16 - Discrete Time Markov Chain - 2
- Lecture 17 - Discrete Time Markov Chain - 3
- Lecture 18 - Discrete Time Markov Chain - 4
- Lecture 19 - Discrete Time Markov Chain - 5
- Lecture 20 - Continuous Time Markov Chain - 1
- Lecture 21 - Continuous Time Markov Chain - 2
- Lecture 22 - Continuous Time Markov Chain - 3
- Lecture 23 - Martingale Process - 1
- Lecture 24 - Martingale Process - 2

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

NPTEL Video Course - Electrical Engineering - Advanced Electric Drives

Subject Co-ordinator - Dr. S.P. Das

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  
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Lecture 22  
Lecture 23  
Lecture 24  
Lecture 25  
Lecture 26  
Lecture 27  
Lecture 28  
Lecture 29

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

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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 - Electrical Engineering - High Voltage DC Transmission

Subject Co-ordinator - Dr. S.N. Singh

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - High Voltage DC Transmission  
Lecture 2 - High Voltage DC Transmission  
Lecture 3 - High Voltage DC Transmission  
Lecture 4 - High Voltage DC Transmission  
Lecture 5 - High Voltage DC Transmission  
Lecture 6 - High Voltage DC Transmission  
Lecture 7 - High Voltage DC Transmission  
Lecture 8 - High Voltage DC Transmission  
Lecture 9 - High Voltage DC Transmission  
Lecture 10 - High Voltage DC Transmission  
Lecture 11 - High Voltage DC Transmission  
Lecture 12 - High Voltage DC Transmission  
Lecture 13 - High Voltage DC Transmission  
Lecture 14 - High Voltage DC Transmission  
Lecture 15 - High Voltage DC Transmission  
Lecture 16 - High Voltage DC Transmission  
Lecture 17 - High Voltage DC Transmission  
Lecture 18 - High Voltage DC Transmission  
Lecture 19 - High Voltage DC Transmission  
Lecture 20 - High Voltage DC Transmission  
Lecture 21 - High Voltage DC Transmission  
Lecture 22 - High Voltage DC Transmission  
Lecture 23 - High Voltage DC Transmission  
Lecture 24 - High Voltage DC Transmission  
Lecture 25 - High Voltage DC Transmission  
Lecture 26 - High Voltage DC Transmission  
Lecture 27 - High Voltage DC Transmission  
Lecture 28 - High Voltage DC Transmission  
Lecture 29 - High Voltage DC Transmission

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

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Lecture 30 - High Voltage DC Transmission  
Lecture 31 - High Voltage DC Transmission  
Lecture 32 - High Voltage DC Transmission  
Lecture 33 - High Voltage DC Transmission  
Lecture 34 - High Voltage DC Transmission  
Lecture 35 - High Voltage DC Transmission  
Lecture 36 - High Voltage DC Transmission  
Lecture 37 - High Voltage DC Transmission

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

NPTEL Video Course - Electrical Engineering - Intelligent Systems and Control

Subject Co-ordinator - Prof. Laxmidhar Behera

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Intelligent Systems and Control
- Lecture 2 - Linear Neural networks
- Lecture 3 - Multi layered Neural Networks
- Lecture 4 - Back Propagation Algorithm revisited
- Lecture 5 - Non Linear System Analysis - Part I
- Lecture 6 - Non Linear System Analysis - Part II
- Lecture 7 - Radial Basis Function Networks
- Lecture 8 - Adaptive Learning rate
- Lecture 9 - Weight update rules
- Lecture 10 - Recurrent networks Back propagation through time
- Lecture 11 - Recurrent networks Real time recurrent learning
- Lecture 12 - Self organizing Map - Multidimensional networks
- Lecture 13 - Fuzzy sets - A Primer
- Lecture 14 - Fuzzy Relations
- Lecture 15 - Fuzzy Rule base and Approximate Reasoning
- Lecture 16 - Introduction to Fuzzy Logic Control
- Lecture 17 - Neural Control A review
- Lecture 18 - Network inversion and Control
- Lecture 19 - Neural Model of a Robot manipulator
- Lecture 20 - Indirect Adaptive Control of a Robot manipulator
- Lecture 21 - Adaptive neural control for Affine Systems SISO
- Lecture 22 - Adaptive neural control for Affine systems MIMO
- Lecture 23 - Visual Motor Coordination with KSOM
- Lecture 24 - Visual Motor coordination - quantum clustering
- Lecture 25 - Direct Adaptive control of Manipulators - Intro
- Lecture 26 - NN based back stepping control
- Lecture 27 - Fuzzy Control - a Review
- Lecture 28 - Mamdani type flc and parameter optimization
- Lecture 29 - Fuzzy Control of a pH reactor

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

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- Lecture 30 - Fuzzy Lyapunov controller - Computing with words
- Lecture 31 - Controller Design for a T-S Fuzzy model
- Lecture 32 - Linear controllers using T-S fuzzy model

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

NPTEL Video Course - Electrical Engineering - Power Systems Operation and Control

Subject Co-ordinator - Dr. S.N. Singh

Co-ordinating Institute - IIT - Kanpur

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

Module 1 - Lecture 1  
Module 1 - Lecture 2  
Module 1 - Lecture 3  
Module 2 - Lecture 1  
Module 2 - Lecture 2  
Module 2 - Lecture 3  
Module 2 - Lecture 4  
Module 2 - Lecture 5  
Module 2 - Lecture 6  
Module 2 - Lecture 7  
Module 2 - Lecture 8  
Module 2 - Lecture 9  
Module 2 - Lecture 10  
Module 2 - Lecture 11  
Module 2 - Lecture 12  
Module 2 - Lecture 13  
Module 2 - Lecture 14  
Module 3 - Lecture 1  
Module 3 - Lecture 2  
Module 3 - Lecture 3  
Module 3 - Lecture 4  
Module 3 - Lecture 5  
Module 3 - Lecture 6  
Module 3 - Lecture 7  
Module 3 - Lecture 8  
Module 3 - Lecture 9  
Module 3 - Lecture 10  
Module 4 - Lecture 1  
Module 4 - Lecture 2

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

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Module 4 - Lecture 3  
Module 4 - Lecture 4  
Module 5 - Lecture 1  
Module 5 - Lecture 2  
Module 6 - Lecture 1  
Module 6 - Lecture 2

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

NPTEL Video Course - Electrical Engineering - NOC:Electromagnetic theory

Subject Co-ordinator - Dr. Pradeep Kumar K

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to EMT
- Lecture 2 - Coulombs law
- Lecture 3 - Vector analysis-I and Introduction to coordinate system
- Lecture 4 - Rectangular coordinate system
- Lecture 5 - Vector analysis-II
- Lecture 6 - Introduction to Electric field
- Lecture 7 - Electric field-I
- Lecture 8 - Cylindrical coordinate system
- Lecture 9 - Transformation and Electric field-II
- Lecture 10 - Electric Potential-I
- Lecture 11 - Spherical co-ordinate system and Electric potential-II
- Lecture 12 - Vector Analysis-III and Electric potential-III
- Lecture 13 - Gauss's law and its application-I
- Lecture 14 - Gauss's law and its application-II
- Lecture 15 - Divergence and Poisson's and Laplace's equation
- Lecture 16 - Gauss's law and its application -III
- Lecture 17 - Vector analysis  $\hat{\text{A}}$  III (curl and its significance)
- Lecture 18 - Conductor and dielectric-I
- Lecture 19 - Polarization - I
- Lecture 20 - Polarization - II
- Lecture 21 - Polarization - II (Continued...)
- Lecture 22 - Boundary condition
- Lecture 23 - Continuity equation and Conductors - III
- Lecture 24 - Conductors  $\hat{\text{A}}$  IV
- Lecture 25 - Conductors  $\hat{\text{A}}$  IV (Continued...) and Capacitor - I
- Lecture 26 - Capacitor - II
- Lecture 27 - Capacitor - II (Continued...) and Equipotential Surfaces
- Lecture 28 - Solution of Laplace's equation-I
- Lecture 29 - Solution of Laplace's equation-I I and method of images-I

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

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- Lecture 30 - Method of images-II
- Lecture 31 - Solution of Laplace's equation-III
- Lecture 32 - Solution of Laplace's equation-IV
- Lecture 33 - Introduction of magnetic field
- Lecture 34 - Biot savart law and its application
- Lecture 35 - Biot savart law and its application-II
- Lecture 36 - Magnetic vector potential
- Lecture 37 - Magnetic force, torque and dipole
- Lecture 38 - Magnetic force, torque and dipole (Continued...)
- Lecture 39 - Magnetic materials-I
- Lecture 40 - Magnetic materials-I (Continued...) and Magnetic moment
- Lecture 41 - Magnetic materials-I (Continued...) and Boundary condition for Magnetic fields
- Lecture 42 - Inductor and calculation of inductance for different shapes
- Lecture 43 - Inductor and calculation of inductance for different shapes (Continued...)
- Lecture 44 - Faradays law and its application-I
- Lecture 45 - Faradays law and its application-II
- Lecture 46 - Displacement current
- Lecture 47 - Maxwell's equation
- Lecture 48 - Wave propagation
- Lecture 49 - Solution of Helmholtz equation
- Lecture 50 - Uniform plane waves
- Lecture 51 - Polarization and Poynting Vector
- Lecture 52 - Wave reflections (Normal incidence)
- Lecture 53 - Waves in imperfect dielectrics and Good conductors
- Lecture 54 - Skin depth/effect
- Lecture 55 - Oblique incidence of waves
- Lecture 56 - Oblique incidence of waves (Continued...)
- Lecture 57 - Transmission line
- Lecture 58 - Transmission line model
- Lecture 59 - Steady state sinusoidal response of T-line-I
- Lecture 60 - Steady state sinusoidal response of T-line-II
- Lecture 61 - Steady state sinusoidal response of T-line-II and Smith chart
- Lecture 62 - Application of smith chart-I
- Lecture 63 - Application of smith chart-II
- Lecture 64 - Impedance matching
- Lecture 65 - Transients on Transmission line-I
- Lecture 66 - Transients on Transmission line-II
- Lecture 67 - Pulse on Transmission line
- Lecture 68 - Capacitive termination in Transmission line

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

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- Lecture 69 - Waveguide
- Lecture 70 - Waveguide Analysis
- Lecture 71 - TM modes in Waveguide
- Lecture 72 - Rectangular waveguide
- Lecture 73 - Rectangular waveguide
- Lecture 74 - Waveguide
- Lecture 75 - Waveguide losses
- Lecture 76 - Dielectric Waveguide
- Lecture 77 - Dielectric Waveguide (Continued...)
- Lecture 78 - Radiation and Antenna
- Lecture 79 - Hertzian Dipole Antenna
- Lecture 80 - Hertzian Dipole Antenna (Continued...)
- Lecture 81 - Quasi-statistics-I
- Lecture 82 - Quasi-statistics-II
- Lecture 83 - Long wire Antenna
- Lecture 84 - Group velocity and Phase velocity
- Lecture 85 - Numerical solution of Laplace's equation

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

NPTEL Video Course - Electrical Engineering - NOC:Principles of Communication - Part 1

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Basics - Definition of Energy and Power of Signals
- Lecture 2 - Frequency Domain Representation and Introduction to Discrete Fourier Series
- Lecture 3 - Discrete Fourier Series Example and Parseval's Theorem for Periodic Signals
- Lecture 4 - Fourier Transform (FT), Inverse Fourier Transform (IFT) of Continuous Signals, Example of FT of P
- Lecture 5 - Modulation Property of Fourier Transform, Dirac Delta or Unit Impulse Function - Definition and F
- Lecture 6 - Duality Property of Fourier Transform and Introduction to Linear Time Invariant (LTI) Systems
- Lecture 7 - Transmission of Signal through Linear Time Invariant (LTI) Systems and Cross- Correlation of Sign
- Lecture 8 - Auto-Correlation of Signal and Energy Spectral Density (ESD)
- Lecture 9 - Example for Auto-Correlation of Signal and Energy Spectral Density (ESD)
- Lecture 10 - Introduction to Amplitude Modulation (AM), Modulation Index, Envelope Distortion and Over Modula
- Lecture 11 - Spectrum of Amplitude Modulated(AM) Signals and Introduction to Envelope Detection
- Lecture 12 - Envelope Detection for Amplitude Modulated (AM) Signals and Time Constant for Capacitor in Envel
- Lecture 13 - Power of Amplitude Modulated (AM) Signals and Power Efficiency of AM Signals
- Lecture 14 - Double Sideband (DSB) Suppressed Carrier (SC) Modulation, Spectrum of DSB-SC Signals and Coheren
- Lecture 15 - Double Sideband(DSB) Suppressed Carrier (SC) Demodulation, Non-coherent demodulation, Impact of
- Lecture 16 - Carrier Phase Offset Example for Double Sideband (DSB) Suppressed Carrier (SC) Demodulation- Wir
- Lecture 17 - Phase Synchronization using Costas Receiver for Double Sideband (DSB) Suppressed Carrier (SC) De
- Lecture 18 - Introduction to Quadrature Carrier Multiplexing (QCM) and Demodulation of QCM Signals.
- Lecture 19 - Introduction to Single Sideband (SSB) Modulation
- Lecture 20 - Generation of Single Sideband (SSB) Modulation Signals through Frequency Discrimination
- Lecture 21 - Frequency Domain Description of Hilbert Transform  $\hat{A}$  Fourier Spectrum of the Hilbert Transformer
- Lecture 22 - Time Domain Description of Hilbert Transform  $\hat{A}$  Impulse Response of the Hilbert Transformer
- Lecture 23 - Phase Shifting Method for Generation of Single Sideband (SSB) Modulated Signals based on Hilbert
- Lecture 24 - Complex Pre-Envelope and Complex Envelope of Passband Signals
- Lecture 25 - Complex Pre- Envelope and Complex Envelope of QCM (Quadrature Carrier Modulated) Signals
- Lecture 26 - Introduction to Vestigial Side Band(VSB) Modulation and Non- Ideal Filtering, Spectral Efficiency
- Lecture 27 - Properties of Vestigial Side Band Filter for Reconstruction of Message Signal without Distortion
- Lecture 28 - Introduction to Angle Modulation, Description of Phase Modulation (PM) and Frequency Modulation
- Lecture 29 - Frequency Modulation (FM) with Sinusoidal Modulation Signal and Pictorial Examples, Insights of

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

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- Lecture 30 - Indirect Method for Generation of FM Signals - Generation of Narrowband FM Signal
- Lecture 31 - Indirect Method for Generation of FM Signals - Generation of Wideband FM Signal through Frequency Modulation
- Lecture 32 - Spectrum of Frequency Modulated (FM) Signals
- Lecture 33 - Bandwidth of Frequency Modulated (FM) Signals - Carson's Rule
- Lecture 34 - Demodulation of Frequency Modulated (FM) Signals, Condition of Envelope Detection
- Lecture 35 - Analog to Digital Conversion of Signals and Introduction to Sampling
- Lecture 36 - Spectrum of Sampled Signal, Aliasing and Nyquist Sampling Theorem
- Lecture 37 - Ideal Impulse Train Sampling, Reconstruction of Original Signal from Samples, Sinc Interpolation
- Lecture 38 - Introduction to Pulse Amplitude Modulation (PAM), Sample and Hold, Flat Top Sampling
- Lecture 39 - Pulse Amplitude Modulation (PAM), Spectrum of PAM Signal, Reconstruction of Original Signal from Samples
- Lecture 40 - Introduction to Quantization, Uniform Quantizer, Mid-Tread Quantizer
- Lecture 41 - Quantization, Mid-Rise Quantizer, PDF and Power of Quantization Noise, Quantization Noise Power
- Lecture 42 - Introduction to Lloyd-Max Quantization Algorithm, Optimal Quantizer Design
- Lecture 43 - Lloyd-Max Quantization Algorithm, Iterative Computation of Optimal Quantization Levels and Intervals
- Lecture 44 - Companding for Non-Uniform Quantization,  $\mu$ -law Compressor, A-law Compressor
- Lecture 45 - Introduction to Delta Modulation, One-bit Quantizer
- Lecture 46 - Signal Reconstruction in Delta Modulation, Schematic Diagrams, Slope Overload Distortion and Granular Noise
- Lecture 47 - Differential Pulse Coded Modulation (DPCM), DPCM Signal Reconstruction and Schematic Diagram
- Lecture 48 - Frequency Mixing and Translation in Communication Systems, Heterodyne and Super Heterodyne Receivers
- Lecture 49 - Frequency Translation and Super Heterodyne Receivers, Problem of Image Frequency
- Lecture 50 - Frequency Division Multiplexing (FDM), Carrier Spacing in FDM
- Lecture 51 - Time Division Multiplexing (TDM), Operation of TDM, Sample Spacing in TDM
- Lecture 52 - Bandwidth Requirements for Time Division Multiplexing (TDM), The T1 TDM System

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

NPTEL Video Course - Electrical Engineering - NOC:An Introduction to Coding Theory

Subject Co-ordinator - Dr. Adrish Banerjee

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Introduction to Error Control Coding - I  
Lecture 2 - Introduction to Error Control Coding - II  
Lecture 3 - Introduction to Error Control Coding - III  
Lecture 4 - Introduction to Linear Block Codes, Generator Matrix and Parity Check Matrix  
Lecture 5 - Syndrome, Error Correction and Error Detection  
Lecture 6 - Problem Solving Session - I  
Lecture 7 - Decoding of Linear Block Codes  
Lecture 8 - Distance Properties of Linear Block Codes - I  
Lecture 9 - Distance Properties of Linear Block Codes - II  
Lecture 10 - Problem Solving Session - II  
Lecture 11 - Some Simple Linear Block Codes - I  
Lecture 12 - Some Simple Linear Block Codes - II  
Lecture 13 - Bounds on the Size of a Code  
Lecture 14 - Problem Solving Session - III  
Lecture 15 - Introduction to Convolutional Codes - I  
Lecture 16 - Introduction to Convolutional Codes - II  
Lecture 17 - Convolutional Codes  
Lecture 18 - Convolutional Codes  
Lecture 19 - Decoding of Convolutional Codes - I  
Lecture 20 - Decoding of Convolutional Codes - II  
Lecture 21 - Problem solving session - IV  
Lecture 22 - Problem solving session - V  
Lecture 23 - Performance Bounds for Convolutional Codes  
Lecture 24 - Low Density Parity Check Codes  
Lecture 25 - Decoding of Low Density Parity Check Codes - I  
Lecture 26 - Decoding of Low Density Parity Check Codes - II  
Lecture 27 - Turbo Codes  
Lecture 28 - Turbo Decoding  
Lecture 29 - Problem Solving Sessions - VI

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

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- Lecture 30 - Distance Properties of Turbo Codes
- Lecture 31 - Convergence of Turbo Codes
- Lecture 32 - Automatic Repeat reQuest (ARQ) Schemes
- Lecture 33 - Applications of Linear Codes



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

NPTEL Video Course - Electrical Engineering - NOC:Principles of Communication Systems - Part II

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Digital Communication Systems
- Lecture 2 - Spectrum of Transmitted Digital Communication Signal and Wide Sense Stationarity
- Lecture 3 - Spectrum of Transmitted Digital Communication Signal, Autocorrelation Function and Power Spectral Density
- Lecture 4 - Spectrum of Transmitted Digital Communication Signal, Relation to Energy Spectral Density and Intensity
- Lecture 5 - Additive White Gaussian Noise (AWGN) Properties, Gaussian Noise and White Noise
- Lecture 6 - Structure of Digital Communication Receiver, Receiver Filter and Signal-to-Noise Power Ratio (SNR)
- Lecture 7 - Digital Communication Receiver, Noise Properties and Output Noise Power
- Lecture 8 - Digital Communication Receiver, Optimal SNR and Matched Filter
- Lecture 9 - Probability of Error in Digital Communication and Probability Density Functions of Output
- Lecture 10 - Probability of Error in Digital Communication, Optimal Decision Rule and Gaussian Q function
- Lecture 11 - Introduction to Binary Phase Shift Keying (BPSK) Modulation, Optimal Decision Rule and Probability of Error
- Lecture 12 - Introduction to Amplitude Shift Keying (ASK) Modulation
- Lecture 13 - Optimal Decision Rule for Amplitude Shift Keying (ASK), Bit Error Rate (BER) and Comparison with BPSK
- Lecture 14 - Introduction to Signal Space Concept and Orthonormal Basis Signals
- Lecture 15 - Introduction to Frequency Shift Keying (FSK)
- Lecture 16 - Optimal Decision Rule for FSK, Bit Error Rate (BER) and Comparison with BPSK, ASK
- Lecture 17 - Introduction to Quadrature Phase Shift Keying (QPSK)
- Lecture 18 - Waveforms of Quadrature Phase Shift Keying (QPSK)
- Lecture 19 - Matched Filtering, Bit Error Rate and Symbol Error Rate for Quadrature Phase Shift Keying (QPSK)
- Lecture 20 - Introduction to M-ary PAM (Pulse Amplitude Modulation), Average Symbol Power and Decision rules
- Lecture 21 - M-ary PAM (Pulse Amplitude Modulation) -Part-II, Optimal Decision Rule and Probability of Error
- Lecture 22 - M-ary QAM (Quadrature Amplitude Modulation) Part-I, Introduction, Transmitted Waveform and Average Symbol Power
- Lecture 23 - M-ary QAM (Quadrature Amplitude Modulation) - Part-II, Optimal Decision Rule, Probability of Error
- Lecture 24 - M-ary PSK (Phase Shift Keying) Part-I, Introduction, Transmitted Waveform and Constellation Diagram
- Lecture 25 - M-ary PSK (Phase Shift Keying) - Part-II, Optimal Decision Rule, Nearest Neighbor Criterion and Probability of Error
- Lecture 26 - Introduction to Information Theory, Relevance of Information Theory and Characterization of Information
- Lecture 27 - Definition of Entropy, Average of Information / Uncertainty of source and Properties of Entropy
- Lecture 28 - Entropy Example- Binary Source Maximum and Minimum Entropy of Binary Source
- Lecture 29 - Maximum Entropy of Source with M-ary Alphabet, Concave/Convex Functions and Jensens Inequality

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

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- Lecture 30 - Joint Entropy , Definition of Joint Entropy of Two Sources and Simple Examples for Joint Entropy
- Lecture 31 - Properties of Joint Entropy and Relation between Joint Entropy and Marginal Entropies
- Lecture 32 - Conditional Entropy, Example of Conditional Entropy and Properties of Conditional Entropy
- Lecture 33 - Mutual Information, Diagrammatic Representation and Properties of Mutual Information
- Lecture 34 - Simple Example of Mutual Information and Practical Example of Mutual Information-Binary Symmetric
- Lecture 35 - Channel Capacity, Implications of Channel Capacity, Claude E. Shannon- Father of Information Theory
- Lecture 36 - Differential Entropy and Example for Uniform Probability Density function
- Lecture 37 - Differential Entropy of Gaussian Source and Insights
- Lecture 38 - Joint Conditional/ Differential Entropies and Mutual Information
- Lecture 39 - Capacity of Gaussian channel - Part I
- Lecture 40 - Capacity of Gaussian Channel - Part-II, Practical Implications and Maximum rate in bits/sec
- Lecture 41 - Introduction to Source Coding and Data Compression, Variable Length codes and Unique Decodability
- Lecture 42 - Uniquely Decodable Codes, Prefix-free code, Instantaneous Code and Average Code length
- Lecture 43 - Binary Tree Representation of Code, Example and Kraft Inequality
- Lecture 44 - Lower Bound on Average Code Length and Kullback-Leibler Divergence
- Lecture 45 - Optimal Code length, Constrained Optimization and Morse Code Example
- Lecture 46 - Approaching Lower Bound on Average code length and Block Coding
- Lecture 47 - Huffman Code, Algorithm, Example and Average Code Length
- Lecture 48 - Introduction to channel coding, Rate of Code, Repetition Code and Hamming Distance
- Lecture 49 - Introduction to Convolutional Codes, Binary Field Arithmetic and Linear Codes
- Lecture 50 - Example of Convolutional Code Output and Convolution Operation for Code generation
- Lecture 51 - Matrix Representation of Convolutional Codes, Generator Matrix, Transform Domain Representation
- Lecture 52 - State Diagram Representation of Convolutional Code, State transitions and Example of Code Generation
- Lecture 53 - Trellis Representation of Convolutional Code and Valid Code Words
- Lecture 54 - Decoding of the Convolutional Code, Minimum Hamming distance and Maximum Likelihood Codeword Estimation
- Lecture 55 - Principle of Decoding of Convolutional code
- Lecture 56 - Viterbi Decoder for Maximum Likelihood Decoding of Convolutional Code Using Trellis Representation

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

NPTEL Video Course - Electrical Engineering - NOC:Applied Engineering Electromagnetics

Subject Co-ordinator - Dr. Pradeep Kumar K

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Applied Electromagnetics
- Lecture 2 - Introduction to Transmission lines
- Lecture 3 - Sinusoidal waves on Transmission lines
- Lecture 4 - Terminating T-lines
- Lecture 5 - Circuit parameters of a T-line
- Lecture 6 - Lossy Transmission lines and primary constants
- Lecture 7 - When to apply T-line Theory?
- Lecture 8 - Standing Waves on T-lines
- Lecture 9 - Lumped equivalent circuits of T-lines
- Lecture 10 - Impedance transformation and power flow on T-lines
- Lecture 11 - Graphical aid
- Lecture 12 - Smith chart applications
- Lecture 13 - Further applications of Smith chart - Part 1
- Lecture 14 - Further applications of Smith chart - Part 2
- Lecture 15 - Impedance matching techniques - Part 1
- Lecture 16 - Impedance matching techniques - Part 2
- Lecture 17 - Impedance matching techniques - Part 3
- Lecture 18 - T-lines in time domain
- Lecture 19 - Further examples of use of lattice diagrams
- Lecture 20 - High-speed digital signal propagation on T-lines
- Lecture 21 - Transient analysis with reactive termination and Time-domain reflectometry
- Lecture 22 - Fault detection using TDR
- Lecture 23 - Why Electromagnetics?
- Lecture 24 - Rectangular coordinate systems
- Lecture 25 - Cylindrical coordinate systems
- Lecture 26 - Review of vector fields and Gradient
- Lecture 27 - Divergence, Curl, and Laplacian operations
- Lecture 28 - Towards Maxwells equations - Part 1
- Lecture 29 - Towards Maxwells equations - Part 2

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

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- Lecture 30 - Faradays law
- Lecture 31 - Completing Maxwells equations and Boundary conditions
- Lecture 32 - Boundary conditions for Electromagnetic fields
- Lecture 33 - Electrostatics-I
- Lecture 34 - Electrostatics-II
- Lecture 35 - Electrostatics-III
- Lecture 36 - Electrostatics-IV
- Lecture 37 - Magnetostatic fields-I
- Lecture 38 - Magnetostatic fields-II
- Lecture 39 - Inductance calculations
- Lecture 40 - From Maxwells equations to uniform plane waves
- Lecture 41 - Plane wave propagation in lossless dielectric media
- Lecture 42 - Polarization of plane waves
- Lecture 43 - Can an Ideal capacitor exist?
- Lecture 44 - Skin effect in conductors
- Lecture 45 - Skin effect in round wires
- Lecture 46 - Finite difference method
- Lecture 47 - Reflection of uniform plane waves
- Lecture 48 - Application
- Lecture 49 - Oblique incidence of plane waves
- Lecture 50 - Total internal reflection
- Lecture 51 - Application
- Lecture 52 - Application
- Lecture 53 - Introduction to waveguides
- Lecture 54 - Rectangular waveguides
- Lecture 55 - Attenuation and Dispersion in rectangular waveguides
- Lecture 56 - Planar optical waveguides
- Lecture 57 - Application
- Lecture 58 - Application
- Lecture 59 - Mach-Zehnder Modulator
- Lecture 60 - Wave Propagation in Anisotropic Medium
- Lecture 61 - Wave Propagation in Ferrites
- Lecture 62 - Magnetic Vector Potential - Part 1
- Lecture 63 - Magnetic Vector Potential - Part 2
- Lecture 64 - Fields of a Dipole Antenna
- Lecture 65 - Antenna Parameters and Long wire Antenna
- Lecture 66 - Friis Transmission Formula

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

NPTEL Video Course - Electrical Engineering - NOC:Principles of Signals and Systems

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Principles of Signals and Systems- Introduction to Signals and Systems, Signal Classification - C
- Lecture 2 - Analog and Digital Signals
- Lecture 3 - Energy and Power Signals
- Lecture 4 - Real Exponential Signals
- Lecture 5 - Memory/Memory-less and Causal/Non-Causal Systems
- Lecture 6 - Properties of Linear Systems
- Lecture 7 - Example Problems - 1
- Lecture 8 - Example Problems - 2
- Lecture 9 - Example Problems - 3
- Lecture 10 - Properties and Analysis of LTI Systems - I
- Lecture 11 - Properties and Analysis of LTI Systems - II
- Lecture 12 - Properties and Analysis of LTI Systems - III
- Lecture 13 - Properties of Discrete Time LTI Systems
- Lecture 14 - Example Problems LTI Systems - I
- Lecture 15 - Example Problems LTI Systems - II
- Lecture 16 - Example Problems DT-LTI Systems
- Lecture 17 - Laplace Transform
- Lecture 18 - Laplace Transform Properties - I
- Lecture 19 - Laplace Transform Properties - II
- Lecture 20 - Laplace Transform of LTI Systems
- Lecture 21 - Laplace Transform Example Problems - I
- Lecture 22 - Laplace Transform Example Problems - II
- Lecture 23 - Laplace Transform of RL, RC Circuit
- Lecture 24 - Z-Transform
- Lecture 25 - Z-Transform Properties - I
- Lecture 26 - Z-Transform Properties - II
- Lecture 27 - Z-Transform of LTI Systems
- Lecture 28 - Z-Transform Examples - I
- Lecture 29 - Z-Transform Examples - II

