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 linearization, operating point/operating trajectory
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 tranformations 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
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 (Continued.)
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宮 (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 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
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

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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 Integrated Circuit Technology
Lecture 2 - Introduction Micro to Nano A Journey into Integrated Circuit Technology
Lecture 3 - Crystal Properties and Silicon Growth
Lecture 4 - Crystal Properties and Silicon 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 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
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
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

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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 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 41 - Module 13 - Lecture 2 - Applying perfect reconstruction condition to obtain filter coefficients.
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 52 - Module 17 - Lecture 2 - Defining Mean, Variance and Â□containment in a given domainÂ□.
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 60 - Module 19 - Lecture 3 - Optimal function in the sense of Time-Bandwidth product.
Lecture 61 - Module 20 - Lecture 1 - Discontent with the Â□Optimal functionÂ□.
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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Lecture 69 - Module 21 - Lecture 4 - Continuous Wavelet Transform (CWT)
Lecture 70 - Demonstration 5
Lecture 71 - Student's Presentation
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 Â 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
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 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
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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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Lecture 30 - Microwave Phase Shifters  
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Lecture 46 - Fundamentals of Antennas  
Lecture 47 - Dipole, Monopole, loop and Slot Antennas  
Lecture 48 - Linear and Planar Arrays  
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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 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
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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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Lecture 31 - Differential Pulse Code Modulation DPCM - I
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Lecture 33 - Delta Modulation
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Lecture 35 - M-ary PCM/PAM - II
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Lecture 57 - M-ary FSK
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Lecture 65 - Channel Coding
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

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.)
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Lecture 11 - Models of Industrial Control Devices and Systems (Continued.)
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Lecture 23 - Concepts of stability and Routh Stability Criterion
Lecture 24 - Concepts of stability and Routh Stability Criterion (Continued.)
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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 Course - Electrical Engineering - Embedded Systems

Subject Co-ordinator - Prof. Santanu Chaudhary

Co-ordinating Institute - IIT - Delhi

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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
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Lecture 27 - Networked Embedded Systems - IV
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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
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
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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
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 Course - Electrical Engineering - Power System Dynamics

Subject Co-ordinator - Dr. M.L. Kothari
Co-ordinating Institute - IIT - Delhi

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
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Lecture 14 - Excitation Systems - Part-1
Lecture 15 - Excitation Systems - Part-2
Lecture 16 - Modeling of Excitation Systems - Part-1
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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
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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 Amplifiers
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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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 - Many 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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Lecture 30 - Demodulation of DPSK and M\'ary Signals
Lecture 31 - Performance of M\'ary Digital Modulations
Lecture 32 - Performance of M\'ary 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...)
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...)
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Lecture 40 - Digital Circuits (Continued...)
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Lecture 2 - Diodes, Introduction to The Transistor
Lecture 3 - MOS Device, Characteristics
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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
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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 - Cascade, cascade-revisit with capacitance
Lecture 29 - Cascade amplifier (with capacitance)
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 Course - Electrical Engineering - NOC:Nonlinear and Adaptive Control

Subject Co-ordinator - Prof. Shubhendu Bhasin

Co-ordinating Institute - IIT - Delhi

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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
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Lecture 10 - Robust Model Reference Adaptive Control - Part 4
Lecture 30 - Introduction to Trellis Coded Modulation (TCM)
Lecture 31 - Ungerboek'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

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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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 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
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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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 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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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
Lecture 30
Lecture 31
Lecture 32
Lecture 33
Lecture 34
Lecture 35
Lecture 36
Lecture 37
Lecture 38
Lecture 39
Lecture 40
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
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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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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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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
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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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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 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 - Coulomb's 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 Â– 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 Â– IV
Lecture 25 - Conductors Â– IV (Continued... ) and Capacitor - I
Lecture 26 - Capacitor - II
Lecture 27 - Capacitor - II (Continued...) and Equipotential Surfaces
Lecture 28 - Solution of LaplaceÂ’s equation-I
Lecture 29 - Solution of LaplaceÂ’s equation-I I and method of images-I

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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 - Faraday’s law and its application-I
Lecture 45 - Faraday’s 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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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

