

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

NPTEL Video Course - Electronics and Communication Engineering - Adv. Digital Signal Processing - Multirate a

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

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction

Lecture 2 - The Haar Wavelet

Lecture 3 - The Haar Multiresolution Analysis

Lecture 4 - Wavelets And Multirate Digital Signal Processing

Lecture 5 - Equivalence - Functions And Sequences

Lecture 6 - The Haar Filter Bank

Lecture 7 - Haar Filter Bank Analysis And Synthesis

Lecture 8 - Relating ψ , ϕ and the Filters

Lecture 9 - Iterating the filter bank from ψ , ϕ

Lecture 10 - Z-Domain Analysis Of Multirate Filter Bank

Lecture 11 - Two Channel Filter Bank

Lecture 12 - Perfect Reconstruction - Conjugate Quadrature

Lecture 13 - Conjugate Quadrature Filters - Daubechies Family of MRA

Lecture 14 - Daubechies' Filter Banks - Conjugate Quadrature Filters

Lecture 15 - Time And Frequency Joint Perspective

Lecture 16 - Ideal Time Frequency Behaviour

Lecture 17 - The Uncertainty Principle

Lecture 18 - Time Bandwidth Product Uncertainty

Lecture 19 - Evaluating and Bounding $\sqrt{t} \cdot \sqrt{\omega}$

Lecture 20 - The Time Frequency Plane & its Tilings

Lecture 21 - Short time Fourier Transform & Wavelet Transform in General

Lecture 22 - Reconstruction & Admissibility

Lecture 23 - Admissibility in Detail Discretization of Scale

Lecture 24 - Logarithmic Scale Discretization, Dyadic Discretization

Lecture 25 - The Theorem of (DYADIC) Multiresolution Analysis

Lecture 26 - Proof of the Theorem of (DYADIC) Multiresolution Analysis

Lecture 27 - Introducing Variants of The Multiresolution Analysis Concept

Lecture 28 - JPEG 2000 5/3 FilterBank & Spline MRA

Lecture 29 - Orthogonal Multiresolution Analysis with Splines

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- Lecture 30 - Building Piecewise Linear Scaling Function, Wavelet
- Lecture 31 - The Wave Packet Transform
- Lecture 32 - Nobel Identities & The Haar Wave Packet Transform
- Lecture 33 - The Lattice Structure for Orthogonal Filter Banks
- Lecture 34 - Constructing the Lattice & its Variants
- Lecture 35 - The Lifting Structure & Polyphase Matrices
- Lecture 36 - The Polyphase Approach - The Modulation Approach
- Lecture 37 - Modulation Analysis and The 3-Band Filter Bank, Applications
- Lecture 38 - The Applications *Data Mining, *Face Recognition
- Lecture 39 - Proof that a non-zero function can not be both time and band-limited
- Lecture 40 - M-Band Filter Banks and Looking Ahead
- Lecture 41 - Tutorial -Session 1
- Lecture 42 - Student's Presentation
- Lecture 43 - Tutorial on Uncertainty Product
- Lecture 44 - Tutorial on Two band Filter Bank
- Lecture 45 - Tutorial -Frequency Domain Analysis of Two band Filter Bank
- Lecture 46 - Zoom in and Zoom out using Wavelet Transform
- Lecture 47 - More Thoughts on Wavelets
- Lecture 48 - Towards selecting Wavelets through vanishing moments
- Lecture 49 - In Search of Scaling Coefficients
- Lecture 50 - Wavelet Applications

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

NPTEL Video Course - Electronics and Communication Engineering - Advanced Optical Communication

Subject Co-ordinator - Prof. R.K. Shevgaonkar

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction
Lecture 2 - Basics of Light
Lecture 3 - Ray Model - I
Lecture 4 - Ray Model - II
Lecture 5 - Wave Model - I
Lecture 6 - Wave Model - II
Lecture 7 - Wave Model - III
Lecture 8 - Signal Distortion - I
Lecture 9 - Signal Distortion - II
Lecture 10 - Signal Distortion - III
Lecture 11 - Practical issues in Implementation of Fiber link
Lecture 12 - Optical Sources
Lecture 13 - Light Emitting Diodes - I
Lecture 14 - Light Emitting Diodes - II
Lecture 15 - Laser - I
Lecture 16 - Laser - II
Lecture 17 - Laser - III
Lecture 18 - Laser - IV
Lecture 19 - Laser - V + Photon Detector
Lecture 20 - Photo Diodes and Detector Noise
Lecture 21 - Photo Detector
Lecture 22 - Optical Receivers - I
Lecture 23 - Optical Receivers - II
Lecture 24 - Receiver Sensitivity Degradation
Lecture 25 - Fiber Optic Link Design
Lecture 26 - Wavelength Division Multiplexed Systems
Lecture 27 - EDFA
Lecture 28 - Integrated Optics - I
Lecture 29 - Integrated Optics - II

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- Lecture 30 - Tutorials - I
- Lecture 31 - Tutorials - II
- Lecture 32 - Introduction to Non-Linear Fiber Optics
- Lecture 33 - Non-linear Schrodinger Equation
- Lecture 34 - Group Velocity Dispersion (GVD)
- Lecture 35 - Self Phase Modulation (SPM)
- Lecture 36 - Solitonic Communication
- Lecture 37 - Raman Amplifier
- Lecture 38 - Cross Phase Modulation and four wave mixing
- Lecture 39 - Laboratory Experiments - I
- Lecture 40 - Laboratory Experiments - II
- Lecture 41 - Laboratory Experiments - III

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

NPTEL Video Course - Electronics and Communication Engineering - Advanced VLSI Design

Subject Co-ordinator - Prof. A.N. Chandorkar, Prof. D.K. Sharma, Prof. Sachin Patkar, Prof. Virendra Singh

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Historical Perspective and Future Trends in CMOS VLSI Circuit and System Design - Part I
- Lecture 2 - Historical Perspective and Future Trends in CMOS VLSI Circuit and System Design - Part II
- Lecture 3 - Logical Effort - A way of Designing Fast CMOS Circuits - Part I
- Lecture 4 - Logical Effort - A way of Designing Fast CMOS Circuits - Part II
- Lecture 5 - Logical Effort - A way of Designing Fast CMOS Circuits - Part III
- Lecture 6 - Power Estimation and Control in CMOS VLSI circuits - Part I
- Lecture 7 - Power Estimation and Control in CMOS VLSI circuits - Part II
- Lecture 8 - Low Power Design Techniques - Part I
- Lecture 9 - Low Power Design Techniques - Part II
- Lecture 10 - Arithmetic Implementation Strategies for VLSI - Part I
- Lecture 11 - Arithmetic Implementation Strategies for VLSI - Part II
- Lecture 12 - Arithmetic Implementation Strategies for VLSI - Part III
- Lecture 13 - Arithmetic Implementation Strategies for VLSI - Part IV
- Lecture 14 - Interconnect aware design
- Lecture 15 - Interconnect aware design
- Lecture 16 - Interconnect aware design
- Lecture 17 - Introduction to Hardware Description Languages
- Lecture 18 - Managing concurrency and time in Hardware Description Languages
- Lecture 19 - Introduction to VHDL
- Lecture 20 - Basic Components in VHDL
- Lecture 21 - Structural Description in VHDL
- Lecture 22 - Behavioral Description in VHDL
- Lecture 23 - Introduction to Verilog
- Lecture 24 - FSM + datapath (GCD example)
- Lecture 25 - FSM + datapath (Continued...)
- Lecture 26 - Single Cycle MMIPS
- Lecture 27 - Multicycle MMIPS
- Lecture 28 - Multicycle MMIPS \hat{A} FSM
- Lecture 29 - Brief Overview of Basic VLSI Design Automation Concepts

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- Lecture 30 - Netlist and System Partitioning
- Lecture 31 - Timing Analysis in the context of Physical Design Automation
- Lecture 32 - Placement algorithm
- Lecture 33 - Introduction to VLSI Testing
- Lecture 34 - VLSI Test Basics - I
- Lecture 35 - VLSI Test Basics - II
- Lecture 36 - VLSI Testing
- Lecture 37 - VLSI Testing
- Lecture 38 - VLSI Testing
- Lecture 39 - VLSI Design Verification
- Lecture 40 - VLSI Design Verification
- Lecture 41 - VLSI Design Verification
- Lecture 42 - VLSI Design Verification

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

NPTEL Video Course - Electronics and Communication Engineering - Broadband Networks: Concepts and Technology

Subject Co-ordinator - Prof. Abhay Karandikar

Co-ordinating Institute - IIT - Bombay

- Lecture 1 - Introduction to Broadband Networks
- Lecture 2 - Qos in Packet Switching and ATM
- Lecture 3 - ATM Networks
- Lecture 4 - Effective Bandwidth - I
- Lecture 5 - Effective Bandwidth - II
- Lecture 6 - Traffic Descriptor in ATM
- Lecture 7 - Calculus for QOS - I
- Lecture 8 - Calculus For Qos - II
- Lecture 9 - Packet Scheduling Algorithm Introduction
- Lecture 10 - Fluid Fair Queueing and Weighted Fair Queueing
- Lecture 11 - Virtual Time In Scheduling
- Lecture 12 - Fairness of WFO and SCFO Scheduling Algorithms
- Lecture 13 - Rate Proportional Servers
- Lecture 14 - Latency Rate Servers - I
- Lecture 15 - Latency Rate Servers - II And Delay Bounds
- Lecture 16 - QOS In Best Effort Internet
- Lecture 17 - TCP Congestion Control
- Lecture 18 - Analysis of TCP
- Lecture 19 - TCP Throughput
- Lecture 20 - Buffer Management
- Lecture 21 - IP Addressing Scheme
- Lecture 22 - IP Addressing Lookup And Packet Classification
- Lecture 23 - IP Over ATM
- Lecture 24 - Multiple Label Switching (MPLS)
- Lecture 25 - MPLS and Traffic Engineering
- Lecture 26 - Optical Network and MPLS
- Lecture 27 - Integrated Service Internet (IntServ) and RSVP
- Lecture 28 - Differentiated Services Internet
- Lecture 29 - Voice over IP
- Lecture 30 - RTP
- Lecture 31 - Metro Ethernet Access Networks
- Lecture 32 - Metro Ethernet Access Networks

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

NPTEL Video Course - Electronics and Communication Engineering - Digital Communication

Subject Co-ordinator - Prof. Bikash Kumar Dey

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction to Digital Communication
- Lecture 2 - Sampling
- Lecture 3 - Quantization, PCM and Delta Modulation
- Lecture 4 - Probability and Random Processes (Part-1)
- Lecture 5 - Probability and Random Processes (Part-2)
- Lecture 6 - Channels and their Models (Part-1)
- Lecture 7 - Channels and their Models (Part-2)
- Lecture 8 - Information Theory (Part-1)
- Lecture 9 - Information Theory (Part-2)
- Lecture 10 - Bandpass Signal Representation (Part-1)
- Lecture 11 - Bandpass Signal Representation (Part-2)
- Lecture 12 - Digital Modulation Techniques (Part-1)
- Lecture 13 - Digital Modulation Techniques (Part-2)
- Lecture 14 - Digital Modulation Techniques (Part-3)
- Lecture 15 - Digital Modulation Techniques (Part-4)
- Lecture 16 - Digital Modulation Techniques (Part-5)
- Lecture 17 - Digital Modulation Techniques (Part-6)
- Lecture 18 - Digital Modulation Techniques (Part-7)
- Lecture 19 - Digital Modulation Techniques (Part-8)
- Lecture 20 - Digital Modulation Techniques (Part-9)
- Lecture 21 - Digital Modulation Techniques (Part-10)
- Lecture 22 - Probability of Error Calculation
- Lecture 23 - Calculation of Probability of Error
- Lecture 24 - Calculation of Probability of Error
- Lecture 25 - Equalizers
- Lecture 26 - Source Coding (Part-1)
- Lecture 27 - Source Coding (Part-2)
- Lecture 28 - Source Coding (Part-3)
- Lecture 29 - Source Coding (Part-4)

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- Lecture 30 - Channel Coding
- Lecture 31 - Fundamentals of OFDM
- Lecture 32 - Conclusion

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

NPTEL Video Course - Electronics and Communication Engineering - Information Theory and Coding

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

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction to Information Theory and Coding

Lecture 2 - Definition of Information Measure and Entropy

Lecture 3 - Extension of An Information Source and Markov Source

Lecture 4 - Adjoint of An Information Source, Joint and Conditional Information Measure

Lecture 5 - Properties of Joint and Conditional Information Measures and A Markov Source

Lecture 6 - Asymptotic Properties of Entropy and Problem Solving in Entropy

Lecture 7 - Block Code and its Properties

Lecture 8 - Instantaneous Code and Its Properties

Lecture 9 - Kraft-McMillan Equality and Compact Codes

Lecture 10 - Shannon's First Theorem

Lecture 11 - Coding Strategies and Introduction to Huffman Coding

Lecture 12 - Huffman Coding and Proof of Its Optimality

Lecture 13 - Competitive Optimality of The Shannon Code

Lecture 14 - Non-Binary Huffman Code and Other Codes

Lecture 15 - Adaptive Huffman Coding - Part-I

Lecture 16 - Adaptive Huffman Coding - Part-II

Lecture 17 - Shannon-Fano-Elias Coding and Introduction to Arithmetic Coding

Lecture 18 - Arithmetic Coding - Part-I

Lecture 19 - Arithmetic Coding - Part-II

Lecture 20 - Introduction to Information Channels

Lecture 21 - Equivocation and Mutual Information

Lecture 22 - Properties of Different Information Channels

Lecture 23 - Reduction of Information Channels

Lecture 24 - Properties of Mutual Information and Introduction to Channel Capacity

Lecture 25 - Calculation of Channel Capacity for Different Information Channels

Lecture 26 - Shannon's Second Theorem

Lecture 27 - Discussion On Error Free Communication Over Noisy Channel

Lecture 28 - Error Free Communication Over A Binary Symmetric Channel and Introduction to Continuous Sources and Channels

Lecture 29 - Differential Entropy and Evaluation of Mutual Information for Continuous Sources and Channels

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- Lecture 30 - Channel Capacity of A BandLimited Continuous Channel
- Lecture 31 - Introduction to Rate-Distortion Theory
- Lecture 32 - Definition and Properties of Rate-Distortion Functions
- Lecture 33 - Calculation of Rate-Distortion Functions
- Lecture 34 - Computational Approach for Calculation of Rate-Distortion Functions
- Lecture 35 - Introduction to Quantization
- Lecture 36 - Lloyd-Max Quantizer
- Lecture 37 - Companded Quantization
- Lecture 38 - Variable Length Coding and Problem Solving in Quantizer Design
- Lecture 39 - Vector Quantization
- Lecture 40 - Transform Coding - Part-I
- Lecture 41 - Transform Coding - Part-II

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

NPTEL Video Course - Electronics and Communication Engineering - Transmission Lines and EM Waves

Subject Co-ordinator - Prof. R.K. Shevgaonkar

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction to EM waves and various techniques of communication

Lecture 2 - Equations of Voltage and Current on TX line

Lecture 3 - Propagation constant, Characteristic impedance and reflection coefficient

Lecture 4 - Impedance Transformation

Lecture 5 - Loss-less and Low loss Transmission line and VSWR

Lecture 6 - Power transfer on TX line

Lecture 7 - Smith Chart

Lecture 8 - Admittance Smith Chart

Lecture 9 - Experimental setup for transmission line measurements

Lecture 10 - Applications of transmission lines

Lecture 11 - Applications of transmission lines-II

Lecture 12 - Impedance Matching

Lecture 13 - Lossy Transmission Line

Lecture 14 - Problems on Transmission line

Lecture 15 - Types of transmission line

Lecture 16 - Basics of Vectors

Lecture 17 - Vector calculus

Lecture 18 - Basic laws of Electromagnetics

Lecture 19 - Maxwell's Equations

Lecture 20 - Boundary conditions at Media Interface

Lecture 21 - Uniform plane wave

Lecture 22 - Propagation of wave

Lecture 23 - Wave polarization

Lecture 24 - Pioncere's Sphere

Lecture 25 - Wave propagation in conducting medium

Lecture 26 - Wave propagation and phase velocity

Lecture 27 - Power flow and Poynting vector

Lecture 28 - Surface current and power loss in a conductor

Lecture 29 - Plane wave in arbitrary direction

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- Lecture 30 - Plane wave at dielectric interface
- Lecture 31 - Reflection and refraction at media interface
- Lecture 32 - Total internal reflection
- Lecture 33 - Polarization at media interface
- Lecture 34 - Reflection from a conducting boundary
- Lecture 35 - Parallel plane waveguide
- Lecture 36 - Wave propagation in parallel plane waveguide
- Lecture 37 - Analysis of waveguide general approach
- Lecture 38 - Rectangular waveguide
- Lecture 39 - Modal propagation in rectangular waveguide
- Lecture 40 - Surface currents on the waveguide walls
- Lecture 41 - Field visualization and Attenuation in waveguide
- Lecture 42 - Attenuation in waveguide continued
- Lecture 43 - Radiation (Antenna)
- Lecture 44 - Solution for potential function
- Lecture 45 - Radiation from the Hertz dipole
- Lecture 46 - Power radiated by hertz dipole
- Lecture 47 - Thin linear antenna
- Lecture 48 - Radiation Parameters of antenna
- Lecture 49 - Receiving antenna
- Lecture 50 - Monopole and Dipole antenna
- Lecture 51 - Fourier transform relation between current and radiation pattern
- Lecture 52 - Antenna arrays
- Lecture 53 - Uniform Linear array
- Lecture 54 - Uniform Linear array continued
- Lecture 55 - Synthesis of array
- Lecture 56 - Binomial array and general array synthesis
- Lecture 57 - Problems on uniform plane wave
- Lecture 58 - Problems on uniform plane wave in a medium
- Lecture 59 - Problems on waveguides
- Lecture 60 - Problems on Antennas and radiation

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

NPTEL Video Course - Electronics and Communication Engineering - CMOS Analog VLSI Design

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

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction to CMOS Analog VLSI Design
- Lecture 2 - Introduction to CMOS Analog VLSI Design (Continued...)
- Lecture 3 - MOS Fundamentals
- Lecture 4 - MOS Fundamentals (Continued...)
- Lecture 5 - Basic of MOS Amplifier (Part-1)
- Lecture 6 - Basic of MOS Amplifier (Part-2)
- Lecture 7 - Basic of MOS Amplifier (Part-3)
- Lecture 8 - Cascode Amplifier
- Lecture 9 - Types of MOSFET Amplifier
- Lecture 10 - Types of MOSFET Amplifier
- Lecture 11 - Differential Amplifier
- Lecture 12 - Differential Amplifier
- Lecture 13 - Current Sources
- Lecture 14 - Current Sources
- Lecture 15 - Current Sources
- Lecture 16 - Frequency Response of Amplifier
- Lecture 17 - Basic of CMOS OPAMP
- Lecture 18 - OPAMP Design Issues
- Lecture 19 - OPAMP Design
- Lecture 20 - OPAMP Design
- Lecture 21 - Operational Transconductance Amplifier
- Lecture 22 - OTA Operation Transconductance Amplifier and Application
- Lecture 23 - Fully Differential Amplifier and Noise
- Lecture 24 - Noise
- Lecture 25 - Noise (Continued...)
- Lecture 26 - Layout of Analog Circuit
- Lecture 27 - Oscillators
- Lecture 28 - Oscillators (Continued...)
- Lecture 29 - Oscillators (Continued...)