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

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- Lecture 30 - Z-Transform Examples - III
- Lecture 31 - Z-Transform Examples - IV
- Lecture 32 - Inverse Z-Transform
- Lecture 33 - Fourier Analysis Introduction
- Lecture 34 - Complex Exponential and Trigonometric FS
- Lecture 35 - Conditions for Existence of FS
- Lecture 36 - Fourier Transform (FT) Introduction
- Lecture 37 - Properties of Fourier Transform - I
- Lecture 38 - Properties of Fourier Transform - II
- Lecture 39 - Fourier Transform - Parseval's Relation
- Lecture 40 - Fourier Transform of LTI Systems
- Lecture 41 - FT- Ideal and Non-Ideal Filters
- Lecture 42 - Fourier Analysis Examples - I
- Lecture 43 - Fourier Analysis Examples - II
- Lecture 44 - Fourier Analysis Examples - III
- Lecture 45 - Fourier Analysis Examples - IV
- Lecture 46 - Fourier Analysis Examples - V
- Lecture 47 - Fourier Analysis Examples - VI
- Lecture 48 - Fourier Analysis Bode Plot - I
- Lecture 49 - Fourier Analysis Bode Plot - II
- Lecture 50 - Fourier Transform Examples
- Lecture 51 - Fourier Transform Problems
- Lecture 52 - Sampling
- Lecture 53 - Sampling
- Lecture 54 - Fourier Analysis of Discrete Time Signals and Systems - Introduction
- Lecture 55 - Fourier Analysis of Discrete Time Signals - Duality, Parseval's Theorem
- Lecture 56 - Discrete Time Fourier Transform
- Lecture 57 - Discrete Time Fourier Transform
- Lecture 58 - Discrete Time Fourier Transform
- Lecture 59 - DTFT
- Lecture 60 - Discrete Fourier Transform - Definition, Inverse DFT, Relation between DFT and DFS, Relation bet
- Lecture 61 - Discrete Fourier Transform
- Lecture 62 - Example Problems
- Lecture 63 - Example Problems
- Lecture 64 - DTFT Example Problems - III
- Lecture 65 - DTFT Example Problems - IV
- Lecture 66 - DTFT Example Problems - V
- Lecture 67 - DFT Example Problems - I
- Lecture 68 - Example Problems

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

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- Lecture 69 - Group/Phase Delay - Part I
- Lecture 70 - Group/Phase Delay - Part II
- Lecture 71 - IIR Filter Structures
- Lecture 72 - IIR Filter Structures
- Lecture 73 - IIR Filter Structures
- Lecture 74 - IIR Filter Structures
- Lecture 75 - IIR Filter

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

NPTEL Video Course - Electrical Engineering - NOC:Applied Optimization for Wireless, Machine Learning, Big Data

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Vectors and Matrices - Linear Independence and Rank
- Lecture 2 - Eigenvectors and Eigenvalues of Matrices and their Properties
- Lecture 3 - Positive Semidefinite (PSD) and Positive Definite (PD) Matrices and their Properties
- Lecture 4 - Inner Product Space and its Properties
- Lecture 5 - Inner Product Space and its Properties
- Lecture 6 - Properties of Norm, Gaussian Elimination and Echelon form of matrix
- Lecture 7 - Gram Schmidt Orthogonalization Procedure
- Lecture 8 - Null Space and Trace of Matrices
- Lecture 9 - Eigenvalue Decomposition of Hermitian Matrices and Properties
- Lecture 10 - Matrix Inversion Lemma (Woodbury identity)
- Lecture 11 - Introduction to Convex Sets and Properties
- Lecture 12 - Affine Set Examples and Application
- Lecture 13 - Norm Ball and its Practical Applications
- Lecture 14 - Ellipsoid and its Practical Applications
- Lecture 15 - Norm Cone, Polyhedron and its Applications
- Lecture 16 - Applications
- Lecture 17 - Positive Semi Definite Cone And Positive Semi Definite (PSD) Matrices
- Lecture 18 - Introduction to Affine functions and examples
- Lecture 19 - norm balls and Matrix properties
- Lecture 20 - Inverse of a Positive Definite Matrix
- Lecture 21 - Example Problems
- Lecture 22 - Problems on Convex Sets (Continued...)
- Lecture 23 - Introduction to Convex and Concave Functions
- Lecture 24 - Properties of Convex Functions with examples
- Lecture 25 - Test for Convexity
- Lecture 26 - Application
- Lecture 27 - Jensen's Inequality and Practical Application
- Lecture 28 - Jensen's Inequality application
- Lecture 29 - Properties of Convex Functions

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

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- Lecture 30 - Conjugate Function and Examples to prove Convexity of various Functions
- Lecture 31 - Examples on Operations Preserving Convexity
- Lecture 32 - Examples on Test for Convexity, Quasi-Convexity
- Lecture 33 - Examples on Convex Functions
- Lecture 34 - Practical Application
- Lecture 35 - Practical Application
- Lecture 36 - Practical Application
- Lecture 37 - Practical Application
- Lecture 38 - Practical Application
- Lecture 39 - Practical Application
- Lecture 40 - Practical Application
- Lecture 41 - Linear modeling and Approximation Problems
- Lecture 42 - Geometric Intuition for Least Squares
- Lecture 43 - Practical Application
- Lecture 44 - Practical Application
- Lecture 45 - Least Norm Signal Estimation
- Lecture 46 - Regularization
- Lecture 47 - Convex Optimization Problem representation
- Lecture 48 - Linear Program Practical Application
- Lecture 49 - Stochastic Linear Program, Gaussian Uncertainty
- Lecture 50 - Practical Application
- Lecture 51 - Practical Application
- Lecture 52 - Practical Application
- Lecture 53 - Practical Application
- Lecture 54 - Practical Application
- Lecture 55 - Practical Application
- Lecture 56 - Practical Application
- Lecture 57 - Practical Application- Orthogonal Matching Pursuit (OMP) algorithm for Compressive Sensing
- Lecture 58 - Example Problem
- Lecture 59 - Practical Application
- Lecture 60 - Practical Application of Machine Learning and Artificial Intelligence
- Lecture 61 - Practical Application
- Lecture 62 - Practical Application
- Lecture 63 - Concept of Duality
- Lecture 64 - Relation between optimal value of Primal and Dual Problems, concepts of Duality gap and Strong D
- Lecture 65 - Example problem on Strong Duality
- Lecture 66 - Karush-Kuhn-Tucker (KKT) conditions
- Lecture 67 - Application of KKT condition
- Lecture 68 - Optimal MIMO Power allocation (Waterfilling)-II

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

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- Lecture 69 - Example problem on Optimal MIMO Power allocation (Waterfilling)
- Lecture 70 - Linear objective with box constraints, Linear Programming
- Lecture 71 - Example Problems II
- Lecture 72 - Examples on Quadratic Optimization
- Lecture 73 - Examples on Duality
- Lecture 74 - Examples on Duality
- Lecture 75 - Semi Definite Program (SDP) and its application
- Lecture 76 - Application
- Lecture 77 - Introduction to big Data
- Lecture 78 - Matrix Completion Problem in Big Data
- Lecture 79 - Matrix Completion Problem in Big Data

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

NPTEL Video Course - Electrical Engineering - NOC:Fiber-Optic Communication Systems and Techniques

Subject Co-ordinator - Dr. Pradeep Kumar K

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Overview of fiber-optic communication systems
- Lecture 2 - Review of Maxwell's equations
- Lecture 3 - Uniform plane waves (UWPs) in free-space
- Lecture 4 - Properties of UWPs (propagation constant, polarization, and Poynting vector)
- Lecture 5 - Boundary conditions and reflection from a PEC
- Lecture 6 - Obliquely incident waves-I (TE and TM waves, Snell's laws)
- Lecture 7 - Obliquely incident waves-II (Reflection and transmission coefficients, Brewster angle)
- Lecture 8 - Total internal reflection
- Lecture 9 - Ray theory of dielectric slab waveguides
- Lecture 10 - Transverse resonance condition for slab waveguides
- Lecture 11 - Introduction to optical fibers
- Lecture 12 - Ray theory of light propagation in optical fibers
- Lecture 13 - Concept of waveguide modes
- Lecture 14 - Systematic procedure to obtain modes of a waveguide
- Lecture 15 - Systematic analysis of parallel plate metallic waveguide
- Lecture 16 - Systematic analysis of dielectric slab waveguides
- Lecture 17 - Further discussion on slab waveguides
- Lecture 18 - Modal analysis of step index optical fiber
- Lecture 19 - Properties of modes of step-index optical fiber - I
- Lecture 20 - Properties of modes of step-index optical fiber - II
- Lecture 21 - Linearly polarized modes
- Lecture 22 - Attenuation and power loss in fibers
- Lecture 23 - Introduction to dispersion in fibers
- Lecture 24 - Mathematical modelling of dispersion
- Lecture 25 - Pulse propagation equation and its solution
- Lecture 26 - Pre-chirped pulses and Inter and Intra-modal dispersion in optical fibers
- Lecture 27 - Beam Propagation Method
- Lecture 28 - Polarization Effects on Pulse Propagation
- Lecture 29 - Modes in Optical Fibres and Pulse Propagation in Optical Fibres

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

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- Lecture 30 - Graded Index Fibers
- Lecture 31 - Light Sources, Detectors and Amplifiers
- Lecture 32 - Basics of Lasers-I (Structure of Lasers, Process of Photon Emission)
- Lecture 33 - Basics of Lasers-II (Einstein's Theory of Radiation)
- Lecture 34 - Basics of Lasers-III (Population Inversion and Rate Equation for Lasers)
- Lecture 35 - Basic Properties of Semiconductor Laser-I (Energy Gap, Intrinsic and Extrinsic Semiconductors)
- Lecture 36 - Basic Properties of Semiconductor Laser-II (Fermi Level)
- Lecture 37 - Optical Properties of Semiconductors-I (Direct Bandgap and Indirect Bandgap, Density of States)
- Lecture 38 - Optical Properties of Semiconductors-II (Gain, Absorption, Recombination rate) Homojunction Laser
- Lecture 39 - Double Heterostructure Lasers, Introduction to Quantum Well Lasers
- Lecture 40 - Semiconductor Optical Amplifier
- Lecture 41 - Erbium-doped fiber amplifier
- Lecture 42 - Photodetectors
- Lecture 43 - Noise in Photodetectors
- Lecture 44 - Introduction to WDM components
- Lecture 45 - Couplers, Circulators, FRM and Filters
- Lecture 46 - Filter, MUX/DEMUX, Diffraction grating (FBG and Long period grating)
- Lecture 47 - Optical Modulators-I (Current modulation)
- Lecture 48 - Optical Modulators-II (Electro-optic modulators)
- Lecture 49 - Review of Communication Concepts-I (Deterministic and Random Signals, Baseband and Passband Signals)
- Lecture 50 - Review of Communication Concepts-II (Signal and vectors, Signal energy, Orthonormal basis functions)
- Lecture 51 - Intensity modulation/ Direct Detection
- Lecture 52 - BER discussion for OOK systems
- Lecture 53 - Higher order modulation and Coherent Receiver
- Lecture 54 - Coherent receiver for BPSK systems and BER calculation
- Lecture 55 - Recovering Polarization
- Lecture 56 - DSP algorithms for Chromatic dispersion mitigation
- Lecture 57 - DSP algorithms for Carrier phase estimation - I
- Lecture 58 - DSP algorithms for Carrier phase estimation - II
- Lecture 59 - Nonlinear effects in fiber
- Lecture 60 - Four wave mixing, Loss measurement, Dispersion measurement
- Lecture 61 - Lab Demonstration (Laser diode characteristics, Loss measurement, Optical Intensity Modulation)

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

NPTEL Video Course - Electrical Engineering - NOC:Electromagnetic Waves in Guided and Wireless Media

Subject Co-ordinator - Dr. Pradeep Kumar K

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction and Types of Transmission Lines
- Lecture 2 - Distributed Circuit Model of Uniform Transmission Line
- Lecture 3 - Voltage and Current Equation of the Transmission line
- Lecture 4 - Sinusoidal Excitation of Transmission Line (Propagation constant, Characteristic Impedance)
- Lecture 5 - Properties of Transmission Line (Reflection Coefficient, Input Impedance, Standing Wave Ratio)
- Lecture 6 - Power Calculations and Introduction to Smith Chart
- Lecture 7 - Smith Chart
- Lecture 8 - Additional Applications of Smith Chart
- Lecture 9 - Time domain Analysis of Transmission Line - I
- Lecture 10 - Time domain Analysis of Transmission Line - II
- Lecture 11 - Usage of Lattice Diagrams
- Lecture 12 - TDR analysis of Transmission Lines
- Lecture 13 - Introduction to Propagation of Electromagnetic Waves
- Lecture 14 - Uniform Plane Waves - I
- Lecture 15 - Uniform Plane Waves - II
- Lecture 16 - Poynting Vector, Average Power, Polarization
- Lecture 17 - Uniform Plane Waves in Lossy Medium
- Lecture 18 - Normal Incidence of Plane Waves
- Lecture 19 - Oblique Incidence of Plane Waves - I
- Lecture 20 - Oblique Incidence of Plane Waves - II
- Lecture 21 - Total Internal Reflection
- Lecture 22 - Slab Waveguides
- Lecture 23 - Optical Fibers
- Lecture 24 - Parallel Plate Waveguides
- Lecture 25 - Rectangular Waveguides
- Lecture 26 - Modes of Rectangular Waveguides
- Lecture 27 - Waveguides summary and Introduction to Radiation
- Lecture 28 - Solution to Electric Scalar Potential and Magnetic Vector Potential Equations
- Lecture 29 - Further discussion on Magnetic Vector Potential and Elementary Hertzian Dipole

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

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- Lecture 30 - Near field and Far-field Antenna and Properties of Antennas
- Lecture 31 - Linear antenna - I
- Lecture 32 - Linear antenna - II and Properties of Transmitting and Receiving Antenna
- Lecture 33 - Friis Transmission Formula
- Lecture 34 - Antenna Array
- Lecture 35 - Wireless Channel
- Lecture 36 - Further discussion on Wireless Channel Modelling
- Lecture 37 - Diffraction - I
- Lecture 38 - Diffraction - II
- Lecture 39 - Distribution of Laser Beam
- Lecture 40 - Interference (Double slit experiment, Fabry Perot Interferometer)
- Lecture 41 - Summary

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

NPTEL Video Course - Electrical Engineering - Electrical Machines I

Subject Co-ordinator - Dr. D. Kastha

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Operating Principles and Construction of Single Phase Transformers
- Lecture 3 - Modeling of Single Phase Transformers
- Lecture 4 - Equivalent Circuits of Single Phase Transformers
- Lecture 5 - Testing of Single Phase Transformers
- Lecture 6 - Efficiency of Single Phase Transformers
- Lecture 7 - Voltage Regulation of Single Phase Transformers
- Lecture 8 - Parallel Operation of Single Phase Transformers
- Lecture 9 - Harmonics and Switching Transients in Single Phase Transformers
- Lecture 10 - Introduction to Three Phase Transformer
- Lecture 11 - Construction of Three Phase Transformers
- Lecture 12 - Three Phase Transformer Connections
- Lecture 13 - Three Phase Transformer Phase Groups Part - I
- Lecture 14 - Three Phase Transformer Phase Groups Part - II
- Lecture 15 - Analysis and Testing of Three Phase Transformers
- Lecture 16 - Operation of Three Phase Transformers
- Lecture 17 - Auto Transformers
- Lecture 18 - Three Winding Transformers
- Lecture 19 - Scott Connected Transformers
- Lecture 20 - Potential and Current Transformers
- Lecture 21 - Operating Principles of DC Machines
- Lecture 22 - Constructional Features of DC Machines
- Lecture 23 - Generated EMF and Torque in DC Machines
- Lecture 24 - Armature Reaction
- Lecture 25 - Commutation in DC Machines
- Lecture 26 - Separately Excited DC Generators
- Lecture 27 - DC Shunt Generators
- Lecture 28 - Compound DC Generators
- Lecture 29 - Interconnected DC Generators

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

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- Lecture 30 - Characteristics of DC Shunt Motors
- Lecture 31 - Starting of DC Shunt Motors
- Lecture 32 - Speed Control of DC Shunt Motors
- Lecture 33 - Braking of DC Shunt Motors
- Lecture 34 - Electronic Control of DC Shunt Motors
- Lecture 35 - Testing of DC Shunt Motors
- Lecture 36 - Characteristics of DC Series Motors
- Lecture 37 - Starting and Braking of DC Series Motors
- Lecture 38 - Speed Control and of DC Series Motors
- Lecture 39 - Testing of DC Series Motors
- Lecture 40 - Characteristics of Compound DC Series Motors



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

NPTEL Video Course - Electrical Engineering - Optimal Control

Subject Co-ordinator - Prof. G.D. Ray

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Optimization Problem
- Lecture 2 - Introduction to Optimization Problem
- Lecture 3 - Optimality Conditions for Function of Several Variables
- Lecture 4 - Optimality Conditions for Function of Several Variables (Continued.)
- Lecture 5 - Unconstrained Optimization Problem (Numerical Techniques)
- Lecture 6 - Solution of Unconstrained Optimization Problem Using Conjugate Gradient Method and Networks Method
- Lecture 7 - Solution of Unconstrained Optimization Problem Using Conjugate Gradient Method and Networks Method
- Lecture 8 - Solution of Constraint Optimization Problem-Karush-Kuhn Tucker (KKT) Conditions
- Lecture 9 - Solution of Constraint Optimization Problem-Karush-Kuhn Tucker (KKT) Conditions (Continued.)
- Lecture 10 - Problem and Solution Session
- Lecture 11 - Post Optimality Analysis, Convex Function and its Properties
- Lecture 12 - Post Optimality Analysis, Convex Function and its Properties (Continued.)
- Lecture 13 - Quadratic Optimization Problem Using Linear Programming
- Lecture 14 - Matrix form of the Simplex Method
- Lecture 15 - Matrix form of the Simplex Method (Continued.)
- Lecture 16 - Solution of Linear Programming Using Simplex Method
- Lecture 17 - Solution of Linear Programming Using Simplex Method
- Lecture 18 - Solution of LP Problems with Two Phase Method
- Lecture 19 - Solution of LP Problems with Two Phase Method (Continued.)
- Lecture 20 - Standard Primal and Dual Problems
- Lecture 21 - Relationship Between Primal and Dual Variables
- Lecture 22 - Solution of Quadratic Programming Problem Using Simplex Method
- Lecture 23 - Interior Point Method for Solving Optimization Problems
- Lecture 24 - Interior Point Method for Solving Optimization Problems (Continued.)
- Lecture 25 - Solution of Nonlinear Programming Problem Using Exterior Penalty Function Method
- Lecture 26 - Solution of Nonlinear Programming Problem Using Exterior Penalty Function Method (Continued.)
- Lecture 27 - Solution of Nonlinear Programming Problem Using Interior Penalty Function Method
- Lecture 28 - Solution of Nonlinear Programming Problem Using Interior Penalty Function Method (Continued.)
- Lecture 29 - Multiobjective Optimization Problem

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

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- Lecture 30 - Dynamic Optimization Problem
- Lecture 31 - Dynamic Optimization Problem
- Lecture 32 - Dynamic Optimization Problem
- Lecture 33 - Numerical Example and Solution of Optimal Control Problem using Calculus of Variation principle
- Lecture 34 - Numerical Example and Solution of Optimal Control Problem using Calculus of Variation principle
- Lecture 35 - Hamiltonian Formulation for solution of optimal Control problem and numerical example
- Lecture 36 - Hamiltonian Formulation for solution of optimal Control problem and numerical example (Continued)
- Lecture 37 - Performance Indices and Linear Quadratic Regulator Problem
- Lecture 38 - Performance Indices and Linear Quadratic Regulator Problem (Continued.)
- Lecture 39 - Solution and Stability Analysis of Finite - time LQR Problem
- Lecture 40 - Solution and Infinite - time LQR Problem and Stability Analysis
- Lecture 41 - Numerical Example and Methods for Solution of A.R.E.
- Lecture 42 - Numerical Example and Methods for Solution of A.R.E. (Continued.)
- Lecture 43 - Frequency Domain Interpretation of LQR Controlled System
- Lecture 44 - Gain and Phase Margin of LQR Controlled System
- Lecture 45 - The Linear Quadratic Gaussian Problem
- Lecture 46 - Loop-Transfer Recovery
- Lecture 47 - Dynamic Programming for Discrete Time Systems
- Lecture 48 - Minimum  $\hat{a}$  Time Control of a Linear Time Invariant System
- Lecture 49 - Solution of Minimum  $\hat{a}$  Time Control Problem with an Example
- Lecture 50 - Constraint in Control Inputs and State Variables
- Lecture 51 - Constraint in Control Inputs and State Variables (Continued...)
- Lecture 52 - Norms for Vectors, Matrices, Signals and Linear Systems
- Lecture 53 - Signal and System Norms
- Lecture 54 - Internal Stability, Sensitivity and Complementary Sensitivity Functions
- Lecture 55 - Internal Stability, Sensitivity and Complementary Sensitivity Functions (Continued...)
- Lecture 56 - Plant Uncertainty and Standard form for Robust Stability Analysis
- Lecture 57 - Plant Uncertainty and Standard form for Robust Stability Analysis (Continued...)
- Lecture 58 - Frequency Response of Linear System and Singular Value Decomposition of System
- Lecture 59 - Control Problem Statement in H-  $\alpha$  Framework
- Lecture 60 - Control Problem Statement in H -  $\alpha$  Framework (Continued...)

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

NPTEL Video Course - Electrical Engineering - Chaos, Fractals and Dynamic Systems

Subject Co-ordinator - Prof. S. Banerjee

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Representations of Dynamical Systems
- Lecture 2 - Vector Fields of Nonlinear Systems
- Lecture 3 - Limit Cycles
- Lecture 4 - The Lorenz Equation - I
- Lecture 5 - The Lorenz Equation - II
- Lecture 6 - The Rossler Equation and Forced Pendulum
- Lecture 7 - The Chua's Circuit
- Lecture 8 - Discrete Time Dynamical Systems
- Lecture 9 - The Logistic Map and Period doubling
- Lecture 10 - Flip and Tangent Bifurcations
- Lecture 11 - Intermittency Transcritical and pitchfork
- Lecture 12 - Two Dimensional Maps
- Lecture 13 - Bifurcations in Two Dimensional Maps
- Lecture 14 - Introduction to Fractals
- Lecture 15 - Mandelbrot Sets and Julia Sets
- Lecture 16 - The Space Where Fractals Live
- Lecture 17 - Interactive Function Systems
- Lecture 18 - IFS Algorithms
- Lecture 19 - Fractal Image Compression
- Lecture 20 - Stable and Unstable Manifolds
- Lecture 21 - Boundary Crisis and Interior Crisis
- Lecture 22 - Statistics of Chaotic Attractors
- Lecture 23 - Matrix Times Circle
- Lecture 24 - Lyapunov Exponent
- Lecture 25 - Frequency Spectra of Orbits
- Lecture 26 - Dynamics on a Torus
- Lecture 27 - Dynamics on a Torus
- Lecture 28 - Analysis of Chaotic Time Series
- Lecture 29 - Analysis of Chaotic Time Series

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

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- Lecture 30 - Lyapunou Function and Centre Manifold Theory
- Lecture 31 - Non-Smooth Bifurcations
- Lecture 32 - Non-Smooth Bifurcations
- Lecture 33 - Normal form for Piecewise Smooth 2D Maps
- Lecture 34 - Bifurcations in Piecewise Linear 2D Maps
- Lecture 35 - Bifurcations in Piecewise Linear 2D Maps
- Lecture 36 - Multiple Attractor Bifurcation and Dangerous
- Lecture 37 - Dynamics of Discontinuous Maps
- Lecture 38 - Introduction to Floquet Theory
- Lecture 39 - The Monodromy Matrix and the Saltation Matrix
- Lecture 40 - Control of Chaos

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

NPTEL Video Course - Electrical Engineering - Digital Signal Processing

Subject Co-ordinator - Prof. T.K. Basu

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Discrete Time Signal and System  
Lecture 2 - Discrete Time Signal and System (Continued...)  
Lecture 3 - Discrete Time Signal and System (Continued...)  
Lecture 4 - Frequency Domain Representation of Discrete Signals  
Lecture 5 - Z-Transform  
Lecture 6 - Z-Transform (Continued...)  
Lecture 7 - Solution of Difference Equation  
Lecture 8 - Tutorial on Discrete Time Signals & Their Transforms  
Lecture 9 - Relation Between Discrete Time and Continuous Signals  
Lecture 10 - Discrete Fourier Transform (DFT)  
Lecture 11 - Discrete Fourier Transform (DFT) (Continued...)  
Lecture 12 - Discrete Fourier Transform (DFT) (Continued...)  
Lecture 13 - State Space Representation  
Lecture 14 - Filters Introduction  
Lecture 15 - FIR Filters  
Lecture 16 - FIR Filters (Continued...) Introduction to IIR Filters  
Lecture 17 - IIR Filters (Continued...)  
Lecture 18 - IIR Filters (Continued...)  
Lecture 19 - IIR Filters (Continued...)  
Lecture 20 - Tutorial & Introduction to Computer Aided Design of Filters  
Lecture 21 - Computer Aided Design of Filters  
Lecture 22 - FFT and Computer Aided Design of Filters  
Lecture 23 - Introduction to Lattice Filter  
Lecture 24 - Lattice Filter (Continued...)  
Lecture 25 - Effects of Quantization  
Lecture 26 - Effects of Quantization (Continued...)  
Lecture 27 - Effects of Quantization (Continued...)  
Lecture 28 - Effects of Quantization (Continued...)  
Lecture 29 - Random Signals

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

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- Lecture 30 - Relationship Between Real and Imaginary Parts of DTFT
- Lecture 31 - Relationship Between Real and Imaginary Parts of DTFT
- Lecture 32 - Relationship Between Real and Imaginary Parts of DTFT
- Lecture 33 - Multi rate Signal Processing
- Lecture 34 - Multi rate Signal Processing (Continued...)
- Lecture 35 - Polyphase Decomposition

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

NPTEL Video Course - Electrical Engineering - Dynamics of Physical Systems

Subject Co-ordinator - Prof. S. Banerjee

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to System Elements
- Lecture 2 - Newton's Method and Constraints
- Lecture 3 - Derivation of the Lagrangian Equation
- Lecture 4 - Using the lagrangian Equation to Obtain Differential Equations (Part-I)
- Lecture 5 - Using the lagrangian Equation to Obtain Differential Equations (Part-II)
- Lecture 6 - Using the lagrangian Equation to Obtain Differential Equations (Part-III)
- Lecture 7 - Using the lagrangian Equation to Obtain Differential Equations (Part-IV)
- Lecture 8 - Obtaining First Order Equations
- Lecture 9 - Application of the Hamiltonian Method
- Lecture 10 - Obtaining Differential Equations Using Kirchoff's Laws
- Lecture 11 - The Graph Theory Approach for Electrical Circuits (Part-I)
- Lecture 12 - The Graph Theory Approach for Electrical Circuits (Part-II)
- Lecture 13 - The Bond Graph Approach - I
- Lecture 14 - The Bond Graph Approach - II
- Lecture 15 - The Bond Graph Approach - III
- Lecture 16 - The Bond Graph Approach - IV
- Lecture 17 - The Bond Graph Approach - V
- Lecture 18 - The Bond Graph Approach - VI
- Lecture 19 - The Bond Graph Approach - VII
- Lecture 20 - Numerical Solution of Differential Equations
- Lecture 21 - Dynamics in the State Space
- Lecture 22 - Vector Field Around Equilibrium Points - I
- Lecture 23 - Vector Field Around Equilibrium Points - II
- Lecture 24 - Vector Field Around Equilibrium Points - III
- Lecture 25 - Vector Field Around Equilibrium Points - IV
- Lecture 26 - High Dimensional Linear Systems
- Lecture 27 - Linear Systems with External Input - I
- Lecture 28 - Linear Systems with External Input - II
- Lecture 29 - Linear Systems with External Input - III

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

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- Lecture 30 - Dynamics of Nonlinear Systems - I
- Lecture 31 - Dynamics of Nonlinear Systems - II
- Lecture 32 - Dynamics of Nonlinear Systems - III
- Lecture 33 - Discrete-Time Dynamical Systems - I
- Lecture 34 - Discrete-Time Dynamical Systems - II



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

NPTEL Video Course - Electrical Engineering - Energy Resources and Technology

Subject Co-ordinator - Prof. S. Banerjee

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Thermodynamics  
Lecture 2 - Quality of Energy  
Lecture 3 - Complete Cycle Analysis of Fossil Fuels  
Lecture 4 - Energy in Transportation  
Lecture 5 - Other Fossil Fuels  
Lecture 6 - Energy Economics  
Lecture 7 - Energy Economics  
Lecture 8 - Thermal Power Plants  
Lecture 9 - Thermal Power Plants  
Lecture 10 - Hydroelectric Power  
Lecture 11 - Hydroelectric Power  
Lecture 12 - Nuclear Power Generation  
Lecture 13 - Nuclear Fusion Reactors  
Lecture 14 - Environmental Effects of Conventional Power  
Lecture 15 - Solar Thermal Energy Conversion  
Lecture 16 - Solar Concentrating Collectors  
Lecture 17 - Photovoltaic Power Generation  
Lecture 18 - Photovoltaic Power Generation (Continued.)  
Lecture 19 - Photovoltaic Power Generation (Continued.)  
Lecture 20 - Photovoltaic Power Generation (Continued.)  
Lecture 21 - Wind Energy - I  
Lecture 22 - Wind Energy - II  
Lecture 23 - Wind Energy - III  
Lecture 24 - Wind Energy - IV  
Lecture 25 - Wind Energy - V  
Lecture 26 - Wind Energy - VI  
Lecture 27 - Wind Electrical Conversion - I  
Lecture 28 - Wind Electrical Conversion - II  
Lecture 29 - Wind Electrical Conversion - III

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

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- Lecture 30 - Tidal Energy
- Lecture 31 - Tidal Energy
- Lecture 32 - Tidal Energy
- Lecture 33 - Ocean Thermal Energy Conversion
- Lecture 34 - Solar Pond and Wave Power
- Lecture 35 - Geothermal Energy
- Lecture 36 - Solar Distillation and Biomass Energy
- Lecture 37 - Energy Storage
- Lecture 38 - Magneto hydrodynamic Power Generation
- Lecture 39 - Magneto hydrodynamic Power Generation
- Lecture 40 - Hydrogen Economy

