

## 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  $\psi$ ,  $\phi$  and the Filters

Lecture 9 - Iterating the filter bank from  $\psi$ ,  $\phi$

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

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

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

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

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

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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

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

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

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Lecture 30 - Demonstration

Lecture 31 - Conclusive Remarks and Future Prospects

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

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

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

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

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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

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- 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

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- 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

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

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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 - NOC:Design of Power Electronic Converters

Subject Co-ordinator - Prof. Shabari Nath

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Introduction
- Lecture 2 - Analysis of Buck Converter
- Lecture 3 - Choosing L and C
- Lecture 4 - Design Example of Buck Converter
- Lecture 5 - Analysis of H Bridge
- Lecture 6 - Bipolar PWM
- Lecture 7 - Unipolar PWM
- Lecture 8 - Bipolar vs Unipolar PWM
- Lecture 9 - Different types of power diode
- Lecture 10 - Diode characteristics
- Lecture 11 - Diode Datasheets
- Lecture 12 - Diode Datasheet Examples
- Lecture 13 - MOSFET
- Lecture 14 - Switching characteristics of MOSFET
- Lecture 15 - MOSFET Datasheets - I
- Lecture 16 - MOSFET Datasheets - II
- Lecture 17 - MOSFET Datasheet example
- Lecture 18 - IGBT
- Lecture 19 - IGBT Datasheets - I
- Lecture 20 - IGBT Datasheets - II
- Lecture 21 - IGBT Datasheet Example
- Lecture 22 - Introduction to Gate Drivers
- Lecture 23 - Gate Driver Requirements
- Lecture 24 - Optocouplers based Gate Drivers - I
- Lecture 25 - Optocouplers based Gate Drivers - II
- Lecture 26 - Desat Protection
- Lecture 27 - Bootstrapping
- Lecture 28 - Pulse Transformer based Gate Drivers
- Lecture 29 - Gate Drivers - Few Other Requirements

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

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- Lecture 30 - Introduction to Snubbers
- Lecture 31 - RC Snubber Analysis - I
- Lecture 32 - RC Snubber Analysis - II : Underdamped Case
- Lecture 33 - RC Snubber Analysis - III : Overdamped and Critically Damped Case
- Lecture 34 - RC Snubber Design - I
- Lecture 35 - RC Snubber Design - II
- Lecture 36 - RCD Snubbers - I
- Lecture 37 - RCD Snubbers - II
- Lecture 38 - Power Loss - I
- Lecture 39 - Power Loss - II
- Lecture 40 - Thermal Modelling - I
- Lecture 41 - Thermal Modelling - II
- Lecture 42 - Thermal Modelling - III
- Lecture 43 - Choosing Heat Sinks
- Lecture 44 - Fundamentals
- Lecture 45 - Magnetic Losses
- Lecture 46 - Conductors
- Lecture 47 - Magnetic Materials
- Lecture 48 - Magnetic Core
- Lecture 49 - Inductor Design - I
- Lecture 50 - Inductor Design - II
- Lecture 51 - Transformer Design
- Lecture 52 - Inductor Design Example
- Lecture 53 - Example of Transformer Design
- Lecture 54 - Introduction to EMI
- Lecture 55 - EMI Measurements
- Lecture 56 - EMI in Power Electronics
- Lecture 57 - CM and DM noise
- Lecture 58 - Design Solutions of EMI
- Lecture 59 - EMI Filter - I
- Lecture 60 - EMI Filter - II
- Lecture 61 - Sections of Power Converters
- Lecture 62 - Capacitors
- Lecture 63 - Familiarity with Components - I
- Lecture 64 - Familiarity with Components - II
- Lecture 65 - PCB - I
- Lecture 66 - PCB - II
- Lecture 67 - PCB - III
- Lecture 68 - Grounds

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

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Lecture 69 - Lab Demo of Hardware Design  
Lecture 70 - Tutorial: PCB Designing

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Operation and Planning of Power Distribution