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

NPTEL Video Course - Electronics and Communication Engineering - Analog Circuits

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

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction to Analog Circuits - An Overview
- Lecture 2 - Two Parts of Review of Analog Filter Approximation
- Lecture 3 - BJT Small Signal Model
- Lecture 4 - BJT Small Signal Model [Continuation from Lecture 3]
- Lecture 5 - MOS Circuit Model
- Lecture 6 - Biasing of Circuits
- Lecture 7 - Amplifiers
- Lecture 8 - MOS Amplifiers
- Lecture 9 - Cascode Amplifier
- Lecture 10 - Frequency Response of Amplifier
- Lecture 11 - Frequency Response of Amplifier
- Lecture 12 - Frequency Response of Amplifier
- Lecture 13 - Frequency Response of Amplifier
- Lecture 14 - Differential Amplifier
- Lecture 15 - Differential Amplifier
- Lecture 16 - Differential Amplifier
- Lecture 17 - Feedback Theory
- Lecture 18 - Feedback Theory
- Lecture 19 - OPAMP Circuits
- Lecture 20 - OPAMP Circuits
- Lecture 21 - Active RC Filters
- Lecture 22 - Active Filters
- Lecture 23 - Oscillators
- Lecture 24 - Oscillators
- Lecture 25 - DAC/ADC

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

NPTEL Video Course - Electronics and Communication Engineering - NOC: Microwave Integrated Circuits

Subject Co-ordinator - Prof. Jayanta Mukherjee

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction
- Lecture 2 - Reflection Coefficient, VSWR, Smith Chart
- Lecture 3 - Reflection Coefficient, VSWR
- Lecture 4 - Smith Chart
- Lecture 5 - Application of the Smith Chart
- Lecture 6 - Microwave Components
- Lecture 7 - Broadband Impedance Matching
- Lecture 8 - Multi-section transformer
- Lecture 9 - Maximally flat (binomial) transformer, Chebyshev transformer
- Lecture 10 - Non-uniform transmission line (Tapers)
- Lecture 11 - Scattering Parameters
- Lecture 12 - Properties of Scattering Parameters
- Lecture 13 - Properties of Scattering Parameters (Continued...)
- Lecture 14 - Signal flow graph, ABCD parameters
- Lecture 15 - 1 and 2 Port passive Components
- Lecture 16 - 3 Port Microwave Components
- Lecture 17 - Couplers
- Lecture 18 - Coupled Line Couplers
- Lecture 19 - Resonators and narrow band filters
- Lecture 20 - Narrow-band filters
- Lecture 21 - Filter design
- Lecture 22 - Filter synthesis, Kuroda's Identity
- Lecture 23 - Impedance Matching Circuits for Amplifiers
- Lecture 24 - Microstrip Matching (Continued...), Masons Rule, Power Gain Equations
- Lecture 25 - Amplifier Gain Stability
- Lecture 26 - Amplifier Gain Stability (Continued...)
- Lecture 27 - Gain Circles
- Lecture 28 - Gain Circles (Continued...)
- Lecture 29 - Noise

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- Lecture 30 - Noise Figure Circles (Continued...)
- Lecture 31 - DC Bias
- Lecture 32 - Amplifier Classes, Frequency Compensation
- Lecture 33 - Linearity
- Lecture 34 - Oscillator Design

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NPTEL Video Course - Electronics and Communication Engineering - NOC:Foundations of Wavelets and Multirate Di

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

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction
- Lecture 2 - Origin of wavelets
- Lecture 3 - Haar wavelet
- Lecture 4 - Dyadic wavelet
- Lecture 5 - Dilates and translates of Haar wavelet
- Lecture 6 - L2 norm of a function
- Lecture 7 - Piecewise constant representation of a function
- Lecture 8 - Ladder of subspaces
- Lecture 9 - Scaling function of Haar wavelet
- Lecture 10 - Demonstration
- Lecture 11 - Vector representation of sequences
- Lecture 12 - Properties of norm
- Lecture 13 - Parsevals theorem
- Lecture 14 - Equivalence of functions and sequences
- Lecture 15 - Angle between Functions and their Decomposition
- Lecture 16 - Additional Information on Direct-Sum
- Lecture 17 - Introduction to filter banks
- Lecture 18 - Haar Analysis filter bank in Z-domain
- Lecture 19 - Haar Synthesis filter bank in Z-domain
- Lecture 20 - Moving from Z-domain to frequency domain
- Lecture 21 - Frequency Response of Haar Analysis Low pass Filter bank
- Lecture 22 - Frequency Response of Haar Analysis High pass Filter bank
- Lecture 23 - Ideal Two-band Filter bank
- Lecture 24 - Disqualification of Ideal Filter bank
- Lecture 25 - Realizable Two-band Filter bank
- Lecture 26 - Demonstration
- Lecture 27 - Relating Fourier transform of scaling function to filter bank
- Lecture 28 - Fourier transform of scaling function
- Lecture 29 - Construction of scaling and wavelet functions from filter bank

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Lecture 30 - Demonstration

Lecture 31 - Conclusive Remarks and Future Prospects

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NPTEL Video Course - Electronics and Communication Engineering - RF Integrated Circuits

Subject Co-ordinator - Dr. Shouribrata Chatterjee

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - RF system basic architectures
- Lecture 2 - Transmission media reflection
- Lecture 3 - Maximum power transfer
- Lecture 4 - Parallel RLC tank
- Lecture 5 - Matching
- Lecture 6 - Other matching networks
- Lecture 7 - Resistors capacitors
- Lecture 8 - Inductors
- Lecture 9 - Inductors and wires
- Lecture 10 - Wires
- Lecture 11 - Transmission lines
- Lecture 12 - Device review
- Lecture 13 - MOS capacitances
- Lecture 14 - Bandwidth estimation constants
- Lecture 15 - Bandwidth estimation constants (Continued.)
- Lecture 16 - Bandwidth estimation using short circuit
- Lecture 17 - Bandwidth groupdelay and peaking
- Lecture 18 - Shunt series amplifier
- Lecture 19 - Shunt series amplifier (Continued.)
- Lecture 20 - Various noise sources
- Lecture 21 - Noise in a mosfet
- Lecture 22 - Motivation first cut design
- Lecture 23 - Motivation first cut design (Continued.)
- Lecture 24 - Noise other possible topologies
- Lecture 25 - Multiplier Fundamentals
- Lecture 26 - Mixer non idealties
- Lecture 27 - Mixer non idealties (Continued.)
- Lecture 28 - A tank based oscillators
- Lecture 29 - Phase noise in oscillators

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- Lecture 30 - Other oscillators topologies
- Lecture 31 - Phase locked loop basics
- Lecture 32 - Charge pump
- Lecture 33 - Pll dynamics integer
- Lecture 34 - Spurious frequencies fractional and synthesis
- Lecture 35 - Fractional spurs
- Lecture 36 - Delta and sigma modulation
- Lecture 37 - Class abc power amplifiers
- Lecture 38 - Class bcd power amplifiers
- Lecture 39 - Class cd pwm amplifiers
- Lecture 40 - Course summary and conclusion

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NPTEL Video Course - Electronics and Communication Engineering - Communication Engineering

Subject Co-ordinator - Prof. Surendra Prasad

Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Introduction to Communication Engineering
Lecture 2 - Communication channel
Lecture 3 - Brief Review of Signal and Systems
Lecture 4 - The Hilbert Transform
Lecture 5 - Analytic Representation of band pass Signals
Lecture 6 - Fundamentals of Analog Signal Transmission
Lecture 7 - Analog Modulation of Carriers
Lecture 8 - Amplitude Modulation
Lecture 9 - Amplitude Modulation
Lecture 10 - Single Sideband Modulation
Lecture 11 - Suppressed Sideband Modulation
Lecture 12 - VSB Modulation - Superhet Receiver
Lecture 13 - Superhet Receiver etc
Lecture 14 - Practical Mixers-Effects of Tonal
Lecture 15 - Angle Modulation
Lecture 16 - Angle Modulation
Lecture 17 - Generation of FM Signals
Lecture 18 - FM Generation and Detection
Lecture 19 - Demodulation of Angle Modulated Signals
Lecture 20 - Demodulation of Angle Modulated Signals
Lecture 21 - Demodulation of Angle Modulated Signals
Lecture 22 - Feedback Demodulators - phase locked loop
Lecture 23 - The Phase Locked Loop
Lecture 24 - Frequency Compressive Feedback Demodulator
Lecture 25 - FM Receivers
Lecture 26 - TV Transmission
Lecture 27 - Review of Probability Theory and Random Process
Lecture 28 - Review of Probability Theory and Random Variables
Lecture 29 - Random Processes

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- Lecture 30 - Random Processes
- Lecture 31 - Random Processes
- Lecture 32 - Gaussian Random Processes
- Lecture 33 - Behaviour of Communication System
- Lecture 34 - Performance of AM Systems in Noise
- Lecture 35 - Noise in AM and Angle Modulation Systems
- Lecture 36 - Noise in Phase and Frequency Modulation systems
- Lecture 37 - Noise in Angle Modulation
- Lecture 38 - Pre emphasis - De emphasis
- Lecture 39 - Pulse Modulation Schemes - PWM and PPM
- Lecture 40 - Data Modulation
- Lecture 41 - Pulse Code Modulation

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

NPTEL Video Course - Electronics and Communication Engineering - Digital Signal Processing

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

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Digital Signal Processing Introduction
- Lecture 2 - Digital Signal Processing Introduction (Continued.)
- Lecture 3 - Digital Systems
- Lecture 4 - Characterization Description, Testing of Digital Systems
- Lecture 5 - LTI Systems Step & Impulse Responses, Convolution
- Lecture 6 - Inverse Systems, Stability, FIR & IIR
- Lecture 7 - FIR & IIR; Recursive & Non Recursive
- Lecture 8 - Discrete Time Fourier Transform
- Lecture 9 - Discrete Fourier Transform (DFT)
- Lecture 10 - DFT (Continued.)
- Lecture 11 - DFT (Continued.) Introduction to Z Transform
- Lecture 12 - Z Transform
- Lecture 13 - Z Transform (Continued.)
- Lecture 14 - Discrete Time Systems in the Frequency Domain
- Lecture 15 - Simple Digital Filters
- Lecture 16 - All Pass Filters, Com.Filters
- Lecture 17 - Linear Phase filters, Complementary Transfer Fn
- Lecture 18 - Compensatory Transfer Functions, (Continued.)
- Lecture 19 - Test for Stability using All Pass Functions
- Lecture 20 - Digital Processing of Continuous Time Signals
- Lecture 21 - Problem Solving Session
- Lecture 22 - Problem Solving Session
- Lecture 23 - Analog Filter Design
- Lecture 24 - Analog Chebyshev LPF Design
- Lecture 25 - Analog Filter Design (Continued.)
- Lecture 26 - Analog frequency Transformation
- Lecture 27 - Problem Solving Session on Discrete Time System
- Lecture 28 - Digital Filter Structures
- Lecture 29 - IIR Realizations

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

- Lecture 30 - All Pass Realizations
- Lecture 31 - Lattice Synthesis (Continued.)
- Lecture 32 - FIR Lattice Synthesis
- Lecture 33 - FIR Lattice (Continued.) and Digital Filter Design
- Lecture 34 - IIR Filter Design
- Lecture 35 - IIR Design by Bilinear Transformation
- Lecture 36 - IIR Design Examples
- Lecture 37 - Digital to Digital Frequency Transformation
- Lecture 38 - FIR Design
- Lecture 39 - FIR Digital Filter Design by Windowing
- Lecture 40 - FIR Design by Windowing & Frequency Sampling
- Lecture 41 - Solving Problems on DSP Structures
- Lecture 42 - FIR Design by Frequency Sampling
- Lecture 43 - FIR Design by Frequency Sampling (Continued.)

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

NPTEL Video Course - Electronics and Communication Engineering - Wireless Communication

Subject Co-ordinator - Prof. Ranjan Bose

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Motivation and Introduction
- Lecture 2 - Types of Wireless communication
- Lecture 3 - The modern wireless Communication Systems
- Lecture 4 - The cellular concept - System Design issues
- Lecture 5 - Cell capacity and reuse
- Lecture 6 - Interference and System capacity
- Lecture 7 - Improving coverage and system capacity
- Lecture 8 - Mobile Radio Propagation
- Lecture 9 - Mobile Radio Propagation (Continued.)
- Lecture 10 - Mobile Radio Propagation (Continued.)
- Lecture 11 - Mobile Radio Propagation (Continued.)
- Lecture 12 - Mobile Radio Propagation (Continued.)
- Lecture 13 - Mobile Radio Propagation (Continued.)
- Lecture 14 - Mobile Radio Propagation II
- Lecture 15 - Mobile Radio Propagation II (Continued.)
- Lecture 16 - Mobile Radio Propagation II (Continued.)
- Lecture 17 - Mobile Radio Propagation II (Continued.)
- Lecture 18 - Mobile Radio Propagation II (Continued.)
- Lecture 19 - Mobile Radio Propagation II (Continued.)
- Lecture 20 - Mobile Radio Propagation II (Continued.)
- Lecture 21 - Modulation Techniques for Mobile Communication
- Lecture 22 - Modulation Techniques (Continued.)
- Lecture 23 - Modulation Techniques (Continued.)
- Lecture 24 - Modulation Techniques (Continued.)
- Lecture 25 - Modulation Techniques (Continued.)
- Lecture 26 - Modulation Techniques (Continued.)
- Lecture 27 - Modulation Techniques (Continued.)
- Lecture 28 - Equalization and Diversity Techniques
- Lecture 29 - Equalization and Diversity Techniques (Continued.)

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

- Lecture 30 - Equalization and Diversity Techniques (Continued.)
- Lecture 31 - Equalization and Diversity Techniques (Continued.)
- Lecture 32 - Coding Techniques for Mobile Communications
- Lecture 33 - Coding Techniques for Mobile Communications (Continued.)
- Lecture 34 - Coding Techniques for Mobile Communications (Continued.)
- Lecture 35 - Coding Techniques for Mobile Communications (Continued.)
- Lecture 36 - Wireless Networks
- Lecture 37 - GSM and CDMA
- Lecture 38 - GSM and CDMA (Continued.)

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

NPTEL Video Course - Electronics and Communication Engineering - Basic Electronics

Subject Co-ordinator - Prof. Chitralkha Mahanta

Co-ordinating Institute - IIT - Guwahati

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

Lecture 1 - Semiconductor materials
Lecture 2 - PN Junction Diodes
Lecture 3 - Diode Equivalent Circuits
Lecture 4 - Diode Rectifier Circuits
Lecture 5 - Zener Diode and Applications
Lecture 6 - Clipping and Clamping Circuits
Lecture 7 - Transistor Operation - Part-1
Lecture 8 - Transistor Operation - Part-2
Lecture 9 - Biasing the BJT - Part-1
Lecture 10 - Biasing the BJT - Part-2
Lecture 11 - BJT Small Signal Analysis
Lecture 12 - BJT Amplifier - Part-1
Lecture 13 - BJT Amplifier - Part-2
Lecture 14 - Frequency Response of BJT Analysis - Part-1
Lecture 15 - Bipolar Junction Transistors
Lecture 16 - Transistor as a Switch
Lecture 17 - MOSFET - Part-1
Lecture 18 - MOSFET - Part-2
Lecture 19 - MOSFET under dc operation
Lecture 20 - Mosfet as an Amplifier
Lecture 21 - Small signal model of MOSFET - Part-1
Lecture 22 - Small signal model of MOSFET - Part-2
Lecture 23 - High Frequency model of mosfet
Lecture 24 - Junction Field Effect Transistor
Lecture 25 - Operational Amplifier Introduction
Lecture 26 - Ideal Op-Amp
Lecture 27 - Op-Amp applications Part-1
Lecture 28 - Op-Amp Applications Part-2
Lecture 29 - Op-Amp Applications Part-3

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

- Lecture 30 - The practical Op-Amp
- Lecture 31 - Positive feedback and oscillation
- Lecture 32 - Comparator
- Lecture 33 - Large Signal Amplifiers
- Lecture 34 - Transformer Couple Power Amplifier
- Lecture 35 - Class AB Operations of Power Amplifier
- Lecture 36 - Power BJTs
- Lecture 37 - Regulated Power Supply
- Lecture 38 - Four Layered Diode
- Lecture 39 - Silicon Control Rectifier
- Lecture 40 - SCR Applications

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:VLSI Design Verification and Test

Subject Co-ordinator - Dr. Santosh Biswas, Jatindra Kumar Deka, Prof. Arnab Sarkar

Co-ordinating Institute - IIT - Guwahati

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

Lecture 1 - Introduction - Part 1
Lecture 2 - Introduction - Part 2
Lecture 3 - Overview of VLSI Design Flow
Lecture 4 - High Level Synthesis Overview - Part 1
Lecture 5 - High Level Synthesis Overview - Part 2
Lecture 6 - Scheduling in HLS - Part 1
Lecture 7 - Scheduling in HLS - Part 2
Lecture 8 - Scheduling in HLS - Part 3
Lecture 9 - Scheduling in HLS - Part 4
Lecture 10 - Scheduling in HLS - Part 5
Lecture 11 - Scheduling in HLS - Part 6
Lecture 12 - Scheduling in HLS - Part 7
Lecture 13 - Resource Sharing and Binding in HLS - Part 1
Lecture 14 - Resource Sharing and Binding in HLS - Part 2
Lecture 15 - Resource Sharing and Binding in HLS - Part 3
Lecture 16 - Resource Sharing and Binding in HLS - Part 4
Lecture 17 - Resource Sharing and Binding in HLS - Part 5
Lecture 18 - Resource Sharing and Binding in HLS - Part 6
Lecture 19 - Resource Sharing and Binding in HLS - Part 7
Lecture 20 - Logic Synthesis - Part 1
Lecture 21 - Logic Synthesis - Part 2
Lecture 22 - Logic Synthesis - Part 3
Lecture 23 - Physical Design - Part 1
Lecture 24 - Physical Design - Part 2
Lecture 25 - Physical Design - Part 3
Lecture 26 - Introduction to formal methods for design verification
Lecture 27 - Temporal Logic
Lecture 28 - Syntax and Semantics of CLT
Lecture 29 - Syntax and semantics of CTL (Continued...)

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- Lecture 30 - Equivalences between CTL Formulas
- Lecture 31 - Introduction to Model Checking
- Lecture 32 - Model checking Algorithms
- Lecture 33 - Model checking Algorithms (Continued...)
- Lecture 34 - Model Checking with Fairness
- Lecture 35 - Binary Decision Diagram
- Lecture 36 - Ordered Binary Decision Diagram (OBDD)
- Lecture 37 - Operation On OBDD
- Lecture 38 - OBDD for State Transition Systems E
- Lecture 39 - Symbolic Model Checking
- Lecture 40 - Introduction to Digital VLSI Testing
- Lecture 41 - Functional and Structural Testing
- Lecture 42 - Fault Equivalence
- Lecture 43 - Fault Simulation - I
- Lecture 44 - Fault Simulation - II
- Lecture 45 - Fault Simulation - III
- Lecture 46 - Testability Measures (SCOAP)
- Lecture 47 - Introduction to Automatic Test Pattern Generation (ATPG) and ATPG Algebras
- Lecture 48 - D-Algorithm - I
- Lecture 49 - D-Algorithm - II
- Lecture 50 - ATPG for Synchronous Sequential Circuits
- Lecture 51 - Scan Chain based Sequential Circuit Testing - I
- Lecture 52 - Scan Chain based Sequential Circuit Testing - II
- Lecture 53 - BIST - I
- Lecture 54 - BIST - II

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

NPTEL Video Course - Electronics and Communication Engineering - Signals and Systems

Subject Co-ordinator - Prof. K.S. Venkatesh

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1
Lecture 2
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Lecture 6
Lecture 7
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Lecture 12
Lecture 13
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NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - Advanced 3G and 4G Wireless Mobile Communication

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to 3G/4G Standards
- Lecture 2 - Wireless Channel and Fading
- Lecture 3 - Rayleigh Fading and BER of Wired Communication
- Lecture 4 - BER for Wireless Communication
- Lecture 5 - Introduction to Diversity
- Lecture 6 - Multi-antenna Maximal Ratio Combiner
- Lecture 7 - BER with Diversity
- Lecture 8 - Spatial Diversity and Diversity Order
- Lecture 9 - Wireless Channel and Delay Spread
- Lecture 10 - Coherence Bandwidth of the Wireless Channel
- Lecture 11 - ISI and Doppler in Wireless Communications
- Lecture 12 - Doppler Spectrum and Jakes Model
- Lecture 13 - Introduction to CDMA, Spread Spectrum and LFSR
- Lecture 14 - Generation and Properties of PN Sequences
- Lecture 15 - Correlation of PN Sequences and Jammer Margin
- Lecture 16 - CDMA Advantages and RAKE Receiver
- Lecture 17 - Multi-User CDMA Downlink Part I
- Lecture 18 - Multi-User CDMA Downlink Part II
- Lecture 19 - Multi-User CDMA Uplink and Asynchronous CDMA
- Lecture 20 - CDMA Near-Far Problem and Introduction to MIMO
- Lecture 21 - MIMO System Model and Zero-Forcing Receiver
- Lecture 22 - MIMO MMSE Receiver and Introduction to SVD
- Lecture 23 - SVD Based Optimal MIMO Transmission and Capacity
- Lecture 24 - SVD Based Optimal MIMO Transmission and Capacity
- Lecture 25 - OSTBCs and Introduction to V-BLAST Receiver
- Lecture 26 - V-BLAST (Continued) and MIMO Beamforming
- Lecture 27 - Introduction to OFDM and Multi-Carrier Modulation
- Lecture 28 - IFFT Sampling for OFDM
- Lecture 29 - OFDM Schematic and Cyclic Prefix