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

NPTEL Video Course - Electrical Engineering - Estimation of Signals and Systems

Subject Co-ordinator - Prof. S. Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Probability Theory
- Lecture 3 - Random Variables
- Lecture 4 - Function of Random Variable Joint Density
- Lecture 5 - Mean and Variance
- Lecture 6 - Random Vectors Random Processes
- Lecture 7 - Random Processes and Linear Systems
- Lecture 8 - Some Numerical Problems
- Lecture 9 - Miscellaneous Topics on Random Process
- Lecture 10 - Linear Signal Models
- Lecture 11 - Linear Mean Sq. Error Estimation
- Lecture 12 - Auto Correlation and Power Spectrum Estimation
- Lecture 13 - Z-Transform Revisited Eigen Vectors/Values
- Lecture 14 - The Concept of Innovation
- Lecture 15 - Least Squares Estimation Optimal IIR Filters
- Lecture 16 - Introduction to Adaptive Filters
- Lecture 17 - State Estimation
- Lecture 18 - Kalman Filter-Model and Derivation
- Lecture 19 - Kalman Filter-Derivation (Continued...)
- Lecture 20 - Estimator Properties
- Lecture 21 - The Time-Invariant Kalman Filter
- Lecture 22 - Kalman Filter-Case Study
- Lecture 23 - System identification Introductory Concepts
- Lecture 24 - Linear Regression-Recursive Least Squares
- Lecture 25 - Variants of LSE
- Lecture 26 - Least Square Estimation
- Lecture 27 - Model Order Selection Residual Tests
- Lecture 28 - Practical Issues in Identification
- Lecture 29 - Estimation Problems in Instrumentation and Control

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

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Lecture 30 - Conclusion

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

NPTEL Video Course - Electrical Engineering - Illumination Engineering

Subject Co-ordinator - Prof. N.K. Kishore

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Illumination Engineering
- Lecture 2 - Instructional Objectives
- Lecture 3 - Eye and Vision - I
- Lecture 4 - Eye and Vision - II
- Lecture 5 - Laws of Illumination
- Lecture 6 - Photometry
- Lecture 7 - Incandescent Lamps
- Lecture 8 - Discharge Lamps - I
- Lecture 9 - Discharge Lamps - II
- Lecture 10 - Discharge Lamps - III
- Lecture 11 - Illumination Systems - I
- Lecture 12 - Illumination Systems - II
- Lecture 13 - Glare
- Lecture 14 - Color
- Lecture 15 - Interior Lighting
- Lecture 16 - Sports Lighting
- Lecture 17 - Road Lighting
- Lecture 18 - Lighting Calculations
- Lecture 19 - Lighting Applications
- Lecture 20 - Conclusions on Illumination Engineering

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

NPTEL Video Course - Electrical Engineering - Industrial Automation and Control

Subject Co-ordinator - Prof. S. Sen, Prof. S. Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Architecture of Industrial Automation Systems
- Lecture 3 - Measurement Systems Characteristics
- Lecture 4 - Temperature Measurement
- Lecture 5 - Pressure, Force and Torque Sensors
- Lecture 6 - Motion Sensing
- Lecture 7 - Flow Measurement
- Lecture 8 - Signal Conditioning
- Lecture 9 - Signal Conditioning (Continued.)
- Lecture 10 - Data Acquisition Systems
- Lecture 11 - Introduction to Automatic Control
- Lecture 12 - P-I-D Control
- Lecture 13 - PID Control Tuning
- Lecture 14 - Feedforward Control Ratio Control
- Lecture 15 - Time Delay Systems and Inverse Response Systems
- Lecture 16 - Special Control Structures
- Lecture 17 - Concluding Lesson on Process Control
- Lecture 18 - Introduction to Sequence Control, PLC, RLL
- Lecture 19 - Sequence Control. Scan Cycle, Simple RLL Programs
- Lecture 20 - Sequence Control. More RLL Elements, RLL Syntax
- Lecture 21 - A Structured Design Approach to Sequence
- Lecture 22 - PLC Hardware Environment
- Lecture 23 - Introduction To CNC Machines
- Lecture 24 - Contour generation and Motion Control
- Lecture 25 - Flow Control Valves
- Lecture 26 - Hydraulic Control Systems - I
- Lecture 27 - Hydraulic Control Systems - II
- Lecture 28 - Industrial Hydraulic Circuit
- Lecture 29 - Pneumatic Control Systems - I

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

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- Lecture 30 - Pneumatic Systems - II
- Lecture 31 - Energy Savings with Variable Speed Drives
- Lecture 32 - DC Motor Drives
- Lecture 33 - DC and BLDC Servo Drives
- Lecture 34 - Induction Motor Drives
- Lecture 35 - Step Motor Drives BLDC Drives
- Lecture 36 - Embedded Systems
- Lecture 37 - The Fieldbus Network - I
- Lecture 38 - The Fieldbus Network - II
- Lecture 39 - Higher Level Automation Systems
- Lecture 40 - Course Review and Conclusion

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

NPTEL Video Course - Electrical Engineering - Industrial Instrumentation

Subject Co-ordinator - Prof. Alok Barua

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Industrial Instrumentation  
Lecture 2 - Dynamic Characteristics  
Lecture 3 - Dynamic Characteristics (Continued.)  
Lecture 4 - Strain gauge  
Lecture 5 - Load cell  
Lecture 6 - Torque Measurement  
Lecture 7 - Thermistor  
Lecture 8 - Thermocouples  
Lecture 9 - Resistance Temperature Detector  
Lecture 10 - LVDT  
Lecture 11 - Capacitance Transducers  
Lecture 12 - Flowmeter - I  
Lecture 13 - Flowmeter - II  
Lecture 14 - Flowmeter - III  
Lecture 15 - Flowmeter - IV  
Lecture 16 - Flowmeter - V  
Lecture 17 - Problems on Temperature Sensors  
Lecture 18 - Pressure Sensors  
Lecture 19 - Low Pressure Measurement  
Lecture 20 - pH and Viscosity Measurement  
Lecture 21 - Problem and Solutions On Industrial Instrumentation  
Lecture 22 - Signal Conditioning Circuits - I  
Lecture 23 - Signal Conditioning Circuits - II  
Lecture 24 - Piezoelectric Sensors  
Lecture 25 - Ultrasonic Sensors  
Lecture 26 - Nucleonic Instrumentation  
Lecture 27 - Measurement Of Magnetic Field  
Lecture 28 - Optoelectronic Sensor - I  
Lecture 29 - Optoelectronic Sensor - II

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

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- Lecture 30 - Synchro
- Lecture 31 - Dissolved Oxygen Sensors - I
- Lecture 32 - Dissolved Oxygen Sensors - II
- Lecture 33 - Flapper - Nozzle
- Lecture 34 - Smart Sensors
- Lecture 35 - Chromatography - I
- Lecture 36 - Chromatography - II
- Lecture 37 - Pollution Measurement
- Lecture 38 - Control Valve - I
- Lecture 39 - Control Valve - II
- Lecture 40 - Signal Conditioning Integrated Circuits

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

NPTEL Video Course - Electrical Engineering - Networks Signals and Systems

Subject Co-ordinator - Prof. T.K. Basu

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Network Elements and Sources
- Lecture 2 - Introduction to Linearity and Nonlinearity
- Lecture 3 - Distributed & Lumped Parameters 2-port Networks
- Lecture 4 - Two-port Parameters Short Circuit, Open Circuit
- Lecture 5 - Tutorial
- Lecture 6 - Locus Diagram - Introduction to Signals
- Lecture 7 - Signals (Continued.) Laplace Transforms
- Lecture 8 - Laplace Transform (Continued.)
- Lecture 9 - Tutorial on Laplace Transform
- Lecture 10 - Frequency Response Bode Plot
- Lecture 11 - Bode Plot (Continued.)
- Lecture 12 - Bode Plot (Continued.) - Poles & Zeros
- Lecture 13 - Driving Point Immittance Functions - Realisability Conditions
- Lecture 14 - Two - Element Synthesis
- Lecture 15 - Two - Element Synthesis (Continued.)
- Lecture 16 - Tutorial
- Lecture 17 - Tutorial
- Lecture 18 - Graph Theory
- Lecture 19 - Graph Theory (Continued.)
- Lecture 20 - Graph Theory (Continued.)
- Lecture 21 - Graph Theory (Continued.)
- Lecture 22 - Image Impedance, Iterative Impedance
- Lecture 23 - Image Impedance, Iterative Impedance
- Lecture 24 - Characteristic Impedance and Design of Filters
- Lecture 25 - Analysis of Resistive Networks Computer Aided
- Lecture 26 - R-L-C Two-Terminal Network
- Lecture 27 - Parts of Network Functions
- Lecture 28 - Parts of Network Functions (Continued.)
- Lecture 29 - Tutorial

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

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- Lecture 30 - Tutorial (Continued.)
- Lecture 31 - Tutorial
- Lecture 32 - Synthesis of 2-port Network
- Lecture 33 - Synthesis of 2-port Network (Continued.)
- Lecture 34 - Synthesis of 2-port Network (Continued.)
- Lecture 35 - Fourier Series
- Lecture 36 - Fourier Series (Continued.)

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

NPTEL Video Course - Electrical Engineering - Power System Analysis

Subject Co-ordinator - Prof. A.K. Sinha

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Power system analysis
- Lecture 2 - Introduction to Single Line Diagram
- Lecture 3 - Transmission Line Parameters
- Lecture 4 - Inductance Calculation (Three Phase)
- Lecture 5 - Transmission Line Capacitance
- Lecture 6 - Transmission Line Capacitance (Continued..)
- Lecture 7 - Transmission Line Modeling
- Lecture 8 - Transmission Line Modeling Long Line
- Lecture 9 - Transmission Line Steady State Operation
- Lecture 10 - Transmission Line Steady State Control Voltage
- Lecture 11 - Transmission System A Review
- Lecture 12 - Transformer Model
- Lecture 13 - Synchronous Machine Model
- Lecture 14 - Synchronous Machine Model
- Lecture 15 - Load Model
- Lecture 16 - Power Flow - I
- Lecture 17 - Power Flow - II
- Lecture 18 - Power Flow - III
- Lecture 19 - Power Flow - IV
- Lecture 20 - Power Flow - V
- Lecture 21 - Power Flow - VI
- Lecture 22 - Power Flow - VII
- Lecture 23 - Review of Power System Component Models
- Lecture 24 - Review of Power Flow Study
- Lecture 25 - Short Circuit Analysis
- Lecture 26 - Symmetrical Component Analysis
- Lecture 27 - Sequence Networks
- Lecture 28 - Unbalanced Fault Analysis
- Lecture 29 - Unbalanced Fault Analysis

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

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- Lecture 30 - Fault Analysis for Large power Systems
- Lecture 31 - Bus Impedance Matrix
- Lecture 32 - Asymmetrical Fault Analysis Using Z - Bus
- Lecture 33 - Power System Stability - I
- Lecture 34 - Power System Stability - II
- Lecture 35 - Power System Stability - III
- Lecture 36 - Power System Stability - IV
- Lecture 37 - Power System Stability - V
- Lecture 38 - Power System Stability - VI
- Lecture 39 - Power System Stability - VII
- Lecture 40 - Power System Stability - VIII

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

NPTEL Video Course - Electrical Engineering - NOC:Industrial Automation and Control

Subject Co-ordinator - Prof. S. Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Introduction (Continued...)
- Lecture 3 - Architecture of Industrial Automation Systems
- Lecture 4 - Architecture of Industrial Automation Systems (Continued...)
- Lecture 5 - Measurement Systems Characteristics
- Lecture 6 - Measurement Systems Characteristics (Continued...)
- Lecture 7 - Data Acquisition Systems
- Lecture 8 - Data Acquisition Systems (Continued...)
- Lecture 9 - Introduction to Automatic Control
- Lecture 10 - Introduction to Automatic Control (Continued...)
- Lecture 11 - P-I-D Control
- Lecture 12 - P-I-D Control (Continued...)
- Lecture 13 - PID Control Tuning
- Lecture 14 - PID Control Tuning (Continued...)
- Lecture 15 - Feedforward Control Ratio Control
- Lecture 16 - Feedforward Control Ratio Control (Continued...)
- Lecture 17 - Time Delay Systems and Inverse Response Systems
- Lecture 18 - Time Delay Systems and Inverse Response Systems (Continued...)
- Lecture 19 - Special Control Structures
- Lecture 20 - Special Control Structures (Continued...)
- Lecture 21 - Concluding Lesson on Process Control (Self-study)
- Lecture 22 - Introduction to Sequence Control, PLC, RLL
- Lecture 23 - Introduction to Sequence Control, PLC, RLL (Continued...)
- Lecture 24 - Sequence Control. Scan Cycle, Simple RLL Programs
- Lecture 25 - Sequence Control, Scan Cycle, Simple RLL Programs (Continued...)
- Lecture 26 - Sequence Control. More RLL Elements, RLL Syntax
- Lecture 27 - Sequence Control. More RLL Elements, RLL Syntax (Continued...)
- Lecture 28 - A Structured Design Approach to Sequence Control
- Lecture 29 - A Structured Design Approach to Sequence Control (Continued...)

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

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- Lecture 30 - PLC Hardware Environment
- Lecture 31 - PLC Hardware Environment (Continued...)
- Lecture 32 - Flow Control Valves
- Lecture 33 - Flow Control Valves (Continued...)
- Lecture 34 - Hydraulic Control Systems - I
- Lecture 35 - Hydraulic Control Systems - I (Continued...)
- Lecture 36 - Hydraulic Control Systems - II
- Lecture 37 - Hydraulic Control Systems - II (Continued...)
- Lecture 38 - Industrial Hydraulic Circuit
- Lecture 39 - Industrial Hydraulic Circuit (Continued...)
- Lecture 40 - Pneumatic Control Systems - I
- Lecture 41 - Pneumatic Control Systems - I (Continued...)
- Lecture 42 - Pneumatic Systems - II
- Lecture 43 - Pneumatic Systems - II (Continued...)
- Lecture 44 - Energy Savings with Variable Speed Drives
- Lecture 45 - Energy Savings with Variable Speed Drives (Continued...)
- Lecture 46 - Introduction To CNC Machines
- Lecture 47 - Introduction To CNC Machines
- Lecture 48 - The Fieldbus Network - I
- Lecture 49 - The Fieldbus Network - I (Continued...)
- Lecture 50 - Higher Level Automation Systems
- Lecture 51 - Higher Level Automation Systems (Continued...)
- Lecture 52 - Course Review and Conclusion (Self Study)

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

NPTEL Video Course - Electrical Engineering - NOC:Medical Image Analysis

Subject Co-ordinator - Prof. Debdoot Sheet

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Medical Image Analysis
- Lecture 2 - X Ray and CT Imaging
- Lecture 3 - Magnetic Resonance Imaging
- Lecture 4 - Ultrasound Imaging
- Lecture 5 - Optical Microscopy and Molecular Imaging
- Lecture 6 - Texture in Medical Images
- Lecture 7 - Region Growing and Clustering
- Lecture 8 - Random Walks for Segmentation
- Lecture 9 - Active Contours for Segmentation
- Lecture 10 - Systematic Evaluation and Validation
- Lecture 11 - Decision Trees for Segmentation and Classification
- Lecture 12 - Random Forests for Segmentation and Classification
- Lecture 13 - Neural Networks for Segmentation and Classification
- Lecture 14 - Deep Learning for Medical Image Analysis
- Lecture 15 - Deep Learning for Medical Image Analysis (Continued...)
- Lecture 16 - Retinal Vessel Segmentation
- Lecture 17 - Vessel Segmentation in Computed Tomography Scan of Lungs
- Lecture 18
- Lecture 19 - Tissue Characterization in Ultrasound
- Lecture 20

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

NPTEL Video Course - Electrical Engineering - NOC:Biomedical Signal Processing

Subject Co-ordinator - Prof. Sudipta Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Motivation
- Lecture 2 - Preliminaries
- Lecture 3 - Biomedical Signal Origin and Dynamics
- Lecture 4 - Biomedical Signal Origin and Dynamics (Continued...)
- Lecture 5 - Biomedical Signal Origin and Dynamics (Continued...)
- Lecture 6 - Biomedical Signal Origin and Dynamics (Continued...)
- Lecture 7 - Artifact Removal
- Lecture 8 - Artifact Removal (Continued...)
- Lecture 9 - Artifact Removal (Continued...)
- Lecture 10 - Artifact Removal (Continued...)
- Lecture 11 - Artifact Removal (Continued...)
- Lecture 12 - Artifact Removal (Continued...)
- Lecture 13 - Artifact Removal (Continued...)
- Lecture 14 - Artifact Removal (Continued...)
- Lecture 15 - Artifact Removal (Continued...)
- Lecture 16 - Artifact Removal (Continued...)
- Lecture 17 - Artifact Removal (Continued...)
- Lecture 18 - Event Detection
- Lecture 19 - Event Detection (Continued...)
- Lecture 20 - Event Detection (Continued...)
- Lecture 21 - Event Detection (Continued...)
- Lecture 22 - Event Detection (Continued...)
- Lecture 23 - Event Detection (Continued...)
- Lecture 24 - Event Detection (Continued...)
- Lecture 25 - Homomorphic Processing
- Lecture 26 - Homomorphic Processing (Continued...)
- Lecture 27 - Waveform Analysis
- Lecture 28 - Waveform Analysis (Continued...)
- Lecture 29 - Waveform Analysis

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

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- Lecture 30 - Waveform Analysis (Continued...)
- Lecture 31 - Waveform Analysis (Continued...)
- Lecture 32 - Waveform Analysis (Continued...)
- Lecture 33 - Waveform Analysis (Continued...)
- Lecture 34 - Frequency Domain Characterisation
- Lecture 35 - Frequency Domain Characterisation (Continued...)
- Lecture 36 - Frequency Domain Characterisation (Continued...)
- Lecture 37 - Frequency Domain Characterisation (Continued...)
- Lecture 38 - Frequency Domain Characterisation (Continued...)
- Lecture 39 - Frequency Domain Characterisation (Continued...)
- Lecture 40 - Modelling of Biomedical Systems
- Lecture 41 - Modelling of Biomedical Systems (Continued...)
- Lecture 42 - Modelling of Biomedical Systems (Continued...)
- Lecture 43 - Modelling of Biomedical Systems (Continued...)
- Lecture 44 - Modelling of Biomedical Systems (Continued...)
- Lecture 45 - Modelling of Biomedical Systems (Continued...)
- Lecture 46 - Modelling of Biomedical Systems (Continued...)
- Lecture 47 - Tutorial - I
- Lecture 48 - Tutorial - I (Continued...)
- Lecture 49 - Tutorial - I (Continued...)
- Lecture 50 - Tutorial - II
- Lecture 51 - Tutorial - II (Continued...)
- Lecture 52 - Tutorial - II (Continued...)
- Lecture 53 - Tutorial - III
- Lecture 54 - Tutorial - III (Continued...)
- Lecture 55 - Tutorial - III (Continued...)
- Lecture 56 - Tutorial - III (Continued...)
- Lecture 57 - Tutorial - IV
- Lecture 58 - Tutorial - IV (Continued...)
- Lecture 59 - Tutorial - IV (Continued...)
- Lecture 60 - Tutorial - IV (Continued...)
- Lecture 61 - Tutorial - IV (Continued...)
- Lecture 62 - Tutorial - IV (Continued...)
- Lecture 63 - Tutorial - V
- Lecture 64 - Tutorial - V (Continued...)
- Lecture 65 - Tutorial - V (Continued...)
- Lecture 66 - Tutorial - V (Continued...)
- Lecture 67 - Tutorial - V (Continued...)
- Lecture 68 - Live Session

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

NPTEL Video Course - Electrical Engineering - NOC:Microprocessors and Microcontrollers

Subject Co-ordinator - Prof. Santanu Chattopadhyay

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 - Basic Computer Organization  
Lecture 5 - Basic computer organization  
Lecture 6 - Basic Computer Organization  
Lecture 7 - 8085 Microprocessors  
Lecture 8 - 8085 Microprocessors (Continued...)  
Lecture 9 - 8085 Microprocessors (Continued...)  
Lecture 10 - 8085 Microprocessors (Continued...)  
Lecture 11 - 8085 Microprocessors (Continued...)  
Lecture 12 - 8085 Microprocessors (Continued...)  
Lecture 13 - 8085 Microprocessors (Continued...)  
Lecture 14 - 8085 Microprocessors (Continued...)  
Lecture 15 - 8085 Microprocessors (Continued...)  
Lecture 16 - 8085 Microprocessors (Continued...)  
Lecture 17 - 8085 Microprocessors (Continued...)  
Lecture 18 - 8085 Microprocessors (Continued...)  
Lecture 19 - 8085 Microprocessors (Continued...)  
Lecture 20 - 8085 Microprocessors (Continued...)  
Lecture 21 - 8085 Microprocessors (Continued...)  
Lecture 22 - 8085 Microprocessors (Continued...)  
Lecture 23 - 8051 Microcontroller  
Lecture 24 - 8051 Microcontroller (Continued...)  
Lecture 25 - 8051Microcontroller (Continued...)  
Lecture 26 - 8051 Microcontroller (Continued...)  
Lecture 27 - 8051 Microcontroller (Continued...)  
Lecture 28 - 8051 Microcontroller (Continued...)  
Lecture 29 - 8051 Microcontroller (Continued...)

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

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Lecture 30 - 8051 Microcontroller (Continued...)  
Lecture 31 - 8051 Microcontroller (Continued...)  
Lecture 32 - 8051 Microcontroller (Continued...)  
Lecture 33 - 8051 Microcontroller (Continued...)  
Lecture 34 - 8051 Microcontroller (Continued...)  
Lecture 35 - 8051 Microcontroller (Continued...)  
Lecture 36 - 8051 Programming Examples  
Lecture 37 - 8051 Programming Examples (Continued...)  
Lecture 38 - 8051 Programming Examples (Continued...)  
Lecture 39 - 8051 Programming Examples (Continued...)  
Lecture 40 - 8051 Programming Examples (Continued...)  
Lecture 41 - ARM  
Lecture 42 - ARM (Continued...)  
Lecture 43 - ARM (Continued...)  
Lecture 44 - ARM (Continued...)  
Lecture 45 - ARM (Continued...)  
Lecture 46 - ARM (Continued...)  
Lecture 47 - ARM (Continued...)  
Lecture 48 - ARM (Continued...)  
Lecture 49 - PIC  
Lecture 50 - PIC, AVR  
Lecture 51 - AVR (Continued...)  
Lecture 52 - AVR (Continued...)  
Lecture 53 - Interfacing  
Lecture 54 - Interfacing (Continued...)  
Lecture 55 - Interfacing (Continued...)  
Lecture 56 - Interfacing (Continued...)  
Lecture 57 - Interfacing (Continued...)  
Lecture 58 - Interfacing (Continued...)  
Lecture 59 - 8086  
Lecture 60 - 8086 (Continued...)  
Lecture 61 - 8086 (Continued...)  
Lecture 62 - 8086 (Continued...)  
Lecture 63 - 8086 (Continued...)  
Lecture 64 - 8087

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

NPTEL Video Course - Electrical Engineering - NOC:Deep Learning For Visual Computing

Subject Co-ordinator - Prof. Debdoot Sheet

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Visual Computing
- Lecture 2 - Feature Extraction for Visual Computing
- Lecture 3 - Feature Extraction with Python
- Lecture 4 - Neural Networks for Visual Computing
- Lecture 5 - Classification with Perceptron Model
- Lecture 6 - Introduction to Deep Learning with Neural Networks
- Lecture 7 - Introduction to Deep Learning with Neural Networks
- Lecture 8 - Multilayer Perceptron and Deep Neural Networks
- Lecture 9 - Multilayer Perceptron and Deep Neural Networks
- Lecture 10 - Classification with Multilayer Perceptron
- Lecture 11 - Autoencoder for Representation Learning and MLP Initialization
- Lecture 12 - MNIST handwritten digits classification using autoencoders
- Lecture 13 - Fashion MNIST classification using autoencoders
- Lecture 14 - ALL-IDB Classification using autoencoders
- Lecture 15 - Retinal Vessel Detection using autoencoders
- Lecture 16 - Stacked Autoencoders
- Lecture 17 - MNIST and Fashion MNIST with Stacked Autoencoders
- Lecture 18 - Denoising and Sparse Autoencoders
- Lecture 19 - Sparse Autoencoders for MNIST classification
- Lecture 20 - Denoising Autoencoders for MNIST classification
- Lecture 21 - Cost Function
- Lecture 22 - Classification cost functions
- Lecture 23 - Optimization Techniques and Learning Rules
- Lecture 24 - Gradient Descent Learning Rule
- Lecture 25 - SGD and ADAM Learning Rules
- Lecture 26 - Convolutional Neural Network Building Blocks
- Lecture 27 - Simple CNN Model
- Lecture 28 - LeNet Definition
- Lecture 29 - Training a LeNet for MNIST Classification

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

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- Lecture 30 - Modifying a LeNet for CIFAR
- Lecture 31 - Convolutional Autoencoder and Deep CNN
- Lecture 32 - Convolutional Autoencoder for Representation Learning
- Lecture 33 - AlexNet
- Lecture 34 - VGGNet
- Lecture 35 - Revisiting AlexNet and VGGNet for Computational Complexity
- Lecture 36 - GoogLeNet - Going very deep with convolutions
- Lecture 37 - GoogLeNet
- Lecture 38 - ResNet - Residual Connections within Very Deep Networks and DenseNet - Densely connected networks
- Lecture 39 - ResNet
- Lecture 40 - DenseNet
- Lecture 41 - Space and Computational Complexity in DNN
- Lecture 42 - Assessing the space and computational complexity of very deep CNNs
- Lecture 43 - Domain Adaptation and Transfer Learning in Deep Neural Networks
- Lecture 44 - Transfer Learning a GoogLeNet
- Lecture 45 - Transfer Learning a ResNet
- Lecture 46 - Activation pooling for object localization
- Lecture 47 - Region Proposal Networks (rCNN and Faster rCNN)
- Lecture 48 - GAP + rCNN
- Lecture 49 - Semantic Segmentation with CNN
- Lecture 50 - UNet and SegNet for Semantic Segmentation
- Lecture 51 - Autoencoders and Latent Spaces
- Lecture 52 - Principle of Generative Modeling
- Lecture 53 - Adversarial Autoencoders
- Lecture 54 - Adversarial Autoencoder for Synthetic Sample Generation
- Lecture 55 - Adversarial Autoencoder for Classification
- Lecture 56 - Understanding Video Analysis
- Lecture 57 - Recurrent Neural Networks and Long Short-Term Memory
- Lecture 58 - Spatio-Temporal Deep Learning for Video Analysis
- Lecture 59 - Activity recognition using 3D-CNN
- Lecture 60 - Activity recognition using CNN-LSTM

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

NPTEL Video Course - Electrical Engineering - NOC:Power System Engineering

Subject Co-ordinator - Prof. Debapriya Das

Co-ordinating Institute - IIT - Kharagpur

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 - Cables (Continued...)

Lecture 12 - Transient over voltages and Insulation coordination

Lecture 13 - Transient over voltages and Insulation coordination (Continued...)

Lecture 14 - Transient over voltages and Insulation coordination (Continued...)

Lecture 15 - Transient over voltages and Insulation coordination (Continued...)

Lecture 16 - Transient over voltages and Insulation coordination (Continued...)

Lecture 17 - Transient over voltages and Insulation coordination (Continued...)

Lecture 18 - Transient over voltages and Insulation coordination (Continued...)

Lecture 19 - Transient over voltages and Insulation coordination (Continued...)

Lecture 20 - Corona

Lecture 21 - Corona (Continued...)

Lecture 22 - Corona (Continued...)

Lecture 23 - Corona (Continued...), Sag and Tension Analysis

Lecture 24 - Sag and Tension Analysis (Continued...)

Lecture 25 - Sag and Tension Analysis (Continued...)

Lecture 26 - Sag and Tension Analysis (Continued...)

Lecture 27 - Sag and Tension Analysis (Continued...)

Lecture 28 - Sag and Tension Analysis (Continued...)

Lecture 29 - Load flow of radial distribution networks

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

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- Lecture 30 - Load flow of radial distribution networks (Continued...)
- Lecture 31 - Load flow of radial distribution networks (Continued...)
- Lecture 32 - Load flow of radial distribution networks (Continued...)
- Lecture 33 - Load flow of radial distribution networks (Continued...)
- Lecture 34 - Load flow of radial distribution networks (Continued...)
- Lecture 35 - Load flow of radial distribution networks (Continued...)
- Lecture 36 - Load flow of radial distribution networks (Continued...)
- Lecture 37 - Load flow of radial distribution networks (Continued...), Voltage stability of distribution network
- Lecture 38 - Voltage stability of distribution network, Approximate method
- Lecture 39 - Application of capacitors in distribution system
- Lecture 40 - Application of capacitors in distribution system (Continued...)
- Lecture 41 - Application of capacitors in distribution system (Continued...)
- Lecture 42 - Application of capacitors in distribution system (Continued...)
- Lecture 43 - Application of capacitors in distribution system (Continued...)
- Lecture 44 - Application of capacitors in distribution system (Continued...), Load frequency control
- Lecture 45 - Load frequency control (Continued...)
- Lecture 46 - Load frequency control (Continued...)
- Lecture 47 - Load frequency control (Continued...)
- Lecture 48 - Load frequency control (Continued...)
- Lecture 49 - Load frequency control (Continued...)
- Lecture 50 - Load frequency control (Continued...)
- Lecture 51 - Load frequency control (Continued...)
- Lecture 52 - Load frequency control (Continued...)
- Lecture 53 - Load frequency control (Continued...)
- Lecture 54 - Load frequency control (Continued...)
- Lecture 55 - Load frequency control (Continued...)
- Lecture 56 - Load frequency control (Continued...)
- Lecture 57 - Automatic generation control
- Lecture 58 - Automatic generation control (Continued...)
- Lecture 59 - Automatic generation control (Continued...), Unit commitment
- Lecture 60 - Unit commitment (Continued...)
- Lecture 61 - Live Session



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

NPTEL Video Course - Electrical Engineering - NOC:Fundamentals of Electrical Engineering

Subject Co-ordinator - Prof. Debapriya Das

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Basic Concepts, Examples  
Lecture 2 - Basic Concepts, Examples (Continued...)  
Lecture 3 - Basic Concepts, Examples (Continued...)  
Lecture 4 - Basic Concepts, Examples (Continued...)  
Lecture 5 - Basic Laws  
Lecture 6 - Basic Laws (Continued...)  
Lecture 7 - Basic Laws (Continued...)  
Lecture 8 - Basic Laws (Continued...)  
Lecture 9 - Basic Laws (Continued...)  
Lecture 10 - Basic Laws (Continued...)  
Lecture 11 - Methods of Circuit Analysis  
Lecture 12 - Methods of Circuit Analysis (Continued...)  
Lecture 13 - Methods of Circuit Analysis (Continued...)  
Lecture 14 - Methods of Circuit Analysis (Continued...)  
Lecture 15 - Methods of Circuit Analysis (Continued...)  
Lecture 16 - Methods of Circuit Analysis (Continued...)  
Lecture 17 - Mesh analysis with current sources, Examples  
Lecture 18 - Methods of Circuit Analysis (Continued...) and Circuit Theorems  
Lecture 19 - Circuit Theorems (Continued...)  
Lecture 20 - Circuit Theorems (Continued...)  
Lecture 21 - Circuit Theorems (Continued...)  
Lecture 22 - Circuit Theorems (Continued...)  
Lecture 23 - Circuit Theorems (Continued...)  
Lecture 24 - Circuit Theorems (Continued...)  
Lecture 25 - Circuit Theorems (Continued...) and Capacitors and Inductors  
Lecture 26 - Capacitors and Inductors (Continued...)  
Lecture 27 - Capacitors and Inductors (Continued...)  
Lecture 28 - Capacitors and Inductors (Continued...)  
Lecture 29 - First Order Circuits

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

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- Lecture 30 - First Order Circuits (Continued...)
- Lecture 31 - First Order Circuits (Continued...)
- Lecture 32 - First Order Circuits (Continued...)
- Lecture 33 - First Order Circuits (Continued...)
- Lecture 34 - First Order Circuits (Continued...)
- Lecture 35 - First Order Circuits (Continued...)
- Lecture 36 - First Order Circuits (Continued...)
- Lecture 37 - Single phase AC circuits
- Lecture 38 - Single phase AC circuits (Continued...)
- Lecture 39 - Single phase AC circuits (Continued...)
- Lecture 40 - Single phase AC circuits (Continued...)
- Lecture 41 - Single phase AC circuits (Continued...)
- Lecture 42 - Single phase AC circuits (Continued...)
- Lecture 43 - Single phase AC circuits (Continued...)
- Lecture 44 - Resonance and Maximum Power Transfer Theorem
- Lecture 45 - Resonance and Maximum Power Transfer Theorem (Continued...)
- Lecture 46 - Resonance and Maximum Power Transfer Theorem (Continued...)
- Lecture 47 - Three phase circuits
- Lecture 48 - Three phase circuits (Continued...)
- Lecture 49 - Three phase circuits (Continued...)
- Lecture 50 - Three phase circuits (Continued...)
- Lecture 51 - Magnetic Circuits
- Lecture 52 - Magnetic Circuits (Continued...)
- Lecture 53 - Magnetic Circuits (Continued...)
- Lecture 54 - Single Phase Transformer
- Lecture 55 - Single Phase Transformer (Continued...)
- Lecture 56 - Single Phase Transformer (Continued...)
- Lecture 57 - Single Phase Transformer (Continued...)
- Lecture 58 - Three phase Induction Motors
- Lecture 59 - Three phase Induction Motors (Continued...)
- Lecture 60 - Three phase Induction Motors (Continued...)
- Lecture 61 - Three phase Induction Motors (Continued...)
- Lecture 62 - DC Motors
- Lecture 63 - DC Motors (Continued...)
- Lecture 64 - DC Motors (Continued...)