Subject Co-ordinator - Prof. Sanjib Ganguly

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Power systems: Overview and historical developments
- Lecture 2 - Introduction to power delivery systems
- Lecture 3 - Introduction to electrical loads
- Lecture 4 - Load diversity
- Lecture 5 - Different load indices
- Lecture 6 - Loss factor
- Lecture 7 - Load management
- Lecture 8 - Brief overview of power distribution substation
- Lecture 9 - Substation bus schemes and primary distribution network topology
- Lecture 10 - Voltage drop and power loss computations for typical radial distribution feeders
- Lecture 11 - Generalized expression for voltage drop for radial distribution feeder
- Lecture 12 - Derivation of K-constant for voltage drop computation
- Lecture 13 - Different reliability indices used in distribution networks
- Lecture 14 - Different reliability indices with numerical examples
- Lecture 15 - Mathematical concept of reliability
- Lecture 16 - Reliability evaluation of multiple units connected to series and/or parallel
- Lecture 17 - Numerical problems on reliability evaluation
- Lecture 18 - Power quality problems in distribution systems
- Lecture 19 - Forward backward load flow approach for power distribution systems
- Lecture 20 - Forward backward load flow approach for power distribution systems
- Lecture 21 - Reactive power compensation: Basic idea
- Lecture 22 - Reactive power compensation: Numerical examples
- Lecture 23 - Capacitor placement at distribution feeder: Analytical approach
- Lecture 24 - Power distribution system planning: Economic aspects
- Lecture 25 - Power distribution system planning: Different models and solution strategies
- Lecture 26 - Mono-objective power distribution system planning approach
- Lecture 27 - Multi-objective power distribution system planning approach
- Lecture 28 - Multi-objective planning incorporating sectionalizing switches and tie-lines
- Lecture 29 - Reconfiguration of power distribution networks

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

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- Lecture 30 - Distribution networks with the integration of Distributed Generation
- Lecture 31 - Concept of microgrids
- Lecture 32 - Wind and solar energy conversion systems
- Lecture 33 - Energy storage systems
- Lecture 34 - Distribution system automation and smart grid - Part I
- Lecture 35 - Distribution system automation and smart grid - Part 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  
Lecture 3  
Lecture 4  
Lecture 5  
Lecture 6  
Lecture 7  
Lecture 8  
Lecture 9  
Lecture 10  
Lecture 11  
Lecture 12  
Lecture 13  
Lecture 14  
Lecture 15  
Lecture 16  
Lecture 17  
Lecture 18  
Lecture 19  
Lecture 20  
Lecture 21  
Lecture 22  
Lecture 23  
Lecture 24  
Lecture 25  
Lecture 26  
Lecture 27  
Lecture 28  
Lecture 29

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

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Lecture 30  
Lecture 31  
Lecture 32  
Lecture 33  
Lecture 34  
Lecture 35  
Lecture 36  
Lecture 37  
Lecture 38  
Lecture 39  
Lecture 40  
Lecture 41  
Lecture 42  
Lecture 43  
Lecture 44  
Lecture 45

## 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

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- 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  
Lecture 18 - Digital Switching  
Lecture 19 - Digital Switching  
Lecture 20 - Digital Switching  
Lecture 21 - Digital Switching  
Lecture 22 - Digital Switching  
Lecture 23 - Digital Switching  
Lecture 24 - Digital Switching  
Lecture 25 - Digital Switching  
Lecture 26 - Digital Switching  
Lecture 27 - Digital Switching  
Lecture 28 - Digital Switching  
Lecture 29 - Digital Switching

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

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Lecture 30 - Digital Switching  
Lecture 31 - Digital Switching  
Lecture 32 - Digital Switching  
Lecture 33 - Digital Switching  
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

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- 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 Convolution
- 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 Prefix

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

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- 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

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- 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

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- 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

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- 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

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- 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

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- 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

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- 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

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- 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

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- 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

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- 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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- 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

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- 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

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

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

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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

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- 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 - NOC: Spread Spectrum Communications and Jamming