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

- Lecture 30 - OFDM Based Parallelization and OFDM Example
- Lecture 31 - OFDM Example (Continued) and Introduction to MIMO-OFDM
- Lecture 32 - MIMO-OFDM (Continued)
- Lecture 33 - Impact of Carrier Frequency Offset (CFO) in OFDM
- Lecture 34 - PAPR in OFDM Systems and Introduction to SC-FDMA
- Lecture 35 - SC-FDMA (Continued) and Introduction of Wireless Propagation Models
- Lecture 36 - Ground Reflection and Okumura Models
- Lecture 37 - Hata Model and Log Normal Shadowing
- Lecture 38 - Link Budget Analysis
- Lecture 39 - Introduction to Teletraffic Theory
- Lecture 40 - Cellular Traffic Modeling and Blocking Probability

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

NPTEL Video Course - Electronics and Communication Engineering - Digital Switching

Subject Co-ordinator - Prof. Yatindra N Singh

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Digital Switching
Lecture 2 - Digital Switching
Lecture 3 - Digital Switching
Lecture 4 - Digital Switching
Lecture 5 - Digital Switching
Lecture 6 - Digital Switching
Lecture 7 - Digital Switching
Lecture 8 - Digital Switching
Lecture 9 - Digital Switching
Lecture 10 - Digital Switching
Lecture 11 - Digital Switching
Lecture 12 - Digital Switching
Lecture 13 - Digital Switching
Lecture 14 - Digital Switching
Lecture 15 - Digital Switching
Lecture 16 - Digital Switching
Lecture 17 - Digital Switching
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Lecture 29 - Digital Switching

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Lecture 30 - Digital Switching
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Lecture 32 - Digital Switching
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Lecture 34 - Digital Switching
Lecture 35 - Digital Switching
Lecture 36 - Digital Switching
Lecture 37 - Digital Switching

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Principles of Modern CDMA-MIMO-OFDM Wire

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Evolution of Wireless Communication Technologies
- Lecture 2 - Modeling Wireless Channel
- Lecture 3 - Wireless Fading Channel Model
- Lecture 4 - Fading Channel Distribution
- Lecture 5 - Rayleigh Fading Channel
- Lecture 6 - Bit Error Rate (BER) Performance
- Lecture 7 - Bit Error Rate (BER) of AWGN Channels
- Lecture 8 - Bit Error Rate of Rayleigh Fading Wireless Channel
- Lecture 9 - Exact BER Expression for Rayleigh Fading Wireless Channel
- Lecture 10 - Deep Fade Analysis of Wireless Communication
- Lecture 11 - Principle of Diversity
- Lecture 12 - Multiple Antenna Diversity
- Lecture 13 - Maximal-Ratio Combining
- Lecture 14 - BER of Multiple Antenna Wireless Systems
- Lecture 15 - Approximate BER for Multiple Antenna Wireless System
- Lecture 16 - Examples for BER of Wireless Communication
- Lecture 17 - Deep Fade in Multi Antenna Systems
- Lecture 18 - Intuition for Deep Fade in Multi-Antenna System
- Lecture 19 - Definition of Diversity Order
- Lecture 20 - Max Delay Spread
- Lecture 21 - RMS Delay Spread
- Lecture 22 - Delay Spread and Inter Symbol Interference
- Lecture 23 - Coherence Bandwidth of Wireless Channel
- Lecture 24 - Mobility and Doppler Effect in Wireless Channels
- Lecture 25 - Impact of Doppler Effect on Wireless Channel
- Lecture 26 - Introduction to Code Division Multiple Access (CDMA)
- Lecture 27 - Chip Time and Bandwidth Expansion in CDMA
- Lecture 28 - Code Generation for CDMA
- Lecture 29 - CDMA Codes

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

- Lecture 30 - BER of CDMA Systems
- Lecture 31 - Analysis of Multi-user CDMA
- Lecture 32 - Multipath Diversity in CDMA Systems
- Lecture 33 - Near-Far Problem in CDMA
- Lecture 34 - Multiple Input Multiple Output (MIMO) Systems
- Lecture 35 - Examples of MIMO Systems
- Lecture 36 - MIMO Receivers
- Lecture 37 - BER Performance of ZF Receiver
- Lecture 38 - Transmit Beamforming in MISO Systems
- Lecture 39 - Alamouti Code and Space-Time Block Codes
- Lecture 40 - BER of Alamouti Coded System
- Lecture 41 - Singular Value Decomposition (SVD)
- Lecture 42 - SVD in MIMO
- Lecture 43 - Capacity of MIMO Wireless Systems
- Lecture 44 - SVD based MIMO Transmission
- Lecture 45 - Orthogonal Frequency Division Multiplexing (OFDM)
- Lecture 46 - Transmission in Multicarrier Systems
- Lecture 47 - FFT/IFFT Processing in OFDM
- Lecture 48 - Cyclic Prefix in OFDM Systems
- Lecture 49 - Schematic Representation of OFDM Transmitter and Receiver
- Lecture 50 - BER Performance of OFDM Systems

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Probability and Random Variables, Processes

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Basics - Sample Space and Events

Lecture 2 - Axioms of Probability

Lecture 3 - Conditional Probability - Mary-PAM Example

Lecture 4 - Independent Events - Mary-PAM Example

Lecture 5 - Independent Events - Block Transmission Example

Lecture 6 - Independent Events - Multiantenna Fading Example

Lecture 7 - Bayes Theorem and A posteriori Probabilities

Lecture 8 - Maximum A posteriori Probability (MAP) Receiver

Lecture 9 - Random Variables, Probability Density Function (PDF)

Lecture 10 - Application

Lecture 11 - Mean, Variance of Random Variables

Lecture 12 - Application

Lecture 13 - Transformation of Random Variables and Rayleigh Fading Wireless Channel

Lecture 14 - Gaussian Random Variable and Linear Transformation

Lecture 15 - Special Case

Lecture 16 - Application

Lecture 17 - Random Processes and Wide Sense Stationarity (WSS)

Lecture 18 - WSS Example Narrowband Wireless Signal with Random Phase

Lecture 19 - Power Spectral Density (PSD) for WSS Random Process

Lecture 20 - PSD Application in Wireless Bandwidth Required for Signal Transmission

Lecture 21 - Transmission of WSS Random Process Through LTI System

Lecture 22 - Special Random Processes Gaussian Process and White Noise AWGN Communication Channel

Lecture 23 - Gaussian Process Through LTI System Example

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Estimation for Wireless Communications,

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Basics - Sensor Network and Noisy Observation Model
- Lecture 2 - Likelihood Function and Maximum Likelihood (ML) Estimate
- Lecture 3 - Properties of Maximum Likelihood (ML) Estimate $\hat{\theta}$ Mean and Unbiasedness
- Lecture 4 - Properties of Maximum Likelihood (ML) Estimate $\hat{\theta}$ Variance and Spread Around Mean
- Lecture 5 - Reliability of the Maximum Likelihood (ML) Estimate $\hat{\theta}$ Number of Samples Required
- Lecture 6 - Estimation of Complex Parameters $\hat{\theta}$ Symmetric Zero Mean Complex Gaussian Noise
- Lecture 7 - Wireless Fading Channel Estimation $\hat{\theta}$ Pilot Symbols and Likelihood Function
- Lecture 8 - Wireless Fading Channel Estimation $\hat{\theta}$ Pilot Training based Maximum Likelihood ML Estimate
- Lecture 9 - Wireless Fading Channel Estimation $\hat{\theta}$ Mean and Variance of Pilot Training Based Maximum Likelihood ML Estimate
- Lecture 10 - Example $\hat{\theta}$ Wireless Fading Channel Estimation for Downlink Mobile Communication
- Lecture 11 - Cramer Rao Bound (CRB) for Parameter Estimation
- Lecture 12 - Cramer Rao Bound CRB Example $\hat{\theta}$ Wireless Sensor Network
- Lecture 13 - Vector Parameter Estimation $\hat{\theta}$ System Model for Multi Antenna Downlink Channel Estimation
- Lecture 14 - Likelihood Function and Least Squares Cost Function for Vector Parameter Estimation
- Lecture 15 - Least Squares Cost Function for Vector Parameter Estimation Vector Derivative Gradient
- Lecture 16 - Least Squares Solution Maximum Likelihood ML Estimate Pseudo Inverse
- Lecture 17 - Properties of Least Squares Estimate $\hat{\theta}$ Mean Covariance and Distribution
- Lecture 18 - Least Squares Multi Antenna Downlink Maximum Likelihood Channel Estimation
- Lecture 19 - Multiple Input Multiple Output MIMO Channel Estimation $\hat{\theta}$ Least Squares Maximum Likelihood ML Estimate
- Lecture 20 - Example $\hat{\theta}$ Least Squares Multiple Input Multiple Output MIMO Channel Estimation
- Lecture 21 - Channel Equalization and Inter Symbol Interference ISI Model
- Lecture 22 - Least Squares based Zero Forcing Channel Equalizer
- Lecture 23 - Example of ISI Channel and Least Squares based Zero Forcing
- Lecture 24 - Equalization and Approximation Error for Zero Forcing Channel Equalizer
- Lecture 25 - Example Equalization and Approximation Error for Zero Forcing Channel Equalizer
- Lecture 26 - Introduction to Orthogonal Frequency Division Multiplexing OFDM $\hat{\theta}$ Cyclic Prefix CP and Circular
- Lecture 27 - Introduction to Orthogonal Frequency Division Multiplexing OFDM $\hat{\theta}$ FFT at Receiver and Flat Fading
- Lecture 28 - Channel Estimation Across Each Subcarrier in Orthogonal Frequency Division Multiplexing OFDM
- Lecture 29 - Example Orthogonal Frequency Division Multiplexing OFDM $\hat{\theta}$ Transmission of Samples with Cyclic

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

- Lecture 30 - Example Orthogonal Frequency Division Multiplexing OFDM \hat{A} FFT at Receiver and Channel Estimation
- Lecture 31 - Comb Type Pilot CTP Based Orthogonal Frequency Division Multiplexing OFDM Channel Estimation
- Lecture 32 - Comb Type Pilot CTP Based Orthogonal Frequency Division Multiplexing OFDM Channel Estimation
- Lecture 33 - Example Comb Type Pilot CTP Based Orthogonal Frequency Division Multiplexing OFDM Channel
- Lecture 34 - Frequency Domain Equalization FDE for Inter Symbol Interference ISI Removal in Wireless System
- Lecture 35 - Example Frequency Domain Equalization FDE for Inter Symbol Interference ISI Removal in Wireless
- Lecture 36 - Example Frequency Domain Equalization FDE for Inter Symbol Interference ISI Removal in Wireless
- Lecture 37 - Introduction to Sequential Estimation \hat{A} Application in Wireless Channel Estimation
- Lecture 38 - Sequential Estimation of Wireless Channel Coefficient \hat{A} Estimate and Variance Update Equation
- Lecture 39 - Example Sequential Estimation of Wireless Channel Coefficient

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Error Control Coding - An Introduction to

Subject Co-ordinator - Dr. Adrish Banerjee

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Error Coding - I
- Lecture 2 - Introduction to Error Coding - II
- Lecture 3 - Introduction to Error Control Coding - III
- Lecture 4 - Introduction to Convolutional Codes - I
- Lecture 5 - Introduction to Convolutional Codes - II
- Lecture 6 - Convolutional Codes
- Lecture 7 - Convolutional Codes
- Lecture 8 - Decoding of Convolutional Codes - I
- Lecture 9 - Decoding of Convolutional Codes - II
- Lecture 10 - Problem Solving Session - I
- Lecture 11 - Problem Solving Session - II
- Lecture 12 - Performance Bounds for Convolutional Codes
- Lecture 13 - Turbo Codes
- Lecture 14 - Turbo Decoding
- Lecture 15 - Convergence of Turbo Codes
- Lecture 16 - Applications of Convolutional Codes
- Lecture 17 - Problem Solving Sessions - III

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Error Control Coding: An Introduction to

Subject Co-ordinator - Dr. Adrish Banerjee

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to Error Control Coding - I
- Lecture 2 - Introduction to Error Control Coding - II
- Lecture 3 - Introduction to Error Control Coding - III
- Lecture 4 - Introduction to Linear Block Codes, Generator Matrix and Parity Check Matrix
- Lecture 5 - Syndrome, Error Correction and Error Detection
- Lecture 6 - Problem Solving Session - I
- Lecture 7 - Decoding of Linear Block Codes
- Lecture 8 - Distance Properties of Linear Block Codes - I
- Lecture 9 - Distance Properties of Linear Block Codes - II
- Lecture 10 - Problem Solving Session - II
- Lecture 11 - Some Simple Linear Block Codes - I
- Lecture 12 - Some Simple Linear Block Codes - II
- Lecture 13 - Bounds on the Size of a Code
- Lecture 14 - Problem Solving Session - III
- Lecture 15 - Low Density Parity Check Codes
- Lecture 16 - Decoding of Low Density Parity Check Codes - I
- Lecture 17 - Decoding of Low Density Parity Check Codes - II
- Lecture 18 - Applications of Linear Block Codes

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Bayesian, MMSE Estimation for Wireless C

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Basics $\hat{\Lambda}$ Introduction to Bayesian Minimum Mean Squared Error
- Lecture 2 - Optimal Bayesian Minimum Mean Squared Error (MMSE) Estimate
- Lecture 3 - Derivation of Minimum Mean Squared Error MMSE Estimate for Gaussian Parameter $\hat{\Lambda}$ Part I
- Lecture 4 - Derivation of Minimum Mean Squared Error MMSE Estimate for Gaussian Parameter $\hat{\Lambda}$ Part II
- Lecture 5 - Derivation of Minimum Mean Squared Error (MMSE) Estimate for Gaussian Parameter $\hat{\Lambda}$ Non-Zero Mean
- Lecture 6 - Minimum Mean Squared Error MMSE Estimation Application $\hat{\Lambda}$ Wireless Sensor Network
- Lecture 7 - Simplification and Example of Minimum Mean Squared Error MMSE Estimate for Wireless Sensor Network
- Lecture 8 - Minimum Mean Squared Error MMSE Estimation Application $\hat{\Lambda}$ Wireless Fading Channel Estimation
- Lecture 9 - Simplification and Example of Minimum Mean Squared Error MMSE Estimate for Wireless Fading Channel
- Lecture 10 - Minimum Mean Squared Error MMSE for Wireless Sensor Network WSN $\hat{\Lambda}$ Derivation and Example
- Lecture 11 - Reliability of Minimum Mean Squared Error MMSE Estimate $\hat{\Lambda}$ Part I
- Lecture 12 - Reliability of Minimum Mean Squared Error MMSE Estimate $\hat{\Lambda}$ Part II
- Lecture 13 - Minimum Mean Squared Error MMSE for Wireless Fading Channel Estimation $\hat{\Lambda}$ Derivation
- Lecture 14 - Minimum Mean Squared Error (MMSE) for Wireless Fading Channel Estimation $\hat{\Lambda}$ Example and Properties
- Lecture 15 - Linear Minimum Mean Squared Error LMMSE Estimate Derivation $\hat{\Lambda}$ Part I
- Lecture 16 - Linear Minimum Mean Squared Error LMMSE Estimate Derivation $\hat{\Lambda}$ Part II
- Lecture 17 - Vector Parameter Estimation $\hat{\Lambda}$ System Model for Multi-Antenna Downlink Channel Estimation
- Lecture 18 - Linear Minimum Mean Squared Error LMMSE Estimate for Multi Antenna Downlink Wireless Channel - E
- Lecture 19 - Linear Minimum Mean Squared Error LMMSE Estimate for Multi Antenna Downlink Wireless Channel - E
- Lecture 20 - Example of Linear Minimum Mean Squared Error LMMSE Estimation for Multi Antenna Downlink Wireless Channel
- Lecture 21 - Derivation and Example of Error Covariance of Multi Antenna LMMSE Channel Estimation
- Lecture 22 - System Model for Multiple Input Multiple Output MIMO Downlink Wireless Channel Estimation
- Lecture 23 - Channel/ Noise Statistics for Multiple-Input Multiple-Output (MIMO) Downlink Wireless Channel Es
- Lecture 24 - LMMSE/ MMSE Estimation for Multiple-Input Multiple-Output(MIMO) Downlink Wireless Channel Estima
- Lecture 25 - Example of LMMSE/ MMSE Estimation for Multiple-Input Multiple-Output (MIMO) Downlink Wireless Ch
- Lecture 26 - Introduction and system model for equalization
- Lecture 27 - Linear Minimum Mean Square Error (LMMSE) Channel Equalization
- Lecture 28 - Error for LMMSE Channel Equalizer and Example of LMMSE Channel Equalization
- Lecture 29 - Example of Linear Minimum Mean Square Error (LMMSE) Channel Equalization

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

- Lecture 30 - Introduction and system model for OFDM
- Lecture 31 - System model for OFDM, IFFT/ FFT Operations
- Lecture 32 - LMMSE Estimation for OFDM
- Lecture 33 - Estimate and Error variance of LMMSE Estimate
- Lecture 34 - Example of OFDM
- Lecture 35 - Example of LMMSE estimate and Error variance for OFDM

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Optical communications

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 communications
Lecture 2 - Optical Transmitter - I
Lecture 3 - Optical Transmitter - I (Continued...)
Lecture 4 - Optical Transmitter - II
Lecture 5 - Optical Transmitter - II (Continued...)
Lecture 6 - Intensity modulation
Lecture 7 - Review of Signals and Representations - I
Lecture 8 - Review of Signals and Representations - II
Lecture 9 - Digital Modulation - I
Lecture 10 - Review of Signals and Representations - III
Lecture 11 - Review of Signals and Representations - IV
Lecture 12 - Digital Modulation - II
Lecture 13 - Digital Modulation - II (Continued...)
Lecture 14 - Digital Modulation - III
Lecture 15 - Optical receivers - I
Lecture 16 - Optical receivers - II
Lecture 17 - Optical Modulator
Lecture 18 - Propagation of Electromagnetic wave
Lecture 19 - Review of EM Theory
Lecture 20 - Reflection of Waves
Lecture 21 - Optical fiber - I
Lecture 22 - Optical fiber - II
Lecture 23 - Modes in Optical fiber - I
Lecture 24 - Modes in Optical fiber - I (Continued...)
Lecture 25 - Modes in Optical fiber - II
Lecture 26 - Dispersion in Fibers
Lecture 27 - Dispersion in Fibers (Continued...)
Lecture 28 - Wrapping up fiber parameters
Lecture 29 - System Design - I

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

- Lecture 30 - Passive WDM components - I
- Lecture 31 - Passive WDM components - II
- Lecture 32 - Detection of light
- Lecture 33 - Detection of light (Continued...)
- Lecture 34 - Response time and Noise in Detectors
- Lecture 35 - Noise in photodiodes - I Edit Lesson
- Lecture 36 - Noise in photodiodes - II
- Lecture 37 - Light sources - I
- Lecture 38 - Light sources - II Edit Lesson
- Lecture 39 - Semiconductor laser diodes
- Lecture 40 - Optical communication
- Lecture 41 - Power spectral density
- Lecture 42 - Power spectral density (Continued...)
- Lecture 43 - Advantage of coherent receiver
- Lecture 44 - Dispersion induced limitations
- Lecture 45 - Optical amplifiers - I
- Lecture 46 - Optical amplifiers - II
- Lecture 47 - Noise in optical amplifiers
- Lecture 48 - Noise in optical amplifiers (Continued...)
- Lecture 49 - ASE induced limitations
- Lecture 50 - Determining BER in OOK system
- Lecture 51 - BER determination
- Lecture 52 - Eye diagram and Higher modulation techniques Edit Lesson
- Lecture 53 - Higher modulation techniques (Continued...)
- Lecture 54 - Optical OFDM

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Digital Switching-I

Subject Co-ordinator - Prof. Yatindra N Singh

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Introduction to Telephony and Networks