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

NPTEL Video Course - Electrical Engineering - NOC:Digital Circuits

Subject Co-ordinator - Prof. Santanu Chattopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction  
Lecture 2 - Introduction (Continued...)  
Lecture 3 - Number System  
Lecture 4 - Number System (Continued...)  
Lecture 5 - Number System (Continued...)  
Lecture 6 - Number System (Continued...)  
Lecture 7 - Number System (Continued...)  
Lecture 8 - Boolean Algebra  
Lecture 9 - Boolean Algebra (Continued...)  
Lecture 10 - Boolean Algebra (Continued...)  
Lecture 11 - Boolean Algebra (Continued...)  
Lecture 12 - Boolean Algebra (Continued...)  
Lecture 13 - Boolean Algebra (Continued...)  
Lecture 14 - Logic Gates  
Lecture 15 - Logic Gates (Continued...)  
Lecture 16 - Logic Gates (Continued...)  
Lecture 17 - Logic Gates (Continued...)  
Lecture 18 - Logic Gates (Continued...)  
Lecture 19 - Logic Gates (Continued...)  
Lecture 20 - Arithmetic Circuits  
Lecture 21 - Arithmetic Circuits (Continued...)  
Lecture 22 - Arithmetic Circuits (Continued...)  
Lecture 23 - Decoders, Multiplexers, PLA  
Lecture 24 - Decoders, Multiplexers, PLA (Continued...)  
Lecture 25 - Decoders, Multiplexers, PLA (Continued...)  
Lecture 26 - Decoders, Multiplexers, PLA (Continued...)  
Lecture 27 - Decoders, Multiplexers, PLA (Continued...)  
Lecture 28 - Sequential Circuits  
Lecture 29 - Sequential Circuits (Continued...)

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

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- Lecture 30 - Sequential Circuits (Continued...)
- Lecture 31 - Sequential Circuits (Continued...)
- Lecture 32 - Sequential Circuits (Continued...)
- Lecture 33 - Sequential Circuits (Continued...)
- Lecture 34 - Sequential Circuits (Continued...)
- Lecture 35 - Finite State Machine
- Lecture 36 - Finite State Machine (Continued...)
- Lecture 37 - Data Converters
- Lecture 38 - Data Converters (Continued...)
- Lecture 39 - Data Converters (Continued...)
- Lecture 40 - Data Converters (Continued...)
- Lecture 41 - Memory
- Lecture 42 - Memory (Continued...)
- Lecture 43 - Memory (Continued...)
- Lecture 44 - FPGA
- Lecture 45 - FPGA (Continued...)
- Lecture 46 - VHDL
- Lecture 47 - VHDL(Continued...)
- Lecture 48 - 8085 Microprocessor
- Lecture 49 - 8085 Microprocessor (Continued...)
- Lecture 50 - 8085 Microprocessor (Continued...)
- Lecture 51 - 8085 Microprocessor (Continued...)
- Lecture 52 - 8085 Microprocessor (Continued...)
- Lecture 53 - 8085 Microprocessor (Continued...)
- Lecture 54 - 8085 Microprocessor (Continued...)
- Lecture 55 - 8085 Microprocessor (Continued...)
- Lecture 56 - 8085 Microprocessor (Continued...)
- Lecture 57 - 8085 Microprocessor (Continued...)
- Lecture 58 - 8085 Microprocessor (Continued...)
- Lecture 59 - 8085 Microprocessor (Continued...)
- Lecture 60 - 8085 Microprocessor (Continued...)
- Lecture 61 - 8085 Microprocessor (Continued...)
- Lecture 62 - 8085 Microprocessor (Continued...)
- Lecture 63 - 8086 Microprocessor
- Lecture 64 - 8086 Microprocessor (Continued...)
- Lecture 65 - 8086 Microprocessor (Continued...)

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

NPTEL Video Course - Electrical Engineering - NOC:Analysis and Design Principles of Microwave Antennas

Subject Co-ordinator - Dr. Amitabha Bhattacharya

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Concept of Scalar and Vector Potentials
- Lecture 2 - Radiation From a Current Element (Hertzian Dipole)
- Lecture 3 - Specific Properties of the Radiated Fields from a Current Element
- Lecture 4 - General Properties of Radiated Fields from an Antenna
- Lecture 5 - Farfield and Radiation Pattern of an Antenna
- Lecture 6 - Directivity and Gain of an Antenna
- Lecture 7 - Idea of Efficiency, Beamwidth, Polarisation and Bandwidth
- Lecture 8 - Polarization of Antenna
- Lecture 9 - Impedance of Antenna
- Lecture 10 - Effective Aperture of an Antenna
- Lecture 11 - Friss Transmission Equation and Antenna Temperature
- Lecture 12 - Dipole And Monopole Antena
- Lecture 13 - Dipole And Monopole Antena (Continued...)
- Lecture 14 - BALUN
- Lecture 15 - Loop Antenna
- Lecture 16 - Folded Dipole Antenna
- Lecture 17 - Introduction to Antenna Array
- Lecture 18 - Antenna Array Theory
- Lecture 19 - Broadside Uniform Linear Array
- Lecture 20 - Endfire Linear Uniform Array
- Lecture 21 - Parasitic Array and Log Periodic Antenna
- Lecture 22 - Analysis Procedures of Aperture Antennas
- Lecture 23 - Analysis Procedures of Aperture Antenna (Continued...)
- Lecture 24 - Horn Antenna
- Lecture 25 - Horn Antenna (Continued...)
- Lecture 26 - Reflector Antennas
- Lecture 27 - Paraboloid Reflector Antenna (Continued...)
- Lecture 28 - Paraboloid Reflector Antenna (Continued...)
- Lecture 29 - Dual Reflector Antenna

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

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- Lecture 30 - Generalised Analysis of Antenna
- Lecture 31 - Solution of Wave Equation for Electric and Magnetic Current Densities
- Lecture 32 - Farfield Evaluation of Spherical Wave Radiation by Generalised Antenna
- Lecture 33 - Slot Antenna
- Lecture 34 - Open Ended Waveguide Antenna and Microstrip Antenna
- Lecture 35 - Numerical Evaluation of Wire Antenna Currents
- Lecture 36 - Solution of Intregal Equation by Moment Method
- Lecture 37 - Array Pattern Synthesis
- Lecture 38 - Array Pattern Synthesis (Continued...)
- Lecture 39 - Ultra Wideband Antennas
- Lecture 40 - Antenna Measurements

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

NPTEL Video Course - Electrical Engineering - NOC:Architectural Design of Digital Integrated Circuits

Subject Co-ordinator - Prof. Indranil Hatai

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to VLSI Design Flow  
Lecture 2 - Introduction to VLSI Design Flow  
Lecture 3 - Introduction to VLSI Design Flow  
Lecture 4 - Algorithm to Efficient Architecture Mapping  
Lecture 5 - Algorithm to Efficient Architecture Mapping (Continued...)  
Lecture 6 - Algorithm to Efficient Architecture Mapping (Continued...)  
Lecture 7 - Tutorial on Algorithm to Efficient Architecture Mapping  
Lecture 8 - Algorithm to Efficient Architecture Mapping (Continued...)  
Lecture 9 - Algorithm to Efficient Architecture Mapping (Continued...)  
Lecture 10 - Algorithm to Efficient Architecture Mapping (Continued...)  
Lecture 11 - Algorithm to Efficient Architecture Mapping (Continued...)  
Lecture 12 - Algorithm to Efficient Architecture Mapping (Continued...)  
Lecture 13 - Algorithm to Efficient Architecture Mapping  
Lecture 14 - Algorithm to Efficient Architecture Mapping (Continued...)  
Lecture 15 - Efficient Adder Architecture  
Lecture 16 - Efficient Adder Architecture (Continued...)  
Lecture 17 - Efficient Adder Architecture (Continued...)  
Lecture 18 - Efficient Adder Architecture  
Lecture 19 - Efficient Adder Architecture  
Lecture 20 - Efficient Adder Architecture  
Lecture 21 - Efficient Adder Architecture  
Lecture 22 - Efficient Adder Architecture  
Lecture 23 - Efficient Adder Architecture  
Lecture 24 - Efficient Adder Architecture  
Lecture 25 - Pipelining and Parallel Processing  
Lecture 26 - Pipelining and Parallel Processing  
Lecture 27 - Multiplier Architecture  
Lecture 28 - Multiplier Architecture  
Lecture 29 - Multiplier Architecture

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

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- Lecture 30 - Multiplier Architecture
- Lecture 31 - Multiplier Architecture
- Lecture 32 - Multiplier Architecture
- Lecture 33 - Multiplier Architecture
- Lecture 34 - Multiplier Architecture
- Lecture 35 - Squaring Circuit Design
- Lecture 36 - Reconfigurable Constant Multiplier Design
- Lecture 37 - Reconfigurable Constant Multiplier Design
- Lecture 38 - Reconfigurable Constant Multiplier Design
- Lecture 39 - Fixed Point Number Representation
- Lecture 40 - Fixed Point Number Representation
- Lecture 41 - CORDIC Architecture
- Lecture 42 - CORDIC Architecture
- Lecture 43 - CORDIC Architecture
- Lecture 44 - CORDIC Architecture
- Lecture 45 - Timing Analysis
- Lecture 46 - Timing Analysis
- Lecture 47 - Timing Analysis
- Lecture 48 - Logic Hazard



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

NPTEL Video Course - Electrical Engineering - NOC:Electrical Machines-II

Subject Co-ordinator - Prof.Tapas Kumar Bhattacharya

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Inductance, Self and Mutual
- Lecture 2 - Relationship of Inductances in Transformer
- Lecture 3 - Equivalent Circuit from Circuit KVL Equations
- Lecture 4 - Co-efficient of Coupling , Energy Stored in Coupled Coils
- Lecture 5 - A Single Conductor Generator and Motor
- Lecture 6 - Analysis of Single Conductor Generator and Motor
- Lecture 7 - Analysis of Single Conductor Generator and Motor (Continued...)
- Lecture 8 - Flux Density Distribution in Space and Nature emf
- Lecture 9 - Flux Density Distribution in Space and Nature emf (Continued...)
- Lecture 10 - From Linear to Rotating Machine
- Lecture 11 - From Linear to Rotating Machine (Continued...)
- Lecture 12 - Basic Underlying Principle of Operation of Rotating Machine
- Lecture 13 - Basic Underlying Principle of Operation of Rotating Machine (Continued...)
- Lecture 14 - Flux Density Distribution along the Air Gap
- Lecture 15 - Flux Density Distribution along the Air Gap (Continued...)
- Lecture 16 - Induced Voltage in a Coil in a Rotating Machine
- Lecture 17 - Induced Voltage in a Coil in a Rotating Machine (Continued...)
- Lecture 18 - Induced Voltage in a Coil in a Rotating Machine (Continued...)
- Lecture 19 - Induced Voltage due to Fundamental and Harmonic Components of Flux Density Distribution
- Lecture 20 - Distributed Coils Connected in Series Resultant Voltage
- Lecture 21 - Distribution Factor
- Lecture 22 - Pitch Factor and Winding Factor
- Lecture 23 - How to decide about Short Pitch Angle  $\tilde{\alpha} \cdot \hat{\mu}$
- Lecture 24 - Double Layer 3-phase Winding - An Introduction
- Lecture 25 - Winding Table for 3-phase Distributed Winding
- Lecture 26 - Winding Table for 3-phase Distributed Winding with Examples
- Lecture 27 - Winding Table for 3-phase Distributed Winding with Examples (Continued...)
- Lecture 28 - 120 degree Phase Spread Winding with Examples
- Lecture 29 - Winding Table of 120 degree Phase Spread Coils and Group Connection

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

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- Lecture 30 - Introduction to Rotating Magnetic Field
- Lecture 31 - Rotating Magnetic Field (Continued...), Mechanical and Electrical Speed
- Lecture 32 - Speed and Direction of Rotating Field
- Lecture 33 - Synchronous Speed and How to Calculate Induced Voltage in a Coil
- Lecture 34 - Introduction to Induction Motor
- Lecture 35 - Introduction to Induction Motor (Continued...)
- Lecture 36 - General Expression of Torque in Terms of Stator and Rotor Fields
- Lecture 37 - Torque Angle and Torque Expression
- Lecture 38 - How to Fix Up Positions of Net Field, Rotor Field and Stator Field
- Lecture 39 - Slip
- Lecture 40 - Equivalent Circuit of 3-Phase Induction Motor
- Lecture 41 - Equivalent Circuit of 3-Phase Induction Motor (Continued...)
- Lecture 42 - Equivalent Circuit of 3-Phase Induction Motor (Continued...)
- Lecture 43 - Expression for Electromagnetic Torque in terms of Equivalent Circuit Parameters
- Lecture 44 - Maximum Electromagnetic Torque and Slip at Which it Occurs
- Lecture 45 - Typical Torque Slip Characteristic and Operating Point
- Lecture 46 - Change in Torque-slip Characteristic as Supply Voltage and Rotor Resistance are Varied
- Lecture 47 - Types of Induction Motor - Slip Ring Type
- Lecture 48 - Introduction to Cage Induction Motor
- Lecture 49 - Cage Motor Can Operate for Different Stator Poles
- Lecture 50 - Core Loss in Induction Motor and Simplified Equivalent Circuit
- Lecture 51 - Torque Expression from Simplified Equivalent Circuit and Introduction to Circle Diagram
- Lecture 52 - Circle Diagram (Continued...)
- Lecture 53 - Exact Power Flow Diagram and Circle Diagram
- Lecture 54 - Circle Diagram (Continued...)
- Lecture 55 - Circle Diagram
- Lecture 56 - Circle Diagram from Test Data
- Lecture 57 - Starting of 3 Phase Induction Motor - Introduction
- Lecture 58 - DOL and Reactor Starting
- Lecture 59 - DOL and Auto Transformer Starting
- Lecture 60 - Introduction to Speed Control
- Lecture 61 - Idea of VVVF Speed Control of Induction Motor
- Lecture 62 - Speed Control Using Two Motors
- Lecture 63 - Electrical Braking of 3 Phase Induction Motor
- Lecture 64 - Braking (Continued...)
- Lecture 65 - Introduction to Single Phase Induction Motor - Sequence Currents
- Lecture 66 - Development of Equivalent Circuit
- Lecture 67 - Development of Equivalent Circuit (Continued...)
- Lecture 68 - Torque-slip Ch. of 1 ph. I-M Running on Single Winding

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

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- Lecture 69 - Introduction to Starting of 1ph. Induction Motor
- Lecture 70 - Expression for Starting Torque and Need for Phase Splitting
- Lecture 71 - Resistor Split 1 ph. Induction Motor
- Lecture 72 - Capacitor Split 1 ph Induction Motor
- Lecture 73 - Starting of 1 ph. Induction Motor (Continued...)
- Lecture 74 - Synchronous Machine Construction
- Lecture 75 - Synchronous Generator - Introduction
- Lecture 76 - Synchronisation
- Lecture 77 - Expression for Induced Voltage and O.C. Phasor Diagram
- Lecture 78 - Loaded Synchronous Generator - Resultant Field
- Lecture 79 - Armature Reaction and Synchronous Reactance. Basic Phasor Diagram
- Lecture 80 - General Mode of Operation - Retro Field, Stator Field and Resultant Field
- Lecture 81 - Complete Phasor Diagram and Expression for Complex Power
- Lecture 82 - Synchronous Motor Operation, Phasor Diagram and Power Expression
- Lecture 83 - Effect of Variation of Field Current in Generator
- Lecture 84 - Effect of Variation Field Current in Synchronous Motor, Introduction to Salient Pole Machine
- Lecture 85 - Analysis of Salient Pole Synchronous Machine
- Lecture 86 - Phasor Diagram of Salient Pole Synchronous Machine for Generator and Motor Mode
- Lecture 87 - Expression for Load Angle and Expression for Power
- Lecture 88 - Phasor Diagrams of Salient Pole Synchronous Generator under Various Conditions
- Lecture 89 - Phasor Diagrams of Salient Pole Synchronous Motor under Various Conditions
- Lecture 90 - O.C and S.C Test on Synchronous Generator

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

NPTEL Video Course - Electrical Engineering - NOC:Digital Electronic Circuits

Subject Co-ordinator - Prof. Goutam Saha

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Transistor as a switch
- Lecture 3 - Performance Issues and Introduction to TTL
- Lecture 4 - Transistor Transistor Logic (TTL)
- Lecture 5 - CMOS Logic
- Lecture 6 - Basic Gates and their representations
- Lecture 7 - Fundamentals of Boolean Algebra
- Lecture 8 - Boolean Function to Truth Table and Implementaion Issues
- Lecture 9 - Truth Table to Boolean Function and Implementaion Issues
- Lecture 10 - Karnugh Map and Digital Circuit Realization
- Lecture 11 - Karnaugh Map to Entered Variable Map
- Lecture 12 - Quine - McClusky (QM) Algorithm
- Lecture 13 - Cost Criteria and Minimization of Multiple Output Functions
- Lecture 14 - Static 1 Hazard
- Lecture 15 - Static 0 Hazard and Dynamic Hazard
- Lecture 16 - Multiplexer
- Lecture 17 - Multiplexer
- Lecture 18 - Demultiplexer / Decoder
- Lecture 19 - Decoder with BCD Input and Encoder
- Lecture 20 - Parity Generator and Checker
- Lecture 21 - Number System
- Lecture 22 - Negative Number and 2s Complement Arithmetic
- Lecture 23 - Arithmetic Building Blocks - I
- Lecture 24 - Arithmetic Building Blocks - II
- Lecture 25 - Overflow Detection and BCD Arithmetic
- Lecture 26 - Magnitude Comparator
- Lecture 27 - Arithmetic Logic Unit (ALU)
- Lecture 28 - Unweighted Code
- Lecture 29 - Error Detection and Correction Code

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

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- Lecture 30 - Multiplication and Division
- Lecture 31 - SR Latch and Introduction to Clocked Flip-Flop
- Lecture 32 - Edge-Triggered Flip-Flop
- Lecture 33 - Representations of Flip-Flops
- Lecture 34 - Analysis of Sequential Logic Circuit
- Lecture 35 - Conversion of Flip-Flops and Flip-Flop Timing Parameters
- Lecture 36 - Register and Shift Register
- Lecture 37 - Shift Register
- Lecture 38 - Application of Shift Register
- Lecture 39 - Linear Feedback Shift Register
- Lecture 40 - Serial Addition, Multiplication and Division
- Lecture 41 - Asynchronous Counter
- Lecture 42 - Decoding Logic and Synchronous Counter
- Lecture 43 - Cascading
- Lecture 44 - Counter Design with Asynchronous Reset and Preset
- Lecture 45 - Counter Design as Synthesis Problem and Few Other Uses of Counter
- Lecture 46 - Synthesis of Sequential Logic Circuit
- Lecture 47 - Moore Model and Mealy Model
- Lecture 48 - Algorithmic State Machine (ASM) Chart and Synthesis of Sequential Logic Circuit
- Lecture 49 - Circuit Realization from ASM Chart and State Minimization
- Lecture 50 - State Minimization by Implication Table and Partitioning Method
- Lecture 51 - Digital to Analog Conversion - I
- Lecture 52 - Digital to Analog Conversion - II
- Lecture 53 - Analog to Digital Conversion - I
- Lecture 54 - Analog to Digital Conversion - II
- Lecture 55 - Certain Performance Issue of ADC and DAC
- Lecture 56 - Introduction to Memory
- Lecture 57 - Static Random Access Memory (SRAM)
- Lecture 58 - Dynamic RAM (DRAM) and Memory Expansion
- Lecture 59 - Read Only Memory (ROM)
- Lecture 60 - PAL, PLA, CPLD, FPGA

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

NPTEL Video Course - Electrical Engineering - NOC:Power System Dynamics, Control and Monitoring

Subject Co-ordinator - Prof. Debapriya Das

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Power System stability
- Lecture 2 - Power System stability (Continued...)
- Lecture 3 - Power System stability (Continued...)
- Lecture 4 - Power System stability (Continued...)
- Lecture 5 - Power System stability (Continued...)
- Lecture 6 - Power System Stability (Continued...)
- Lecture 7 - Power System Stability (Continued...)
- Lecture 8 - Power System Stability (Continued...)
- Lecture 9 - Power System Stability (Continued...)
- Lecture 10 - Power System Stability (Continued...)
- Lecture 11 - Power System Stability (Continued...)
- Lecture 12 - Power System Stability (Continued...)
- Lecture 13 - Power System Stability (Continued...)
- Lecture 14 - Power System Stability (Continued...)
- Lecture 15 - Power System Stability (Continued...)
- Lecture 16 - Power System Stability (Continued...)
- Lecture 17 - Power System Stability (Continued...)
- Lecture 18 - Power System Stability (Continued...)
- Lecture 19 - Power System Stability (Continued...)
- Lecture 20 - Power System Stability (Continued...)
- Lecture 21 - Power System stability (Continued...)
- Lecture 22 - Power System stability, Eigen properties of the state matrix
- Lecture 23 - Power System stability, Eigen properties of the state matrix (Continued...)
- Lecture 24 - Power System stability, Eigen properties of the state matrix (Continued...)
- Lecture 25 - Power System stability, Eigen properties of the state matrix (Continued...)
- Lecture 26 - Power System stability, Eigen properties of the state matrix (Continued...)
- Lecture 27 - Power System stability, Eigen properties of the state matrix, Transient stability
- Lecture 28 - Transient stability
- Lecture 29 - Transient stability (Continued...)

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

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- Lecture 30 - Transient stability (Continued...)
- Lecture 31 - Transient stability
- Lecture 32 - Transient stability, Automatic generation control conventional scenario
- Lecture 33 - Automatic generation control conventional scenario
- Lecture 34 - Automatic generation control conventional scenario
- Lecture 35 - Automatic generation control conventional scenario
- Lecture 36 - Automatic generation control conventional scenario
- Lecture 37 - Automatic generation control conventional scenario
- Lecture 38 - Automatic generation control conventional scenario
- Lecture 39 - Automatic generation control conventional scenario
- Lecture 40 - Automatic generation control conventional scenario
- Lecture 41 - AGC in deregulated system
- Lecture 42 - AGC in deregulated system (Continued...)
- Lecture 43 - AGC in deregulated system (Continued...)
- Lecture 44 - AGC in deregulated system (Continued...)
- Lecture 45 - AGC in deregulated system (Continued...)
- Lecture 46 - AGC in deregulated system (Continued...)
- Lecture 47 - AGC in deregulated system (Continued...)
- Lecture 48 - AGC in deregulated system (Continued...)
- Lecture 49 - AGC in deregulated system, Reactive power and voltage control
- Lecture 50 - Reactive power and voltage control
- Lecture 51 - Reactive power and voltage control, State estimation in power system
- Lecture 52 - State estimation in power system
- Lecture 53 - State estimation in power system (Continued...)
- Lecture 54 - State estimation in power system (Continued...)
- Lecture 55 - State estimation in power system (Continued...)
- Lecture 56 - State estimation in power system (Continued...)
- Lecture 57 - Hydraulic turbine modelling
- Lecture 58 - Hydraulic turbine modelling (Continued...)
- Lecture 59 - Subsynchronous oscillation
- Lecture 60 - Subsynchronous oscillation, Windup and non windup limits

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

NPTEL Video Course - Electrical Engineering - NOC:Evolution of Air Interface towards 5G

Subject Co-ordinator - Prof. Suvra Sekhar Das

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Evolution of wireless Communication
- Lecture 2 - Evolution of wireless Communication Standards From 2G to 5G
- Lecture 3 - Evolution of wireless Communication Standards From 2G to 5G (Continued...)
- Lecture 4 - Evolution of wireless Communication Standards From 2G to 5G (Continued...)
- Lecture 5 - Evolution of wireless Communication Standards From 2G to 5G (Continued...)
- Lecture 6 - Requirements and operating scenarios of 5G
- Lecture 7 - Requirements and operating scenarios of 5G (Continued....)
- Lecture 8 - 5G scenarios
- Lecture 9 - Ultra reliable low latency communication
- Lecture 10 - Designing 5G new radio
- Lecture 11 - Fundamental Framework for waveform analysis
- Lecture 12 - Fundamental Framework for waveform analysis (Continued...)
- Lecture 13 - Waveform Design Aspects of 2G
- Lecture 14 - Waveforms in 3G
- Lecture 15 - Waveforms in 3G (Continued...)
- Lecture 16 - Waveform in 4G and 5G (OFDM)
- Lecture 17 - Waveform in 4G and 5G (OFDM) (Continued...)
- Lecture 18 - Waveform in 4G and 5G (OFDM) (Continued...)
- Lecture 19 - Waveform in 4G and 5G (OFDMA)
- Lecture 20 - Waveform in 4G and 5G (OFDMA, SCFDMA, SCFDE)
- Lecture 21 - Waveform in 4G and 5G (SCFDMA Continued...)
- Lecture 22 - Waveform in 5G
- Lecture 23 - Waveform in 5G Numerology
- Lecture 24 - Frame Structure in 5G NR
- Lecture 25 - Numerology in 5G and adaptive subcarrier bandwidth
- Lecture 26 - Numerology in 5G (Continued...)
- Lecture 27 - Waveforms beyond 5G
- Lecture 28 - Waveforms beyond 5G (Continued...)
- Lecture 29 - Waveforms beyond 5G (Continued...)