Subject Co-ordinator - Prof. Debarati Sen

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Spread Spectrum Communication

Lecture 2 - Direct Sequence Spread Spectrum System

Lecture 3 - Performance Analysis of DSSS

Lecture 4 - Concept of Jamming Margin

Lecture 5 - Frequency Hopping Spread Spectrum System

Lecture 6 - Tutorial-1

Lecture 7 - Slow and Fast Frequency Hopping

Lecture 8 - Hybrid Spread Spectrum System and Time Hopped SSS

Lecture 9 - Spread Sequences and Waveforms

Lecture 10 - Generation Mechanism of ML Sequence

Lecture 11 - Properties of Spread Spectrum Sequences

Lecture 12 - Tutorial-2

Lecture 13 - Power Spectral Density of ML Sequence

Lecture 14 - Walsh Hadamard Code and Properties

Lecture 15 - Generation Mechanism and Properties of OVSF and Barker Codes

Lecture 16 - Generation Mechanism and Properties of Gold and Kasami Codes

Lecture 17 - Performance Analysis of DSSS in Presence of Tone Jamming

Lecture 18 - Performance Analysis During Generation Tone Jamming

Lecture 19 - Performance Analysis in Presence of Gaussian Interference

Lecture 20 - Performance Analysis of a Quaternary System

Lecture 21 - Despreading with Matched Filter

Lecture 22 - Noncoherent Systems

Lecture 23 - Tutorial - III

Lecture 24 - Galois Field Mathematics

Lecture 25 - Galois Field Mathematics (Continued...)

Lecture 26 - Galois Field Mathematics (Continued...)

Lecture 27 - Polynomials over Binary Field

Lecture 28 - Long Nonlinear Sequence Generation

Lecture 29 - Rejection of Narrowband Interference

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

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- Lecture 30 - Narrow Band Interference Cancellation by Transform Domain Processing
- Lecture 31 - PN Code Acquisition Fundamentals
- Lecture 32 - Performance Analysis of PN Code Acquisition System - Part I
- Lecture 33 - Performance Analysis of PN Code Acquisition System - Part II
- Lecture 34 - Tutorial - IV
- Lecture 35 - Rapid Acquisition Using Matched Filter - Part I
- Lecture 36 - Rapid Acquisition Using Matched Filter - Part II
- Lecture 37 - Active Search Acquisition for FFH/MFSK Signals
- Lecture 38 - Active Search Code Acquisition for FFH/MFSK Analysis
- Lecture 39 - Detection Probability Analysis of Code Acquisition for FFH / MFSK
- Lecture 40 - Tutorial - V
- Lecture 41 - DSSS Tracking
- Lecture 42 - FHSS Synchronization Method - I
- Lecture 43 - FHSS Synchronization Method - II
- Lecture 44 - FHSS Synchronization Method - III
- Lecture 45 - FHSS Tracking
- Lecture 46 - Tutorial - VI
- Lecture 47 - Concept of Fading for Wireless Communications
- Lecture 48 - Diversity for Fading Channels
- Lecture 49 - Rake Receiver
- Lecture 50 - Performance Analysis of Rake Receiver
- Lecture 51 - Spread Spectrum Multiple Access
- Lecture 52 - Tutorial - VII
- Lecture 53 - Introduction to CDMA
- Lecture 54 - Interference Handling Mechanism in CDMA Networks
- Lecture 55 - Interference Handling by Soft Handover
- Lecture 56 - Interference Handling by Smart Antenna
- Lecture 57 - Multiuser Detection and Interference Cancellation
- Lecture 58 - Tutorial - VIII
- Lecture 59 - Multiuser Detection - Part I
- Lecture 60 - Multiuser Detection - Part II
- Lecture 61 - MUD - Probability of Error
- Lecture 62 - IS95 and CDMA - Part I
- Lecture 63 - IS95 and CDMA - Part II
- Lecture 64 - Tutorial - IX
- Lecture 65 - WCDMA and UMTS - Part I
- Lecture 66 - WCDMA and UMTS - Part II
- Lecture 67 - LPI Communications
- Lecture 68 - Radiometer