Lecture 2 - Strowger Automatic Exchange

Lecture 3 - Crossbar Switching

Lecture 4 - Logic Circuit for Crosspoint Operation

Lecture 5 - Introduction to Multistage Interconnection Networks

Lecture 6 - Blocking probability of crossbar switches

Lecture 7 - Call congestion and time congestio

Lecture 8 - Clos network

Lecture 9 - Lee's approximation

Lecture 10 - Karnaugh's approximation

Lecture 11 - Time switch

Lecture 12 - Time switch and Clos network

Lecture 13 - TST switch, Strictly Non-blocking network, Rearrangeably non-blocking network

Lecture 14 - Paull's Matrix

Lecture 15 - f-way multicasting

Lecture 16 - Strictly sense non blocking multicasting switch

Lecture 17 - Rearrangeably non blocking networks

Lecture 18 - Slepian Duguid theorem, Paull's theorem

Lecture 19 - Paull's matrix for rearrangeably non blocking networks

Lecture 20 - Recursive construction; Crosspoint complexity for rearrangeably and strictly non-blocking network

Lecture 21 - Cantor network

Lecture 22 - Wide-sense non blocking network

Lecture 23 - Example of wide -sense non-blocking switch

Lecture 24 - Packet Switching

Lecture 25 - Buffering strategies

Lecture 26 - Output Queued Switch

Lecture 27 - Input Queued Switch

Lecture 28 - Banyan Network, Delta Network

Lecture 29 - Shufflenet as Delta network

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

- Lecture 30 - Performance analysis of crossbar and delta network
- Lecture 31 - Properties of Delta Network
- Lecture 32 - Buffered and Unbuffered Delta network
- Lecture 33 - Analysis of Buffered Delta Network - 1 of 3
- Lecture 34 - Analysis of Buffered Delta Network - 2 of 3
- Lecture 35 - Analysis of Buffered Delta Network - 3 of 3

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:An Introduction to Information Theory

Subject Co-ordinator - Dr. Adrish Banerjee

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction
- Lecture 2 - Measure of Information
- Lecture 3 - Information Inequalities
- Lecture 4 - Problem solving session - I
- Lecture 5 - Block to Variable Length Coding - I
- Lecture 6 - Block to Variable Length Coding - II
- Lecture 7 - Block to Variable Length Coding - III
- Lecture 8 - Variable to block length coding
- Lecture 9 - The asymptotic equipartition property
- Lecture 10 - Block to block coding of DMS
- Lecture 11 - Problem solving session - II
- Lecture 12 - Universal Source Coding - I
- Lecture 13 - Universal source coding - II
- Lecture 14 - Coding of sources with memory
- Lecture 15 - Channel Capacity
- Lecture 16 - Joint typical sequences
- Lecture 17 - Noisy channel coding theorem
- Lecture 18 - Differential entropy
- Lecture 19 - Gaussian channel
- Lecture 20 - Parallel Gaussian channel
- Lecture 21 - Problem solving session - III
- Lecture 22 - Rate distortion theory
- Lecture 23 - Blahut-Arimoto Algorithm
- Lecture 24 - Problem solving session - IV

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

NPTEL Video Course - Electronics and Communication Engineering - Adaptive Signal Processing

Subject Co-ordinator - Prof. Mrityunjay Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Adaptive Filters
- Lecture 2 - Introduction to Stochastic Processes
- Lecture 3 - Stochastic Processes
- Lecture 4 - Correlation Structure
- Lecture 5 - FIR Wiener Filter (Real)
- Lecture 6 - Steepest Descent Technique
- Lecture 7 - LMS Algorithm
- Lecture 8 - Convergence Analysis
- Lecture 9 - Convergence Analysis (Mean Square)
- Lecture 10 - Convergence Analysis (Mean Square)
- Lecture 11 - Misadjustment and Excess MSE
- Lecture 12 - Misadjustment and Excess MSE
- Lecture 13 - Sign LMS Algorithm
- Lecture 14 - Block LMS Algorithm
- Lecture 15 - Fast Implementation of Block LMS Algorithm
- Lecture 16 - Fast Implementation of Block LMS Algorithm
- Lecture 17 - Vector Space Treatment to Random Variables
- Lecture 18 - Vector Space Treatment to Random Variables
- Lecture 19 - Orthogonalization and Orthogonal Projection
- Lecture 20 - Orthogonal Decomposition of Signal Subspaces
- Lecture 21 - Introduction to Linear Prediction
- Lecture 22 - Lattice Filter
- Lecture 23 - Lattice Recursions
- Lecture 24 - Lattice as Optimal Filter
- Lecture 25 - Linear Prediction and Autoregressive Modeling
- Lecture 26 - Gradient Adaptive Lattice
- Lecture 27 - Gradient Adaptive Lattice
- Lecture 28 - Introduction to Recursive Least Squares
- Lecture 29 - RLS Approach to Adaptive Filters

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

- Lecture 30 - RLS Adaptive Lattice
- Lecture 31 - RLS Lattice Recursions
- Lecture 32 - RLS Lattice Recursions
- Lecture 33 - RLS Lattice Algorithm
- Lecture 34 - RLS Using QR Decomposition
- Lecture 35 - Givens Rotation
- Lecture 36 - Givens Rotation and QR Decomposition
- Lecture 37 - Systolic Implementation
- Lecture 38 - Systolic Implementation
- Lecture 39 - Singular Value Decomposition
- Lecture 40 - Singular Value Decomposition
- Lecture 41 - Singular Value Decomposition

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

NPTEL Video Course - Electronics and Communication Engineering - Digital Computer Organization

Subject Co-ordinator - Prof. P.K. Biswas

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Digital Computer Organization
Lecture 2 - CPU Design - I
Lecture 3 - CPU Design - II
Lecture 4 - CPU Design Timing and Control
Lecture 5 - Micro programmed Control - I
Lecture 6 - Micro programmed Control - II
Lecture 7 - Pipeline Concept - I
Lecture 8 - Pipeline Concept - II
Lecture 9 - Pipeline Concept - III
Lecture 10 - Pipeline CPU - I
Lecture 11 - Pipeline CPU - II
Lecture 12 - Pipeline CPU - III
Lecture 13 - Memory Organization - I
Lecture 14 - Memory Organization - II
Lecture 15 - Memory Organization - III
Lecture 16 - Memory Organization - IV
Lecture 17 - Memory Organization - V
Lecture 18 - Cache Memory Architecture
Lecture 19 - Cache Memory Architecture RAM Architecture
Lecture 20 - RAM Architecture
Lecture 21 - DAM Architecture-1
Lecture 22 - DAM Architecture Buffer Cache
Lecture 23 - Buffer Cache
Lecture 24 - Secondary Storage Organization - I
Lecture 25 - Secondary Storage Organization - II
Lecture 26 - Secondary Storage Organization - III
Lecture 27 - I/O Subsystem Organization
Lecture 28 - Error Detection and Correction

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

NPTEL Video Course - Electronics and Communication Engineering - Digital Image Processing

Subject Co-ordinator - Prof. P.K. Biswas

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Image Digitization - I
- Lecture 3 - Image Digitization - II
- Lecture 4 - Pixels Relationships - I
- Lecture 5 - Pixels Relationships - II
- Lecture 6 - Basic Transformations
- Lecture 7 - Camera Model and Imaging Geometry
- Lecture 8 - Camera Calibration and Stereo Imaging
- Lecture 9 - Interpolation and Resampling
- Lecture 10 - Image Interpolation - II
- Lecture 11 - Image Interpolation - I
- Lecture 12 - Image Transformation - II
- Lecture 13 - Fourier Transformation - I
- Lecture 14 - Fourier Transformation - II
- Lecture 15 - Discrete Cosine Transform
- Lecture 16 - K-L Transform
- Lecture 17 - Image Enhancement
- Lecture 18 - Image Enhancement
- Lecture 19 - Image Enhancement
- Lecture 20 - Image Enhancement
- Lecture 21 - Image Enhancement Frequency
- Lecture 22 - Image Restoration - I
- Lecture 23 - Image Restoration - II
- Lecture 24 - Image Restoration - III
- Lecture 25 - Image Registration
- Lecture 26 - Colour Image Processing - I
- Lecture 27 - Colour Image Processing - II
- Lecture 28 - Colour Image Processing - III
- Lecture 29 - Image Segmentation - I

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

- Lecture 30 - Image Segmentation - II
- Lecture 31 - Image Segmentation - III
- Lecture 32 - Image Segmentation - IV
- Lecture 33 - Mathematical Morphology - I
- Lecture 34 - Mathematical Morphology - II
- Lecture 35 - Mathematical Morphology - III
- Lecture 36 - Mathematical Morphology - IV
- Lecture 37 - Object Representation and Description - I
- Lecture 38 - Object Representation and Description - II
- Lecture 39 - Object Representation and Description - III
- Lecture 40 - Object Recognition

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

NPTEL Video Course - Electronics and Communication Engineering - Digital Systems Design

Subject Co-ordinator - Prof. D. Roychoudhury

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Digital Systems Design
- Lecture 2 - Introduction
- Lecture 3 - Digital Logic - I
- Lecture 4 - Digital Logic - II
- Lecture 5 - Digital Logic - III
- Lecture 6 - Boolean Algebra
- Lecture 7 - Boolean Algebra
- Lecture 8 - Boolean Function Minimization
- Lecture 9 - Boolean Function Minimization
- Lecture 10 - Boolean Function Minimization
- Lecture 11 - Hazzard Covers by K - Map
- Lecture 12 - Combinational Circuit Design
- Lecture 13 - Design of ADDER Circuits
- Lecture 14 - Design of Subtractor Circuits
- Lecture 15 - Digital of Common Digital Elements
- Lecture 16 - Design of Complex Combinational Circuits
- Lecture 17 - Design of Combinational Circuits
- Lecture 18 - Combinational Logic Problem Design
- Lecture 19 - Combinational Logic Design
- Lecture 20 - Logic Design with PLA
- Lecture 21 - Synchronous Sequential Circuit Design
- Lecture 22 - Design of Sequential Modules
- Lecture 23 - Design of Registers and Counter
- Lecture 24 - Finite State Machine Design
- Lecture 25 - Finite State Machine Design and Optimization
- Lecture 26 - Programmable Logic Devices
- Lecture 27 - Programmable Logic Devices
- Lecture 28 - Programmable Logic Devices
- Lecture 29 - Design of Arithmetic Circuits

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

- Lecture 30 - Design of Arithmetic Circuits
- Lecture 31 - Design of Memory Circuits
- Lecture 32 - Algorithmic State Machines Chart
- Lecture 33 - Design of Computer Instruction Set and the CPU
- Lecture 34 - Design of Computer Instruction Set and the CPU
- Lecture 35 - Design of Computer Instruction Set and the CPU
- Lecture 36 - Design of Computer Instruction Set and the CPU
- Lecture 37 - Design of Computer Instruction Set and the CPU
- Lecture 38 - Design of Computer Instruction Set and the CPU
- Lecture 39 - Design of a Micro Programmed CPU
- Lecture 40 - Digital System Design Current State of the Art

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

NPTEL Video Course - Electronics and Communication Engineering - Digital Voice and Picture Communication

Subject Co-ordinator - Prof. Somnath Sengupta

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Speech Production Model
- Lecture 3 - Speech Coding
- Lecture 4 - Quantizers for Speech Signal
- Lecture 5 - mew - Law and Optimum Quantizer
- Lecture 6 - Adaptive Quantizer
- Lecture 7 - Differential Quantization
- Lecture 8 - LDM and ADM
- Lecture 9 - Differential PCM and Adaptive Prediction
- Lecture 10 - Linear Prediction of Speech
- Lecture 11 - Computational Aspects of LPC parameters
- Lecture 12 - Cholesky Decomposition
- Lecture 13 - Lattice Formulation of LPC Coefficient
- Lecture 14 - Linear Predictive Synthesizer
- Lecture 15 - LPC Vocoder
- Lecture 16 - Introduction to Image and Video Coding
- Lecture 17 - Lossy Image Compression
- Lecture 18 - DCT Quantization and Limitations
- Lecture 19 - Theory of Wavelets
- Lecture 20 - Discrete Wavelet Transforms
- Lecture 21 - DWT on the Images and its Encoding
- Lecture 22 - Embedded Zero Tree Wavelet Encoding
- Lecture 23 - Video Coding
- Lecture 24 - Motion Estimate Techniques
- Lecture 25 - Fast Motion Estimation Techniques
- Lecture 26 - Video Coding Standards
- Lecture 27 - Advanced Coding Aspects
- Lecture 28 - Audio Coding
- Lecture 29 - Audio Coding AC - 3

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

- Lecture 30 - AC -3 Decoder
- Lecture 31 - MPEG - 1 Audio Coding
- Lecture 32 - Introduction to VoIP
- Lecture 33 - VoIP Signaling
- Lecture 34 - H.323 Call Controls and Enhancements
- Lecture 35 - Interworking with PSTN Limitations and Solution
- Lecture 36 - Multiplexing Schemes
- Lecture 37 - H.323
- Lecture 38 - ISDN Video Conferencing
- Lecture 39 - Video Conferencing
- Lecture 40 - 4G Multimedia Conferencing

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

NPTEL Video Course - Electronics and Communication Engineering - MEMS and Microsystems

Subject Co-ordinator - Prof. Santiram Kal

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to MEMS & Microsystems
- Lecture 2 - Introduction to Microsensors
- Lecture 3 - Evaluation of MEMS, Microsensors, Market Survey
- Lecture 4 - Application of MEMS
- Lecture 5 - MEMS Materials
- Lecture 6 - MEMS Materials Properties
- Lecture 7 - MEMS Materials Properties (Continued...)
- Lecture 8 - Microelectronic Technology for MEMS - II
- Lecture 9 - Microelectronic Technology for MEMS - III
- Lecture 10 - Micromachining Technology for MEMS
- Lecture 11 - Micromachining Process
- Lecture 12 - Etch Stop Techniques and Microstructure
- Lecture 13 - Surface and Quartz Micromachining
- Lecture 14 - Fabrication of Micromachined Microstructure
- Lecture 15 - Microstereolithography
- Lecture 16 - MEMS Microsensors Thermal
- Lecture 17 - Micromachined Microsensors Mechanical
- Lecture 18 - MEMS Pressure and Flow Sensor
- Lecture 19 - Micromachined Flow Sensors
- Lecture 20 - MEMS Inertial Sensors
- Lecture 21 - Micromachined Microaccelerometers for MEMS
- Lecture 22 - MEMS Accelerometers for Avionics
- Lecture 23 - Temperature Drift and Damping Analysis
- Lecture 24 - Piezoresistive Accelerometer Technology
- Lecture 25 - MEMS Capacitive Accelerometer
- Lecture 26 - MEMS Capacitive Accelerometer Process
- Lecture 27 - MEMS Gyro Sensor
- Lecture 28 - MEMS for Space Application
- Lecture 29 - Polymer MEMS & Carbon Nano Tubes CNT

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

- Lecture 30 - Wafer Bonding & Packaging of MEMS
- Lecture 31 - Interface Electronics for MEMS
- Lecture 32 - MEMS for Biomedical Applications (Bio-MEMS)

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

NPTEL Video Course - Electronics and Communication Engineering - Neural Networks and Applications

Subject Co-ordinator - Prof. Somnath Sengupta

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Artificial Neural Networks
- Lecture 2 - Artificial Neuron Model and Linear Regression
- Lecture 3 - Gradient Descent Algorithm
- Lecture 4 - Nonlinear Activation Units and Learning Mechanisms
- Lecture 5 - Learning Mechanisms-Hebbian, Competitive, Boltzmann
- Lecture 6 - Associative memory
- Lecture 7 - Associative Memory Model
- Lecture 8 - Condition for Perfect Recall in Associative Memory
- Lecture 9 - Statistical Aspects of Learning
- Lecture 10 - V.C. Dimensions
- Lecture 11 - Importance of V.C. Dimensions Structural Risk Minimization
- Lecture 12 - Single-Layer Perceptions
- Lecture 13 - Unconstrained Optimization
- Lecture 14 - Linear Least Squares Filters
- Lecture 15 - Least Mean Squares Algorithm
- Lecture 16 - Perceptron Convergence Theorem
- Lecture 17 - Bayes Classifier & Perceptron
- Lecture 18 - Bayes Classifier for Gaussian Distribution
- Lecture 19 - Back Propagation Algorithm
- Lecture 20 - Practical Consideration in Back Propagation Algorithm
- Lecture 21 - Solution of Non-Linearly Separable Problems Using MLP
- Lecture 22 - Heuristics For Back-Propagation
- Lecture 23 - Multi-Class Classification Using Multi-layered Perceptrons
- Lecture 24 - Radial Basis Function Networks
- Lecture 25 - Radial Basis Function Networks
- Lecture 26 - Posed Surface Reconstruction
- Lecture 27 - Solution of Regularization Equation
- Lecture 28 - Use of Greens Function in Regularization Networks
- Lecture 29 - Regularization Networks and Generalized RBF

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

- Lecture 30 - Comparison Between MLP and RBF
- Lecture 31 - Learning Mechanisms in RBF
- Lecture 32 - Introduction to Principal Components and Analysis
- Lecture 33 - Dimensionality reduction Using PCA
- Lecture 34 - Hebbian-Based Principal Component Analysis
- Lecture 35 - Introduction to Self Organizing Maps
- Lecture 36 - Cooperative and Adaptive Processes in SOM
- Lecture 37 - Vector-Quantization Using SOM

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

NPTEL Video Course - Electronics and Communication Engineering - Probability and Random Processes

Subject Co-ordinator - Prof. Mrityunjay Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to the Theory of Probability
- Lecture 2 - Axioms of Probability
- Lecture 3 - Axioms of Probability (Continued.)
- Lecture 4 - Introduction to Random Variables
- Lecture 5 - Probability Distributions and Density Functions
- Lecture 6 - Conditional Distribution and Density Functions
- Lecture 7 - Function of a Random Variable
- Lecture 8 - Function of a Random Variable (Continued.)
- Lecture 9 - Mean and Variance of a Random Variable
- Lecture 10 - Moments
- Lecture 11 - Characteristic Function
- Lecture 12 - Two Random Variables
- Lecture 13 - Function of Two Random Variables
- Lecture 14 - Function of Two Random Variables (Continued.)
- Lecture 15 - Correlation Covariance and Related Inver
- Lecture 16 - Vector Space of Random Variables
- Lecture 17 - Joint Moments
- Lecture 18 - Joint Characteristic Functions
- Lecture 19 - Joint Conditional Densities
- Lecture 20 - Joint Conditional Densities (Continued.)
- Lecture 21 - Sequences of Random Variables
- Lecture 22 - Sequences of Random Variables (Continued.)
- Lecture 23 - Correlation Matrices and their Properties
- Lecture 24 - Correlation Matrices and their Properties
- Lecture 25 - Conditional Densities of Random Vectors
- Lecture 26 - Characteristic Functions and Normality
- Lecture 27 - Tchebycheff Inequality and Estimation of an Unknown Parameter
- Lecture 28 - Central Limit Theorem
- Lecture 29 - Introduction to Stochastic Process

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

- Lecture 30 - Stationary Processes
- Lecture 31 - Cyclostationary Processes
- Lecture 32 - System with Random Process at Input
- Lecture 33 - Ergodic Processes
- Lecture 34 - Introduction to Spectral Analysis
- Lecture 35 - Spectral Analysis (Continued.)
- Lecture 36 - Spectrum Estimation - Non Parametric Methods
- Lecture 37 - Spectrum Estimation - Parametric Methods
- Lecture 38 - Autoregressive Modeling and Linear Prediction
- Lecture 39 - Linear Mean Square Estimation - Wiener (FIR)
- Lecture 40 - Adaptive Filtering - LMS Algorithm

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

NPTEL Video Course - Electronics and Communication Engineering - Pattern Recognition and Application

Subject Co-ordinator - Prof. P.K. Biswas

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Feature Extraction - I
- Lecture 3 - Feature Extraction - II
- Lecture 4 - Feature Extraction - III
- Lecture 5 - Bayes Decision Theory
- Lecture 6 - Bayes Decision Theory (Continued.)
- Lecture 7 - Normal Density and Discriminant Function
- Lecture 8 - Normal Density and Discriminant Function (Continued.)
- Lecture 9 - Bayes Decision Theory - Binary Features
- Lecture 10 - Maximum Likelihood Estimation
- Lecture 11 - Probability Density Estimation
- Lecture 12 - Probability Density Estimation (Continued.)
- Lecture 13 - Probability Density Estimation (Continued.)
- Lecture 14 - Probability Density Estimation (Continued.)
- Lecture 15 - Probability Density Estimation (Continued.)
- Lecture 16 - Dimensionality Problem
- Lecture 17 - Multiple Discriminant Analysis
- Lecture 18 - Multiple Discriminant Analysis (Tutorial)
- Lecture 19 - Multiple Discriminant Analysis (Tutorial)
- Lecture 20 - Perceptron Criterion
- Lecture 21 - Perceptron Criterion (Continued.)
- Lecture 22 - MSE Criterion
- Lecture 23 - Linear Discriminator (Tutorial)
- Lecture 24 - Neural Networks for Pattern Recognition
- Lecture 25 - Neural Networks for Pattern Recognition (Continued.)
- Lecture 26 - Neural Networks for Pattern Recognition (Continued.)
- Lecture 27 - RBF Neural Network
- Lecture 28 - RBF Neural Network (Continued.)
- Lecture 29 - Support Vector Machine

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

- Lecture 30 - Hyperbox Classifier
- Lecture 31 - Hyperbox Classifier (Continued.)
- Lecture 32 - Fuzzy Min Max Neural Network for Pattern Recognition
- Lecture 33 - Reflex Fuzzy Min Max Neural Network
- Lecture 34 - Unsupervised Learning - Clustering
- Lecture 35 - Clustering (Continued.)
- Lecture 36 - Clustering using minimal spanning tree
- Lecture 37 - Temporal Pattern recognition
- Lecture 38 - Hidden Markov Model
- Lecture 39 - Hidden Markov Model (Continued.)
- Lecture 40 - Hidden Markov Model (Continued.)