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

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- Lecture 30 - Waveforms beyond 5G (Continued...)
- Lecture 31 - Waveform beyond 5G (Precoded GFDM)
- Lecture 32 - Comparison of waveforms
- Lecture 33 - Channel models for performance evaluation - Part I
- Lecture 34 - Channel models for performance evaluation - Part II
- Lecture 35 - Channel models for performance evaluation - Part III
- Lecture 36 - MIMO Signal Processing (Receive Diversity)
- Lecture 37 - MIMO Signal Processing
- Lecture 38 - MIMO Signal Processing (Capacity)
- Lecture 39 - MIMO Signal Processing (Capacity and Massive MIMO)
- Lecture 40 - Hybrid beamforming (mmWave)

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

NPTEL Video Course - Electrical Engineering - Modelling and Analysis of Electric Machines

Subject Co-ordinator - Dr. Krishna Vasudevan

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction

Lecture 2 - Magnetic Fields

Lecture 3 - Magnetic Circuit

Lecture 4 - Singly Excited Linear Motion System

Lecture 5 - Linear and Cylindrical Motion Systems

Lecture 6 - Systems with Multiple Excitations

Lecture 7 - Non-linear Magnetic Systems

Lecture 8 - Inductances in Constant Air gap Machines

Lecture 9 - Inductance in Salient Pole Machine - I

Lecture 10 - Inductance in Salient Pole Machine - II

Lecture 11 - Inductance in Salient Pole Machine - III

Lecture 12 - Inductance in Salient Pole Machine - IV

Lecture 13 - Inductance in Salient Pole Machine - V

Lecture 14 - Inductances of Distributed Winding - I

Lecture 15 - Inductances of Distributed Winding - II

Lecture 16 - Inductances of Distributed Winding - III

Lecture 17 - Dynamic Equations of Induction Machines

Lecture 18 - Dynamic Equations of Salient Pole Synchronous Machine

Lecture 19 - Three-to-Two Phase Transformation

Lecture 20 - Induction Machine in Two-Phase Reference Frame

Lecture 21 - The Pseudo-Stationary Reference Frame

Lecture 22 - Induction Machine in Pseudo-Stationary Reference Frame

Lecture 23 - The Primitive Machine Equations

Lecture 24 - Dynamic Equations of DC Machines

Lecture 25 - Small Signal Model of DC Machine

Lecture 26 - Small Signal Behaviour of DC Machine

Lecture 27 - The Arbitrary Reference Frame

Lecture 28 - Induction Machine Equations in Arbitrary, Synchronous Reference Frames and Small Signal Modelling

Lecture 29 - Introduction to Field Oriented Control of Induction Machines

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

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- Lecture 30 - Space Vector Formulation of Induction Machine Equations
- Lecture 31 - Modelling of Salient Pole Synchronous Machines - I
- Lecture 32 - Modelling of Salient Pole Synchronous Machines - II
- Lecture 33 - Modelling of Salient Pole Synchronous Machines - III
- Lecture 34 - Steady State Models - Induction Machine
- Lecture 35 - Steady State Models - Salient Pole Synchronous Machine
- Lecture 36 - Solution of Dynamic Equations of Induction Machine - I
- Lecture 37 - Solution of Dynamic Equations of Induction Machine - II
- Lecture 38 - Reactances of Salient Pole Synchronous Machines - I
- Lecture 39 - Reactances of Salient Pole Synchronous Machines - II
- Lecture 40 - Reactances of Salient Pole Synchronous Machines - III
- Lecture 41 - Sudden Short Circuit of Three Phase Alternator - Analytical Solution
- Lecture 42 - Sudden Short Circuit of Three Phase Alternator - Numerical Simulation
- Lecture 43 - Course Recapitulation and Assignments

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

NPTEL Video Course - Electrical Engineering - Analog ICs

Subject Co-ordinator - Prof. K. Radhakrishna Rao

Co-ordinating Institute - IIT - Madras | Texas Instruments - India

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

- Lecture 1 - Basic Building Blocks In Analog ICs
- Lecture 2 - Current Mirrors
- Lecture 3 - Translinear Networks
- Lecture 4 - Differential Amplifier
- Lecture 5 - Differential Amplifier Characteristics
- Lecture 6 - Video Amplifier and RF/IF Amplifiers
- Lecture 7 - Cascade Amplifier
- Lecture 8 - IC Negative Feedback Wide Band Amplifiers
- Lecture 9 - IC Negative Feedback Amplifiers
- Lecture 10 - Voltage Sources And References
- Lecture 11 - IC Voltage Regulator
- Lecture 12 - Characteristics and Parameters Of Voltage
- Lecture 13 - Protection Circuitry For Voltage Regulator
- Lecture 14 - Switched Mode Regulator And Operational
- Lecture 15 - IC Operational Voltage Amplifier
- Lecture 16 - General Purpose Operational Amplifier-747
- Lecture 17 - Transconductance Operational Amplifier
- Lecture 18 - Audio Power Amplifier and Norton's Amplifier
- Lecture 19 - Analog Multipliers
- Lecture 20 - Analog Multipliers
- Lecture 21 - Voltage Controlled Oscillator
- Lecture 22 - Voltage Controlled Oscillator
- Lecture 23 - Self Tuned Filter
- Lecture 24 - Phase Locked Loop<sup>24</sup> Phase Locked Loop
- Lecture 25 - Phase Locked Loop
- Lecture 26 - Phase Locked Loop
- Lecture 27 - Phase Locked Loop
- Lecture 28 - Current Mode ICs

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

NPTEL Video Course - Electrical Engineering - Digital Integrated Circuits

Subject Co-ordinator - Prof. Amitava Dasgupta

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Semiconductors  
Lecture 2 - Modelling of PN Junction Diodes  
Lecture 3 - Modelling of BJTs  
Lecture 4 - Diode and BJT Model Parameter Extraction  
Lecture 5 - BJT Inverters DC and Switching Characteristics  
Lecture 6 - Schottky Transistor  
Lecture 7 - Specifications of Logic Circuits  
Lecture 8 - Qualitative discussion on TTL Circuits  
Lecture 9 - Standard TTL Circuits  
Lecture 10 - Schottky (74s..) and Low power Schottky (74ls)  
Lecture 11 - Advanced TTL Circuits  
Lecture 12 - I<sup>2</sup> L Technology  
Lecture 13 - Edge triggered D-F/F  
Lecture 14 - I<sup>2</sup> L - Condition for Proper Operation  
Lecture 15 - I<sup>2</sup> L - Propagation delay Self aligned  
Lecture 16 - Schottky Transistor Logic  
Lecture 17 - Stacked I<sup>2</sup> L  
Lecture 18 - ECL Basic Operation  
Lecture 19 - Quantitative analysis of ECL 10k Series gates  
Lecture 20 - ECL 100k series; Stacked ECL gates; D-F/F  
Lecture 21 - Emitter Function Logic; Low Power ECL  
Lecture 22 - Polyemitter Bipolar Transistor In ECL; Propagation  
Lecture 23 - Heterojunction Bipolar Transistor Based ECL; ECL  
Lecture 24 - nMOS Logic Circuits  
Lecture 25 - nMOS Logic Circuits(contd); CMOS  
Lecture 26 - CMOS Inverter  
Lecture 27 - CMOS NAND, NOR and Other Gates  
Lecture 28 - Dynamic CMOS ; Transmission Gates; Realization Of MUX, decoder, D-F/F  
Lecture 29 - BiCMOS Gates

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

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- Lecture 30 - BiCMOS Driver;BiCMOS 32-bit Adder
- Lecture 31 - Digital Integrated Circuits
- Lecture 32 - Digital Integrated Circuits
- Lecture 33 - CMOS SRAM
- Lecture 34 - BiCMOS SRAM
- Lecture 35 - DRAM-CMOS and BiCMOS
- Lecture 36 - ROM-EPROM,EEPROM and Flash EPROM
- Lecture 37 - GaAs MESFET Characteristics and Equivalent Circuits
- Lecture 38 - Direct Coupled FET Logic; Superbuffer FET Logic
- Lecture 39 - Buffered FET Logic; Schottky Diode FET Logic
- Lecture 40 - Transmission Line Effects

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

NPTEL Video Course - Electrical Engineering - Electromagnetic Fields

Subject Co-ordinator - Prof. Harishankar Ramachandran

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction To Vector
- Lecture 2 - Introduction To Vector (Continued...)
- Lecture 3 - Coulomb's Law
- Lecture 4 - Electric Field
- Lecture 5 - Electro Static Potential
- Lecture 6 - The Gradient
- Lecture 7 - Gauss's Law
- Lecture 8 - Poisson's Equation
- Lecture 9 - Energy In The Field
- Lecture 10 - Sample Problems In Electrostatics
- Lecture 11 - Fields In Materials
- Lecture 12 - Fields In Material Bodies
- Lecture 13 - Displacement Vectors
- Lecture 14 - Capacitors
- Lecture 15 - Method Of Images
- Lecture 16 - Poisson's Equation 2 Dimensions
- Lecture 17 - Field Near Sharp Edges And Points
- Lecture 18 - Magnetic Field 1
- Lecture 19 - Magnetic Field 2
- Lecture 20 - Stokes Theorems
- Lecture 21 - The curl
- Lecture 22 - Field due to current loop
- Lecture 23 - Ampere's law
- Lecture 24 - Examples of Ampere's law
- Lecture 25 - Inductance
- Lecture 26 - Mutual Inductance
- Lecture 27 - Faraday's law
- Lecture 28 - Magnetic Energy
- Lecture 29 - Magnetic Energy (Continued...)

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

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- Lecture 30 - Magnetic Energy (Continued...)
- Lecture 31 - Generalised Ampere's Law
- Lecture 32 - The Wave Equation
- Lecture 33 - The Wave Equation
- Lecture 34 - Poynting Theorem
- Lecture 35 - Skin Effect
- Lecture 36 - Skin Effect (Continued...)
- Lecture 37 - Radiation And Circuits
- Lecture 38 - Phasor Form Of Poynting Theorem
- Lecture 39 - Reflection At Dielectric Boundaries
- Lecture 40 - Reflection At Dielectric Boundaries (Continued...)
- Lecture 41 - Transmission Lines
- Lecture 42 - Transmission Lines (Continued...) and Conclusion



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

NPTEL Video Course - Electrical Engineering - Networks and Systems

Subject Co-ordinator - Prof. V.G.K. Murthi

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introductory Concepts - 1  
Lecture 2 - Introductory Concepts - 2  
Lecture 3 - Introductory Concepts - 3  
Lecture 4 - Introductory Concepts - 4  
Lecture 5 - Introductory Concepts - 5  
Lecture 6 - Introductory Concepts - 6  
Lecture 7 - Fourier Series - 1  
Lecture 8 - Fourier Series - 2  
Lecture 9 - Fourier Series - 3  
Lecture 10 - Fourier Series - 4  
Lecture 11 - Fourier Series - 5  
Lecture 12 - Fourier Series - 6  
Lecture 13 - Fourier Transforms - 1  
Lecture 14 - Fourier Transforms - 2  
Lecture 15 - Fourier Transforms - 3  
Lecture 16 - Fourier Transforms - 4  
Lecture 17 - Fourier Transforms - 5  
Lecture 18 - Fourier Transforms - 6  
Lecture 19 - Fourier Transforms - 7  
Lecture 20 - Laplace Transforms - 1  
Lecture 21 - Laplace Transforms - 2  
Lecture 22 - Laplace Transforms - 3  
Lecture 23 - Laplace Transforms - 4  
Lecture 24 - Laplace Transforms - 5  
Lecture 25 - Laplace Transforms - 6  
Lecture 26 - Application of Laplace Transforms - 1  
Lecture 27 - Application of Laplace Transforms - 2  
Lecture 28 - Application of Laplace Transforms - 3  
Lecture 29 - Application of Laplace Transforms - 4

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

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Lecture 30	- Network Functions	- 1
Lecture 31	- Network Functions	- 2
Lecture 32	- Network Functions	- 3
Lecture 33	- Network Functions	- 4
Lecture 34	- Network Theorems	- 1
Lecture 35	- Network Theorems	- 2
Lecture 36	- Network Theorems	- 3
Lecture 37	- Network Theorems	- 4
Lecture 38	- Discrete - Time Systems	- 1
Lecture 39	- Discrete - Time Systems	- 2
Lecture 40	- Discrete - Time Systems	- 3
Lecture 41	- Discrete - Time Systems	- 4
Lecture 42	- Discrete - Time Systems	- 5
Lecture 43	- Discrete - Time Systems	- 6
Lecture 44	- Discrete - Time Systems	- 7
Lecture 45	- State-Variable Methods	- 1
Lecture 46	- State-Variable Methods	- 2
Lecture 47	- State Variable Methods	- 3
Lecture 48	- State Variable Methods	- 4
Lecture 49	- State Variable Methods	- 5
Lecture 50	- State Variable Methods	- 6

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

NPTEL Video Course - Electrical Engineering - Probability Foundation for Electrical Engineers

Subject Co-ordinator - Dr. Krishna Jagannathan

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction

Lecture 2 - Cardinality and Countability - 1

Lecture 3 - Cardinality and Countability - 2

Lecture 4 - Probability Spaces - 1

Lecture 5 - Probability Spaces - 2

Lecture 6 - Properties of Probability Measures

Lecture 7 - Discrete Probability Spaces

Lecture 8 - Generated  $\sigma$ -Algebra, Borel Sets

Lecture 9 - Borel Sets and Lebesgue Measure - 1

Lecture 10 - Borel Sets and Lebesgue Measure - 2

Lecture 11 - The Infinite Coin Toss Model

Lecture 12 - Conditional Probability and Independence

Lecture 13 - Independence (Continued...)

Lecture 14 - The Borel-Cantelli Lemmas

Lecture 15 - Random Variables

Lecture 16 - Cumulative Distribution Function

Lecture 17 - Types of Random Variables

Lecture 18 - Continuous Random Variables

Lecture 19 - Continuous Random Variables (Continued...) And Singular Random Variables

Lecture 20 - Several Random Variables

Lecture 21 - Independent Random Variables - 1

Lecture 22 - Independent Random Variables - 2

Lecture 23 - Jointly Continuous Random Variables

Lecture 24 - Transformation of Random Variables - 1

Lecture 25 - Transformation of Random Variables - 2

Lecture 26 - Transformation of Random Variables - 3

Lecture 27 - Transformation of Random Variables - 4

Lecture 28 - Integration And Expectation - 1

Lecture 29 - Integration And Expectation - 2

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

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- Lecture 30 - Properties of Integrals
- Lecture 31 - Monotone Convergence Theorem
- Lecture 32 - Expectation of Discrete Random Variables, Expectation Over Different Spaces
- Lecture 33 - Expectation of Discrete Random Variables
- Lecture 34 - Fatou's Lemma and Dominated Convergence Theorem
- Lecture 35 - Variance and Covariance
- Lecture 36 - Covariance, Correlation Coefficient
- Lecture 37 - Conditional Expectation
- Lecture 38 - MMSE Estimator, Transforms
- Lecture 39 - Moment Generating Function
- Lecture 40 - Characteristic Function - 1
- Lecture 41 - Characteristic Function - 2
- Lecture 42 - Concentration Inequalities
- Lecture 43 - Convergence of Random Variables - 1
- Lecture 44 - Convergence of Random Variables - 2
- Lecture 45 - Convergence of Random Variables - 3
- Lecture 46 - Convergence of Characteristic Functions, Limit Theorems
- Lecture 47 - The Laws of Large Numbers
- Lecture 48 - The Central Limit Theorem
- Lecture 49 - A Brief Overview of Multivariate Gaussians

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

NPTEL Video Course - Electrical Engineering - NOC:Analog Circuits

Subject Co-ordinator - Dr. Nagendra Krishnapura

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to the course
- Lecture 2 - Obtaining power gain
- Lecture 3 - Obtaining power gain using a linear two port?
- Lecture 4 - One port (two terminal) nonlinear element
- Lecture 5 - Nonlinear circuit analysis
- Lecture 6 - Small signal incremental analysis-graphical view
- Lecture 7 - Small signal incremental analysis
- Lecture 8 - Incremental equivalent circuit
- Lecture 9 - Large signal characteristics of a diode
- Lecture 10 - Analysis of diode circuits
- Lecture 11 - Small signal model of a diode
- Lecture 12 - Two port nonlinearity
- Lecture 13 - Small signal equivalent of a two port network
- Lecture 14 - Small signal equivalent circuit of a two port network
- Lecture 15 - Gain of a two port network
- Lecture 16 - Constraints on small signal parameters to maximize the gain
- Lecture 17 - Constraints on large signal characteristics to maximize the gain
- Lecture 18 - Implications of constraints in terms of the circuit equivalent
- Lecture 19 - MOS transistor-description
- Lecture 20 - MOS transistor large signal characteristics
- Lecture 21 - MOS transistor large signal characteristics-graphical view
- Lecture 22 - MOS transistor small signal characteristics
- Lecture 23 - Linear (Triode) region of the MOS transistor
- Lecture 24 - Small signal amplifier using the MOS transistor
- Lecture 25 - Basic amplifier structure
- Lecture 26 - Problems with the basic structure
- Lecture 27 - Adding bias and signal-ac coupling
- Lecture 28 - Common source amplifier with biasing
- Lecture 29 - Common source amplifier

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

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- Lecture 30 - Common source amplifier analysis
- Lecture 31 - Constraint on the input coupling capacitor
- Lecture 32 - Constraint on the output coupling capacitor
- Lecture 33 - Dependence of  $I_d$  on  $V_{ds}$
- Lecture 34 - Small signal output conductance of a MOS TRANSISTOR
- Lecture 35 - Effect of  $g_{ds}$  on a common source amplifier, Inherent gain limit of a Transistor
- Lecture 36 - Variation of  $g_m$  with transistors parameters
- Lecture 37 - Variation of  $g_m$  with constant  $V_{gs}$  and constant drain current bias
- Lecture 38 - Negative feedback control for constant drain current bias
- Lecture 39 - Types of feedback for constant drain current bias
- Lecture 40 - Sense at the drain and feedback to the gate-Drain feedback
- Lecture 41 - Intuitive explanation of low sensitivity with drain feedback
- Lecture 42 - Common source amplifier with drain feedback bias
- Lecture 43 - Constraint on the gate bias resistor
- Lecture 44 - Constraint on the input coupling capacitor.
- Lecture 45 - Constraint on the output coupling capacitor.
- Lecture 46 - Input and output resistances of the common source amplifier with constant VGS bias
- Lecture 47 - Current mirror
- Lecture 48 - Common source amplifier with current mirror bias
- Lecture 49 - Constraint on coupling capacitors and bias resistance
- Lecture 50 - Diode connected transistor
- Lecture 51 - Source feedback biasing
- Lecture 52 - Common source amplifier with source feedback bias
- Lecture 53 - Constraints on capacitor values
- Lecture 54 - Sensing at the drain and feeding back to the source
- Lecture 55 - Sensing at the source and feeding back to the gate
- Lecture 56 - Ensuring that transistor is in saturation
- Lecture 57 - Using a resistor instead of current source for biasing
- Lecture 58 - Quick tour of amplifying devices
- Lecture 59 - Controlled sources using a MOS transistor-Introduction
- Lecture 60 - Voltage controlled voltage source
- Lecture 61 - VCVS using a MOS transistor
- Lecture 62 - VCVS using a MOS transistor-Small signal picture
- Lecture 63 - VCVS using a MOS transistor-Complete circuit
- Lecture 64 - Source follower
- Lecture 65 - VCCS using a MOS transistor
- Lecture 66 - VCCS using a MOS transistor
- Lecture 67 - VCCS using a MOS transistor
- Lecture 68 - VCCS using a MOS transistor

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

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- Lecture 69 - Source degenerated CS amplifier
- Lecture 70 - CCCS using a MOS transistor
- Lecture 71 - CCCS using a MOS transistor
- Lecture 72 - CCCS using a MOS transistor
- Lecture 73 - C CVS using a MOS transistor
- Lecture 74 - C CVS using a MOS transistor
- Lecture 75 - C CVS using a MOS transistor
- Lecture 76 - C CVS using a MOS transistor
- Lecture 77 - V CVS using an opamp
- Lecture 78 - C CVS using an opamp
- Lecture 79 - Negative feedback and virtual short in an opamp
- Lecture 80 - Negative feedback and virtual short in a transistor
- Lecture 81 - Constraints on controlled sources using opamps and transistors
- Lecture 82 - Summary of basic amplifiers
- Lecture 83 - Signal swing limits in amplifiers
- Lecture 84 - Swing limit due to transistor entering triode region
- Lecture 85 - Swing limit due to transistor entering cutoff region
- Lecture 86 - Swing limit calculation example
- Lecture 87 - Swing limits - more calculations
- Lecture 88 - pMOS transistor
- Lecture 89 - Small signal model of the pMOS transistor
- Lecture 90 - Common source amplifier using the pMOS transistor
- Lecture 91 - Swing limits of the pMOS common source amplifier
- Lecture 92 - Biasing a pMOS transistor at a constant current; pMOS current mirror
- Lecture 93 - Converting nMOS transistor circuits to pMOS
- Lecture 94 - Bias current generation
- Lecture 95 - Examples of more than one transistor in feedback

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

NPTEL Video Course - Electrical Engineering - NOC:Introduction to Non Linear Dynamics

Subject Co-ordinator - Prof. Gaurav Raina

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - A brief introduction to modelling  
Lecture 2 - Dynamics and Nonlinear systems  
Lecture 3 - 1-Dimensional Flows, Flows on the Line, Lecture 1  
Lecture 4 - 1-Dimensional Flows, Flows on the Line, Lecture 2  
Lecture 5 - 1-Dimensional Flows, Flows on the Line, Lecture 3  
Lecture 6 - 1-Dimensional Flows, Flows on the Line, Lecture 4  
Lecture 7 - 1-Dimensional Flows, Flows on the Line, Lecture 5  
Lecture 8 - 1-Dimensional Flows, Flows on the Line, Lecture 6  
Lecture 9 - 1-Dimensional Flows, Bifurcations, Lecture 1  
Lecture 10 - 1-Dimensional Flows, Bifurcations, Lecture 2  
Lecture 11 - 1-Dimensional Flows, Bifurcations, Lecture 3  
Lecture 12 - 1-Dimensional Flows, Bifurcations, Lecture 4  
Lecture 13 - 1-Dimensional Flows, Bifurcations, Lecture 5  
Lecture 14 - 1-Dimensional Flows, Bifurcations, Lecture 6  
Lecture 15 - 1-Dimensional Flows, Flows on the Circle, Lecture 1  
Lecture 16 - 1-Dimensional Flows, Flows on the Circle, Lecture 2  
Lecture 17 - 2-Dimensional Flows, Linear Systems, Lecture 1  
Lecture 18 - 2-Dimensional Flows, Linear Systems, Lecture 2  
Lecture 19 - 2-Dimensional Flows, Linear Systems, Lecture 3  
Lecture 20 - 2-Dimensional Flows, Linear Systems, Lecture 4  
Lecture 21 - 2-Dimensional Flows, Phase Plane, Lecture 1  
Lecture 22 - 2-Dimensional Flows, Phase Plane, Lecture 2  
Lecture 23 - 2-Dimensional Flows, Phase Plane, Lecture 3  
Lecture 24 - 2-Dimensional Flows, Limit Cycles, Lecture 1  
Lecture 25 - 2-Dimensional Flows, Limit Cycles, Lecture 2  
Lecture 26 - 2-Dimensional Flows, Limit Cycles, Lecture 3  
Lecture 27 - 2-Dimensional Flows, Bifurcations, Lecture 1  
Lecture 28 - 2-Dimensional Flows, Bifurcations, Lecture 2  
Lecture 29 - 2-Dimensional Flows, Bifurcations, Lecture 3

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

NPTEL Video Course - Electrical Engineering - NOC:Control Engineering

Subject Co-ordinator - Prof. Ramkrishna.P

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to Systems and Control

Lecture 2 - Modelling of Systems

Lecture 3 - Elements of Modelling

Lecture 4 - Examples of Modelling

Lecture 5 - Solving Problems in Modelling of Systems

Lecture 6 - Laplace Transforms

Lecture 7 - Inverse Laplace Transforms

Lecture 8 - Transfer Function of Modelling Block Diagram Representation

Lecture 9 - Solving Problems on Laplace Transforms and Transfer Functions

Lecture 10 - Block Diagram Reduction, Signal Flow Graphs

Lecture 11 - Solving Problems on Block Diagram Reduction, Signal Flow Graphs

Lecture 12 - Time Response Analyzsis of systems

Lecture 13 - Time Response specifications

Lecture 14 - Solving Problems on Time Response Analyzsis ans specifications

Lecture 15 - Stability

Lecture 16 - Routh Hurwitz Criterion

Lecture 17 - Routh Hurwitz Criterion T 1

Lecture 18 - Closed loop System and Stability

Lecture 19 - Root Locus Technique

Lecture 20 - Root Locus Plots

Lecture 21 - Root Locus Plots (Continued...)

Lecture 22 - Root Locus Plots (Continued...)

Lecture 23 - Root Locus Plots (Continued...)

Lecture 24 - Introduction to Frequency Response

Lecture 25 - Frequency Response Plots

Lecture 26 - Relative Stability

Lecture 27 - Bode plots

Lecture 28 - Basics of Control design Proportional, Integral and Derivative Actions

Lecture 29 - Basics of Control design Proportional, Integral and Derivative Actions

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

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- Lecture 30 - Problems on PID Controllers
- Lecture 31 - Basics of Control design Proportional, Integral and Derivative Actions
- Lecture 32 - Control design in time domain and discusses the lead compensator
- Lecture 33 - Improvement of the Transient Response using lead compensation
- Lecture 34 - Design of control using lag compensators
- Lecture 35 - The design of Lead-Lag compensators using root locus
- Lecture 36 - Introduction design of control in frequency domain
- Lecture 37 - Design of Lead Compensator using Bode Plots
- Lecture 38 - Design of Lag Compensators using Bode Plots
- Lecture 39 - Design of Lead-Lag Compensators using Bode plots
- Lecture 40 - Experimental Determination of Transfer Function
- Lecture 41 - Effect of Zeros on System Response
- Lecture 42 - Navigation - Stories and Some Basics
- Lecture 43 - Navigation - Dead Reckoning and Reference Frames
- Lecture 44 - Inertial Sensors and Their Characteristics
- Lecture 45 - Filter Design to Attenuate Inertial Sensor Noise
- Lecture 46 - Complementary Filter
- Lecture 47 - Complementary Filter - 1
- Lecture 48 - Introduction to State Space Systems
- Lecture 49 - Linearization of State Space Dynamics
- Lecture 50 - Linearization of State Space Dynamics - 1
- Lecture 51 - Controllability and Observability

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Analog IC Design

Subject Co-ordinator - Prof. S. Aniruddhan

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to MOSFETs  
Lecture 2 - Simple MOSFET Circuits  
Lecture 3 - MOSFET Current Mirrors  
Lecture 4 - Cascode Amplifiers  
Lecture 5 - MOSFET in Integrated Circuits  
Lecture 6 - MOSFET Capacitances  
Lecture 7 - Noise  
Lecture 8 - Noise of Simple Circuits  
Lecture 9 - Systematic Mismatch  
Lecture 10 - Random Mismatch  
Lecture 11 - Differential Amplifiers  
Lecture 12 - Negative Feedback  
Lecture 13 - Stability of Negative Feedback Systems  
Lecture 14 - Dominant Pole Compensation  
Lecture 15 - Active Load  
Lecture 16 - One Stage OpAmps - 1  
Lecture 17 - One Stage OpAmps - 2  
Lecture 18 - One Stage OpAmps - 3  
Lecture 19 - Differential Amplifiers Offset  
Lecture 20 - One Stage OpAmps - Noise and Offset  
Lecture 21 - One Stage OpAmps - Slew Rate  
Lecture 22 - One Stage OpAmps - Datasheet  
Lecture 23 - One Stage OpAmps - Example 1  
Lecture 24 - One Stage OpAmps - Example 2  
Lecture 25 - Telescopic OpAmp - 1  
Lecture 26 - Telescopic OpAmp - 2  
Lecture 27 - Telescopic OpAmp - 3  
Lecture 28 - Telescopic OpAmp - 4  
Lecture 29 - Telescopic OpAmp - 5

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

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- Lecture 30 - Telescopic OpAmp - Datasheet
- Lecture 31 - Telescopic OpAmp - Design Example
- Lecture 32 - Folded-Cascode OpAmp - 1
- Lecture 33 - Folded-Cascode OpAmp - 2
- Lecture 34 - Folded-Cascode OpAmp - 3
- Lecture 35 - Folded-Cascode OpAmp - 4
- Lecture 36 - Folded-Cascode OpAmp - 5
- Lecture 37 - Negative feedback amplifier
- Lecture 38 - Step response, sinusoidal steady state response
- Lecture 39 - Loop gain and unity loop gain frequency; Opamp
- Lecture 40 - Opamp realization using controlled sources; Delay in the loop
- Lecture 41 - Negative feedback amplifier with ideal delay-small delays
- Lecture 42 - Negative feedback amplifier with ideal delay-large delays
- Lecture 43 - Negative feedback amplifier with parasitic poles and zeros
- Lecture 44 - Negative feedback amplifier with parasitic poles and zeros; Nyquist criterion
- Lecture 45 - Nyquist criterion; Phase margin
- Lecture 46 - Phase margin
- Lecture 47 - Single stage opamp realization
- Lecture 48 - Two stage miller compensated opamp
- Lecture 49 - Two stage miller compensated opamp.
- Lecture 50 - Two and three stage miller compensated opamps; Feedforward compensated opamp
- Lecture 51 - Two Stage Opamp
- Lecture 52 - Two Stage Opamp ; Three Stage and Triple Cascade Opamps
- Lecture 53 - Common Mode Rejection Ratio ; Example
- Lecture 54 - Fully differential single stage opamp
- Lecture 55 - Common mode feedback
- Lecture 56 - Fully differential single stage opamp-2
- Lecture 57 - Fully differential two stage opamp; Fully differential versus pseudo-differential

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

NPTEL Video Course - Electrical Engineering - NOC:Probability Foundations for Electrical Engineers

Subject Co-ordinator - Prof. R.Aravind, Dr. Andrew Thangaraj

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Experiments, Outcomes and Events

Lecture 2 - Examples

Lecture 3 - Operations on Events

Lecture 4 - Examples

Lecture 5 - Sigma Fields and Probability

Lecture 6 - Discrete Sample Spaces

Lecture 7 - Union and Partition

Lecture 8 - Examples

Lecture 9 - Definition and Basic Properties

Lecture 10 - Bayes' Rule for Partitions

Lecture 11 - Examples

Lecture 12 - Example of Detection

Lecture 13 - Example

Lecture 14 - Independence of Events

Lecture 15 - Examples

Lecture 16 - Combining Independent Experiments

Lecture 17 - Conditional Independence

Lecture 18 - Examples and Computations with Conditional Independence

Lecture 19 - Binomial and Geometric Models

Lecture 20 - Examples

Lecture 21 - Definition and Discrete Setting

Lecture 22 - Random Variables and Events

Lecture 23 - Examples

Lecture 24 - Important distributions

Lecture 25 - Examples

Lecture 26 - Real-life modeling example

Lecture 27 - More Distributions

Lecture 28 - Conditional PMFs, Conditioning on an event, Indicator random variables

Lecture 29 - Example

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

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- Lecture 30 - Multiple random variables and joint distribution
- Lecture 31 - Example
- Lecture 32 - Marginal PMF
- Lecture 33 - Trinomial joint PMF
- Lecture 34 - Events and Conditioning with Two Random Variables
- Lecture 35 - Example
- Lecture 36 - Independent random variables
- Lecture 37 - More on independence
- Lecture 38 - Example
- Lecture 39 - Addition of Random Variables
- Lecture 40 - Sum, Difference and Max of Two Random Variables
- Lecture 41 - More Computations
- Lecture 42 - Example
- Lecture 43 - Real line as sample space
- Lecture 44 - Probability density function (pdf)
- Lecture 45 - Cumulative distribution function (CDF)
- Lecture 46 - Continuous random variables
- Lecture 47 - pdf and CDF of continuous random variables
- Lecture 48 - Spinning pointer example
- Lecture 49 - Important continuous distributions
- Lecture 50 - More continuous distributions
- Lecture 51 - Two-dimensional real sample space
- Lecture 52 - Joint pdf and joint CDF
- Lecture 53 - More on assigning probability to regions of x-y plain
- Lecture 54 - Darts example and marginal pdfs
- Lecture 55 - Independence to two continuous random variables
- Lecture 56 - Examples
- Lecture 57 - Prob[  $X > Y$  ]
- Lecture 58 - Transformations of random variables
- Lecture 59 - CDF method
- Lecture 60 - pdf method
- Lecture 61 - Examples
- Lecture 62 - One-to-one transformations
- Lecture 63 - Expected Value or Mean of a Random Variable
- Lecture 64 - Properties of Expectation
- Lecture 65 - Expectation Computations for Important Distributions
- Lecture 66 - Variance
- Lecture 67 - Examples of Variance
- Lecture 68 - Expectations with Two Random Variables