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Lecture 69 - Interceptor Detectors

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Digital VLSI Testing

Subject Co-ordinator - Prof. Santanu Chattopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction  
Lecture 2 - Introduction (Continued...)  
Lecture 3 - Introduction (Continued...)  
Lecture 4 - Introduction (Continued...)  
Lecture 5 - DFT  
Lecture 6 - DFT (Continued...)  
Lecture 7 - DFT (Continued...)  
Lecture 8 - DFT (Continued...)  
Lecture 9 - DFT (Continued...)  
Lecture 10 - DFT (Continued...)  
Lecture 11 - Logic and Fault Simulation  
Lecture 12 - Logic and Fault Simulation (Continued...)  
Lecture 13 - Logic and Fault Simulation (Continued...)  
Lecture 14 - Logic and Fault Simulation (Continued...)  
Lecture 15 - Logic and Fault Simulation (Continued...)  
Lecture 16 - Logic and Fault Simulation (Continued...)  
Lecture 17 - Test Generation  
Lecture 18 - Test Generation (Continued...)  
Lecture 19 - Test Generation (Continued...)  
Lecture 20 - Test Generation (Continued...)  
Lecture 21 - Test Generation (Continued...)  
Lecture 22 - Test Generation (Continued...)  
Lecture 23 - Test Generation (Continued...)  
Lecture 24 - Logic BIST  
Lecture 25 - Logic BIST (Continued...)  
Lecture 26 - Logic BIST (Continued...)  
Lecture 27 - Logic BIST (Continued...)  
Lecture 28 - Test Compression  
Lecture 29 - Test Compression (Continued...)

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

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- Lecture 30 - Test Compression (Continued...)
- Lecture 31 - Test Compression (Continued...)
- Lecture 32 - Low Power Testing
- Lecture 33 - Low Power Testing (Continued...)
- Lecture 34 - Low Power Testing (Continued...)
- Lecture 35 - Low Power Testing (Continued...)
- Lecture 36 - Low Power Testing (Continued...)
- Lecture 37 - Thermal Aware Testing
- Lecture 38 - Thermal Aware Testing (Continued...)
- Lecture 39 - Thermal Aware Testing (Continued...)
- Lecture 40 - Boundary Scan
- Lecture 41 - Boundary Scan (Continued...)
- Lecture 42 - Boundary Scan (Continued...)
- Lecture 43 - Boundary Scan (Continued...)
- Lecture 44 - Boundary Scan (Continued...)
- Lecture 45 - System/Network - On - Chip Test
- Lecture 46 - System/Network - On - Chip Test (Continued...)
- Lecture 47 - System/Network - On - Chip Test (Continued...)
- Lecture 48 - System/Network - On - Chip Test (Continued...)
- Lecture 49 - System/Network - On - Chip Test (Continued...)
- Lecture 50 - System/Network - On - Chip Test (Continued...)
- Lecture 51 - System/Network - On - Chip Test (Continued...)
- Lecture 52 - System/Network - On - Chip Test (Continued...)
- Lecture 53 - System/Network - On - Chip Test (Continued...)
- Lecture 54 - System/Network - On - Chip Test (Continued...)
- Lecture 55 - System/Network - On - Chip Test (Continued...)
- Lecture 56 - System/Network - On - Chip Test (Continued...)
- Lecture 57 - Memory Testing
- Lecture 58 - Memory Testing (Continued...)
- Lecture 59 - Memory Testing (Continued...)
- Lecture 60 - Memory Testing (Continued...)