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Basic Tools of Microwave Engineering

Subject Co-ordinator - Dr. Amitabha Bhattacharya

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Challenges of Microwave Design

Lecture 2 - Introduction to the 1st tool

Lecture 3 - Measurement of Unknown Impedance

Lecture 4 - Application of Smith Chart for finding unknown impedance in laboratory

Lecture 5 - Problem Solving using Smith Chart

Lecture 6 - Need of Impedance Matching at Microwave Frequency

Lecture 7 - Lumped Element Based Impedance Matching Network Design by Smith Chart

Lecture 8 - Distributed Impedance Matching Design by Smith Chart

Lecture 9 - Broadband Impedance Matching Network Design

Lecture 10 - Tutorial 2

Lecture 11 - Voltage and Current at Microwave Frequency

Lecture 12 - Scattering Parameter

Lecture 13 - Properties of Scattering Parameter

Lecture 14 - Network Analyser

Lecture 15 - Tutorial 3

Lecture 16 - Radiation between S-Parameters and Transmission Parameters

Lecture 17 - Scattering Parameters of Coupler and Magic Tee

Lecture 18 - Signal Flow Graph

Lecture 19 - Understanding Network Analyser Calibration with the help of Signal Flow Graph

Lecture 20 - Tutorial 4

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Basic Building Blocks of Microwave Engineering

Subject Co-ordinator - Dr. Amitabha Bhattacharya

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Concept of Mode
- Lecture 2 - Mathematical Model of Modes
- Lecture 3 - Mathematical Model of TEM Mode
- Lecture 4 - Mathematical Model of TE and TM Mode and Impedance Concept
- Lecture 5 - Losses Associated with Microwave Transmission
- Lecture 6 - Coaxial Line
- Lecture 7 - Rectangular Waveguide
- Lecture 8 - Circular Waveguide
- Lecture 9 - Planar Transmission Line
- Lecture 10 - Coaxial Connectors
- Lecture 11 - 3 Port Microwave Power Divider/Combiner - Part I
- Lecture 12 - 3 Port Microwave Power Divider/Combiner - Part II
- Lecture 13 - 4 Port Microwave Power Divider/Combiner
- Lecture 14 - Microwave Resonator
- Lecture 15 - Microwave Attenuators
- Lecture 16 - Microwave Detector and Switching Diodes
- Lecture 17 - Microwave Tubes
- Lecture 18 - Microwave Tubes
- Lecture 19 - Microwave Solid State Diode Oscillator and Amplifier
- Lecture 20 - Microwave Transistors

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Satellite Communication Systems

Subject Co-ordinator - Prof. Kalyankumar Bandyopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction
Lecture 2 - Orbit - 1
Lecture 3 - Orbit - 2
Lecture 4 - Orbit - 3
Lecture 5 - Orbit - 4
Lecture 6 - Space Segment - 1
Lecture 7 - Space Segment - 2
Lecture 8 - Space Segment - 3
Lecture 9 - Space Segment - 4
Lecture 10 - Space Segment - 5
Lecture 11 - Link Budget - 1
Lecture 12 - Link Budget - 2
Lecture 13 - Link Budget - 3
Lecture 14 - Link Budget - 4
Lecture 15 - Link Budget - 5
Lecture 16 - Link Budget - 6
Lecture 17 - Link Budget - 7
Lecture 18 - Link Budget - 8
Lecture 19 - Propagation - 1
Lecture 20 - Propagation - 2
Lecture 21 - Propagation - 3
Lecture 22 - Ground Segment - 1
Lecture 23 - Ground Segment - 2
Lecture 24 - Ground Segment - 3
Lecture 25 - Ground Segment - 4
Lecture 26 - Multiple Access - 1
Lecture 27 - Multiple Access - 2
Lecture 28 - Multiple Access - 3
Lecture 29 - Multiple Access - 4

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

- Lecture 30 - Multiple Access - 5
- Lecture 31 - Nonlinearity - I
- Lecture 32 - Nonlinearity - II
- Lecture 33 - Nonlinearity - III
- Lecture 34 - Synchronisation - I
- Lecture 35 - Synchronisation - II
- Lecture 36 - Effect on Higher Layer - I
- Lecture 37 - Effect on Higher Layer - II
- Lecture 38 - Effect on Higher Layer - III
- Lecture 39 - Satellite Navigation - I
- Lecture 40 - Satellite Navigation - II

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Fundamentals of MIMO Wireless Communication

Subject Co-ordinator - Prof. Suvra Sekhar Das

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Evolution of Wireless Communication Systems 1G - 5G
- Lecture 2 - Elements of Wireless Communication System
- Lecture 3 - Overview of MIMO Communication Systems
- Lecture 4 - Layered View of Transmitter and Receiver
- Lecture 5 - Wireless Channel Models - I
- Lecture 6 - Large Scale Propagation Models Path Loss
- Lecture 7 - Large Scale Propagation Models Path Loss and Shadowing
- Lecture 8 - Small Scale Propagation Multipath Model
- Lecture 9 - Small Scale Propagation Frequency Flat Fading
- Lecture 10 - Small Scale Propagation Envelope Distribution
- Lecture 11 - Small Scale Propagation Received Signal Correlation
- Lecture 12 - Small Scale Propagation Received Signal Correlation (Continued...)
- Lecture 13 - Coherence Time
- Lecture 14 - Doppler Spectrum
- Lecture 15 - Frequency Selective Fading
- Lecture 16 - Frequency Selective Fading - II
- Lecture 17 - FSF-Coherence Bandwidth, Delay Doppler Characteristics
- Lecture 18 - Spatial Channel Characteristics - I
- Lecture 19 - Expression of MIMO Channel
- Lecture 20 - MIMO Channel Characteristics
- Lecture 21 - Statistical Properties of H
- Lecture 22 - Important Results from Linear Algebra
- Lecture 23 - Spatial Diversity
- Lecture 24 - Selection Combining
- Lecture 25 - Maximal Ratio Combining
- Lecture 26 - Problem of Error in MRC
- Lecture 27 - Diversity Gain and Transmit MRC
- Lecture 28 - Transmit Diversity without Channel known at Tx
- Lecture 29 - MIMO Transmit Diversity - 1

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- Lecture 30 - MIMO Diversity - 2
- Lecture 31 - Fundamentals of Information Theory - I
- Lecture 32 - Fundamentals of Information Theory - II
- Lecture 33 - Fundamentals of Information Theory - III
- Lecture 34 - Fundamentals of Information Theory - IV
- Lecture 35 - Capacity of Deterministic MIMO Channels
- Lecture 36 - Capacity of Channel Unknown at Transmitter
- Lecture 37 - Capacity of Channel Known of Transmitter
- Lecture 38 - More on MIMO Channel Capacity
- Lecture 39 - Capacity of Random Channel
- Lecture 40 - MIMO in Practice

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Audio System Engineering

Subject Co-ordinator - Prof. S. Dasmandal

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Fundamentals of Linear Vibrations Edit Lesson
- Lecture 3 - Damped Oscillation and Forced Oscillation
- Lecture 4 - Equivalent Electrical Circuits for Oscillation
- Lecture 5 - Tutorial I
- Lecture 6 - Acoustic Wave Equation
- Lecture 7 - Acoustic Wave Equation (Continued...)
- Lecture 8 - Acoustic Wave Equation (Continued...)
- Lecture 9 - Spherical Waves Propagation
- Lecture 10 - Perception at Sound
- Lecture 11 - Sound Transmission
- Lecture 12 - Sound Transmission (Continued...)
- Lecture 13 - The Acoustic Environment
- Lecture 14 - Room Acoustics - I
- Lecture 15 - Room Acoustics - II
- Lecture 16 - Large Room Acoustics and Small Room Acoustics
- Lecture 17 - Large Room Acoustics and Small Room Acoustics (Continued...)
- Lecture 18 - Auditorium Acoustics
- Lecture 19 - Transduction - I
- Lecture 20 - Transduction - II
- Lecture 21 - Transduction - III
- Lecture 22 - Microphone - I
- Lecture 23 - Microphone Sensitivity
- Lecture 24 - Loudspeaker

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Discrete Time Signal Processing

Subject Co-ordinator - Prof. Mrityunjay Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction
- Lecture 2 - Discrete Time Signals and Systems
- Lecture 3 - Linear, Shift Invariant Systems
- Lecture 4 - Properties of Discrete Convolution Causal and Stable Systems
- Lecture 5 - Graphical Evaluation of Discrete Convolutions
- Lecture 6 - Discrete Time Fourier Transform
- Lecture 7 - Properties of DTFT
- Lecture 8 - Dirac Comb and Sampling Analog Signals
- Lecture 9 - Relation between DTFT and Analog Fourier Transform
- Lecture 10 - Nyquist Interpolation Formula
- Lecture 11 - Rational Systems
- Lecture 12 - Properties of Rational Systems
- Lecture 13 - Introduction to Z-transform
- Lecture 14 - Properties of Z-transform
- Lecture 15 - Properties of z-transform
- Lecture 16 - Inverse z-transform
- Lecture 17 - Introduction to DFT
- Lecture 18 - Properties of DFT
- Lecture 19 - Introduction to Interpretation of Circular Convolution
- Lecture 20 - Graphically Interpretation of Circular Convolution
- Lecture 21 - Zero Padding and Linear convolution Via DFT
- Lecture 22 - Decimation and DFT of Decimated Sequences
- Lecture 23 - Expansion and Interpolation of Sequences
- Lecture 24 - Factor-of-M Polyphase Decomposition of Sequences
- Lecture 25 - Noble Identifies
- Lecture 26 - Efficient Decimator and Interpolator Structure
- Lecture 27 - Linear Phase Filters
- Lecture 28 - Properties of Linear Phase Filters
- Lecture 29 - Structures for IIR Filters

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- Lecture 30 - Structures for FIR Filters
- Lecture 31 - Analog LTI Systems, Fourier and Laplace Transforms
- Lecture 32 - Pole, Zero and Stability of of Analog Filters
- Lecture 33 - Analog Filter Design Example Butterworth Lowpass Filter
- Lecture 34 - IIR Filter Design by Impuls Invariance Method
- Lecture 35 - Design Filter Design from Analog Proptotype Filters by s-z Transformations
- Lecture 36 - Bilinear Transformation
- Lecture 37 - FIR Filter Design by Window
- Lecture 38 - FFT
- Lecture 39 - Complexity Analysis of FFT
- Lecture 40 - Bit Reversal and FFT

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Digital Image Processing

Subject Co-ordinator - Prof. P.K. Biswas

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Digital Image Processing
- Lecture 2 - Application of Digital Image Processing
- Lecture 3 - Image Digitalization, Sampling Quantization and Display
- Lecture 4 - Signal Reconstruction from Samples
- Lecture 5 - Signal Reconstruction from Image
- Lecture 6 - Quantizer Design
- Lecture 7 - Relationship between Pixels
- Lecture 8 - Relationship of Adjacency and Connected Components Labeling
- Lecture 9 - Application of Distance Measures
- Lecture 10 - Basic Transform
- Lecture 11 - Image Formation - I
- Lecture 12 - Image Formation - II
- Lecture 13 - Image Geometry - I
- Lecture 14 - Image Geometry - II
- Lecture 15 - Stereo Imaging Model - II
- Lecture 16 - Interpolation and Resampling
- Lecture 17 - Interpolation Techniques
- Lecture 18 - Interpolation with examples - I
- Lecture 19 - Interpolation with Examples - II
- Lecture 20 - Image Transformation - I Edit Lesson
- Lecture 21 - Image Transformation - 2
- Lecture 22 - Separable Transformation
- Lecture 23 - Basis Images
- Lecture 24 - Fourier Transformation
- Lecture 25 - Properties of FT
- Lecture 26 - FT Result Display - 2
- Lecture 27 - Rotation Invariance Property
- Lecture 28 - DCT and Walsh Transform
- Lecture 29 - Handmard Transformation

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

- Lecture 30 - Histogram Equalization and Specifications - I
- Lecture 31 - KL-transform-2
- Lecture 32 - Image Enhancement
- Lecture 33 - Contrast Stretching Operation
- Lecture 34 - Histogram Equalization and Specification - I
- Lecture 35 - Histogram Equalization and Specification - II
- Lecture 36 - Histogram Implementation - I
- Lecture 37 - Histogram Implementation - II
- Lecture 38 - Image Enhancement
- Lecture 39 - Image Enhancement
- Lecture 40 - Image Enhancement
- Lecture 41 - Frequency Domain Processing Techniques
- Lecture 42 - Image Restoration Techniques - I
- Lecture 43 - Image Restoration Techniques - II
- Lecture 44 - Estimation of Degradation Model and Restoration Techniques - I
- Lecture 45 - Estimation of Degradation Model and Restoration Techniques - II
- Lecture 46 - Other Restoration Techniques - I
- Lecture 47 - Other Restoration Techniques - II
- Lecture 48 - Image Registration - I
- Lecture 49 - Image Registration - II
- Lecture 50 - Colour Image Processing
- Lecture 51 - Colour Model
- Lecture 52 - Conversion of one color model to another - I
- Lecture 53 - Conversion of one color model to another - II
- Lecture 54 - Pseudo color image processing
- Lecture 55 - Full color image processing
- Lecture 56 - Different Approaches for Image Segmentation
- Lecture 57 - Image Segmentation
- Lecture 58 - Region based Segmentation Operation. Thresholding Techniques
- Lecture 59 - Region Splitting and Merging Technique Edit Lesson

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

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

Subject Co-ordinator - Dr. Nagendra Krishnapura

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Course introduction; Negative feedback control
- Lecture 2 - Negative feedback amplifier
- Lecture 3 - Step response, sinusoidal steady state response
- Lecture 4 - Loop gain and unity loop gain frequency; Opamp
- Lecture 5 - Opamp realization using controlled sources; Delay in the loop
- Lecture 6 - Negative feedback amplifier with ideal delay-small delays
- Lecture 7 - Negative feedback amplifier with ideal delay-large delays
- Lecture 8 - Negative feedback amplifier with parasitic poles and zeros
- Lecture 9 - Negative feedback amplifier with parasitic poles and zeros; Nyquist criterion
- Lecture 10 - Nyquist criterion; Phase margin
- Lecture 11 - Phase margin
- Lecture 12 - Single stage opamp realization
- Lecture 13 - Two stage miller compensated opamp
- Lecture 14 - Two stage miller compensated opamp
- Lecture 15 - Two and three stage miller compensated opamps; Feedforward compensated opamp
- Lecture 16 - Feedforward compensated opamp
- Lecture 17 - Feedforward compensated opamp
- Lecture 18 - Feedforward compensated opamp; typical opamp data sheet
- Lecture 19 - Opamp offset and CMRR; Transimpedance amplifier using an opamp
- Lecture 20 - Components available in a CMOS process
- Lecture 21 - MOS transistors-basics
- Lecture 22 - MOS transistors-parasitics, mismatch
- Lecture 23 - MOS transistors-mismatch, speed
- Lecture 24 - Noise in resistors
- Lecture 25 - Noise in MOS transistors; Input and output referred noise
- Lecture 26 - Noise scaling; Basic amplifier stages-Common source, common gate
- Lecture 27 - Basic amplifier stages-Common drain; Frequency response of amplifiers
- Lecture 28 - Common source amplifier frequency response; Differential amplifier
- Lecture 29 - Differential and common mode half circuits; Differential pair with active load

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- Lecture 30 - Differential pair with current mirror load
- Lecture 31 - Single stage opamp characteristics
- Lecture 32 - Opamp with single and dual supplies; Single stage opamp tradeoffs
- Lecture 33 - Telescopic cascode opamp
- Lecture 34 - Telescopic cascode opamp; Folded cascode opamp
- Lecture 35 - Folded cascode opamp
- Lecture 36 - Two stage opamp
- Lecture 37 - Two stage opamp; Three stage and triple cascode opamps
- Lecture 38 - Common mode rejection ratio; Example
- Lecture 39 - Fully differential circuits
- Lecture 40 - Fully differential single stage opamp
- Lecture 41 - Common mode feedback
- Lecture 42 - Fully differential single stage opamp
- Lecture 43 - Fully differential two stage opamp; Fully differential versus pseudo-differential
- Lecture 44 - Circuit simulators and analyses
- Lecture 45 - Phase locked loop as frequency multiplier
- Lecture 46 - Phase domain model
- Lecture 47 - Type I PLL transfer function and reference feedthrough
- Lecture 48 - Type II PLL
- Lecture 49 - Type II PLL transfer functions; Implementation
- Lecture 50 - Type II PLL-extra poles; Random noise in a PLL
- Lecture 51 - Oscillator phase noise
- Lecture 52 - PLL phase noise; LC and ring Oscillators
- Lecture 53 - Generating PTAT and constant MOS gm bias currents
- Lecture 54 - Reducing supply sensitivity; Bandgap voltage reference
- Lecture 55 - Fractional bandgap reference; Low dropout regulator
- Lecture 56 - Low dropout regulators; Continuous-time active filters
- Lecture 57 - Continuous-time active filters
- Lecture 58 - Continuous-time active filters
- Lecture 59 - Discrete-time active filters
- Lecture 60 - Transistor sizing in practice; Course summary

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

NPTEL Video Course - Electronics and Communication Engineering - Coding Theory

Subject Co-ordinator - Dr. Andrew Thangaraj

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to Linear Block Codes
- Lecture 2 - Properties of Linear Block Codes
- Lecture 3 - Dual of Linear Block Codes
- Lecture 4 - Minimum Distance of Codes
- Lecture 5 - Operations on Codes
- Lecture 6 - Bounds on Code Parameters
- Lecture 7 - Optimal Decoders
- Lecture 8 - Syndrome Decoder, Basics of Finite Fields
- Lecture 9 - Constructions of Finite Fields
- Lecture 10 - Computations in Finite Fields
- Lecture 11 - Codes over Finite Fields, Minimal Polynomials
- Lecture 12 - BCH Codes
- Lecture 13 - BCH and RS Codes I
- Lecture 14 - BCH and RS Codes II
- Lecture 15 - Decoding BCH Codes
- Lecture 16 - Decoding RS Codes
- Lecture 17 - Coded Modulation and Soft Decision Decoding
- Lecture 18 - Optimal Decoders for BPSK and AWGN
- Lecture 19 - Bitwise Map Decoder for BPSK over AWGN
- Lecture 20 - Bitwise Map Decoder from the Dual Code
- Lecture 21 - Simulating Coded Modulation
- Lecture 22 - Union Bound, Introduction to LDPC Codes
- Lecture 23 - LDPC Codes
- Lecture 24 - Message Passing, Density Evolution Analysis
- Lecture 25 - Thresholds of LDPC Codes
- Lecture 26 - Irregular LDPC Codes
- Lecture 27 - Optimized Irregular LDPC Codes, Soft Message Passing Decoders
- Lecture 28 - Density Evolution for Soft Message Passing Decoding of LDPC Codes
- Lecture 29 - LDPC Codes in Practice