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

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- Lecture 69 - Correlation and Covariance
- Lecture 70 - Examples
- Lecture 71 - Examples
- Lecture 72 - Examples
- Lecture 73 - Live Session

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

NPTEL Video Course - Electrical Engineering - NOC:Introduction to Photonics

Subject Co-ordinator - Prof. Balaji Srinivasan

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to Photonics  
Lecture 2 - Diffraction and Interference  
Lecture 3 - Tutorial on Ray Optics and Wave Optics  
Lecture 4 - Lab Demonstration  
Lecture 5 - Interferometers  
Lecture 6 - Coherence  
Lecture 7 - Spatial and Temporal Coherence  
Lecture 8 - Tutorial on Wave Optics  
Lecture 9 - Lab Demonstration  
Lecture 10 - Electromagnetic Optics  
Lecture 11 - Fiber Optics  
Lecture 12 - Photon Properties  
Lecture 13 - Lab Demonstration  
Lecture 14 - Photon Optics  
Lecture 15 - Tutorial on Photon optics  
Lecture 16 - Photon interaction - 1  
Lecture 17 - Photon interaction - 2  
Lecture 18 - Lab Demonstration  
Lecture 19 - Optical Amplification  
Lecture 20 - Three Level systems  
Lecture 21 - Four Level Systems  
Lecture 22 - EDFA Introduction  
Lecture 23 - EDFA Tutorial  
Lecture 24 - Lasers Part - 1  
Lecture 25 - Lab Demonstration  
Lecture 26 - Lasers part- 2  
Lecture 27 - Lasers part- 3  
Lecture 28 - Lasers part- 4  
Lecture 29 - Lab Demonstration

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

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- Lecture 30 - Semiconductor light Source and detector - Band structure
- Lecture 31 - Semiconductor light Source and detector - Light emission
- Lecture 32 - Semiconductor light Source and detector LED Characteristics
- Lecture 33 - Lab Demonstration
- Lecture 34 - Semiconductor light Source and detector Laser Characteristics
- Lecture 35 - Semiconductor Detectors - 1
- Lecture 36 - Semiconductor Detectors - 2
- Lecture 37 - Semiconductor Detectors - 3
- Lecture 38 - Lab Demonstration
- Lecture 39 - Semiconductor Detectors - 4
- Lecture 40 - Light manipulation-Mallus' Law
- Lecture 41 - Light manipulation-Birefringence
- Lecture 42 - Light manipulation-Faraday Rotation
- Lecture 43 - Lab Demonstration
- Lecture 44 - Non-linear optics-Pockels effect
- Lecture 45 - Non-linear optics-Kerr Effect
- Lecture 46 - Lab Demonstration
- Lecture 47 - Non-linear optics-stimulated Brillouin scattering
- Lecture 48 - Non-linear optics-stimulated Raman scattering

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

NPTEL Video Course - Electrical Engineering - NOC:Multirate DSP

Subject Co-ordinator - Prof. David Kovil Pillai

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to Multirate DSP - Part 1
- Lecture 2 - Introduction to Multirate DSP - Part 2
- Lecture 3 - Sampling and Nyquist criterion - Part 1
- Lecture 4 - Sampling and Nyquist criterion - Part 2
- Lecture 5 - Signal Reconstruction - Part 1
- Lecture 6 - Signal Reconstruction - Part 2
- Lecture 7 - Reconstruction filter - Part 1
- Lecture 8 - Reconstruction filter - Part 2
- Lecture 9 - Discrete time processing of continuous time signal - Part 1
- Lecture 10 - Discrete time processing of continuous time signal - Part 2
- Lecture 11 - DT processing of CT signal example
- Lecture 12 - Time scaling- upsampler and downsampler - Part 1
- Lecture 13 - Time scaling- upsampler and downsampler - Part 2
- Lecture 14 - Upsampler and downsampler- continued - Part 1
- Lecture 15 - Upsampler and downsampler- continued - Part 2
- Lecture 16 - Decimator properties
- Lecture 17 - Properties of Upsampler and Downsampler
- Lecture 18 - Fractional sampling rate change - Part 1
- Lecture 19 - Fractional sampling rate change - Part 2
- Lecture 20 - Multiplexer/ demultiplexer interpretation
- Lecture 21 - Noble identities and polyphase decomposition - Part 1
- Lecture 22 - Noble identities and polyphase decomposition - Part 2
- Lecture 23 - Polyphase decomposition continued - Part 1
- Lecture 24 - Polyphase decomposition continued - Part 2
- Lecture 25 - Introduction to Multirate Filter Banks
- Lecture 26 - Applications of Multirate - Part 1
- Lecture 27 - Applications of Multirate - Part 2
- Lecture 28 - Spectral Analysis of Filter Bank - Part 1
- Lecture 29 - Spectral Analysis of Filter Bank - Part 2

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

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- Lecture 30 - DFT and High Resolution Spectral Analysis - Part 1
- Lecture 31 - DFT and High Resolution Spectral Analysis - Part 2
- Lecture 32 - Transmultiplexer and Maximally Decimated Filterbanks - Part 1
- Lecture 33 - Transmultiplexer and Maximally Decimated Filterbanks - Part 2
- Lecture 34 - Maximally Decimated Filterbanks 2 - Part 1
- Lecture 35 - Maximally Decimated Filterbanks 2 - Part 2
- Lecture 36 - Study of Two-channel filter bank
- Lecture 37 - Introduction to Quadrature Mirror Filters (QMF)
- Lecture 38 - 2-channel QMF Filter Bank Design
- Lecture 39 - Study of All-pass filters
- Lecture 40 - Study of All-pass lattice
- Lecture 41 - All-pass decomposition, the study of Mth band and Nyquist filters
- Lecture 42 - Study of two-channel filter bank with perfect reconstruction
- Lecture 43 - First part name
- Lecture 44 - First part name
- Lecture 45 - Capacity of wireless channels - CSIR - Part 1
- Lecture 46 - Capacity of wireless channels - CSIT - Part 2
- Lecture 47 - Capacity of wireless channels - Formulation of capacity calculation - Part 3
- Lecture 48 - Capacity of wireless channels - Formulation of capacity calculation (Continued...) - Part 1
- Lecture 49 - Capacity of wireless channels - Formulation of capacity calculation (Continued...) - Part 2
- Lecture 50 - Capacity of wireless channels - Time-invariant Frequency selective channel - Part 3
- Lecture 51 - Capacity of wireless channels - Time-varying Frequency selective channels - Part 1
- Lecture 52 - Multi-rate DSP framework for Multi-carrier Modulation - Part 2
- Lecture 53 - MCM with overlapping spectra - Part 1
- Lecture 54 - Recap of multirate DSP concepts for building OFDM - Part 2
- Lecture 55 - Introduction to Redundancy and it's implementation in multi-rate framework - Part 3
- Lecture 56 - M-channel multicarrier Transceiver - Part 1
- Lecture 57 - M-channel multicarrier Transceiver - Part 2
- Lecture 58 - M-channel multicarrier Transceiver - Part 3
- Lecture 59 - Pseudo-circulant structure - Part 1
- Lecture 60 - Pseudo-circulant structure - Part 2
- Lecture 61 - MCM impairments and CP - Part 1
- Lecture 62 - MCM impairments and CP - Part 2
- Lecture 63 - Orthogonal Frequency Division Multiplexing - Part 1
- Lecture 64 - Orthogonal Frequency Division Multiplexing - Part 2
- Lecture 65 - Review of OFDM with CP
- Lecture 66 - Review of Lec 1-28
- Lecture 67 - OFDM applications - Quantization - Part 1
- Lecture 68 - OFDM applications - Quantization - Part 2

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

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Lecture 69 - Some more applications of MDSP

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

NPTEL Video Course - Electrical Engineering - NOC:LDPC and Polar Codes in 5G Standard

Subject Co-ordinator - Dr. Andrew Thangaraj

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Additive White Gaussian Noise (AWGN) Channel and BPSK
- Lecture 2 - Bit Error Rate (BER) and Signal to Noise Ratio (SNR)
- Lecture 3 - Error Correction Coding in a Digital Communication System
- Lecture 4 - Complementary Error Function
- Lecture 5 - Simulation of Uncoded BPSK and BER v/s Eb/N0 plot Generation in MATLAB/Octave
- Lecture 6 -  $n = 3$  Repetition Code
- Lecture 7 - Implementation of  $n = 3$  Repetition Code in MATLAB
- Lecture 8 - (7,4) Hamming Code
- Lecture 9 - A Brief Introduction to Linear Block Codes
- Lecture 10 - Simulation of (7,4) Hamming Code in MATLAB
- Lecture 11 - Low Density Parity Check Codes
- Lecture 12 - LDPC Codes in 5G
- Lecture 13 - Encoding LDPC codes in 5G
- Lecture 14 - MATLAB programs for encoding LDPC codes
- Lecture 15 - Log-Likelihood Ratio and Soft Input and Soft Output (SISO) Decoder for the Repetition Code
- Lecture 16 - Soft Input and Soft Output (SISO) Decoder for the Single Parity Check (SPC) Code
- Lecture 17 - Illustration of SISO decoder for (3,2) SPC code and min-sum approximation
- Lecture 18 - SISO decoder for a general  $(n,n-1)$  SPC code
- Lecture 19 - Soft-Input Soft-Output Iterative Message Passing Decoder for LDPC Codes
- Lecture 20 - A Toy Example Illustration of the SISO Minsum Iterative Message Passing Decoder
- Lecture 21 - Modifications to the Decoder
- Lecture 22 - Implementation of SISO Layered Minsum Iterative Message Passing Decoder in MATLAB
- Lecture 23 - Debugging and Improvements to the MATLAB Implementation
- Lecture 24 - Rate Matching in LDPC Codes using Puncturing and Shortening
- Lecture 25 - Implementation of Fixed Point Quantization and Offset Minsum in the Decoder
- Lecture 26 - Introduction to Polar Codes
- Lecture 27 - Channel Polarization, Definition of  $(N,K)$  Polar Code and Encoding
- Lecture 28 - MATLAB Implementation for Encoding Polar Codes
- Lecture 29 - Successive Cancellation (SC) Decoder for Polar Codes

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

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- Lecture 30 - Successive Cancellation (SC) Decoder for a General (N,K) Polar Code
- Lecture 31 - MATLAB Implementation of Successive Cancellation Decoder - Part 1
- Lecture 32 - MATLAB Implementation of Successive Cancellation Decoder - Part 2
- Lecture 33 - Successive Cancellation List Decoding
- Lecture 34 - Fixed Point Quantization for SC Decoder and LDPC Decoder
- Lecture 35 - MATLAB Implementation of Successive Cancellation List Decoding
- Lecture 36 - Rate Matching for LDPC codes
- Lecture 37 - Performance Comparison of LDPC codes and Polar Codes in 5G

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

NPTEL Video Course - Electrical Engineering - NOC:Electromagnetic Compatibility, EMC

Subject Co-ordinator - Prof. Daniel Mansson, Prof. Rajeev Thottappillil

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to EMC - Definitions

Lecture 2 - Introduction to EMC - Sources, units etc

Lecture 3 - Electromagnetic principles - Faraday's and Ampere's equations

Lecture 4 - Electromagnetic principles - Gauss's equation, boundary conditions

Lecture 5 - Electromagnetic principles - Uniform plane wave

Lecture 6 - Electromagnetic principles - Transmission lines

Lecture 7 - Electromagnetic principles - Dipoles

Lecture 8 - High-frequency behaviour of components - Conductors

Lecture 9 - High-frequency behaviour of components - Capacitors, inductors, resistors

Lecture 10 - High-frequency behaviour of components - Mechanical switches and transformers

Lecture 11 - Crosstalk or near-field coupling - Capacitive coupling, inductive coupling, common-impedance coupling

Lecture 12 - Crosstalk or near-field coupling - Crosstalk combinations

Lecture 13 - Crosstalk or near-field coupling - Coupling to shielded cables

Lecture 14 - Electromagnetic coupling in the far-field

Lecture 15 - Field Coupling - Exercises

Lecture 16 - Solutions to EMC problems - Lay out and control of interfaces

Lecture 17 - Solutions to EMC problems - Grounding or earthing

Lecture 18 - Solutions to EMC problems - Electromagnetic Shielding

Lecture 19 - Solutions to EMC problems - Electromagnetic Shielding (Continued...)

Lecture 20 - Solutions to EMC problems - Shielded cables

Lecture 21 - Solutions to EMC problems - Filters and Surge protectors

Lecture 22 - Lightning Protection - Introduction

Lecture 23 - Lightning protection - Currents, charges and fields

Lecture 24 - Lightning Protection - Buildings

Lecture 25 - Lightning Protection - Towers, Lightning safety

Lecture 26 - EMC Requirements and Standard, Testing and Difficulties - 1

Lecture 27 - EMC Requirements and Standard, Testing and Difficulties - 2

Lecture 28 - Intentional Electromagnetic Interference or IEMI - 1

Lecture 29 - Intentional Electromagnetic Interference or IEMI - 2

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

NPTEL Video Course - Electrical Engineering - NOC:Optimal Control

Subject Co-ordinator - Prof. Barjeev Tyagi

Co-ordinating Institute - IIT - Roorkee

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

- Lecture 1 - Introduction and Performance Index
- Lecture 2 - Basic Concepts of Calculus of Variation
- Lecture 3 - The Basic Variational Problem
- Lecture 4 - Fixed End Point Problem
- Lecture 5 - Free End Point Problem
- Lecture 6 - Free End Point Problem (Continued...)
- Lecture 7 - Free End Point Problem (Continued...)
- Lecture 8 - Free End Point Problem (Continued...)
- Lecture 9 - Optimum of Functions with Conditions
- Lecture 10 - Optimum of Functions with Conditions (Lagrange Multiplier Method)
- Lecture 11 - Optimum of Functional with Conditions
- Lecture 12 - Variational Approach to Optimal Control Systems
- Lecture 13 - Variational Approach to Optimal Control Systems (Continued...)
- Lecture 14 - Linear Quadratic Optimal Control Systems
- Lecture 15 - Linear Quadratic Optimal Control Systems (Continued...)
- Lecture 16 - Linear Quadratic Optimal Control Systems (Continued...)
- Lecture 17 - Linear Quadratic Optimal Control Systems (Continued...)
- Lecture 18 - Linear Quadratic Optimal Control Systems (Continued...)
- Lecture 19 - Linear Quadratic Optimal Control Systems (Optimal Value of Performance Index)
- Lecture 20 - Infinite Horizon Regulator Problem
- Lecture 21 - Infinite Horizon Regulator Problem (Continued...)
- Lecture 22 - Analytical Solution of MDRE - State Transition Matrix Approach
- Lecture 23 - Analytical Solution of MDRE - Similarity Transformation Approach
- Lecture 24 - Analytical Solution of MDRE - Similarity Transformation Approach (Continued...)
- Lecture 25 - Frequency Domain Interpretation of LQR - Linear Time Invariant System
- Lecture 26 - Frequency Domain Interpretation of LQR - Linear Time Invariant System (Continued...)
- Lecture 27 - LQR with a Specified Degree of Stability
- Lecture 28 - Inverse Matrix Riccati Equation
- Lecture 29 - Linear Quadratic Tracking System

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

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- Lecture 30 - Discrete-Time Optimal Control Systems
- Lecture 31 - Discrete-Time Optimal Control Systems (Continued...)
- Lecture 32 - Discrete-Time Optimal Control Systems (Continued...)
- Lecture 33 - Matrix Discrete Riccati Equation
- Lecture 34 - Analytical Solution of Matrix Difference Riccati Equation
- Lecture 35 - Analytical Solution of Matrix Difference Riccati Equation (Continued...)
- Lecture 36 - Optimal Control using Dynamic Programming
- Lecture 37 - The Hamilton-Jacobi-Bellman (HJB) Equation
- Lecture 38 - LQR System Using HJB Equation
- Lecture 39 - Time Optimal Control System - Constrained Input
- Lecture 40 - Time Optimal Control System (Continued...)

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Basics of Software Defined Radios and Pr

Subject Co-ordinator - Dr. Meenakshi Rawat

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Foundation for software defined radio

Lecture 2 - Components of a software defined radio

Lecture 3 - Software defined radio architectures - Part I

Lecture 4 - Software defined radio architectures - Part II

Lecture 5 - Software defined radio architectures - Part III

Lecture 6 - Software defined radio architectures - Part IV

Lecture 7 - Distortion Parameters - Part I

Lecture 8 - Distortion Parameters - Part II

Lecture 9 - Distortion Parameters

Lecture 10 - Distortion Parameters

Lecture 11 - Power Amplifiers

Lecture 12 - Power Amplifiers

Lecture 13 - Case study-I

Lecture 14 - Case study-II

Lecture 15 - Behavioral models for representing nonlinear distortions

Lecture 16 - Linearization Techniques for nonlinear distortion

Lecture 17 - Predistortion Techniques for nonlinearity distortion in SDR

Lecture 18 - Basic Digital Predistortion Techniques for nonlinear distortion in SDR

Lecture 19 - State-of-the-art Digital Predistortion Techniques for Nonlinear Distortion in SDR

Lecture 20 - Digital Predistortion Techniques for Linear as well as Nonlinear Distortion in SDR

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

NPTEL Video Course - Electrical Engineering - NOC:Electrical Distribution System Analysis

Subject Co-ordinator - Prof. G. B. Kumbhar

Co-ordinating Institute - IIT - Roorkee

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

- Lecture 1 - Introduction to Electrical Distribution System
- Lecture 2 - Components of Distribution System Substation and Busbar Layouts
- Lecture 3 - Components of Distribution System and Feeder Configurations
- Lecture 4 - Nature of Loads in a Distribution System
- Lecture 5 - Load Allocation in a Distribution System
- Lecture 6 - K Factors and Their Applications
- Lecture 7 - Analysis of Uniformly Distributed
- Lecture 8 - Lumping Loads in Geometric Configurations Rectangular
- Lecture 9 - Lumping Loads in Geometric Configurations Triangular
- Lecture 10 - Impedance of Distribution Lines and Feeders - Part I
- Lecture 11 - Series Impedance of Distribution Lines and Feeders - Part II
- Lecture 12 - Models of Distribution Lines and Cables
- Lecture 13 - Modelling of Single-Phase and Three-Phase Transformers
- Lecture 14 - Modelling of Three-Phase Transformers - Part I
- Lecture 15 - Modelling of Three-Phase Transformers - Part II
- Lecture 16 - Modelling of Three-Phase Transformers - Part III
- Lecture 17 - Modelling of Three-Phase Transformers - Part IV
- Lecture 18 - Modelling of Step Voltage Regulators - Part I
- Lecture 19 - Modelling of Step Voltage Regulators - Part II
- Lecture 20 - Modelling of Step Voltage Regulators - Part III
- Lecture 21 - Modelling of Step Voltage Regulators - Part IV
- Lecture 22 - Load Models in Distribution System - Part I
- Lecture 23 - Load Models in Distribution System - Part II
- Lecture 24 - Modelling of Distributed Generation
- Lecture 25 - Applications and Modeling of Capacitor Banks
- Lecture 26 - Summary of Modelling of Distribution System Components
- Lecture 27 - Backward/Forward Sweep Load Flow Analysis - Part I
- Lecture 28 - Backward/Forward Sweep Load Flow Analysis - Part II
- Lecture 29 - Direct Approach Based Load Flow Analysis - Part I

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

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- Lecture 30 - Direct Approach Based Load Flow Analysis - Part II
- Lecture 31 - Direct Approach Based Load Flow Analysis - Part III
- Lecture 32 - Direct Approach Based Load Flow Analysis
- Lecture 33 - Gauss Implicit Z-matrix Method
- Lecture 34 - Sequence Component Based Short Circuit Analysis
- Lecture 35 - Thevenin's Equivalent and Phase Variable Based Short Circuit Analysis
- Lecture 36 - Direct Approach for Short-Circuit Analysis
- Lecture 37 - Direct Approach for Short-Circuit Analysis
- Lecture 38 - Direct Approach for Short-Circuit Analysis
- Lecture 39 - Direct Approach for Short-Circuit Analysis
- Lecture 40 - Applications of Distribution System Analysis

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

NPTEL Video Course - Electrical Engineering - NOC:Introduction to Smart Grid

Subject Co-ordinator - Prof. Premalata Jena, Prof. N.P. Padhy

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Introduction to Smart Grid - I  
Lecture 2 - Introduction to Smart Grid - II  
Lecture 3 - Architecture of smart grid system  
Lecture 4 - Standards for smart grid system  
Lecture 5 - Elements and Technologies of smart grid system - I  
Lecture 6 - Elements and Technologies of smart grid system - II  
Lecture 7 - Distributed Generation Resources - I  
Lecture 8 - Distributed Generation Resources - II  
Lecture 9 - Distributed Generation Resources - III  
Lecture 10 - Distributed Generation Resources - IV  
Lecture 11 - Wide Area Monitoring System - I  
Lecture 12 - Wide Area Monitoring System - II  
Lecture 13 - Phasor Estimation - I  
Lecture 14 - Phasor Estimation - II  
Lecture 15 - Digital Relays for Smart Grid Protection  
Lecture 16 - Islanding Detection Techniques - I  
Lecture 17 - Islanding Detection Techniques - II  
Lecture 18 - Islanding Detection Techniques - III  
Lecture 19 - Smart Grid Protection - I  
Lecture 20 - Smart Grid Protection - II  
Lecture 21 - Smart Grid Protection - III  
Lecture 22 - Smart Grid Protection - IV  
Lecture 23 - Modelling of Storage Devices  
Lecture 24 - Modelling of DC Smart Grid Components  
Lecture 25 - Operation and Control of AC Microgrid - I  
Lecture 26 - Operation and Control of AC Microgrid - II  
Lecture 27 - Operation and Control of DC Microgrid - I  
Lecture 28 - Operation and Control of DC Microgrid - II  
Lecture 29 - Operation and Control of AC-DC hybrid Microgrid - I

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

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- Lecture 30 - Operation and Control of AC-DC hybrid Microgrid - II
- Lecture 31 - Simulation and Case Study of AC Microgrid
- Lecture 32 - Simulation and Case Study of DC Microgrid
- Lecture 33 - Simulation and Case Study of AC-DC Hybrid Microgrid
- Lecture 34 - Demand Side Management in Smart Grid
- Lecture 35 - Demand Response Analysis of Smart Grid
- Lecture 36 - Energy Management
- Lecture 37 - Design of Smart Grid and Practical Smart Grid Case Study - I
- Lecture 38 - Design of Smart Grid and Practical Smart Grid Case Study - II
- Lecture 39 - System Analysis of AC/DC Smart Grid
- Lecture 40 - Conclusions

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

NPTEL Video Course - Electrical Engineering - NOC:Facts Devices

Subject Co-ordinator - Prof. Avik Bhattacharya

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Introduction - I  
Lecture 2 - Introduction - II  
Lecture 3 - Switch Realization  
Lecture 4 - PWM - I  
Lecture 5 - PWM - II  
Lecture 6 - Closed Loop Control  
Lecture 7 - Multi Level Inverter - I  
Lecture 8 - Multi Level Inverter - II  
Lecture 9 - Multi Level Inverter - III  
Lecture 10 - Shunt Compensator Analysis  
Lecture 11 - Shunt Compensator TCR and TSC - I  
Lecture 12 - Shunt Compensator TCR and TSC - II  
Lecture 13 - Static Var Compensator - I  
Lecture 14 - Static Var Compensator - II  
Lecture 15 - STATCOM - I  
Lecture 16 - STATCOM - II  
Lecture 17 - STATCOM/SVC Comparisons  
Lecture 18 - External Control Design of Static Var Compensator  
Lecture 19 - DSTATCOM  
Lecture 20 - Design of DSTATCOM  
Lecture 21 - Series Compensator - I  
Lecture 22 - Series Compensator - II  
Lecture 23 - GCSC and SSSC  
Lecture 24 - SSSC - II  
Lecture 25 - SSSC - III and TSSC  
Lecture 26 - TSSC - II and TCSC  
Lecture 27 - TCSC Characteristics and Control  
Lecture 28 - Voltage and Phase Angle Regulation  
Lecture 29 - Voltage and Phase Angle Regulator Device - I

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

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- Lecture 30 - Voltage and Phase Angle Regulator Device - II
- Lecture 31 - UPQC Introduction and Classification
- Lecture 32 - UPQC Classification - I
- Lecture 33 - Operation and Control of UPQC - II
- Lecture 34 - Operation and Control of UPQC - III
- Lecture 35 - UPFC
- Lecture 36 - Control Structure of UPFC
- Lecture 37 - Comparison of UPFC with PAR and Series Compensators
- Lecture 38 - Interline Power Flow Controller (IPFC) - I
- Lecture 39 - Interline Power Flow Controller (IPFC) - II
- Lecture 40 - Practical Application and Conclusion



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

NPTEL Video Course - Electrical Engineering - NOC:Advanced Linear Continuous Control Systems: Applications wi

Subject Co-ordinator - Prof. Yogesh Vijay Hote

Co-ordinating Institute - IIT - Roorkee

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

- Lecture 1 - Introduction to State Space
- Lecture 2 - State Space Representation
- Lecture 3 - State Space Representation
- Lecture 4 - State Space Representation
- Lecture 5 - State Space Representation
- Lecture 6 - State Space Representation
- Lecture 7 - State Space Representation
- Lecture 8 - State Space Representation
- Lecture 9 - State Space Representation
- Lecture 10 - State Space Representation
- Lecture 11 - Modelling of Mechanical Systems in State Space
- Lecture 12 - Modelling of DC Servo Motor - Part I
- Lecture 13 - Modelling of DC Servo Motor - Part II
- Lecture 14 - Determination of Transfer Function from State Space Model - Part I
- Lecture 15 - Determination of Transfer Function from State Space Model - Part II
- Lecture 16 - Stability Analysis in State Space
- Lecture 17 - Stability Analysis in State Space - Part II
- Lecture 18 - Stability Analysis in State Space
- Lecture 19 - Stability Analysis in State Space
- Lecture 20 - Stability Analysis in State Space
- Lecture 21 - Concept of Diagonalization
- Lecture 22 - Solution of State Equation
- Lecture 23 - Solution of State Equation (Forced System)
- Lecture 24 - Steady State Error for State Space System
- Lecture 25 - State Transition Matrix - Part I
- Lecture 26 - State Transition Matrix - Part II
- Lecture 27 - State Transition Matrix using Cayley-Hamilton Theorem - Part III
- Lecture 28 - MATLAB Programming with State Space
- Lecture 29 - Controllability in State Space - Part I

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

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- Lecture 30 - Controllability in State Space - Part II
- Lecture 31 - Observability in State Space - Part I
- Lecture 32 - Observability in State Space - Part II
- Lecture 33 - Pole Placement by State Feedback - Part I
- Lecture 34 - Pole Placement by State Feedback - Part II
- Lecture 35 - Pole Placement by State Feedback - Part III
- Lecture 36 - Tracking Problem in State Feedback Design - Part I
- Lecture 37 - Tracking Problem in State Feedback Design - Part II
- Lecture 38 - State Observer Design - Part I
- Lecture 39 - State Observer Design - Part II
- Lecture 40 - State Observer Design - Part III

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

NPTEL Video Course - Electrical Engineering - NOC:Computer Aided Power System Analysis

Subject Co-ordinator - Prof. Biswarup Das

Co-ordinating Institute - IIT - Roorkee

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

- Lecture 1 - Modeling of Power System Components
- Lecture 2 - Modeling of Power System Components (Continued...)
- Lecture 3 - Bus Admittance Matrix
- Lecture 4 - Bus Admittance Matrix with Mutual Impedance
- Lecture 5 - Bus Admittance Matrix with mutual impedance (Continued...)
- Lecture 6 - Power flow equations and classification of buses
- Lecture 7 - Basic Gauss - Seidel Numerical Method
- Lecture 8 - Gauss - Seidel Load Flow (GSLF)
- Lecture 9 - GSLF with Multiple Generators
- Lecture 10 - Example of GSLF
- Lecture 11 - Basics of Newton Raphson Numerical Method
- Lecture 12 - Newton - Raphson Load Flow (NRLF) in Polar Co-Ordinate
- Lecture 13 - NRLF in polar co-ordinate (Continued...)
- Lecture 14 - NRLF in polar co-ordinate (Continued...)
- Lecture 15 - NRLF (Polar) Algorithm and Example
- Lecture 16 - NRLF in rectangular coordinate
- Lecture 17 - NRLF in rectangular coordinate (Continued...)
- Lecture 18 - NRLF in rectangular coordinate (Continued...)
- Lecture 19 - Example of NRLF (Rectangular) Method
- Lecture 20 - Fast decoupled load flow (FDLF)
- Lecture 21 - FDLF (Continued...)
- Lecture 22 - FDLF (Continued...)
- Lecture 23 - AC- DC Load Flow
- Lecture 24 - AC- DC Load Flow (Continued...)
- Lecture 25 - AC- DC Load Flow (Continued...)
- Lecture 26 - Sparsity and Gaussian Elimination
- Lecture 27 - Gaussian Elimination Method
- Lecture 28 - Example of Gaussian Elimination Method
- Lecture 29 - Gaussian Elimination and Optimal Ordering

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

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- Lecture 30 - Triangular Factorization
- Lecture 31 - LU Decomposition
- Lecture 32 - Introduction to Contingency Analysis
- Lecture 33 - Linear Sensitivity Factor
- Lecture 34 - Linear Sensitivity Factors (Continued...)
- Lecture 35 - Line outage sensitivity factor
- Lecture 36 - Line outage sensitivity factor (Continued...)
- Lecture 37 - Line outage sensitivity factor (Continued...)
- Lecture 38 - State Estimation Technique
- Lecture 39 - Weighted Least Square (WLS) Method
- Lecture 40 - WLS (Continued...)
- Lecture 41 - WLS Examples
- Lecture 42 - Error Analysis
- Lecture 43 - Error Analysis (Continued...)
- Lecture 44 - Bad Data Detection
- Lecture 45 - Power system state estimation
- Lecture 46 - Power system state estimation (Continued...)
- Lecture 47 - Power system state estimation (Continued...)
- Lecture 48 - Power system state estimation (Continued...)
- Lecture 49 - Fault Analysis
- Lecture 50 - Fault Analysis (Continued...)
- Lecture 51 - Fault Analysis (Continued...)
- Lecture 52 - Fault Analysis (Continued...)
- Lecture 53 - Fault Analysis (Continued...)
- Lecture 54 - Fault Analysis (Continued...)
- Lecture 55 - Fault Analysis (Continued...)
- Lecture 56 - Fault Analysis (Continued...)
- Lecture 57 - Fault Analysis (Continued...)
- Lecture 58 - Fault Analysis (Continued...)
- Lecture 59 - Fault Analysis (Continued...)
- Lecture 60 - Fault Analysis (Continued...)