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Design Principles of RF and Microwave Fi

Subject Co-ordinator - Prof. Amitabha Bhattacharya

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Image Impedance based RF filter design
- Lecture 2 - Concept of Image impedance and Propagation Constant
- Lecture 3 - Symmetrical lossless network description for filter design
- Lecture 4 - Constant k prototype filter design
- Lecture 5 - m-derived prototype filter design
- Lecture 6 - Introduction to Insertion loss based Microwave Filter Design
- Lecture 7 - Prototype low pass filter design
- Lecture 8 - Filter transformation
- Lecture 9 - Microwave Filter implementation
- Lecture 10 - Tutorial an Insertion Loss based Microwave Filter design
- Lecture 11 - Gain Definitions of Microwave Amplifiers
- Lecture 12 - Stability Analysis of Microwave Amplifiers
- Lecture 13 - Conditional stability enforcement for Microwave Amplifier
- Lecture 14 - Amplifier design of maximising transducer gain
- Lecture 15 - Amplifier design for specified gain
- Lecture 16 - Amplifier design for specified noise performance
- Lecture 17 - Broadband Amplifier Design
- Lecture 18 - Quantitative Characterisation of Nonlinearity for Large Signal Amplifier
- Lecture 19 - Quantitative Characterisation of Nonlinearity for Large Signal Amplifier (Continued...)
- Lecture 20 - Measurement of Nonlinearity

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Millimeter Wave Technology

Subject Co-ordinator - Prof. Mrinal Kanti Mandal

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Millimeter-Wave Technology  
Lecture 2 - Introduction to Millimeter-Wave Technology (Continued...)  
Lecture 3 - Introduction to Millimeter-Wave Technology (Continued...)  
Lecture 4 - Introduction to Millimeter-Wave Technology (Continued...)  
Lecture 5 - Introduction to Millimeter-Wave Technology (Continued...)  
Lecture 6 - Guiding Structures  
Lecture 7 - Guiding Structures (Continued...)  
Lecture 8 - Guiding Structures (Continued...)  
Lecture 9 - Guiding Structures (Continued...)  
Lecture 10 - Guiding Structures (Continued...)  
Lecture 11 - Guiding Structures (Continued...)  
Lecture 12 - Guiding Structures (Continued...)  
Lecture 13 - Guiding Structures (Continued...)  
Lecture 14 - Guiding Structures (Continued...)  
Lecture 15 - Guiding Structures (Continued...)  
Lecture 16 - Antennas at MM-Wave Frequencies  
Lecture 17 - Antennas at MM-Wave Frequencies (Continued...)  
Lecture 18 - Antennas at MM-Wave Frequencies (Continued...)  
Lecture 19 - Antennas at MM-Wave Frequencies (Continued...)  
Lecture 20 - Antennas at MM-Wave Frequencies (Continued...)  
Lecture 21 - Passive Components  
Lecture 22 - Passive Components (Continued...)  
Lecture 23 - Passive Components (Continued...)  
Lecture 24 - Passive Components (Continued...)  
Lecture 25 - Passive Components (Continued...)  
Lecture 26 - Active Devices  
Lecture 27 - Active Devices (Continued...)  
Lecture 28 - Active Devices (Continued...)  
Lecture 29 - Active Devices (Continued...)

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

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- Lecture 30 - Active Devices (Continued...)
- Lecture 31 - Noise and Link Budget
- Lecture 32 - Noise and Link Budget (Continued...)
- Lecture 33 - Noise and Link Budget (Continued...)
- Lecture 34 - Noise and Link Budget (Continued...)
- Lecture 35 - Noise and Link Budget (Continued...)
- Lecture 36 - Millimeter-Wave Systems
- Lecture 37 - Millimeter-Wave Systems (Continued...)
- Lecture 38 - Millimeter-Wave Systems (Continued...)
- Lecture 39 - Millimeter-Wave Systems (Continued...)
- Lecture 40 - Millimeter-Wave Systems (Continued...)