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

- Lecture 30 - Introduction to Convolutional Codes
- Lecture 31 - Viterbi Decoding of Convolutional Codes
- Lecture 32 - Union Bound, Recursive Convolutional Encoders
- Lecture 33 - Convolutional Codes in Practice
- Lecture 34 - BCJR Decoder
- Lecture 35 - BCJR & Max-Log-MAP Decoder, Introduction to Turbo Codes
- Lecture 36 - Turbo Decoder
- Lecture 37 - Turbo Codes in Practice
- Lecture 38 - Modern Codes

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

NPTEL Video Course - Electronics and Communication Engineering - Semiconductor Device Modeling

Subject Co-ordinator - Prof. S. Karmalkar

Co-ordinating Institute - IIT - Madras

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

Lecture 1
Lecture 2
Lecture 3
Lecture 4
Lecture 5
Lecture 6
Lecture 7
Lecture 8
Lecture 9
Lecture 10
Lecture 11
Lecture 12
Lecture 13
Lecture 14
Lecture 15
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Lecture 17
Lecture 18
Lecture 19
Lecture 20
Lecture 21
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Lecture 29

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Lecture 44
Lecture 45
Lecture 46

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

NPTEL Video Course - Electronics and Communication Engineering - VLSI Data Conversion Circuits

Subject Co-ordinator - Dr. Shanthi Pavan

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to Data Conversion
Lecture 2 - Sampling-1
Lecture 3 - Sampling-2
Lecture 4 - Nonidealities in Samples
Lecture 5 - Noise due to Sampling
Lecture 6 - Distortion in a Sampling Switch
Lecture 7 - Gate Boosted Switches-1
Lecture 8 - Gate Boosted Switches-2
Lecture 9 - Charge Injection
Lecture 10 - S/H Characterization-1
Lecture 11 - S/H Characterization-2
Lecture 12 - FFTs and Leakage
Lecture 13 - Spectral Windows-1
Lecture 14 - Spectral Windows-2
Lecture 15 - ADC/DAC Definition
Lecture 16 - Quantization Noise-1
Lecture 17 - Quantization Noise-2
Lecture 18 - Over Sampling and Noise Shaping
Lecture 19 - Delta-Sigma Modulation-1
Lecture 20 - Delta-Sigma Modulation-2
Lecture 21 - Linearized Analysis
Lecture 22 - Stability of Delta Sigma Modulators
Lecture 23 - High Order DSMs
Lecture 24 - NTF Design and Tradeoffs
Lecture 25 - Single bit Modulators
Lecture 26 - Loop Filter Architectures
Lecture 27 - Continuous-time Delta Sigma Modulation
Lecture 28 - Implicit Antialiasing
Lecture 29 - Modulators with NRZ and Impulsive DACs

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- Lecture 30 - High Order CTDSMs
- Lecture 31 - CTDM Design
- Lecture 32 - Excess Loop Delay (ELD)
- Lecture 33 - ELD Compensation
- Lecture 34 - Effect of Clock Jitter on CTDSMs-1
- Lecture 35 - Effect of Clock Jitter on CTDSMs-2
- Lecture 36 - Dynamic Range Scaling
- Lecture 37 - Simulation of CTDSMs
- Lecture 38 - Integrator Design-1
- Lecture 39 - Integrator Design-2
- Lecture 40 - Flash ADC Design
- Lecture 41 - Latches and Metastability
- Lecture 42 - Offset in a Latch-1
- Lecture 43 - Offset in a Latch-2 Auto Zeroing
- Lecture 44 - Auto Zeroing-2
- Lecture 45 - Auto Zeroing-3
- Lecture 46 - Auto Zeroing in flash ADCs
- Lecture 47 - Flash ADCs Case Study
- Lecture 48 - Flash ADC Case Study
- Lecture 49 - Flash ADC in a Delta Sigma Loop
- Lecture 50 - DAC Basics
- Lecture 51 - Binary and Thermometer DACs
- Lecture 52 - Segmented DACs
- Lecture 53 - Optimal DAC Segmentation
- Lecture 54 - DAC Nonlinearities
- Lecture 55 - Current Steering DACs-1
- Lecture 56 - Current Steering DACs-2
- Lecture 57 - DAC Mismatches in DSMS
- Lecture 58 - Calibration and Randomization
- Lecture 59 - Dynamic Element Matching-1
- Lecture 60 - Dynamic Element Matching-2

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

NPTEL Video Course - Electronics and Communication Engineering - Digital Circuits and Systems

Subject Co-ordinator - Prof. S. Srinivasan

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction To Digital Circuits
Lecture 2 - Introduction To Digital Circuits
Lecture 3 - Combinational Logic Basics
Lecture 4 - Combinational Circuits
Lecture 5 - Logic Simplification
Lecture 6 - Karnaugh Maps And Implicants
Lecture 7 - Logic Minimization Using Karnaugh Maps
Lecture 8 - Karnaugh Map Minimization Using Maxterms
Lecture 9 - Code Converters
Lecture 10 - Parity Generators And Display Decoder
Lecture 11 - Arithmetic Circuits
Lecture 12 - Carry Look Ahead Adders
Lecture 13 - Subtractors
Lecture 14 - 2's Complement Subtractor and BCD Adder
Lecture 15 - Array Multiplier
Lecture 16 - Introduction to Sequential Circuits
Lecture 17 - S-R, J-K and D Flip Flops
Lecture 18 - J-K and T Flip Flops
Lecture 19 - Triggering Mechanisms of Flip Flops and Counters
Lecture 20 - Up/Down Counters
Lecture 21 - Shift Registers
Lecture 22 - Application of shift Registers
Lecture 23 - State Machines
Lecture 24 - Design of Synchronous Sequential Circuits
Lecture 25 - Design using J-K Flip Flop
Lecture 26 - Mealy and Moore Circuits
Lecture 27 - Pattern Detector
Lecture 28 - MSI and LSI Based Design
Lecture 29 - Multiplexer Based Design

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- Lecture 30 - Encoders and Decoders
- Lecture 31 - Programmable Logic Devices
- Lecture 32 - Design using Programmable Logic Devices
- Lecture 33 - Design using Programmable Logic Devices (Continued)
- Lecture 34 - MSI and LSI based Implementation of Sequential Circuits
- Lecture 35 - MSI and LSI based Implementation of Sequential Circuits (Continued)
- Lecture 36 - Design of circuits using MSI sequential blocks
- Lecture 37 - System Design Example
- Lecture 38 - System Design Example (Continued)
- Lecture 39 - System Design using the concept of controllers
- Lecture 40 - System Design using the concept of controllers (Continued)

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

NPTEL Video Course - Electronics and Communication Engineering - Electronics for Analog Signal Processing - I

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 - Introduction
- Lecture 2 - Diode
- Lecture 3 - Diode characteristics
- Lecture 4 - Rectifier
- Lecture 5 - Voltage Multiplier
- Lecture 6 - Full Wave Rectifier and Peak Detector
- Lecture 7 - Diode as a GATE
- Lecture 8 - Analog GATE
- Lecture 9 - Small Signal Analysis of Diode Circuit
- Lecture 10 - Zener Regulator and Voltage Regulator
- Lecture 11 - Varactor Diode
- Lecture 12 - Amplifiers
- Lecture 13 - Cascading of Amplifiers
- Lecture 14 - Cascading of Amplifiers
- Lecture 15 - h and g Parameters
- Lecture 16 - Two Port Analysis
- Lecture 17 - Amplifier Applications
- Lecture 18 - Frequency Limitations Of An Amplifier
- Lecture 19 - Distortion In Amplifiers
- Lecture 20 - Bipolar Junction Transistor
- Lecture 21 - Transistor (BJT) Inverter
- Lecture 22 - Transistor Biasing
- Lecture 23 - Stable Way of Biasing
- Lecture 24 - Common Emitter Amplifiers
- Lecture 25 - Transistor Biasing Using Single Supply
- Lecture 26 - Metal Oxide Semiconductor
- Lecture 27 - Construction of a MOSFET
- Lecture 28 - Varieties of MOSFETS and JFETS
- Lecture 29 - Characteristics of MOSFET

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

- Lecture 30 - Cascading Amplifiers
- Lecture 31 - Cascading (Direct Coupling)
- Lecture 32 - The Differential Amplifiers
- Lecture 33 - BJT Differential Amplifiers
- Lecture 34 - MOSFET Differential Amplifiers
- Lecture 35 - Cascading Differential Amplifiers
- Lecture 36 - Current Source and Current Sink
- Lecture 37 - NMOS Inverters and CMOS Inverters
- Lecture 38 - Active Components used in Electronics

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

NPTEL Video Course - Electronics and Communication Engineering - Electronics for Analog Signal Processing - I

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 - Feedback Theory
- Lecture 2 - Negative Feedback
- Lecture 3 - Negative Feedback
- Lecture 4 - Y-Feedback
- Lecture 5 - h and g Negative Feedback
- Lecture 6 - g Feedback with Mosfet
- Lecture 7 - Operational Amplifier in Negative Feedback
- Lecture 8 - Operational Amplifier in Negative Feedback
- Lecture 9 - Positive Feedback (Regenerative)
- Lecture 10 - Experimental Demonstration
- Lecture 11 - Instrumentation Amplifiers
- Lecture 12 - Active Filters
- Lecture 13 - Simulation of Harmonic Oscillators
- Lecture 14 - Oscillators
- Lecture 15 - Oscillators
- Lecture 16 - Frequency Compensation in Negative Feedback
- Lecture 17 - Frequency Compensation
- Lecture 18 - Wideband (video) Amplifiers
- Lecture 19 - Wideband Amplifiers
- Lecture 20 - ICs For Video And Tuned Amplifier Applications
- Lecture 21 - Power Amplifier
- Lecture 22 - Power Amplifier
- Lecture 23 - Class B and C Power Amplifiers
- Lecture 24 - Class-B Power Amplifier Load and Drive
- Lecture 25 - Control Circuits
- Lecture 26 - Voltage Regulators
- Lecture 27 - Voltage Regulators
- Lecture 28 - Voltage Regulators
- Lecture 29 - Convertors

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

- Lecture 30 - Analog Multipliers (Modems & Mixers)
- Lecture 31 - Log-Antilog Multipliers
- Lecture 32 - Multipliers
- Lecture 33 - Multipliers
- Lecture 34 - AGC/AVC
- Lecture 35 - AGC/AVC
- Lecture 36 - Experimental Demonstration
- Lecture 37 - PLL (Phase Locked Loop)
- Lecture 38 - PLL (Phase Locked Loop)
- Lecture 39 - Lock Range Capture Range and FSK and FM

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

NPTEL Video Course - Electronics and Communication Engineering - High Speed Devices and Circuits

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

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to Basic concepts
- Lecture 2 - Requirements for high speed circuits, devices and materials
- Lecture 3 - Classification and properties of semiconductor devices
- Lecture 4 - Ternary compound semiconductors and their applications
- Lecture 5 - Ternary compound semiconductors and their applications (Continued.)
- Lecture 6 - Crystal structures in GaAs
- Lecture 7 - Dopants and impurities in GaAs and InP
- Lecture 8 - Brief Overview of GaAs Technology for High Speed Devices
- Lecture 9 - Epitaxial Techniques for GaAs and high speed devices
- Lecture 10 - MBE and LPE for GaAs Epitaxy
- Lecture 11 - GaAs and InP devices for Microelectronics
- Lecture 12 - Metal Semiconductor contacts for MESFET
- Lecture 13 - Metal Semiconductor contacts for MESFET (Continued.)
- Lecture 14 - Metal Semiconductor contacts for MESFET (Continued.)
- Lecture 15 - Ohmic contacts on semiconductors
- Lecture 16 - Fermi level pinning, I V characteristics of Schottky Barrier Diodes
- Lecture 17 - Schottky Barrier Diodes I V characteristics of Non idealities -1
- Lecture 18 - Schottky Barrier Diodes I V characteristics of Non idealities -1
- Lecture 19 - Causes of Non idealities in the Schottky Barrier Diodes (I V characteristics)
- Lecture 20 - MESFET operations and I V characteristics
- Lecture 21 - MESFET I V characteristics Shockley's Model
- Lecture 22 - MESFET Shockley's Model and velocity saturation effect
- Lecture 23 - MESFET velocity saturation effect on drain current saturation
- Lecture 24 - MESFET
- Lecture 25 - MESFET
- Lecture 26 - MESFET
- Lecture 27 - MESFET
- Lecture 28 - MESFET
- Lecture 29 - Self Aligned MESFET SAINT Threshold Voltage and Sub Threshold current

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

- Lecture 30 - Hetero junctions
- Lecture 31 - Hetero junctions and high electron Mobility Transistor (HEMT)
- Lecture 32 - Hetero junctions and high electron Mobility Transistor (HEMT) (Continued.)
- Lecture 33 - High Electron Mobility Transistor
- Lecture 34 - HEMT off voltage, I-V characteristics and trans conductance
- Lecture 35 - I-V characteristics and trans conductance and optimization
- Lecture 36 - Indium phosphide based HEMT
- Lecture 37 - Pseudomorphic HEMT and Hetrojunction Bipolar Transistors
- Lecture 38 - Hetero junction Bipolar Transistors (HBT)
- Lecture 39 - Hetero junction Bipolar Transistors (HBT) (Continued.)
- Lecture 40 - Hetero junction Bipolar Transistors (HBT) (Continued.)
- Lecture 41 - Hetero junction Bipolar Transistors (HBT) (Continued.)

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

NPTEL Video Course - Electronics and Communication Engineering - Solid State Devices

Subject Co-ordinator - Prof. S. Karmalkar

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction on Solid State Devices
- Lecture 2 - Evolution and Uniqueness of Semiconductor
- Lecture 3 - Equilibrium Carrier Concentration
- Lecture 4 - Equilibrium Carrier Concentration
- Lecture 5 - Equilibrium Carrier Concentration
- Lecture 6 - Equilibrium Carrier Concentration
- Lecture 7 - Equilibrium Carrier Concentration
- Lecture 8 - Equilibrium Carrier Concentration
- Lecture 9 - Equilibrium Carrier Concentration
- Lecture 10 - Equilibrium Carrier Concentration
- Lecture 11 - Equilibrium Carrier Concentration
- Lecture 12 - Carrier Transport
- Lecture 13 - Carrier Transport (Continued.)
- Lecture 14 - Carrier Transport (Continued.)
- Lecture 15 - Excess Carriers
- Lecture 16 - Excess Carriers (Continued.)
- Lecture 17 - Procedure for Device Analysis
- Lecture 18 - Procedure for Device Analysis (Continued.)
- Lecture 19 - PN Junction
- Lecture 20 - PN Junction (Continued.)
- Lecture 21 - PN Junction (Continued.)
- Lecture 22 - PN Junction (Continued.)
- Lecture 23 - PN Junction (Continued.)
- Lecture 24 - PN Junction (Continued.)
- Lecture 25 - PN Junction (Continued.)
- Lecture 26 - Bipolar Junction Transistor
- Lecture 27 - Bipolar Junction Transistor (Continued.)
- Lecture 28 - Bipolar Junction Transistor (Continued.)
- Lecture 29 - Bipolar Junction Transistor (Continued.)

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

- Lecture 30 - Bipolar Junction Transistor (Continued.)
- Lecture 31 - Bipolar Junction Transistor (Continued.)
- Lecture 32 - Bipolar Junction Transistor (Continued.)
- Lecture 33 - Metal-Oxide-Semiconductor (MOS) Junction
- Lecture 34 - Metal-Oxide-Semiconductor (MOS) Junction (Continued.)
- Lecture 35 - Metal-Oxide-Semiconductor (MOS) Junction (Continued.)
- Lecture 36 - Metal-Oxide-Semiconductor (MOS) Junction (Continued.)
- Lecture 37 - Metal-Oxide-Semiconductor (MOS) Junction (Continued.)
- Lecture 38 - MOS Field Effect Transistor
- Lecture 39 - MOS Field Effect Transistor (Continued.)
- Lecture 40 - MOS Field Effect Transistor (Continued.)
- Lecture 41 - MOS Field Effect Transistor (Continued.)
- Lecture 42 - The Final Lecture - Conclusion

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

NPTEL Video Course - Electronics and Communication Engineering - VLSI Circuits

Subject Co-ordinator - Prof. S. Srinivasan

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to VLSI Design
- Lecture 2 - Combinational Circuit Design
- Lecture 3 - Programmable Logic Devices
- Lecture 4 - Programmable Array Logic
- Lecture 5 - Review of Flip-Flops
- Lecture 6 - Sequential Circuits
- Lecture 7 - Sequential Circuit Design
- Lecture 8 - MSI Implementation of Sequential Circuits
- Lecture 9 - Design of Sequential Circuits using One Hot Controller
- Lecture 10 - Verilog Modeling of Combinational Circuits
- Lecture 11 - Modeling of Verilog Sequential Circuits - Core Statements
- Lecture 12 - Modeling of Verilog Sequential Circuits - Core Statements(Continued.)
- Lecture 13 - RTL Coding Guidelines
- Lecture 14 - Coding Organization - Complete Realization
- Lecture 15 - Coding Organization - Complete Realization (Continued.)
- Lecture 16 - Writing a Test Bench
- Lecture 17 - System Design using ASM Chart
- Lecture 18 - Example of System Design using ASM Chart
- Lecture 19 - Examples of System Design using Sequential Circuits
- Lecture 20 - Examples of System Design using Sequential Circuits (Continued.)
- Lecture 21 - Microprogrammed Design
- Lecture 22 - Microprogrammed Design (Continued.)
- Lecture 23 - Design Flow of VLSI Circuits
- Lecture 24 - Simulation of Combinational Circuits
- Lecture 25 - Simulation of Combinational and Sequential Circuits
- Lecture 26 - Analysis of Waveforms using Modelsim
- Lecture 27 - Analysis of Waveforms using Modelsim (Continued.)
- Lecture 28 - ModelSim Simulation Tool
- Lecture 29 - Synthesis Tool

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

- Lecture 30 - Synthesis Tool (Continued.)
- Lecture 31 - Synplify Tool - Schematic Circuit Diagram View
- Lecture 32 - Technology View using Synplify Tool
- Lecture 33 - Synopsys Full and Parallel Cases
- Lecture 34 - Xilinx Place & Route Tool
- Lecture 35 - Xilinx Place & Route Tool (Continued.)
- Lecture 36 - PCI Arbiter Design using ASM Chart
- Lecture 37 - Design of Memories - ROM
- Lecture 38 - Design of Memories- RAM
- Lecture 39 - Design of External RAM
- Lecture 40 - Design of Arithmetic Circuits
- Lecture 41 - Design of Arithmetic Circuits (Continued.)
- Lecture 42 - Design of Arithmetic Circuits (Continued.)
- Lecture 43 - System Design Examples
- Lecture 44 - System Design Examples (Continued.)
- Lecture 45 - System Design Examples (Continued.)
- Lecture 46 - System Design Examples (Continued.)
- Lecture 47 - System Design Examples (Continued.)
- Lecture 48 - System Design Examples using FPGA Board
- Lecture 49 - System Design Examples using FPGA Board (Continued.)
- Lecture 50 - Advanced Features of Xilinx Project Navigator
- Lecture 51 - System Design Examples using FPGA Board (Continued.)
- Lecture 52 - System Design Examples using FPGA Board (Continued.)
- Lecture 53 - System Design Examples using FPGA Board (Continued.)
- Lecture 54 - System Design Examples using FPGA Board (Continued.)
- Lecture 55 - Project Design Suggested for FPGA/ASIC Implementations

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

NPTEL Video Course - Electronics and Communication Engineering - VLSI Technology

Subject Co-ordinator - Dr. Nandita Dasgupta

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction on VLSI Design
- Lecture 2 - Bipolar Junction Transistor Fabrication
- Lecture 3 - MOSFET Fabrication for IC
- Lecture 4 - Crystal Structure of Si
- Lecture 5 - Crystal Structure (Continued.)
- Lecture 6 - Defects in Crystal + Crystal growth
- Lecture 7 - Crystal growth Contd + Epitaxy I
- Lecture 8 - Epitaxy II - Vapour phase Epitaxy
- Lecture 9 - Epitaxy III - Doping during Epitaxy
- Lecture 10 - Molecular beam Epitaxy
- Lecture 11 - Oxidation I - Kinetics of Oxidation
- Lecture 12 - Oxidation II - Oxidation rate constants
- Lecture 13 - Oxidation III - Dopant Redistribution
- Lecture 14 - Oxidation IV - Oxide Charges
- Lecture 15 - Diffusion I - Theory of Diffusion
- Lecture 16 - Diffusion II - Infinite Source
- Lecture 17 - Diffusion III - Actual Doping Profiles
- Lecture 18 - Diffusion IV - Diffusion Systems
- Lecture 19 - Ion - Implantation Process
- Lecture 20 - Ion - Implantation Process
- Lecture 21 - Annealing of Damages
- Lecture 22 - Masking during Implantation
- Lecture 23 - Lithography - I
- Lecture 24 - Lithography - II
- Lecture 25 - Wet Chemical Etching
- Lecture 26 - Dry Etching
- Lecture 27 - Plasma Etching Systems
- Lecture 28 - Etching of Si, SiO₂, SiN and other materials
- Lecture 29 - Plasma Deposition Process