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

NPTEL Video Course - Electrical Engineering - NOC:Advance Power Electronics and Control

Subject Co-ordinator - Prof. Avik Bhattacharya

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Introduction  
Lecture 2 - Basic Concept of Switches  
Lecture 3 - Device Physics - I  
Lecture 4 - Device Physics - II  
Lecture 5 - Device Physics - III  
Lecture 6 - Device Physics - IV  
Lecture 7 - Application and Analysis of Switches - I  
Lecture 8 - Application and Analysis of Switches - II  
Lecture 9 - Single Phase Converter  
Lecture 10 - Single Phase Converters - II  
Lecture 11 - Single Phase Converters - III  
Lecture 12 - Three Phase Converters - I  
Lecture 13 - Three Phase Converters - II  
Lecture 14 - Multipulse Converters II  
Lecture 15 - Effect of Source Inductance and PWM Rectifiers  
Lecture 16 - PWM Rectifiers - II  
Lecture 17 - PWM Rectifiers - III and Power Factor Improvement Techniques  
Lecture 18 - PWM Rectifiers - IV and Power Factor Improvement Techniques - II  
Lecture 19 - Power Factor Improvement Techniques III and Non Isolated DC- DC Converters  
Lecture 20 - Non Isolated DC- DC Converters - II  
Lecture 21 - Non Isolated and Isolated DC- DC Converters and Choppers  
Lecture 22 - Isolated DC-DC Converters and Choppers  
Lecture 23 - Isolated DC-DC Converters - II  
Lecture 24 - Isolated DC-DC Converters - III  
Lecture 25 - Isolated DC-DC Converters - IV and VSI and CSI  
Lecture 26 - VSI and CSI  
Lecture 27 - VSI and CSI II and MLI  
Lecture 28 - PWM Techniques II and MLI  
Lecture 29 - MLI II and ZSI

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

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- Lecture 30 - ZSI II and Space Vector Modulation (SVM)
- Lecture 31 - SVM II and AC to AC Converters
- Lecture 32 - SVM III and AC to AC Converters
- Lecture 33 - Cycloconverters and Matrix Converters
- Lecture 34 - Matrix Converter - II
- Lecture 35 - Matrix Converter - III and Power Quality Mitigation Devices
- Lecture 36 - Power Quality Mitigation Devices - II
- Lecture 37 - Linear and Non Linear Control in Power Electronics - I
- Lecture 38 - Linear and Non Linear Control in Power Electronics - II
- Lecture 39 - Non-Linear Control in Power Electronics
- Lecture 40 - Application and Conclusion

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

NPTEL Video Course - Electrical Engineering - NOC:CMOS Digital VLSI Design

Subject Co-ordinator - Prof. Sudeb Dasgupta

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - MOS Transistor Basics - I  
Lecture 2 - MOS Transistor Basics - II  
Lecture 3 - MOS Transistor Basics - III  
Lecture 4 - MOS Parasitics and SPICE Model  
Lecture 5 - CMOS Inverter Basics - I  
Lecture 6 - CMOS Inverter Basics - II  
Lecture 7 - CMOS Inverter Basics - III  
Lecture 8 - Power Analysis - I  
Lecture 9 - Power Analysis - II  
Lecture 10 - SPICE Simulation - I  
Lecture 11 - SPICE Simulation - II  
Lecture 12 - Combinational Logic Design - I  
Lecture 13 - Combinational Logic Design - II  
Lecture 14 - Combinational Logic Design - III  
Lecture 15 - Combinational Logic Design - IV  
Lecture 16 - Combinational Logic Design - V  
Lecture 17 - Combinational Logic Design - VI  
Lecture 18 - Combinational Logic Design - VII  
Lecture 19 - Combinational Logic Design - VIII  
Lecture 20 - Combinational Logic Design - IX  
Lecture 21 - Combinational Logic Design - X  
Lecture 22 - Logical Efforts - I  
Lecture 23 - Logical Efforts - II  
Lecture 24 - Logical Efforts - III  
Lecture 25 - Sequential Logic Design - I  
Lecture 26 - Sequential Logic Design - II  
Lecture 27 - Sequential Logic Design - III  
Lecture 28 - Sequential Logic Design - IV  
Lecture 29 - Sequential Logic Design - V

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

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- Lecture 30 - Sequential Logic Design - VI
- Lecture 31 - Sequential Logic Design - VII
- Lecture 32 - Sequential Logic Design - VIII
- Lecture 33 - Clocking Strategies for Sequential Design - I
- Lecture 34 - Clocking Strategies for Sequential Design - II
- Lecture 35 - Clocking Strategies for Sequential Design - III
- Lecture 36 - Clocking Strategies for Sequential Design - IV
- Lecture 37 - Sequential Logic Design - IX
- Lecture 38 - Clocking Strategies for Sequential Design - V
- Lecture 39 - Concept of Memory and its Designing - I
- Lecture 40 - Concept of Memory and its Designing - II



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

NPTEL Video Course - Electrical Engineering - An Introduction to Electronics Systems Packaging

Subject Co-ordinator - Prof. G.V. Mahesh

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction and Objectives of the course
- Lecture 2 - Definition of a system and history of semiconductors
- Lecture 3 - Products and levels of packaging
- Lecture 4 - Packaging aspects of handheld products; Case studies in applications
- Lecture 5 - Case Study (continued); Definition of PWB, summary and Questions for review
- Lecture 6 - Basics of Semiconductor and Process flowchart; Video on "Sand-to-Silicon" •
- Lecture 7 - Wafer fabrication, inspection and testing
- Lecture 8 - Wafer packaging; Packaging evolution; Chip connection choices
- Lecture 9 - Wire bonding, TAB and flipchip-1
- Lecture 10 - Wire bonding, TAB and flipchip-2; Tutorials
- Lecture 11 - Why packaging? & Single chip packages or modules (SCM)
- Lecture 12 - Commonly used packages and advanced packages; Materials in packages
- Lecture 13 - Advances packages (continued); Thermal mismatch in packages; Current trends in packaging
- Lecture 14 - Multichip modules (MCM)-types; System-in-package (SIP); Packaging roadmaps; Hybrid circuits; Quid
- Lecture 15 - Electrical Issues " I; Resistive Parasitic
- Lecture 16 - Electrical Issues " II; Capacitive and Inductive Parasitic
- Lecture 17 - Electrical Issues " III; Layout guidelines and the Reflection problem
- Lecture 18 - Electrical Issues " IV; Interconnection
- Lecture 19 - Quick Tutorial on packages; Benefits from CAD; Introduction to DFM, DFR & DFT
- Lecture 20 - Components of a CAD package and its highlights
- Lecture 21 - Design Flow considerations; Beginning a circuit design with schematic work and component layout
- Lecture 22 - Demo and examples of layout and routing; Technology file generation from CAD; DFM check list and
- Lecture 23 - Review of CAD output files for PCB fabrication; Photo plotting and mask generation
- Lecture 24 - Process flow-chart; Vias; PWB substrates
- Lecture 25 - Substrates continued; Video highlights; Surface preparation
- Lecture 26 - Photoresist and application methods; UV exposure and developing; Printing technologies for PWBs
- Lecture 27 - PWB etching; Resist stripping; Screen-printing technology
- Lecture 28 - Through-hole manufacture process steps; Panel and pattern plating methods
- Lecture 29 - Video highlights on manufacturing; Solder mask for PWBs; Multilayer PWBs; Introduction to microv

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

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- Lecture 30 - Microvia technology and Sequential build-up technology process flow for high-density interconnect
- Lecture 31 - Conventional Vs HDI technologies; Flexible circuits; Tutorial session
- Lecture 32 - SMD benefits; Design issues; Introduction to soldering
- Lecture 33 - Reflow and Wave Soldering methods to attach SMDs
- Lecture 34 - Solders; Wetting of solders; Flux and its properties; Defects in wave soldering
- Lecture 35 - Vapour phase soldering, BGA soldering and Desoldering/Repair; SMT failures
- Lecture 36 - SMT failure library and Tin Whiskers
- Lecture 37 - Tin-lead and lead-free solders; Phase diagrams; Thermal profiles for reflow soldering; Lead-free
- Lecture 38 - Lead-free solder considerations; Green electronics; RoHS compliance and e-waste recycling issues
- Lecture 39 - Thermal Design considerations in systems packaging
- Lecture 40 - Introduction to embedded passives; Need for embedded passives; Design Library; Embedded resistor
- Lecture 41 - Embedded capacitors; Processes for embedding capacitors; Case study examples; Summary of materia
- Lecture 42 - Chapter-wise summary

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

NPTEL Video Course - Electrical Engineering - Power Electronics and Distributed Generation

Subject Co-ordinator - Dr. Vinod John

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Course introduction and overview
- Lecture 2 - Distributed generation technologies
- Lecture 3 - Distributed storage technologies
- Lecture 4 - Distribution system protection
- Lecture 5 - Circuit breaker coordination
- Lecture 6 - Symmetrical component analysis and sequence excitation
- Lecture 7 - Modeling of distribution system components
- Lecture 8 - Protection components
- Lecture 9 - Impact of distributed generation on distribution protection
- Lecture 10 - Consumption and distribution grounding
- Lecture 11 - Islanding of distribution systems
- Lecture 12 - Modeling of islanded distribution systems
- Lecture 13 - Distribution system problems and examples
- Lecture 14 - Distribution system problems and examples continued
- Lecture 15 - Anti-islanding methods
- Lecture 16 - Solid state circuit switching
- Lecture 17 - Relaying for distributed generation
- Lecture 18 - Feeder voltage regulation
- Lecture 19 - Grounding, distribution protection coordination problems and examples
- Lecture 20 - Ring and network distribution
- Lecture 21 - Economic evaluation of DG systems
- Lecture 22 - Design for effective initial cost
- Lecture 23 - Single phase inverters
- Lecture 24 - DC bus design in voltage source inverter
- Lecture 25 - Electrolytic capacitor reliability and lifetime
- Lecture 26 - Inverter switching and average model
- Lecture 27 - Common mode and differential mode model of inverters
- Lecture 28 - Two leg single phase inverter
- Lecture 29 - Distribution system problems, and examples

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

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- Lecture 30 - DG evaluation problems and examples
- Lecture 31 - Switch selection in two level voltage source inverters and loss evaluation
- Lecture 32 - Thermal model, management and cycling failure of IGBT modules
- Lecture 33 - Semiconductor switch design reliability considerations
- Lecture 34 - AC filters for grid connected inverters
- Lecture 35 - AC inductor design and need for LCL filter
- Lecture 36 - LCL filter design
- Lecture 37 - Examples in power electronic design for DG systems
- Lecture 38 - Examples in power electronic design for DG systems continued
- Lecture 39 - Higher order passive damping design for LCL filters
- Lecture 40 - Balance of hardware component for inverters in DG systems

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

NPTEL Video Course - Electrical Engineering - Pulse width Modulation for Power Electronic Converters

Subject Co-ordinator - Dr. G. Narayanan

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Electronic switches
- Lecture 2 - DC - DC converters
- Lecture 3 - DC - AC converters
- Lecture 4 - Multilevel converters - I
- Lecture 5 - Multilevel converters - II
- Lecture 6 - Applications of voltage source converter - I
- Lecture 7 - Applications of voltage source converter - II
- Lecture 8 - Applications of voltage source converter - III
- Lecture 9 - Purpose of PWM - I
- Lecture 10 - Purpose of PWM - II
- Lecture 11 - Low switching frequency PWM - I
- Lecture 12 - Low switching frequency PWM - II
- Lecture 13 - Selective harmonic elimination
- Lecture 14 - Off-line optimized pulsewidth modulation
- Lecture 15 - Sine-triangle pulsewidth modulation
- Lecture 16 - Harmonic injection pulsewidth modulation
- Lecture 17 - Bus-clamping pulsewidth modulation
- Lecture 18 - Triangle-comparison based PWM for three-phase inverter
- Lecture 19 - Concept of space vector
- Lecture 20 - Conventional space vector PWM
- Lecture 21 - Space vector based bus-clamping PWM
- Lecture 22 - Space vector based advanced bus-clamping PWM
- Lecture 23 - Harmonic analysis of PWM techniques
- Lecture 24 - Analysis of RMS line current ripple using the notion of stator flux ripple
- Lecture 25 - Evaluation of RMS line current ripple using the notion of stator flux ripple
- Lecture 26 - Analysis and design of PWM techniques from line current ripple perspective
- Lecture 27 - Instantaneous and average dc link current in a voltage source inverter
- Lecture 28 - DC link current and DC capacitor current in a voltage source inverter
- Lecture 29 - Analysis of torque ripple in induction motor drives - I

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

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- Lecture 30 - Analysis of torque ripple in induction motor drives - II
- Lecture 31 - Evaluation of conduction loss in three-phase inverter
- Lecture 32 - Evaluation of switching loss in three-phase inverter
- Lecture 33 - Design of PWM for reduced switching loss in three-phase inverter
- Lecture 34 - Effect of dead-time on inverter output voltage for continuous PWM schemes
- Lecture 35 - Effect of dead-time on inverter output voltage for bus-clamping PWM schemes
- Lecture 36 - Analysis of overmodulation in sine-triangle PWM from space vector perspective
- Lecture 37 - Overmodulation in space vector modulated inverter
- Lecture 38 - PWM for three-level neutral-point-clamped inverter - I
- Lecture 39 - PWM for three-level neutral-point-clamped inverter - II
- Lecture 40 - PWM for three-level neutral-point-clamped inverter - III

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

NPTEL Video Course - Electrical Engineering - Switched Mode Power Conversion

Subject Co-ordinator - Prof. L. Umanand, Prof. V. Ramanarayanan

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Introduction to DC-DC converter  
Lecture 2 - Diode  
Lecture 3 - Controlled Switches  
Lecture 4 - Prior Art  
Lecture 5 - Inductor  
Lecture 6 - Transformer  
Lecture 7 - Capacitor  
Lecture 8 - Issues related to switches  
Lecture 9 - Energy storage - Capacitor  
Lecture 10 - Energy storage - Inductor  
Lecture 11 - Primitive Converter  
Lecture 12 - Non-Isolated converter - I  
Lecture 13 - Non-Isolated converter - II  
Lecture 14 - Isolated Converters - I  
Lecture 15 - Isolated Converters - II  
Lecture 16 - Conduction Mode  
Lecture 17 - Problem set - I  
Lecture 18 - Problem set - II  
Lecture 19 - Modeling DC-DC converters  
Lecture 20 - State space representation - I  
Lecture 21 - State Space representation - II  
Lecture 22 - Circuit Averaging - I  
Lecture 23 - Circuit Averaging - II  
Lecture 24 - State Space Model of Boost Converter  
Lecture 25 - DC-DC converter controller  
Lecture 26 - Controller Structure  
Lecture 27 - PID Controller - I  
Lecture 28 - PID Controller - II  
Lecture 29 - PID Controller - III

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

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- Lecture 30 - Implementation of PID controller
- Lecture 31 - Pulse Width Modulator
- Lecture 32 - Controller Design - I
- Lecture 33 - Controller Design - II
- Lecture 34 - Controllers and Sensing Circuit
- Lecture 35 - Regulation of Multiple outputs - I
- Lecture 36 - Regulation of Multiple outputs - II
- Lecture 37 - Current Control
- Lecture 38 - Unity Power Factor Converter
- Lecture 39 - Magnetic Design
- Lecture 40 - DC-DC Converter Design



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

NPTEL Video Course - Electrical Engineering - Basic Electrical Technology

Subject Co-ordinator - Prof. L. Umanand

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Basic Electrical Technology  
Lecture 2 - Passive Components  
Lecture 3 - Sources  
Lecture 4 - Kirchoff's Law  
Lecture 5 - Modelling of Circuit - Part 1  
Lecture 6 - Modelling of Circuit - Part 2  
Lecture 7 - Analysis Using MatLab  
Lecture 8 - Sinusoidal steady state  
Lecture 9 - Transfer Function and Pole Zero domain  
Lecture 10 - Transfer function & pole zero  
Lecture 11 - The Sinusoid  
Lecture 12 - Phasor Analysis - Part 1  
Lecture 13 - Phasor Analysis - Part 2  
Lecture 14 - Power Factor  
Lecture 15 - Power ports  
Lecture 16 - Transformer Basics - Part 1  
Lecture 17 - Transformer Basics - Part 2  
Lecture 18 - Transformer Basics - Part 3  
Lecture 19 - The Practical Transformer - Part 1  
Lecture 20 - The Practical Transformer - Part 2  
Lecture 21 - The Practical Transformer - Part 3  
Lecture 22 - DC Machines - Part 1  
Lecture 23 - DC Machines - Part 2  
Lecture 24 - DC Generators - Part 1  
Lecture 25 - DC Generators - Part 2  
Lecture 26 - DC Motors - Part 1  
Lecture 27 - DC Motors - Part 2  
Lecture 28 - DC Motors - Part 3  
Lecture 29 - Three Phase System - Part 1

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

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- Lecture 30 - Three Phase System - Part 2
- Lecture 31 - Three Phase System - Part 3
- Lecture 32 - Three Phase System - Part 4
- Lecture 33 - Three Phase Transformer - Part 1
- Lecture 34 - Three Phase Transformer - Part 2
- Lecture 35 - Induction Motor - Part 1
- Lecture 36 - Induction Motor - Part 2
- Lecture 37 - Induction Motor - Part 3
- Lecture 38 - Induction Motor - Part 4
- Lecture 39 - Synchronous Machine

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

NPTEL Video Course - Electrical Engineering - Industrial Drives - Power Electronics

Subject Co-ordinator - Prof. K. Gopakumar

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Electric Drive
- Lecture 2 - Controlled Rectifier - Part-1
- Lecture 3 - Controlled Rectifier - Part-2 (Three phase)
- Lecture 4 - Controlled Rectifier - Part-3 (Three phase)
- Lecture 5 - Controlled Rectifier - Part-4 (Three Phase)
- Lecture 6 - Controlled Rectifier - Part-5 (Three Phase)
- Lecture 7 - Power Electronics Improvements
- Lecture 8 - Four Quadrant Dc to Dc Converter
- Lecture 9 - Sine Triangle PWM Control of Converter
- Lecture 10 - Front-end Ac-Dc Converter with harmonic control
- Lecture 11 - Ac to Dc Converter Close Loop Control Schematic
- Lecture 12 - Ac-Dc Converter Close loop Control Block Diagram
- Lecture 13 - Design of the Converter Controller & AC to DC
- Lecture 14 - Front-End Ac to Dc Converter-Design
- Lecture 15 - Front-End Ac to Dc Converter - Simulation study
- Lecture 16 - Dc Motor Speed Control - Introduction
- Lecture 17 - Dc Motor Speed Control - Block Diagram
- Lecture 18 - Dc Motor Speed Control Current Control & S C L
- Lecture 19 - Dc-Motor Speed Control Controller Design - Part-1
- Lecture 20 - Dc Motor Speed Control Controller Design - Part-2
- Lecture 21 - Dc Motor Speed Control Controller Design - Part-3
- Lecture 22 - Basics of DC to AC Converter - Part-1
- Lecture 23 - Basics of DC to AC Converter - Part-2
- Lecture 24 - Inverter Sine Triangle PWM
- Lecture 25 - Inverter - Current Hysteresis Controlled PWM
- Lecture 26 - C H controlled & Basics of space vector PWM
- Lecture 27 - Space Vector PWM - Part-2
- Lecture 28 - Space Vector PWM - Part-3
- Lecture 29 - Space Vector PWM Signal Generation

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

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- Lecture 30 - Speed Control of Induction Motor - Part-1
- Lecture 31 - Speed Control of Induction Motor - Part-2
- Lecture 32 - High dynamic performance of I M Drive
- Lecture 33 - Dynamic Model of Induction Motor - Part-1
- Lecture 34 - Dynamic Model of Induction Motor - Part-2
- Lecture 35 - Vector Control of Induction Motor
- Lecture 36 - Effect of Switching Time lag in Inverter
- Lecture 37 - Power Switch Protection - Snubbers

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

NPTEL Video Course - Electrical Engineering - NOC:Design for Internet of Things

Subject Co-ordinator - Prof. T.V. Prabhakar

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction to IOTs - Part I
- Lecture 2 - Introduction to IOTs - Part II
- Lecture 3 - Introduction to IOTs - Examples
- Lecture 4 - IOT applications - I
- Lecture 5 - IOT applications - II
- Lecture 6 - Power management in IOT device
- Lecture 7 - Introduction to LDO
- Lecture 8 - Design with an LDO
- Lecture 9 - Introduction to switching regulators
- Lecture 10 - Designing with LDO's, switching regulators and case studies - Part I
- Lecture 11 - Designing with LDO's, switching regulators and case studies - Part II
- Lecture 12 - Designing with LDO's, switching regulators and case studies - Part II
- Lecture 13 - Designing with LDO's, switching regulators and case studies - Part IV
- Lecture 14 - Power Conditioning with Energy Harvesters - I
- Lecture 15 - Power Conditioning with Energy Harvesters - II
- Lecture 16 - Power Conditioning with Energy Harvesters - III
- Lecture 17 - Battery less power supply and battery life calculation for embedded devices - I
- Lecture 18 - Battery less power supply and battery life calculation for embedded devices - II
- Lecture 19 - Battery less power supply and battery life calculation for embedded devices - III
- Lecture 20 - Introduction to MQTT
- Lecture 21 - Quality of Service in MQTT
- Lecture 22 - Standards and Security in MQTT
- Lecture 23 - Introduction and Implementation of AMQP
- Lecture 24 - Implementation of CoAP and MDNS
- Lecture 25 - Basics of RFID
- Lecture 26 - RFID protocol and applications
- Lecture 27 - BLE Security
- Lecture 28 - LPWAN technologies
- Lecture 29 - Choice of Microcontrollers

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

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Lecture 30 - Case Study 1 - Joule Jotter  
Lecture 31 - Case Study 2 - Cloud Based Systems

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

NPTEL Video Course - Electrical Engineering - NOC:Advances in UHV Transmission and Distribution

Subject Co-ordinator - Prof Subba Reddy B

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Advantages of HVAC/DC Transmission, Introduction to Grid Management
- Lecture 2 - Transmission system development, Important components of transmission system
- Lecture 3 - Insulation coordination, over voltage in power systems
- Lecture 4 - Design/selection of insulators, Importance of grading/cc rings
- Lecture 5 - Non ceramic insulators performance-service experience
- Lecture 6 - Failure of apparatus in the field, importance of reliability and testing
- Lecture 7 - Pollution flashover phenomena, modeling etc
- Lecture 8 - Planning of High Voltage laboratories
- Lecture 9 - Importance of High Voltage testing and techniques employed
- Lecture 10 - Basic philosophy of HV testing, tests for various HV apparatus
- Lecture 11 - HV testing techniques for various apparatus
- Lecture 12 - HV testing on Composite Insulators
- Lecture 13 - Surface degradation studies on composite insulators
- Lecture 14 - Surface morphological techniques for composite insulators
- Lecture 15 - Conductors used for EHV/UHV transmission
- Lecture 16 - Corona and interference on transmission lines
- Lecture 17 - Introduction of HTLS conductors and their advantages
- Lecture 18 - Mechanical considerations for HV conductors
- Lecture 19 - Introduction to Towers and importance of foundations
- Lecture 20 - Selection/Design of clearances for HV towers
- Lecture 21 - Design Optimization for UHV towers
- Lecture 22 - Introduction to 1100kV HVDC
- Lecture 23 - Introduction to HV Substations
- Lecture 24 - Types of Substations, comparison
- Lecture 25 - Insulation coordination, Components in a typical substation
- Lecture 26 - Preventive maintenance of Substation
- Lecture 27 - Electric and magnetic fields, mitigations techniques
- Lecture 28 - Importance of Grounding, reducing Earthing resistance
- Lecture 29 - Introduction to the use of Fiber optic cables, OPGW

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

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- Lecture 30 - Introduction to communication and SCADA
- Lecture 31 - Precautions and safety measures in substation
- Lecture 32 - Electrical hazards, minimum clearances in substation
- Lecture 33 - Importance of Generation of HVDC in the laboratory
- Lecture 34 - Importance of Generation of HVAC, Impulse Voltage and Currents in the laboratory
- Lecture 35 - Measurements of High Voltages
- Lecture 36 - Measurements of High Voltages (Continued...)
- Lecture 37 - Introduction to digital recorders, measurement
- Lecture 38 - Upgradation/uprating of transmission lines- advantages
- Lecture 39 - Upgradation/uprating of transmission lines- advantages (Continued...)
- Lecture 40 - Summary of the course



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

NPTEL Video Course - Electrical Engineering - NOC:Mathematical Methods and Techniques in Signal Processing

Subject Co-ordinator - Prof. Shayan Srinivasa Garani

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction to signal processing
- Lecture 2 - Basics of signals and systems
- Lecture 3 - Linear time-invariant systems
- Lecture 4 - Modes in a linear system
- Lecture 5 - Introduction to state space representation
- Lecture 6 - State space representation
- Lecture 7 - Non-uniqueness of state space representation
- Lecture 8 - Introduction to vector space
- Lecture 9 - Linear independence and spanning set
- Lecture 10 - Unique representation theorem
- Lecture 11 - Basis and cardinality of basis
- Lecture 12 - Norms and inner product spaces
- Lecture 13 - Inner products and induced norm
- Lecture 14 - Cauchy Schwartz inequality
- Lecture 15 - Orthonormality
- Lecture 16 - Problem on sum of subspaces
- Lecture 17 - Linear independence of orthogonal vectors
- Lecture 18 - Hilbert space and linear transformation
- Lecture 19 - Gram Schmidt orthonormalization
- Lecture 20 - Linear approximation of signal space
- Lecture 21 - Gram Schmidt orthogonalization of signals
- Lecture 22 - Problem on orthogonal complement
- Lecture 23 - Problem on signal geometry (4-QAM)
- Lecture 24 - Basics of probability and random variables
- Lecture 25 - Mean and variance of a random variable
- Lecture 26 - Introduction to random process
- Lecture 27 - Statistical specification of random processes
- Lecture 28 - Stationarity of random processes
- Lecture 29 - Problem on mean and variance

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

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- Lecture 30 - Problem on MAP Detection
- Lecture 31 - Fourier transform of dirac comb sequence
- Lecture 32 - Sampling theorem
- Lecture 33 - Basics of multirate systems
- Lecture 34 - Frequency representation of expanders and decimators
- Lecture 35 - Decimation and interpolation filters
- Lecture 36 - Fractional sampling rate alterations
- Lecture 37 - Digital filter banks
- Lecture 38 - DFT as filter bank
- Lecture 39 - Noble Identities
- Lecture 40 - Polyphase representation
- Lecture 41 - Efficient architectures for interpolation and decimation filters
- Lecture 42 - Problems on simplifying multirate systems using noble identities
- Lecture 43 - Problem on designing synthesis bank filters
- Lecture 44 - Efficient architecture for fractional decimator
- Lecture 45 - Multistage filter design
- Lecture 46 - Two-channel filter banks
- Lecture 47 - Amplitude and phase distortion in signals
- Lecture 48 - Polyphase representation of 2-channel filter banks, signal flow graphs and perfect reconstruction
- Lecture 49 - M-channel filter banks
- Lecture 50 - Polyphase representation of M-channel filter bank
- Lecture 51 - Perfect reconstruction of signals
- Lecture 52 - Nyquist and half band filters
- Lecture 53 - Special filter banks for perfect reconstruction
- Lecture 54 - Introduction to wavelets
- Lecture 55 - Multiresolution analysis and properties
- Lecture 56 - The Haar wavelet
- Lecture 57 - Structure of subspaces in MRA
- Lecture 58 - Haar decomposition - 1
- Lecture 59 - Haar decomposition - 2
- Lecture 60 - Wavelet Reconstruction
- Lecture 61 - Haar wavelet and link to filter banks
- Lecture 62 - Demo on wavelet decomposition
- Lecture 63 - Problem on circular convolution
- Lecture 64 - Time frequency localization
- Lecture 65 - Basic analysis
- Lecture 66 - Basic Analysis
- Lecture 67 - Fourier series and notions of convergence
- Lecture 68 - Convergence of Fourier series at a point of continuity

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

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- Lecture 69 - Convergence of Fourier series for piecewise differentiable periodic functions
- Lecture 70 - Uniform convergence of Fourier series of piecewise smooth periodic function
- Lecture 71 - Convergence in norm of Fourier series
- Lecture 72 - Convergence of Fourier series for all square integrable periodic functions
- Lecture 73 - Problem on limits of integration of periodic functions
- Lecture 74 - Matrix Calculus
- Lecture 75 - KL transform
- Lecture 76 - Applications of KL transform
- Lecture 77 - Demo on KL Transform
- Lecture 78 - Live Session
- Lecture 79 - Live Session 2

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

NPTEL Video Course - Electrical Engineering - NOC:Electronics Enclosures Thermal Issues

Subject Co-ordinator - Prof. N. V Chalapathi Rao

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Electronic Equipment Thermal issues  
Lecture 2 - Practical Examples - 1  
Lecture 3 - Practical Examples - 2  
Lecture 4 - CEDT worked examples - 1  
Lecture 5 - CEDT worked examples - 2  
Lecture 6 - Text book theory  
Lecture 7 - Sample heat sinks  
Lecture 8 - Published correlations - 1  
Lecture 9 - Published correlations - 2  
Lecture 10 - Parallel combined effects  
Lecture 11 - Mounting of packages  
Lecture 12 - Combined Rth of devices  
Lecture 13 - Schonholzer moduls  
Lecture 14 - 1972 model paper  
Lecture 15 - Jensen model  
Lecture 16 - Thermal management - 1  
Lecture 17 - Thermal management - 2  
Lecture 18 - Round up of full model  
Lecture 19 - Fan cooling  
Lecture 20 - Thermo-electric cooling  
Lecture 21 - On-the-net DIY work  
Lecture 22 - Practical video  
Lecture 23 - Lecture 23  
Lecture 24 - Lecture 24  
Lecture 25 - Lecture 25  
Lecture 26 - Lecture 26  
Lecture 27 - Real packages  
Lecture 28 - Prior art  
Lecture 29 - OTS standard profiles