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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 E
Lecture 5 - Modulation Property of Fourier Transform, Dirac Delta or Unit Impulse Function - Definition and FT
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 Signals
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 Modulation
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 Envelope Detector
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 Coherent Demodulation
Lecture 15 - Double Sideband (DSB) Suppressed Carrier (SC) Demodulation, Non-coherent demodulation, Impact of Carrier Phase Offset
Lecture 16 - Carrier Phase Offset Example for Double Sideband (DSB) Suppressed Carrier (SC) Demodulation - Wireless Communication
Lecture 17 - Phase Synchronization using Costas Receiver for Double Sideband (DSB) Suppressed Carrier (SC) Demodulation
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 Â• Fourier Spectrum of the Hilbert Transformer
Lecture 22 - Time Domain Description of Hilbert Transform Â• Impulse Response of the Hilbert Transformer
Lecture 23 - Phase Shifting Method for Generation of Single Sideband (SSB) Modulated Signals based on Hilbert Transform
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 Sideband (VSB) Modulation and Non-Ideal Filtering, Spectral Efficiency
Lecture 27 - Properties of Vestigial Sideband Filter for Reconstruction of Message Signal without Distortion
Lecture 28 - Introduction to Angle Modulation, Description of Phase Modulation (PM) and Frequency Modulation (FM)
Lecture 29 - Frequency Modulation (FM) with Sinusoidal Modulation Signal and Pictorial Examples, Insights of FM

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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 Multiplication
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 - Comping 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

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Lecture 30 - Joint Entropy, Definition of Joint Entropy of Two Sources and Simple Examples for Joint Entropy Computation
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 Channel
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 Estimate
Lecture 55 - Principle of Decoding of Convolutional code
Lecture 56 - Viterbi Decoder for Maximum Likelihood Decoding of Convolutional Code Using Trellis Representation
Lecture 30 - Faraday's law
Lecture 31 - Completing Maxwell's 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 Maxwell's 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
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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 - Continuous and Discrete Time Signals
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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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

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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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 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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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 Lasers
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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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
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
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 Quadrant Method and Networks Method
Lecture 7 - Solution of Unconstrained Optimization Problem Using Conjugate Quadrant Method and Networks Method (Continued.)
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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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 (Continued.)
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 â□□ Time Control of a Linear Time Invariant System
Lecture 49 - Solution of Minimum â□□ 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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Lecture 30 - Lyapunou Function and Centre Manifold Theory
Lecture 31 - Non-Smooth Bifurcations
Lecture 32 - Non-Smooth Bifurcations
Lecture 33 - Normal from 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 Course - Electrical Engineering - Digital Signal Processing

Subject Co-ordinator - Prof. T.K. Basu
Co-ordinating Institute - IIT - Kharagpur

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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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 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
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
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 - Last 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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Lecture 30 - Conclusion
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 Course - Electrical Engineering - Industrial Automation and Control

Subject Co-ordinator - Prof. S. Sen, Prof. S. Mukhopadhyay
Co-ordinating Institute - IIT - Kharagpur
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Subject Co-ordinator - Prof. Alok Barua
Co-ordinating Institute - IIT - Kharagpur

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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

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NPTEL Video Course - Electrical Engineering - Power System Analysis

Subject Co-ordinator - Prof. A.K. Sinha
Co-ordinating Institute - IIT - Kharagpur
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NPTEL Video Course - Electrical Engineering - NOC:Industrial Automation and Control

Subject Co-ordinator - Prof. S. Mukhopadhyay
Co-ordinating Institute - IIT - Kharagpur

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

Subject Co-ordinator - Prof. Debdoott Sheet

Co-ordinating Institute - IIT - Kharagpur

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

Subject Co-ordinator - Prof. Sudipta Mukhopadhyay

Co-ordinating Institute - IIT - Kharagpur

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Subject Co-ordinator - Prof. Santanu Chattopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

Subject Co-ordinator - Prof. Debapriya Das

Co-ordinating Institute - IIT - Kharagpur

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Subject Co-ordinator - Prof. Debapriya Das

Co-ordinating Institute - IIT - Kharagpur

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NPTEL Video Course - Electrical Engineering - NOC:Digital Circuits

Subject Co-ordinator - Prof. Santanu Chattopadhyay

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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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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 Integral Equation by Moment Method
Lecture 37 - Array Pattern Synthesis
Lecture 38 - Array Pattern Synthesis (Continued...)
Lecture 39 - Ultra Wideband Antennas
Lecture 40 - Antenna Measurements