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

- Lecture 30 - Metallization - I
- Lecture 31 - Problems in Aluminium Metal contacts
- Lecture 32 - IC BJT - From junction isolation to LOCOS
- Lecture 33 - Problems in LOCOS + Trench isolation
- Lecture 34 - More about BJT Fabrication and Realization
- Lecture 35 - Circuits + Transistors in ECL Circuits
- Lecture 36 - MOSFET I - Metal gate vs. Self-aligned Poly-gate
- Lecture 37 - MOSFET II Tailoring of Device Parameters
- Lecture 38 - CMOS Technology
- Lecture 39 - Latch - up in CMOS
- Lecture 40 - BICMOS Technology

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

NPTEL Video Course - Electronics and Communication Engineering - Basic Electrical 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; Current and Voltage; Kirchhoff's Current and Voltage laws

Lecture 2 - Electrical circuit elements

Lecture 3 - Elements in series and parallel; Superposition in linear circuits

Lecture 4 - Controlled sources; Determining the characteristics of a two terminal element; Realizing a resist

Lecture 5 - Nodal analysis of a network with conductances and current sources; Setting up the equations; Cond

Lecture 6 - Circuit analysis; Number of KCL and KVL equations in a circuit; Nodal analysis of a network with

Lecture 7 - Nodal analysis with voltage sources and controlled sources; Brief introduction to modified nodal

Lecture 8 - Mesh analysis of a circuit with resistors and voltage sources; Comparison with nodal analysis; Me

Lecture 9 - Choice of nodal versus mesh analysis; Circuit theorems

Lecture 10 - Thevenin and Norton (theorem and) equivalent circuits; Power conservation in a circuit

Lecture 11 - Tellegen's theorem; Reciprocity theorem

Lecture 12 - Compensation Theorem; Two ports

Lecture 13 - Two port parameters-y parameters

Lecture 14 - Two port parameters(z, h, and g); Reciprocal two ports

Lecture 15 - Opamp, ideal opamp circuits, non-inverting and inverting amplifiers; Ensuring that the opamp has

Lecture 16 - RC circuit natural response; First order differential equation

Lecture 17 - RC (first-order) circuit, complete response with step inputs; Transient(natural) and steady stat

Lecture 18 - Step response of RC circuit with loops of voltage sources and capacitors; RL circuits; RLC circu

Lecture 19 - Second order(RLC circuit) natural response; Series and prallel RLC circuits; Differential equati

Lecture 20 - General formulation of second order(RLC circuit) natural response; Natural frequency and damping

Lecture 21 - Sinusoidal steady state response of RC and RLC circuits

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Basic Electrical Circuits

Subject Co-ordinator - Dr. Nagendra Krishnapura

Co-ordinating Institute - IIT - Madras

- Lecture 1 - Preliminaries
- Lecture 2 - Current
- Lecture 3 - Voltage
- Lecture 4 - Electrical elements and circuits
- Lecture 5 - Kirchhoff's current law (KCL)
- Lecture 6 - Kirchhoff's Voltage law (KVL)
- Lecture 7 - Voltage Source
- Lecture 8 - Current Source
- Lecture 9 - Resistor
- Lecture 10 - Capacitor
- Lecture 11 - Inductor
- Lecture 12 - Mutual Inductor
- Lecture 13 - Linearity of Elements
- Lecture 14 - Solutions to the assignment on units 1 and 2
- Lecture 15 - Series connection-Voltage sources in series
- Lecture 16 - Series connection of R, L, C, current source
- Lecture 17 - Elements in parallel
- Lecture 18 - Current source in series with an element; Voltage source in parallel with an element
- Lecture 19 - Extreme cases
- Lecture 20 - Summary
- Lecture 21 - Voltage controlled voltage source (VCVS)
- Lecture 22 - Voltage controlled current source (VCCS)
- Lecture 23 - Current controlled voltage source (CCVS)
- Lecture 24 - Current controlled current source (CCCS)
- Lecture 25 - Realizing a resistance using a VCCS or CCCS
- Lecture 26 - Scaling an element's value using controlled sources
- Lecture 27 - Example calculation
- Lecture 28 - Solution to the assignment on units 3 and 4
- Lecture 29 - Power and energy absorbed by electrical elements
- Lecture 30 - Power and energy in a resistor
- Lecture 31 - Power and energy in a capacitor
- Lecture 32 - Power and energy in an inductor
- Lecture 33 - Power and energy in a voltage source

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

- Lecture 34 - Power and energy in a current source
- Lecture 35 - Goals of circuit analysis
- Lecture 36 - Number of independent KCL equations
- Lecture 37 - Number of independent KVL equations and branch relationships
- Lecture 38 - Analysis of circuits with a single independent source
- Lecture 39 - Analysis of circuits with multiple independent sources using superposition
- Lecture 40 - Superposition
- Lecture 41 - Solution to the assignment on units 5 and 6
- Lecture 42 - What is nodal analysis
- Lecture 43 - Setting up nodal analysis equations
- Lecture 44 - Structure of the conductance matrix
- Lecture 45 - How elements appear in the nodal analysis formulation
- Lecture 46 - Completely solving the circuit starting from nodal analysis
- Lecture 47 - Nodal analysis example
- Lecture 48 - Matrix inversion basics
- Lecture 49 - Nodal analysis with independent voltage sources
- Lecture 50 - Supernode for nodal analysis with independent voltage sources
- Lecture 51 - Nodal analysis with VCCS
- Lecture 52 - Nodal analysis with VCVS
- Lecture 53 - Nodal analysis with CCCS
- Lecture 54 - Nodal analysis with CVCVS
- Lecture 55 - Nodal analysis summary
- Lecture 56 - Solution to the assignment on units 7 and 8
- Lecture 57 - Planar circuits
- Lecture 58 - Mesh currents and their relationship to branch currents
- Lecture 59 - Mesh analysis
- Lecture 60 - Mesh analysis with independent current sources-Supermesh
- Lecture 61 - Mesh analysis with current controlled voltage sources
- Lecture 62 - Mesh analysis with current controlled current sources
- Lecture 63 - Mesh analysis using voltage controlled sources
- Lecture 64 - Nodal analysis versus Mesh analysis
- Lecture 65 - Superposition theorem
- Lecture 66 - Pushing a voltage source through a node
- Lecture 67 - Splitting a current source
- Lecture 68 - Substitution theorem
- Lecture 69 - Substitution theorem
- Lecture 70 - Substituting a voltage or current source with a resistor

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

NPTEL Video Course - Electronics and Communication Engineering - Advanced Logic Synthesis

Subject Co-ordinator - Mr. Dhiraj Taneja

Co-ordinating Institute - Broadcom - Hyderabad

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

Lecture 1 - MOS Transistor
Lecture 2 - MOS Transistor - Detailed Study
Lecture 3 - Combinational Circuits and layout
Lecture 4 - Delay
Lecture 5 - Sequential Circuits
Lecture 6 - Logical Effort
Lecture 7 - Circuit Families
Lecture 8 - Lab-01
Lecture 9 - Lab-02
Lecture 10 - Lab-03
Lecture 11 - Lab-04
Lecture 12 - Introduction to Synthesis
Lecture 13 - Libraries
Lecture 14 - RTL Coding for Synthesis
Lecture 15 - Reading Design in DC
Lecture 16 - Design Environment
Lecture 17 - Design Constraints
Lecture 18 - Compile Flow and strategies
Lecture 19 - Analysis and Reporting
Lecture 20 - Lab-05
Lecture 21 - Advanced Synthesis Techniques
Lecture 22 - Datapath Extraction Guidelines
Lecture 23 - Power - Methodology and Analysis
Lecture 24 - Lab-06
Lecture 25 - Lab-07
Lecture 26 - Lab-08
Lecture 27 - Lab-09
Lecture 28 - Static Timing Analysis - Concepts and Flow
Lecture 29 - Interconnects and Delay calculation

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

- Lecture 30 - Clock and Exceptions
- Lecture 31 - On Chip Variation
- Lecture 32 - Introduction to Crosstalk
- Lecture 33 - Gaussian / Normal Distribution
- Lecture 34 - Equivalence Checking / Formal Verification

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

NPTEL Video Course - Electronics and Communication Engineering - ARM Based Development

Subject Co-ordinator - Mr. S. Chandramouleeswaran

Co-ordinating Institute - Independent Embedded SW Trainer

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

- Lecture 1 - Types of computer Architectures, ISA's and ARM History
- Lecture 2 - Embedded System Software and Hardware, stack implementation in ARM, Endianness, condition codes
- Lecture 3 - Processor core VS CPU core, ARM7TDMI Interface signals, Memory Interface, Bus Cycle types, Register
- Lecture 4 - Instruction Format, ARM Core Data Flow Model, ARM 3 stage Pipeline, ARM family attribute comparis
- Lecture 5 - ARM 5 stage Pipeline, Pipeline Hazards, Data forwarding - a hardware solution
- Lecture 6 - ARM ISA and Processor Variants, Different Types of Instructions, ARM Instruction set, data proces
- Lecture 7 - Shift Operations, shift Operations using RS lower byte, Immediate value encoding
- Lecture 8 - Dataprocessing Instructions
- Lecture 9 - Addressing Mode-1, Addressing Mode-2
- Lecture 10 - Addressing Mode-2, LDR/STR, Addressing mode-3 with examples
- Lecture 11 - Instruction Timing, Addressing Mode-4 with Examples
- Lecture 12 - Swap Instructions, Swap Register related Instructions, Loading Constants
- Lecture 13 - Program Control Flow, Control Flow Instructions, B & BL instructions, BX instruction
- Lecture 14 - Interrupts and Exceptions, Exception Handlers, Reset Handling
- Lecture 15 - Aborts, software Interrupt Instruction, undefined instruction exception
- Lecture 16 - Interrupt Latency, Multiply Instructions, Instruction set examples
- Lecture 17 - Thumb state, Thumb Programmers model, Thumb Implementation, Thumb Applications
- Lecture 18 - Thumb Instructions, Interrupt processing
- Lecture 19 - Interrupt Handelling schemes, Examples of Interrupt Handlers
- Lecture 20 - Coprocessors
- Lecture 21 - Coprocessor Instructions, data Processing Instruction, data transfers, register transfers
- Lecture 22 - Number representations, floating point representation
- Lecture 23 - Flynn's Taxonomy, SIMD and Vector Processors, Vector Floating Point Processor (VFP), VFP and ARM
- Lecture 24 - Memory Technologies, Need for memory Hierarchy, Hierarchical Memory Organization, Virtual Memory
- Lecture 25 - Cache Memory, Mapping Functions
- Lecture 26 - Cache Design, Unified or split cache, multiple level of caches, ARM cache features, coprocessor
- Lecture 27 - Processes, Memory Map, Protected Systems, ARM systems with MPU, memory Protection Unit (MPU)
- Lecture 28 - Physical Vs Virtual Memory, Paging, Segmentation
- Lecture 29 - MMU Advantage, virtual memory translation, Multitasking with MMU, MMU organization, Tightly coup

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

- Lecture 30 - ARM Development Environment, Arm Procedure Call Standard (APCS),
- Lecture 31 - Example C program
- Lecture 32 - Embedded software Development, Image structure, linker inputs and outputs, memory map, applicati
- Lecture 33 - AMBA Overview, Typical AMAB Based Microcontroller, AHB bus features, AHB Bus transfers, APB bus
- Lecture 34 - DMA, Peripherals, Programming Peripherals in ARM
- Lecture 35 - DMA
- Lecture 36 - Protocols (I2c, SPI), UART, GPIO
- Lecture 37 - ARM ISAs, ARMv5, ARMv6, ARM v7, big.little technology, ARMv8

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

NPTEL Video Course - Electronics and Communication Engineering - Embedded Software Testing

Subject Co-ordinator - Mr. Madhukeshwara H.M

Co-ordinating Institute - HCL

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

- Lecture 1 - Embedded Systems Basics Session 1
- Lecture 2 - Embedded Systems Basics Session 1 (Continued...)
- Lecture 3 - Prerequistics for Embedded Systems Testing
- Lecture 4 - Test Case Designa and procedures
- Lecture 5 - Test Standards
- Lecture 6 - Depicting Levels of Testing
- Lecture 7 - Depicting Levels of Testing (Continued...)
- Lecture 8 - Software Life Cycle
- Lecture 9 - Embeded V-Model Life Cycle
- Lecture 10 - Embedded V-Model Life Cycle (Continued...)
- Lecture 11 - Master Test Planning
- Lecture 12 - Black Box Testing (Continued...)
- Lecture 13 - Black Box Testing (Continued...)
- Lecture 14 - Dynamic Testing
- Lecture 15 - Black Box Testing
- Lecture 16 - (Lecture Missing)
- Lecture 17 - Black Box Testing (Continued...)
- Lecture 18 - Model Based Design Intro.
- Lecture 19 - Dynamic Testing (Continued...)
- Lecture 20 - White Box Testing
- Lecture 21 - White Box Testing (Continued...)
- Lecture 22 - Grey-box testing
- Lecture 23 - Static Testing
- Lecture 24 - Static Analysis
- Lecture 25 - Static Analysis (Continued...)
- Lecture 26 - Static Analysis (Continued...)
- Lecture 27 - Test Metrics
- Lecture 28 - Software Testing Metrics
- Lecture 29 - Integration Test Strategy

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

- Lecture 30 - Integration Tests Environment
- Lecture 31 - Use Case Diagram
- Lecture 32 - Depicting Levels of Testing (Continued...)
- Lecture 33 - Configure Management Elements
- Lecture 34 - SCM Activities
- Lecture 35 - Test Management Tool
- Lecture 36 - SCM Activities (Continued...)
- Lecture 37 - Overview Lecture 1
- Lecture 38 - Unit Testing
- Lecture 39 - Unit Testing (Continued...)
- Lecture 40 - Understading C++
- Lecture 41 - Unit Testing (Continued...)
- Lecture 42 - Level Testing
- Lecture 43 - Identify Test Cases
- Lecture 44 - Test Link Work Flow

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

NPTEL Video Course - Electronics and Communication Engineering - Linux Programming and Scripting

Subject Co-ordinator - Mr. Anand Iyer

Co-ordinating Institute - Calypto Design Systems

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

Lecture 1 - Linux Basics - I
Lecture 2 - Linux Basics - II
Lecture 3 - Linux Basics - III
Lecture 4 - Linux Basics - IV
Lecture 5 - Linux Networking - I
Lecture 6 - Linux Networking - II
Lecture 7 - File Transfer Protocol
Lecture 8 - Domain Name System
Lecture 9 - DNS (Continued...)
Lecture 10 - DFS
Lecture 11 - AFS and NIS
Lecture 12 - PERL 1
Lecture 13 - PERL 2
Lecture 14 - PERL 3
Lecture 15 - PERL 4
Lecture 16 - PERL 5
Lecture 17 - PERL 6
Lecture 18 - PERL 7
Lecture 19 - PERL 8
Lecture 20 - PERL 9
Lecture 21 - Using sort
Lecture 22 - PERL 10
Lecture 23 - Programming Using Tcl/Tk - I
Lecture 24 - Programming Using Tcl/Tk - II
Lecture 25 - Programming Using Tcl/Tk - III
Lecture 26 - More about Procedures
Lecture 27 - TCP, Ports and Sockets
Lecture 28 - I/O and Processes
Lecture 29 - Bindings

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

- Lecture 30 - Programming Using Tcl/Tk - IV
- Lecture 31 - Furniture Arranger
- Lecture 32 - Bindtags
- Lecture 33 - Tcl in Synopsys Tools
- Lecture 34 - Python Programming
- Lecture 35 - Scope
- Lecture 36 - Iteration
- Lecture 37 - More about Regexprs
- Lecture 38 - Advanced Functions
- Lecture 39 - Exception Handling
- Lecture 40 - Examples of file Parsing
- Lecture 41 - Program on If Statement
- Lecture 42 - Program on Lists
- Lecture 43 - Makefiles

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Digital Circuits and Systems

Subject Co-ordinator - Prof. Shankar Balachandran

Co-ordinating Institute - IIT - Madras

- Lecture 1 - Introduction
- Lecture 2 - Basic Boolean Logic
- Lecture 3 - Boolean Theorems
- Lecture 4 - Definitions, SoP and Pos
- Lecture 5 - Algebraic Minimization Examples
- Lecture 6 - Introduction to Verilog
- Lecture 7 - Universality, Rearranging Truth Tables
- Lecture 8 - Karnaugh Maps
- Lecture 9 - K-Map Minimization
- Lecture 10 - K-Map with Don't cares
- Lecture 11 - Multiple Output Functions
- Lecture 12 - Number Systems
- Lecture 13 - Encoders and Decoders
- Lecture 14 - Multiplexers
- Lecture 15 - Multiplexer based Circuit Design
- Lecture 16 - Verilog
- Lecture 17 - Compiling and Running Verilog - A Demonstration
- Lecture 18 - Sequential Elements
- Lecture 19 - Gated Latches
- Lecture 20 - Flipflops
- Lecture 21 - Verilog - Assign Statement and Instantiation
- Lecture 22 - Sequential Circuits
- Lecture 23 - CMOS+Electrical Properties
- Lecture 24 - Delays
- Lecture 25 - Sequential Element Delays
- Lecture 26 - More Sequential Circuits
- Lecture 27 - Introduction to State Machines
- Lecture 28 - Always Statement in Verilog
- Lecture 29 - Sequential Logic Synthesis
- Lecture 30 - FSM Design Problems
- Lecture 31 - State Minimization
- Lecture 32 - State Assignment
- Lecture 33 - Timing Sequential Circuits

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- Lecture 34 - Verilog Styles + Sequential Elements
- Lecture 35 - GCD Algorithm
- Lecture 36 - GCD Machines Datapath
- Lecture 37 - GCD State Machine
- Lecture 38 - GCD Top Level Module
- Lecture 39 - Datapath in Verilog
- Lecture 40 - Datapath Elements in Verilog
- Lecture 41 - FSM in Verilog
- Lecture 42 - Putting it all together
- Lecture 43 - Pipelining
- Lecture 44 - K-stage Pipeline
- Lecture 45 - Interleaving and Parallelism
- Lecture 46 - Blocking and Non-blocking Statements
- Lecture 47 - Modeling Circuits with Pipelining

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Networks and Systems

Subject Co-ordinator - Prof. V.G.K. Murti, Mr. C. S. Ramalingam, Dr. Andrew Thangaraj

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Functions in circuits - constant and sinusoidal functions

Lecture 2 - Functions in circuits - Exponential function

Lecture 3 - Complex numbers and other topics

Lecture 4 - Systems, Signals, Networks

Lecture 5 - Representation and Classification of Systems

Lecture 6 - Linear systems

Lecture 7 - Time-invariance and causality

Lecture 8 - Signals, Elementary continuous signals

Lecture 9 - Complex frequencies of signals

Lecture 10 - Discontinuous signals - step, ramp

Lecture 11 - Unit impulse or delta function

Lecture 12 - Basic discrete-time signals

Lecture 13 - Examples of Signals

Lecture 14 - Introduction to Systems, Complementary Functions, Initial Conditions