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

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- Lecture 30 - CAD detailed design of profiles
- Lecture 31 - Round up
- Lecture 32 - 4X Peltier Cooler
- Lecture 33 - Manufacturing Video
- Lecture 34 - Peltier heat sink

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

NPTEL Video Course - Electrical Engineering - NOC: Integrated Circuits, MOSFETs, Op-Amps and their Application

Subject Co-ordinator - Prof. Hardik Jeetendra Pandya

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction to Integrated Circuits (IC) Technology
- Lecture 2 - Introduction to fabrication of IC
- Lecture 3 - Introduction to IC fabrication
- Lecture 4 - Introduction to IC fabrication (Continued...)
- Lecture 5 - Introduction to the fabrication of sensors
- Lecture 6 - Introduction to fabrication technology
- Lecture 7 - Introduction to fabrication technology (Continued...)
- Lecture 8 - Introduction to fabrication technology (Continued...)
- Lecture 9 - Introduction to fabrication technology (Continued...)
- Lecture 10 - Introduction to fabrication technology (Continued...)
- Lecture 11 - Process flow for Fabrication of MOSFETs
- Lecture 12 - Operation of Enhancement type MOSFET
- Lecture 13 - Operation of Depletion type MOSFET
- Lecture 14 - MOSFETs Characteristics and Applications (Current Mirrors)
- Lecture 15 - Introduction to Operational Amplifiers
- Lecture 16 - Operational Amplifier Characteristics
- Lecture 17 - Operational Amplifier Characteristics (Continued...)
- Lecture 18 - Characteristics of an op-amp (Continued...)
- Lecture 19 - Operational Amplifier Configurations
- Lecture 20 - Operational Amplifier Configurations (Continued...)
- Lecture 21 - Applications of Operational Amplifier
- Lecture 22 - Applications of Operational Amplifier
- Lecture 23 - Applications of Operational Amplifier
- Lecture 24 - Introduction to Passive and Active Filters and op-amp as Low Pass Filter
- Lecture 25 - Operational Amplifier as a High Pass Filter
- Lecture 26 - Operational Amplifier as a Band Pass and Band Reject Filter
- Lecture 27 - Introduction to Oscillator
- Lecture 28 - RC Phase Shift Oscillator using Op-amp
- Lecture 29 - Wein Bridge Oscillator using Op-amp

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

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- Lecture 30 - Hartley and Colpitts Oscillator using Op-amp
- Lecture 31 - Working of Crystal Oscillators
- Lecture 32 - Construction and Operation of UJT Relaxation Oscillators
- Lecture 33 - Introduction to Noise and its Types
- Lecture 34 - Analysis of Data Sheets of an Op-Amp
- Lecture 35 - Analysis of Data Sheets of an Op-Amp (Continued...)
- Lecture 36 - Analysis of Data Sheets of an Op-Amp (Continued...)
- Lecture 37 - Experiment - Introduction to Laboratory Equipment
- Lecture 38 - Experiment - Measurement of Active and Passive elements using Multimeter
- Lecture 39 - Experiment - Working with Laboratory Equipment
- Lecture 40 - Experiment - Working with Laboratory Equipment
- Lecture 41 - Experiment - Op-Amp Characteristics
- Lecture 42 - Experiment - Op-Amp Characteristics
- Lecture 43 - Experiment - Op-Amp Characteristics
- Lecture 44 - Experiment - Op-Amp as Inverting Amplifier
- Lecture 45 - Experiment - Op-Amp as Non-Inverting Amplifier
- Lecture 46 - Experiment - To study input and output voltage range of an Op-Amp
- Lecture 47 - Experiment - Differential amplifier using op-amp
- Lecture 48 - Experiment - To study the gain of instrumentation amplifier
- Lecture 49 - Experiment - Summing amplifier using op-amp
- Lecture 50 - Experiment - To study op-amp based comparator
- Lecture 51 - Experiment - To study op-amp based integrator and differentiator
- Lecture 52 - Experiment - Study of passive low pass filter
- Lecture 53 - Experiment - Op-amp based active low pass filter
- Lecture 54 - Experiment - Passive and active high pass filter
- Lecture 55 - Experiment - Introduction to experimental set-up of band pass filter
- Lecture 56 - Experiment - Passive and active band pass filter
- Lecture 57 - Experiment - Introduction to experimental set-up for band reject filter
- Lecture 58 - Experiment - Active band reject filter
- Lecture 59 - Experiment - Peak detector circuit using Op-Amp

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

NPTEL Video Course - Electrical Engineering - NOC:Semiconductor Devices and Circuits

Subject Co-ordinator - Prof. Sanjiv Sambandan

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Quantum Mechanics
- Lecture 2 - Quantum Mechanics
- Lecture 3 - Quantum Mechanics
- Lecture 4 - Solids
- Lecture 5 - Solids
- Lecture 6 - Solids
- Lecture 7 - Solids
- Lecture 8 - Solids
- Lecture 9 - Density of States
- Lecture 10 - Density of States (Continued...), Fermi Function
- Lecture 11 - Fermi Function - Carrier Concentration
- Lecture 12 - Doping
- Lecture 13 - Doping (Continued...)
- Lecture 14 - Recombination and Generation
- Lecture 15 - Recombination and Generation (Continued...)
- Lecture 16 - Recombination and Generation (Continued...), Charge Transport
- Lecture 17 - Charge Transport (Continued...)
- Lecture 18 - Continuity Equation
- Lecture 19 - Junctions
- Lecture 20 - Metal Semiconductor Junctions
- Lecture 21 - Schottky Contact
- Lecture 22 - Schottky Contact
- Lecture 23 - Schottky Contact
- Lecture 24 - Schottky Contact
- Lecture 25 - PN Junctions
- Lecture 26 - PN Junctions
- Lecture 27 - PN Junctions
- Lecture 28 - PN Junctions
- Lecture 29 - Bipolar Junction Transistors (BJT)

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

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- Lecture 30 - BJT
- Lecture 31 - BJT
- Lecture 32 - Metal Oxide Semiconductor Capacitor (MOSCAP)
- Lecture 33 - MOSCAP (Continued...)
- Lecture 34 - MOSCAP
- Lecture 35 - MOSCAP
- Lecture 36 - MOSFET
- Lecture 37 - MOSFET
- Lecture 38 - MOSFET
- Lecture 39 - MOSFET
- Lecture 40 - Subthreshold swing, Additional concepts
- Lecture 41 - Trapped charge, Body-bias
- Lecture 42 - Scaling of MOSFETs
- Lecture 43 - Scaling of MOSFETs (Continued...), Leakage currents in MOSFETs
- Lecture 44 - MOSFET characterization
- Lecture 45 - MOSFET characterization
- Lecture 46 - MOSFET as a switch
- Lecture 47 - MOSFET as a switch (Continued...)
- Lecture 48 - Amplifiers using MOSFET
- Lecture 49 - Amplifiers using MOSFET (Continued...)
- Lecture 50 - Circuits
- Lecture 51 - Introduction
- Lecture 52 - Thin Film Transistors
- Lecture 53 - Tutorials Session - 1
- Lecture 54 - Tutorials Session - 2
- Lecture 55 - Tutorials Session - 3

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

NPTEL Video Course - Electrical Engineering - NOC:Fabrication Techniques for MEMs-based Sensors: Clinical Per

Subject Co-ordinator - Prof. Hardik Jeetendra Pandya

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction to Microengineering Devices
- Lecture 2 - Introduction to Microengineering Devices (Continued...)
- Lecture 3 - Introduction to Microengineering Devices (Continued...)
- Lecture 4 - Silicon, silicon di-oxide and photolithography
- Lecture 5 - Silicon, silicon di-oxide and photolithography (Continued...)
- Lecture 6 - Physical Vapour Deposition
- Lecture 7 - Physical Vapour Deposition (Continued...)
- Lecture 8 - Photolithography
- Lecture 9 - Mask Aligner
- Lecture 10 - Mask Aligner (Continued...)
- Lecture 11 - Micromachining
- Lecture 12 - Micromachining
- Lecture 13 - Micromachining
- Lecture 14 - Micromachining
- Lecture 15 - Chemical Vapour Deposition
- Lecture 16 - Typical Microfabricated Devices for Biomedical Applications
- Lecture 17 - Cancer Diagnostic Tool
- Lecture 18 - Process flow for Fabrication of Micro Heater
- Lecture 19 - Process flow for Fabrication of Interdigitated Electrodes
- Lecture 20 - Process flow for Fabrication of Interdigitated Electrodes (Continued...)
- Lecture 21 - Process flow for Fabrication of ETM phenotyping
- Lecture 22 - Process flow for Fabrication of Piezo canteliver
- Lecture 23
- Lecture 24
- Lecture 25
- Lecture 26
- Lecture 27 - Microchip for Rapid Drug Screening
- Lecture 28 - Microchip for Rapid Drug Screening (Continued...)
- Lecture 29 - A Microfluidic chip for rapid bacterial antibiotic Susceptibility testing

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

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- Lecture 30 - Smart Catheter
- Lecture 31 - Smart Catheter
- Lecture 32 - Smart Catheter
- Lecture 33 - Tissue and Cell Culture Techniques
- Lecture 34 - Clean Room
- Lecture 35 - GLP
- Lecture 36 - Introduction to Equipments
- Lecture 37 - Gowning Procedure for using Biological Lab Setup
- Lecture 38 - Introduction to Equipments
- Lecture 39 - Introduction to Equipments
- Lecture 40 - Introduction to Equipments
- Lecture 41 - Function generator, Multimeter, Sampling, LabVIEW, NI-CDAQ
- Lecture 42 - Introduction to Equipments
- Lecture 43 - Introduction to Equipments
- Lecture 44 - Introduction to Equipments
- Lecture 45 - Introduction to Equipments
- Lecture 46 - Introduction to Equipments
- Lecture 47 - Introduction to Equipments
- Lecture 48 - Introduction to Equipments
- Lecture 49 - Introduction to Equipments
- Lecture 50 - Introduction to Equipments
- Lecture 51 - PDMS Moulding
- Lecture 52 - 3D Printing
- Lecture 53 - Introduction to Fabricated Sensors
- Lecture 54 - Simulation
- Lecture 55 - Simulation

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

NPTEL Video Course - Electrical Engineering - NOC:Op-Amp Practical Applications: Design, Simulation and Implementation

Subject Co-ordinator - Prof. Hardik Jeetendra Pandya

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction/Summary on Op-amps
- Lecture 2 - Introduction/Summary on Op-amps (Continued...)
- Lecture 3 - Introduction/Summary on Op-amps (Continued...)
- Lecture 4 - Effect of Loading and Input Impedance - Part 1
- Lecture 5 - Effect of Loading and Input Impedance - Part 2
- Lecture 6 - Effect of Loading and Input Impedance - Part 3
- Lecture 7 - Effect of Loading and Input Impedance - Part 4
- Lecture 8 - Introduction to an Analog Circuit Development Board (TI ASLK Pro)
- Lecture 9 - Op-amp Applications
- Lecture 10 - Op-amp Applications
- Lecture 11 - Op-amp Applications
- Lecture 12 - Op-amp Circuits using Diodes
- Lecture 13 - Understanding the Range of Feedback Amplifiers
- Lecture 14 - Op-amps as Phase Shift Oscillator
- Lecture 15 - Op-amp as Wein Bridge Oscillator
- Lecture 16 - Op-amp as Hartley Oscillator
- Lecture 17 - Op-amp as Colpitts Oscillator
- Lecture 18 - Op-amps as Comparator
- Lecture 19 - Op-amp with Positive Feedback
- Lecture 20 - Op-amp with Positive Feedback
- Lecture 21 - Op-amp with Positive Feedback
- Lecture 22 - Op-amp with Positive Feedback
- Lecture 23 - Op-amp based Voltage Controlled Current Source
- Lecture 24 - Measure of Unknown Resistance by Constant Current Drive Circuit Implemented using Op-amp
- Lecture 25 - Design and Development of Temperature Controlled Circuit using Op-amp as ON-OFF, Proportional and Integral Controller
- Lecture 26 - Implementation of Error Detector Circuit and Signal Conditioning Circuit for Temperature Control
- Lecture 27 - Implementation of Plant/Heating Circuit and ON-OFF Controller
- Lecture 28 - Implementation of P and PI Controllers
- Lecture 29 - Experiment on Controlling the Temperature on the Plant using different Controllers

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

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- Lecture 30 - Experiment
- Lecture 31 - Introduction to ECG Experiment
- Lecture 32 - Desing and Implementation of ECG Preprocessing Stage - Part 1
- Lecture 33 - Desing and Implementation of ECG Preprocessing Stage - Part 2
- Lecture 34 - Desing and Implementation of ECG Preprocessing Stage - Part 3
- Lecture 35 - Desing and Implementation of ECG Preprocessing Stage - Part 4
- Lecture 36 - Desing and Implementation of Peak Detetor and Thresholding Circuit for ECG Signal Conditioning
- Lecture 37 - Live Demonstration on ECG Signal Acquistion, Conditioning and Measurement of BPM
- Lecture 38 - Understanding Analog Multipliers using Development Board
- Lecture 39 - Application
- Lecture 40 - Introdution to Data-Acquisition
- Lecture 41 - Analog to Digital Conversion Circuits and Experiment on 2-bit Flash Type ADC
- Lecture 42 - Digital to Analog Conversion Circuits and Experiment on 4-bit R-2R DAC
- Lecture 43 - DAC Basics using Development Board - Introduction
- Lecture 44 - Understanding DAC 7821 Datasheet
- Lecture 45 - Basic DAC Experiment on Variable Gain Amplifier
- Lecture 46 - Understanding DAC
- Lecture 47 - Introduction to CDAQ (Compact DAQ)
- Lecture 48 - Software-in-Loop based Temperature Controller using CDAQ and LabVIEW

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

NPTEL Video Course - Electrical Engineering - NOC:Physical Modelling for Electronics Enclosures using Rapid p

Subject Co-ordinator - Prof. N. V Chalapathi Rao

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Products prototyping
- Lecture 2 - Prototype concepts
- Lecture 3 - Physical simulation
- Lecture 4 - Rapid Prototyping
- Lecture 5 - Products detailing
- Lecture 6 - Advantages of Design Modelling
- Lecture 7 - Sample product concept
- Lecture 8 - Product sample exercise 1
- Lecture 9 - Exercise in product sample 2
- Lecture 10 - Integration of components 1
- Lecture 11 - Components integration in models
- Lecture 12 - 3D printing detail 1
- Lecture 13 - 3D printing detail 2
- Lecture 14 - 3D print assembly design
- Lecture 15 - Heat spreader to 3D print
- Lecture 16 - Metallic, 3D, build up 1
- Lecture 17 - 3D build up 2
- Lecture 18 - 3D design 1 from Photo snap
- Lecture 19 - 3D design 2 from Photo snap
- Lecture 20 - 3D Laser cuts 1, prints
- Lecture 21 - 3D Laser cuts 2, open source public prints
- Lecture 22 - Demo of 3D Part print
- Lecture 23 - Building a model 1
- Lecture 24 - Building a model 2
- Lecture 25 - Common place objects
- Lecture 26 - Materials
- Lecture 27 - Future 3D In biology
- Lecture 28 - Product clamp variants
- Lecture 29 - Product clamp build up

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

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- Lecture 30 - Multi direction features
- Lecture 31 - Multi direction features (Continued...)
- Lecture 32 - Fastening detail
- Lecture 33 - Flat objects
- Lecture 34 - Modularity
- Lecture 35 - Creative design work
- Lecture 36 - Creative designs
- Lecture 37 - Using flat features
- Lecture 38 - Organic shapes
- Lecture 39 - Simulation for alternate use

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

NPTEL Video Course - Electrical Engineering - NOC:Recent Advances in Transmission Insulators

Subject Co-ordinator - Prof Subba Reddy B

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Introduction to Transmission and distribution Insulators

Lecture 2 - Manufacturing process for Ceramic/glass Insulators

Lecture 3 - Manufacturing process for Polymeric Insulators

Lecture 4 - Design Considerations of Transmission Insulators

Lecture 5 - Field experience of Ceramic/Glass and Polymeric Insulators

Lecture 6 - Comparison of Transmission Insulators

Lecture 7 - Environmental issues with transmission Insulators

Lecture 8 - Reliability and Philosophy of Testing

Lecture 9 - Testing of Ceramic, Glass and Composite Insulators

Lecture 10 - Cleaning methods adopted for Insulators

Lecture 11 - Cleaning methods adopted for Insulators (Continued...)

Lecture 12 - Coating techniques for Insulators

Lecture 13 - Introduction to Hybrid Insulators



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

NPTEL Video Course - Electrical Engineering - NOC:Fundamentals of Semiconductor Devices

Subject Co-ordinator - Prof. Digbijoy N. Nath

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction to semiconductors
- Lecture 2 - Introduction to energy bands
- Lecture 3 - Fundamentals of band structure
- Lecture 4 - Band structure (Continued...) and Fermi-Dirac distribution
- Lecture 5 - Density of states
- Lecture 6 - Doping and intrinsic carrier concentration
- Lecture 7 - Equilibrium carrier concentration
- Lecture 8 - Temperature-dependence of carrier concentration
- Lecture 9 - High doping effects and incomplete ionization
- Lecture 10 - Carrier scattering and mobility
- Lecture 11 - Low-field and high-field transport, introduction to diffusion
- Lecture 12 - Drift-diffusion and trap statistics
- Lecture 13 - Current continuity equation
- Lecture 14 - Continuity equation (Continued...) and introduction to p-n junction
- Lecture 15 - p-n junction under equilibrium
- Lecture 16 - p-n junction under equilibrium (Continued...)
- Lecture 17 - p-n junction under bias
- Lecture 18 - p-n junction under bias (Continued...)
- Lecture 19 - p-n junction
- Lecture 20 - Application of p-n junctions
- Lecture 21 - Breakdown of junction and C-V profiling
- Lecture 22 - Introduction to Schottky junction
- Lecture 23 - Schottky junction under equilibrium
- Lecture 24 - Schottky junction under bias
- Lecture 25 - Introduction to transistors
- Lecture 26 - Basics of BJT
- Lecture 27 - Working of BJT
- Lecture 28 - Working of BJT (Continued...)
- Lecture 29 - Delays in BJT

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

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- Lecture 30 - MOS
- Lecture 31 - MOS
- Lecture 32 - Ideal MOS system
- Lecture 33 - MOS C-V in more details
- Lecture 34 - MOSFET - An introduction
- Lecture 35 - Gradual Channel Approximation
- Lecture 36 - Substrate bias effect and subthreshold conduction in MOSFET
- Lecture 37 - Short Channel Effects in MOSFET
- Lecture 38 - Introduction to compound semiconductors
- Lecture 39 - Basics of heterojunctions
- Lecture 40 - Band diagram of heterojunctions
- Lecture 41 - Heterojunctions (Continued....)
- Lecture 42 - Heterojunction transistors
- Lecture 43 - III-nitrides
- Lecture 44 - Solar cell basics
- Lecture 45 - Solar cell (Continued...)
- Lecture 46 - Solar cell
- Lecture 47 - Basics of photodetectors
- Lecture 48 - Photodetectors
- Lecture 49 - Junction photodetectors
- Lecture 50 - Basics of recombination
- Lecture 51 - Basics of LED
- Lecture 52 - LED
- Lecture 53 - Visible LED
- Lecture 54 - Transistors for power electronics
- Lecture 55 - Transistors for power electronics (Continued...) and for RF electronics
- Lecture 56 - Transistors for RF (Continued...) and transistors for Memory
- Lecture 57 - Basics of microelectronic fabrication
- Lecture 58 - Microelectronic fabrication (Continued...)
- Lecture 59 - Summary

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

NPTEL Video Course - Electrical Engineering - NOC:Advanced IOT Applications

Subject Co-ordinator - Prof. T V Prabhakar

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Overview of localization using IoT sensors
- Lecture 2 - Outdoor localization without GPS - I
- Lecture 3 - Outdoor localization without GPS - II
- Lecture 4 - Outdoor localization using elevation - pressure mapping
- Lecture 5 - Localization using IMU sensors - I
- Lecture 6 - Localization using IMU sensors - II
- Lecture 7 - Localization using IMU sensors - III
- Lecture 8 - RFID based localization - I
- Lecture 9 - RFID based localization - II
- Lecture 10 - Simulation of simple algorithms for object detection
- Lecture 11 - Building smart vehicle for collision avoidance
- Lecture 12 - Basic computer vision algorithms - Part 1
- Lecture 13 - Basic computer vision algorithms - Part 2
- Lecture 14 - Code walkthrough of computer vision algorithm
- Lecture 15 - Introduction to LiDAR
- Lecture 16 - Range estimation and Obstacle avoidance
- Lecture 17 - Introduction to vehicle platooning
- Lecture 18 - Building blocks for autonomous vehicles - 1
- Lecture 19 - Building blocks for autonomous vehicles - 2
- Lecture 20 - On Board Diagnostics and protocols
- Lecture 21 - Diagnostic services and fuel-injection ratio control unit
- Lecture 22 - Real time event processing and Anomaly detection
- Lecture 23 - OBD-II and stream processing demonstration
- Lecture 24 - Speech recognition - Part 1
- Lecture 25 - Speech recognition - Part 2
- Lecture 26 - Speech recognition - Part 3
- Lecture 27 - Speech recognition - Part 4
- Lecture 28 - Device Security - Part 1
- Lecture 29 - Device Security - Part 2

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

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- Lecture 30 - Device Security - Part 3
- Lecture 31 - Need for air quality monitoring
- Lecture 32 - Air quality
- Lecture 33 - Introduction to air quality sensors
- Lecture 34 - Calibration techniques for IoT air quality sensors
- Lecture 35 - Sensor types
- Lecture 36 - Air quality
- Lecture 37 - Air quality
- Lecture 38 - Air quality
- Lecture 39 - Air quality
- Lecture 40 - Introduction to First Responder networks
- Lecture 41 - First Responders - Applications - Part 1
- Lecture 42 - First Responders - Applications - Part 2
- Lecture 43 - Cargo monitoring for tamper detection - Part 1
- Lecture 44 - Cargo monitoring for tamper detection - Part 2

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

NPTEL Video Course - Electrical Engineering - NOC:Electronic Systems for Cancer Diagnosis

Subject Co-ordinator - Prof. Hardik Jeetendra Pandya

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Tissue and Cell Culture Techniques

Lecture 2 - Tissue and Cell Culture Techniques

Lecture 3 - Tissue and Cell Culture Techniques

Lecture 4 - Cleanroom Equipments

Lecture 5 - Cleanroom Equipments (Continued...)

Lecture 6 - Introduction to photolithography

Lecture 7 - Photolithography

Lecture 8 - Photolithography

Lecture 9 - Micromachining Techniques

Lecture 10 - Breast Cancer and Oral Cancer Statistics

Lecture 11 - Fabrication of MEMs-based Biochip for cancer diagnosis

Lecture 12 - Fabrication of MEMs-based Biochip for cancer diagnosis (Continued...)

Lecture 13 - Fabrication of Piezoresistive Sensor

Lecture 14 - Fabrication of Piezoresistive Sensor (Continued...)

Lecture 15 - Fabrication of SU-8 pillar on piezoresistive Sensor

Lecture 16 - Portable Cancer Diagnostic Tool Using a Disposable MEMS-Based Biochip

Lecture 17 - Mechanical Phenotyping of Breast Cancer using MEMS

Lecture 18 - Electrical characterization of Breast Tissue Cores

Lecture 19 - Fabrication of MEMS-based sensor for electro-mechanical phenotyping of breast cancer

Lecture 20 - Fabrication of electro-mechanical sensor (Continued...)

Lecture 21 - Assembly of the electro-mechanical sensor

Lecture 22 - Silicon substrate devices for breast cancer diagnosis

Lecture 23 - Understanding the methods and mechanism to study cell morphology

Lecture 24 - Cytology - A detail study on Spin Coater and Cytospin

Lecture 25 - Techniques in oral cytology studies

Lecture 26 - Techniques in cell morphology analysis

Lecture 27 - Comparative study on diagnostic tools for oral cancer screening

Lecture 28 - Basic building blocks of Electronics System

Lecture 29 - Basic building blocks of Electronics System

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

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- Lecture 30 - Basic building blocks of Electronics System
- Lecture 31 - Basic building blocks of Electronics System
- Lecture 32 - Basic building blocks of Electronics System
- Lecture 33 - Basic building blocks of Electronics System
- Lecture 34 - Basic building blocks of Electronics System
- Lecture 35 - Basic building blocks of Electronics System
- Lecture 36 - Basic building blocks of Electronics System
- Lecture 37 - Etching Process and Figure of Merits
- Lecture 38 - ECG Signal Processing to calculate BPM
- Lecture 39 - ECG Signal Processing to calculate BPM (Continued...)
- Lecture 40 - ECG Signal Processing to calculate BPM (Continued...)
- Lecture 41 - ECG Signal Processing to calculate BPM (Continued...)
- Lecture 42 - ECG Signal Processing to calculate BPM (Continued...)
- Lecture 43 - ECG Signal Processing to calculate BPM [Continued...)
- Lecture 44 - MEMS based Force Sensor for Catheter Contact Force Measurement
- Lecture 45 - 3D Printing
- Lecture 46 - 3D Fabrication Techniques
- Lecture 47 - Gowning Procedure in Clean Room
- Lecture 48 - Introduction to Equipments
- Lecture 49 - PDMS Moulding procedure
- Lecture 50 - Introduction to Equipments
- Lecture 51 - Introduction to Equipments
- Lecture 52 - Micromanipulator
- Lecture 53 - Biosafety Cabinet and Ultrasonicbath
- Lecture 54 - Incubator Shaker
- Lecture 55 - Hotplate and Microcentrifuge
- Lecture 56 - Autoclave
- Lecture 57 - Impedance Analyser
- Lecture 58 - Rapid Prototyping using 3D Printer
- Lecture 59 - Etching Process
- Lecture 60 - Electronic System for Drug Screening
- Lecture 61 - Introduction to Equipments
- Lecture 62 - Introduction to Equipments
- Lecture 63 - Electronic Module for Gas sensor
- Lecture 64 - Fabrication process flow for a metal oxide gas sensor
- Lecture 65 - MEMS Simulation using Comsol Multiphysics
- Lecture 66 - Introduction to COMSOL Multiphysics
- Lecture 67 - COMSOL Examples for MEMS Applications
- Lecture 68 - COMSOL Examples for MEMS Applications (Continued...)

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

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- Lecture 69 - Demonstration of Thermal Acuator and Understanding of Application Builder
- Lecture 70 - Closed loop control of temperature sensor
- Lecture 71 - Experimental Set-up of closed loop control of temperature sensor

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

NPTEL Video Course - Electrical Engineering - NOC:Electronic Modules for Industrial Applications using Op-Amp

Subject Co-ordinator - Prof. Hardik Jeetendra Pandya

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Introduction to Op-amp

Lecture 2 - Introduction Wafer Manufacturing Process and Clean room Protocols

Lecture 3 - Introduction to Fabrication Process Technology and Op-amp

Lecture 4 - Op-amp Characteristics and Datasheet Parameters

Lecture 5 - Overview of Active Filters and Oscillators

Lecture 6 - Overview of Op-amp Oscillators

Lecture 7 - Introduction to ECG Experiment

Lecture 8 - Design and Implementation of ECG Preprocessing Stage - Part 1

Lecture 9 - Design and Implementation of ECG Preprocessing Stage - Part 2

Lecture 10 - Design and Implementation of ECG Preprocessing Stage - Part 3

Lecture 11 - Design and Implementation of ECG Preprocessing Stage - Part 4

Lecture 12 - Design and Implementation of Peak Detector and Thresholding Circuit for ECG Signal Conditioning

Lecture 13 - Experiment

Lecture 14 - Application

Lecture 15 - Photolithography

Lecture 16 - Understanding the process of photolithography

Lecture 17 - Photolithography

Lecture 18 - Photolithography

Lecture 19 - Fabrication of Piezoresistive Sensor

Lecture 20 - Fabrication of MEMS based Catheter Contact Force Sensor

Lecture 21 - Design of Speed Control of DC Motor

Lecture 22 - Design of Speed Control of DC Motor

Lecture 23 - Design of Speed Control of DC Motor

Lecture 24 - Design of Speed Control of DC Motor

Lecture 25 - Design of Speed Control of DC Motor

Lecture 26 - Design of Speed Control of DC Motor

Lecture 27 - Design of Speed Control of DC Motor

Lecture 28 - Design of Speed Control of DC Motor

Lecture 29 - Design of Speed Control of a DC Motor using Op-amp

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

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- Lecture 30 - Design of Speed Control of a DC Motor using Op-amp
- Lecture 31 - Design of Speed Control of a DC Motor using DAQ - Part 1
- Lecture 32 - Design of Speed Control of a DC Motor using DAQ - Part 2
- Lecture 33 - Design of Speed Control of a DC Motor using DAQ - Part 3
- Lecture 34 - Introduction to Hot-Wire Anemometer
- Lecture 35 - Signal-conditioning Circuit for Hot-Wire Anemometer
- Lecture 36 - Signal-conditioning Circuit for Hot-Wire Anemometer Part 2
- Lecture 37 - Signal-conditioning Circuit for Hot-Wire Anemometer
- Lecture 38 - Signal-conditioning Circuit for Hot-Wire Anemometer
- Lecture 39 - Introduction to Gas Sensors
- Lecture 40 - Fabrication Process for Gas Sensor
- Lecture 41 - Signalconditioning Circuit for Operating Heater Voltage of MQ-7 Gas Sensor - Part 1
- Lecture 42 - Signalconditioning Circuit for Operating Heater Voltage of MQ-7 Gas Sensor - Part 2
- Lecture 43 - Signalconditioning Circuit for Operating Heater Voltage of MQ-7 Gas Sensor - Part 3
- Lecture 44 - Fundamentals of Electrophysiological signals
- Lecture 45 - Fundamentals of EEG Signal
- Lecture 46 - Application of EEG Signal for Detection of Hearing Loss
- Lecture 47 - Closed loop control of temperature using DAQ and LabVIEW
- Lecture 48 - Experimental Set-up of closed loop control of temperature sensor
- Lecture 49 - Introduction to MEMS Simulation using Comsol Multiphysics
- Lecture 50 - Introduction to COMSOL Multiphysics
- Lecture 51 - COMSOL Examples for MEMS Applications
- Lecture 52 - COMSOL Examples for MEMS Applications (Continued...)
- Lecture 53 - Demonstration of Thermal Acuator and Understanding of Application Builder