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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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
| 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 Å•Åp |
| 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 |
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 - Rotro 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 Implementation Issues |
| Lecture 9 - Truth Table to Boolean Function and Implementation Issues |
| Lecture 10 - Karnaugh 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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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 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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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
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 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 29 - Introduction to Field Oriented Control of Induction Machines

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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 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
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 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 - I2 L Technology
Lecture 13 - Edge triggered D-F/F
Lecture 14 - I2 L - Condition for Proper Operation
Lecture 15 - I2 L - Propagation delay Self aligned
Lecture 16 - Schottky Transistor Logic
Lecture 17 - Stacked I2 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 - Polymitter 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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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 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

NPTEL Video Course - Electrical Engineering - Networks and Systems

Subject Co-ordinator - Prof. V.G.K. Murti
Co-ordinating Institute - IIT - Madras
Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

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Lecture 2 - Introductory Concepts - 2
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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 ?-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
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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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| 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 |
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| 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 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
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 Id on Vds
Lecture 34 - Small signal output conductance of a MOS TRANSISTOR
Lecture 35 - Effect of gds on a common source amplifier, Inherent gain limit of a Transistor
Lecture 36 - Variation of gm with transistors parameters
Lecture 37 - Variation of gm with constant Vgs 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 bias
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
**NPTEL Video Lecture Topic List**

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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

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NPTEL Video Course - Electrical Engineering - NOC: Control Engineering

Subject Co-ordinator - Prof. Ramkrishna.P
Co-ordinating Institute - IIT - Madras

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 Analysis of Systems
Lecture 13 - Time Response Specifications
Lecture 14 - Solving Problems on Time Response Analysis and 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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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 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
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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
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Lecture 31 - Telescopic OpAmp - Design Example
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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
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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 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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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
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Lecture 48 - Spinning pointer example
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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
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Lecture 58 - Transformations of random variables
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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
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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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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Lecture 69 - Some more applications of MDSP
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 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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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 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 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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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...)
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
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
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

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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 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

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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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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
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Lecture 2 - State Space Representation
Lecture 3 - State Space Representation
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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
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Lecture 21 - Concept of Diagonalization
Lecture 22 - Solution of State Equation
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Lecture 25 - State Transition Matrix - Part I
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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
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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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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
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Lecture 38 - State Estimation Technique
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Lecture 40 - WLS (Continued...)
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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 Bhattacharyya
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
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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
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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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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 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
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Lecture 40 - Concept of Memory and its Designing - II
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; Quiz
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 design rules
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 microvias
Lecture 30 - Microvia technology and Sequential build-up technology process flow for high-density interconnected systems
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 soldering
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 processes
Lecture 41 - Embedded capacitors; Processes for embedding capacitors; Case study examples; Summary of materials
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 of 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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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 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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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
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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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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 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
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Lecture 27 - DC Motors - Part 2
Lecture 28 - DC Motors - Part 3
Lecture 29 - Three Phase System - Part 1

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Lecture 31 - Three Phase System - Part 3
Lecture 32 - Three Phase System - Part 4
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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
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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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Lecture 30 - Speed Control of Induction Motor - Part-1
Lecture 31 - Speed Control of Induction Motor - Part-2
Lecture 32 - High dynamic performance of IM 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
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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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Lecture 30 - Case Study 1 - Joule Jotter
Lecture 31 - Case Study 2 - Cloud Based Systems
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 nad 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 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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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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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 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 modsuls
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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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
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NPTEL Video Course - Electrical Engineering - NOC: Integrated Circuits, MOSFETs, Op-Amps and their Applications

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 Configarations
Lecture 20 - Operational Amplifier Configarations (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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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
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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

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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: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 PI Controllers
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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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 Acquisition, Conditioning and Measurement of BPM
Lecture 38 - Understanding Analog Multipliers using Development Board
Lecture 39 - Application
Lecture 40 - Introduction 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 Course - Electrical Engineering - NOC:Physical Modelling for Electronics Enclosures using Rapid prototyping

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
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 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
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
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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 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 - Assemby 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 - Comparitive 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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Lecture 30 - Basic building blocks of Electronics System
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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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Lecture 69 - Demonstration of Thermal Actuator 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 Course - Electrical Engineering - NOC:Electronic Modules for Industrial Applications using Op-Amps

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
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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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