Lecture 15 - Special initial conditions

Lecture 16 - Characterization of a linear system

Lecture 17 - Impulse Response

Lecture 18 - Evaluating the Convolution Integral

Lecture 19 - Worked-out Problems

Lecture 20 - Introduction and Motivation

Lecture 21 - Evaluating Fourier series coefficients

Lecture 22 - Symmetry conditions

Lecture 23 - Symmetry Condition Examples

Lecture 24 - Application to Network Analysis

Lecture 25 - Exponential Fourier Series

Lecture 26 - Frequency Spectrum

Lecture 27 - Examples

Lecture 28 - Signal Power and Related Ideas

Lecture 29 - Convergence of Fourier Series

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- Lecture 30 - Week 1 Solutions
- Lecture 31 - Hints for Assignment 2
- Lecture 32 - Hints for Assignment 3
- Lecture 33 - Additional Properties of Fourier Series
- Lecture 34 - Exercises on Fourier Series
- Lecture 35 - Lab Demo
- Lecture 36 - From Fourier Series to Fourier Transform
- Lecture 37 - Continuous Time Fourier Transform
- Lecture 38 - Fourier Transform Examples
- Lecture 39 - Examples and Some Properties of Fourier Transform
- Lecture 40 - Properties of Fourier Transform (contd.)
- Lecture 41 - More Fourier Transform Properties
- Lecture 42 - Energy Considerations
- Lecture 43 - Energy Considerations II
- Lecture 44 - Helpful Relationships for Inverse Fourier Transform
- Lecture 45 - Fourier transform of signals that are not absolutely integrable
- Lecture 46 - Fourier Transform of Periodic Signals, Unit Step and Signum Function
- Lecture 47 - Truncated Sine wave and Convolution properties
- Lecture 48 - Integration in Time domain
- Lecture 49 - Application of continuous-time Fourier transform to system analysis
- Lecture 50 - Comments about transient analysis
- Lecture 51 - Sampling Theorem and Exercises on Fourier Transforms
- Lecture 52 - Introduction to Laplace Transform
- Lecture 53 - Laplace transforms of important functions
- Lecture 54 - Recap, Poles / Zeros and Laplace Transform Notation
- Lecture 55 - Properties
- Lecture 56 - Application and properties of Laplace transform
- Lecture 57 - More properties of Laplace transform
- Lecture 58 - More properties of Laplace transform
- Lecture 59 - Properties
- Lecture 60 - Properties
- Lecture 61 - Complex convolution and periodic functions
- Lecture 62 - Examples of Laplace transform
- Lecture 63 - Laplace transform examples
- Lecture 64 - Inverse Laplace transform
- Lecture 65 - Partial fractions
- Lecture 66 - Inverse Laplace Transform and Contour Integration
- Lecture 67 - Relating Fourier and Laplace Transform
- Lecture 68 - Exercises

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- Lecture 69 - Applications of Laplace transform to network transients
- Lecture 70 - Laplace transform for resistor and system analysis
- Lecture 71 - Laplace transform method for mutual inductance
- Lecture 72 - Mutual Inductance Continued
- Lecture 73 - Examples and Advantages of L-transform
- Lecture 74 - General LTI systems and more about $H(s)$
- Lecture 75 - Many facets of the system function (contd)
- Lecture 76 - Frequency response and stability
- Lecture 77 - Full circuit example
- Lecture 78 - Exercises

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

NPTEL Video Course - Electronics and Communication Engineering - Circuits for Analog System Design

Subject Co-ordinator - Prof. M.K. Gunasekaran

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Transistor Amplifier
- Lecture 2 - Transistor Op-amp and Transistor Based Voltage Regulator
- Lecture 3 - Some applications of transistor - I
- Lecture 4 - Some applications of transistor - II
- Lecture 5 - Transformer design & Heat sink design
- Lecture 6 - Op-amp Based Linear Voltage Regulator
- Lecture 7 - Short circuit protection for linear power supply
- Lecture 8 - Temperature indicator design using Op-amp
- Lecture 9 - On & off Temperature controller design
- Lecture 10 - Proportional Temperature Controller Design
- Lecture 11 - PID - Temperature Controller Design
- Lecture 12 - Heater Drive for Various Temperature Controllers
- Lecture 13 - Short Circuit Protection of Power MOSFET
- Lecture 14 - Error budgeting for temperature Indicator
- Lecture 15 - PID Temperature Controllers with Error Budgeting
- Lecture 16 - Error Budgeting for Constant Current Sources
- Lecture 17 - Error Budgeting for Thermo Couple Amplifier
- Lecture 18 - Error Budgeting for Op amp Circuits
- Lecture 19 - Gain Error Calculation in Op amp Circuits
- Lecture 20 - Input Resistance Calculations for Op amp
- Lecture 21 - Output Resistance Calculations for Op amp
- Lecture 22 - Error Budgeting for Different Circuits
- Lecture 23 - 4-20 mA current Transmitter design
- Lecture 24 - Error budgeting for 4-20mA Current Transmitters
- Lecture 25 - LVDT Based Current Transmitters
- Lecture 26 - Constant Current Source Design
- Lecture 27 - 4-20 MA Based Temperature Transmitter
- Lecture 28 - 3-Wire Current Transmitter
- Lecture 29 - Various Resistance Measurement Techniques

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- Lecture 30 - Ratio Transformer Technique to Measure Resistance and capacitance
- Lecture 31 - Capacitive Sensor Circuit Design Examples
- Lecture 32 - Capacitive Sensor Circuit With High Impedance Amplifier
- Lecture 33 - AC- applications of the Op-Amp and Lock in Amplifier Design
- Lecture 34 - Design of lock in Amplifier Circuit with example
- Lecture 35 - Dual Slopes ADC & Design Examples
- Lecture 36 - Dual Slope ADC and Successor approximation ADC
- Lecture 37 - MC based ADC
- Lecture 38 - Digital to analog Converter design and working, Flash ADC
- Lecture 39 - Flash ADC and ADC Converter errors
- Lecture 40 - Sigma delta ADC working Principle

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

NPTEL Video Course - Electronics and Communication Engineering - Digital System design with PLDs and FPGAs

Subject Co-ordinator - Prof. Kuruvilla Varghese

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Course Contents, Objective
- Lecture 2 - Revision of Prerequisite
- Lecture 3 - Design of Synchronous Sequential Circuits
- Lecture 4 - Analysis of Synchronous Sequential Circuits
- Lecture 5 - Top-down Design
- Lecture 6 - Controller Design
- Lecture 7 - Control algorithm and State diagram
- Lecture 8 - Case study 1
- Lecture 9 - FSM issues 1
- Lecture 10 - FSM Issues 2
- Lecture 11 - FSM Issues 3
- Lecture 12 - FSM Issues 4
- Lecture 13 - FSM Issues 5
- Lecture 14 - Synchronization 1
- Lecture 15 - Synchronization 2
- Lecture 16 - Case study 2
- Lecture 17 - Case study on FPGA Board
- Lecture 18 - Entity, Architecture and Operators
- Lecture 19 - Concurrency, Data flow and Behavioural models
- Lecture 20 - Structural Model, Simulation
- Lecture 21 - Simulating Concurrency
- Lecture 22 - Classes and Data types
- Lecture 23 - Concurrent statements and Sequential statements
- Lecture 24 - Sequential statements and Loops
- Lecture 25 - Modelling flip-flops, Registers
- Lecture 26 - Synthesis of Sequential circuits
- Lecture 27 - Libraries and Packages
- Lecture 28 - Operators, Delay modelling
- Lecture 29 - Delay modelling

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- Lecture 30 - VHDL Examples
- Lecture 31 - VHDL coding of FSM
- Lecture 32 - VHDL Test bench
- Lecture 33 - VHDL Examples, FSM Clock
- Lecture 34 - Evolution of PLDs
- Lecture 35 - Simple PLDs
- Lecture 36 - Simple PLDs
- Lecture 37 - Complex PLDs
- Lecture 38 - FPGA Introduction
- Lecture 39 - FPGA Interconnection, Design Methodology
- Lecture 40 - Xilinx Virtex FPGA's CLB
- Lecture 41 - Xilinx Virtex Resource Mapping, IO Block
- Lecture 42 - Xilinx Virtex Clock Tree
- Lecture 43 - FPGA Configuration
- Lecture 44 - Altera and Actel FPGAs

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

NPTEL Video Course - Electronics and Communication Engineering - Error Correcting Codes

Subject Co-ordinator - Prof. P. Vijay Kumar

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Course Overview & Basics
- Lecture 2 - Example Codes and their Parameters
- Lecture 3 - Mathematical Preliminaries
- Lecture 4 - Subgroups and Equivalence Relations
- Lecture 5 - Cosets, Rings & Fields
- Lecture 6 - Vector Spaces, Linear Independence and Basis
- Lecture 7 - Linear Codes, & Linear independence
- Lecture 8 - Spanning & Basis
- Lecture 9 - The Dual Code
- Lecture 10 - Systematic Generator Matrix
- Lecture 11 - Minimum Distance of a Linear Code
- Lecture 12 - Bounds on the size of a Code
- Lecture 13 - Asymptotic Bounds
- Lecture 14 - Standard Array Decoding
- Lecture 15 - Performance Analysis of the SAD
- Lecture 16 - State and Trellis
- Lecture 17 - The Viterbi Decoder
- Lecture 18 - Catastrophic Error Propagation
- Lecture 19 - Path Enumeration
- Lecture 20 - Viterbi Decoder over the AWGN Channel
- Lecture 21 - Generalized Distributive Law
- Lecture 22 - The MPF Problem
- Lecture 23 - Further Examples of the MPF Problem
- Lecture 24 - Junction Trees
- Lecture 25 - Example of Junction Tree Construction
- Lecture 26 - Message passing on the Junction tree
- Lecture 27 - GDL Approach to Decoding Convolutional Codes
- Lecture 28 - ML Code-Symbol Decoding of the Convolutional Code
- Lecture 29 - LDPC Codes

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- Lecture 30 - LDPC Code Terminology
- Lecture 31 - Gallager Decoding Algorithm A
- Lecture 32 - BP Decoding of LDPC Codes
- Lecture 33 - BP Decoding (Continued)
- Lecture 34 - Density Evolution under BP decoding
- Lecture 35 - Convergence & Concentration Theorem - LDPC Codes
- Lecture 36 - A Construction for Finite Fields
- Lecture 37 - Finite Fields
- Lecture 38 - Deductive Approach to Finite Fields
- Lecture 39 - Subfields of a Finite field
- Lecture 40 - Transform Approach to Cyclic Codes
- Lecture 41 - Estimating the Parameters of a Cyclic Code
- Lecture 42 - Decoding Cyclic Codes

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

NPTEL Video Course - Electronics and Communication Engineering - Nanoelectronics: Devices and Materials

Subject Co-ordinator - Dr. Navakanta Bhat, Prof. K.N. Bhat, Dr. S.A. Shivashankar

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Introduction to Nanoelectronics

Lecture 2 - CMOS Scaling Theory

Lecture 3 - Short Channel Effects

Lecture 4 - Subthreshold Conduction

Lecture 5 - Drain Induced Barrier Lowering

Lecture 6 - Channel and Source / Drain Engineering

Lecture 7 - CMOS Process Flow

Lecture 8 - Gate oxide scaling and reliability

Lecture 9 - High-k gate dielectrics

Lecture 10 - Metal gate transistor

Lecture 11 - Industrial CMOS Technology

Lecture 12 - Ideal MOS C-V Characteristics

Lecture 13 - Effect of non idealities on C-V

Lecture 14 - MOS Parameter Extraction from C-V Characteristics

Lecture 15 - MOS Parameter Extraction from I-V Characteristics

Lecture 16 - MOSFET Analysis, sub-threshold swing ΔS

Lecture 17 - Interface state density effects on ΔS . Short Channel Effects (SCE) and Drain Induced Barrier

Lecture 18 - Velocity Saturation, Ballistic transport, and Velocity Overshoot Effects and Injection Velocity

Lecture 19 - SOI Technology and comparisons with Bulk Silicon CMOS technology

Lecture 20 - SOI MOSFET structures, Partially Depleted (PD) and Fully Depleted (FD) SOI MOSFETs

Lecture 21 - FD SOI MOSFET

Lecture 22 - Sub-threshold Slope & SCE suppression in FD SOI MOSFET, Volume Inversion and Ultra thin (UTFD) SOI

Lecture 23 - Need for MS contact Source/Drain Junction in Nano scale MOSFETs

Lecture 24 - Rectifying and Ohmic contacts and challenges in MS junction source drain MOSFET Technology

Lecture 25 - Effect of Interface states and Fermi level pinning on MS contacts on Si and passivation techniques

Lecture 26 - Germanium as an alternate to silicon for high performance MOSFETs and the challenges in Germanium

Lecture 27 - Germanium MOSFET technology and recent results on surface passivated Ge MOSFETs

Lecture 28 - Compound semiconductors and hetero junction FETs for high performance

Lecture 29 - GaAs MESFETs

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

- Lecture 30 - Hetero-junctions and High Electron Mobility Transistors (HEMT)
- Lecture 31 - Introduction to Nanomaterials
- Lecture 32 - Basic Principles of Quantum Mechanics
- Lecture 33 - Basic Principles of Quantum Mechanics (Continued...)
- Lecture 34 - Energy bands in crystalline solids
- Lecture 35 - Quantum structures and devices
- Lecture 36 - Crystal growth and nanocrystals
- Lecture 37 - Nanocrystals and nanostructured thin films
- Lecture 38 - Nanowires and other nanostructures
- Lecture 39 - Carbon Nanostructures and CVD
- Lecture 40 - Atomic layer deposition (ALD)
- Lecture 41 - Characterisation of nanomaterials

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

NPTEL Video Course - Electronics and Communication Engineering - Pattern Recognition

Subject Co-ordinator - Prof. P.S. Sastry

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction to Statistical Pattern Recognition
- Lecture 2 - Overview of Pattern Classifiers
- Lecture 3 - The Bayes Classifier for minimizing Risk
- Lecture 4 - Estimating Bayes Error; Minimax and Neymann-Pearson classifiers
- Lecture 5 - Implementing Bayes Classifier; Estimation of Class Conditional Densities
- Lecture 6 - Maximum Likelihood estimation of different densities
- Lecture 7 - Bayesian estimation of parameters of density functions, MAP estimates
- Lecture 8 - Bayesian Estimation examples; the exponential family of densities and ML estimates
- Lecture 9 - Sufficient Statistics; Recursive formulation of ML and Bayesian estimates
- Lecture 10 - Mixture Densities, ML estimation and EM algorithm
- Lecture 11 - Convergence of EM algorithm; overview of Nonparametric density estimation
- Lecture 12 - Convergence of EM algorithm, Overview of Nonparametric density estimation
- Lecture 13 - Nonparametric estimation, Parzen Windows, nearest neighbour methods
- Lecture 14 - Linear Discriminant Functions; Perceptron -- Learning Algorithm and convergence proof
- Lecture 15 - Linear Least Squares Regression; LMS algorithm
- Lecture 16 - AdaLine and LMS algorithm; General nonlinear least-squares regression
- Lecture 17 - Logistic Regression; Statistics of least squares method; Regularized Least Squares
- Lecture 18 - Fisher Linear Discriminant
- Lecture 19 - Linear Discriminant functions for multi-class case; multi-class logistic regression
- Lecture 20 - Learning and Generalization; PAC learning framework
- Lecture 21 - Overview of Statistical Learning Theory; Empirical Risk Minimization
- Lecture 22 - Consistency of Empirical Risk Minimization
- Lecture 23 - Consistency of Empirical Risk Minimization; VC-Dimension
- Lecture 24 - Complexity of Learning problems and VC-Dimension
- Lecture 25 - VC-Dimension Examples; VC-Dimension of hyperplanes
- Lecture 26 - Overview of Artificial Neural Networks
- Lecture 27 - Multilayer Feedforward Neural networks with Sigmoidal activation functions;
- Lecture 28 - Backpropagation Algorithm; Representational abilities of feedforward networks
- Lecture 29 - Feedforward networks for Classification and Regression; Backpropagation in Practice

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- Lecture 30 - Radial Basis Function Networks; Gaussian RBF networks
- Lecture 31 - Learning Weights in RBF networks; K-means clustering algorithm
- Lecture 32 - Support Vector Machines -- Introduction, obtaining the optimal hyperplane
- Lecture 33 - SVM formulation with slack variables; nonlinear SVM classifiers
- Lecture 34 - Kernel Functions for nonlinear SVMs; Mercer and positive definite Kernels
- Lecture 35 - Support Vector Regression and ϵ -insensitive Loss function, examples of SVM learning
- Lecture 36 - Overview of SMO and other algorithms for SVM; ϵ -SVM and ϵ -SVR; SVM as a risk minimizer
- Lecture 37 - Positive Definite Kernels; RKHS; Representer Theorem
- Lecture 38 - Feature Selection and Dimensionality Reduction; Principal Component Analysis
- Lecture 39 - No Free Lunch Theorem; Model selection and model estimation; Bias-variance trade-off
- Lecture 40 - Assessing Learnt classifiers; Cross Validation;
- Lecture 41 - Bootstrap, Bagging and Boosting; Classifier Ensembles; AdaBoost
- Lecture 42 - Risk minimization view of AdaBoost

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

NPTEL Video Course - Electronics and Communication Engineering - Analog Circuits and Systems 1

Subject Co-ordinator - Prof. K. Radhakrishna Rao

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction to Sensors, Signals and Systems
- Lecture 2 - Role of Analog Signal Processing in Electronic Products - Part I
- Lecture 3 - Role of Analog Signal Processing in Electronic Products - Part II
- Lecture 4 - Analog Signal Processing using One Port Networks
- Lecture 5 - Analog Signal Processing using One Port Networks, Passive Two Ports and Ideal amplifiers
- Lecture 6 - Synthesis of Amplifiers using Nullators and Norators
- Lecture 7 - Passive Electronic Devices for Analog Signal Processing
- Lecture 8 - Active Devices for Analog Signal Processing Systems
- Lecture 9 - Electronic Devices for Analog Circuits - Part I
- Lecture 10 - Electronic Devices for Analog Circuits - Part II
- Lecture 11 - Feedback in Systems
- Lecture 12 - Static Characteristic of Feedback Systems
- Lecture 13 - Dynamic Behaviour of Feedback Systems - Part I
- Lecture 14 - Dynamic Behavior of Feedback Systems - Part II
- Lecture 15 - Design of Feedback Amplifiers - Part I
- Lecture 16 - Design of Feedback Amplifiers - Part II
- Lecture 17 - Design of Feedback Amplifiers and Instrumentation Amplifiers
- Lecture 18 - Instrumentation Amplifiers, Integrators and Differentiators
- Lecture 19 - Non-linear Analog Signal Processing
- Lecture 20 - DC Voltage Regulators
- Lecture 21 - Filters - Approximations to ideal filter functions
- Lecture 22 - Passive Filters - Part I
- Lecture 23 - Passive Filters - Part II
- Lecture 24 - Active Filters - Part I
- Lecture 25 - Active Filters - Part II
- Lecture 26 - Active Filters
- Lecture 27 - State Space Filters
- Lecture 28 - Universal Active Filter - Effect of Active Device GB
- Lecture 29 - State-Space Filters (Tuning of Filters)

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- Lecture 30 - Automatic Tuning of Filters (PLL) and Review of Filter Design
- Lecture 31 - Waveform Generation
- Lecture 32 - LC Oscillator - Effect of Non-idealities
- Lecture 33 - Transconductor based Oscillator
- Lecture 34 - Regenerative Comparators and Non-Sinusoidal Oscillators
- Lecture 35 - Non-Sinusoidal Oscillators and VCO (FM & FSK Generators)
- Lecture 36 - Phase and Frequency Followers
- Lecture 37 - Frequency Locked Loop (Popularly known as PLL)
- Lecture 38 - Design of PLL and FLL
- Lecture 39 - Analog System Design

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Design and Simulation of DC-DC converter

Subject Co-ordinator - Prof. L. Umanand

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - System Overview
- Lecture 2 - Understanding Rectifier with C-filter
- Lecture 3 - Setting up gEDA, ngSpice and Octave
- Lecture 4 - Simulation walk-through
- Lecture 5 - Designing the rectifier capacitor filter circuit
- Lecture 6 - Startup surge limiting
- Lecture 7 - DC-DC converter concepts
- Lecture 8 - Buck, Boost and Buck-Boost Converters
- Lecture 9 - Simulation Example of Buck Converter
- Lecture 10 - Understanding Buck Converter
- Lecture 11 - Understanding Boost and Buck-Boost
- Lecture 12 - Forward Converter Topology
- Lecture 13 - Waveforms and Design
- Lecture 14 - Simulation of Forward Converter
- Lecture 15 - Forward Converter with Lossless Core Reset
- Lecture 16 - Transformer Design
- Lecture 17 - Inductor Design
- Lecture 18 - Flyback Converter Topology
- Lecture 19 - Pushpull Converter
- Lecture 20 - Half and Full Bridge Converters
- Lecture 21 - Close Loop Operation of Converters
- Lecture 22 - Simulation examples
- Lecture 23 - Multi-Output Converters
- Lecture 24 - Concluding Remarks

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