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Power System Analysis

Subject Co-ordinator - Prof. Debapriya Das

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Structure of Power Systems and Few other Aspects - I
- Lecture 2 - Structure of Power Systems and Few other Aspects - II
- Lecture 3 - Structure of Power Systems and Few other Aspects - III
- Lecture 4 - Resistance and Inductance
- Lecture 5 - Resistance and Inductance (Continued...)
- Lecture 6 - Resistance and Inductance (Continued...)
- Lecture 7 - Resistance and Inductance (Continued...)
- Lecture 8 - Resistance and Inductance (Continued...)
- Lecture 9 - Resistance and Inductance (Continued...)
- Lecture 10 - Resistance and Inductance (Continued...)
- Lecture 11 - Capacitance of Transmisson Lines
- Lecture 12 - Capacitance of Transmisson Lines (Continued...)
- Lecture 13 - Capacitance of Transmisson Lines (Continued...)
- Lecture 14 - Capacitance of Transmisson Lines (Continued...)
- Lecture 15 - Power System Components and per-unit system
- Lecture 16 - Power System Components and per-unit system (Continued...)
- Lecture 17 - Power System Components and per-unit system (Continued...)
- Lecture 18 - Power System Components and per-unit system (Continued...)
- Lecture 19 - Power System Components and per-unit system (Continued...)
- Lecture 20 - Power System Components and per-unit system (Continued...)
- Lecture 21 - Characteristic and performance of transmission lines
- Lecture 22 - Characteristic and performance of transmission lines (Continued...)
- Lecture 23 - Characteristic and performance of transmission lines (Continued...)
- Lecture 24 - Characteristic and performance of transmission lines (Continued...)
- Lecture 25 - Characteristic and performance of transmission lines (Continued...)
- Lecture 26 - Load flow studies
- Lecture 27 - Load flow studies (Continued...)
- Lecture 28 - Load flow studies (Continued...)
- Lecture 29 - Load flow studies (Continued...)

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

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- Lecture 30 - Load flow studies (Continued...)
- Lecture 31
- Lecture 32
- Lecture 33
- Lecture 34
- Lecture 35
- Lecture 36 - Load flow studies (Continued...)
- Lecture 37 - Optimal system operation
- Lecture 38 - Optimal system operation (Continued...)
- Lecture 39 - Optimal system operation (Continued...)
- Lecture 40 - Optimal system operation (Continued...)
- Lecture 41 - Optimal system operation (Continued...)
- Lecture 42 - Optimal system operation (Continued...)
- Lecture 43 - Optimal system operation (Continued...)
- Lecture 44 - Optimal system operation (Continued...)
- Lecture 45 - Three phase fault studies
- Lecture 46 - Three phase fault studies (Continued...)
- Lecture 47 - Three phase fault studies (Continued...)
- Lecture 48 - Three phase fault studies (Continued...)
- Lecture 49 - Symmetrical components
- Lecture 50 - Symmetrical components (Continued...)
- Lecture 51 - Symmetrical components (Continued...)
- Lecture 52 - Symmetrical components (Continued...)
- Lecture 53 - Symmetrical components (Continued...)
- Lecture 54 - Symmetrical components (Continued...)
- Lecture 55 - Power system stability>
- Lecture 56 - Power system stability (Continued...)
- Lecture 57 - Power system stability (Continued...)
- Lecture 58 - Power system stability (Continued...)
- Lecture 59 - Power system stability (Continued...)
- Lecture 60 - Power system stability (Continued...)

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

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

Subject Co-ordinator - Prof. Goutam Das

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Fourier Series  
Lecture 2 - Fourier Series (Continued...)  
Lecture 3 - Fourier Series (Continued...)  
Lecture 4 - Fourier Series (Continued...)  
Lecture 5 - Fourier Series (Continued...)  
Lecture 6 - Fourier Series (Continued...)  
Lecture 7 - Fourier Series (Continued...)  
Lecture 8 - Fourier Transform  
Lecture 9 - Fourier Transform (Continued...)  
Lecture 10 - Fourier Transform (Continued...)  
Lecture 11 - Fourier Transform (Continued...)  
Lecture 12 - Energy Spectral Density  
Lecture 13 - Power Spectral Density  
Lecture 14 - PSD of Random Signal  
Lecture 15 - Amplitude Modulation  
Lecture 16 - Amplitude Modulation (Continued...)  
Lecture 17 - Amplitude Modulation (Continued...)  
Lecture 18 - Amplitude Modulation (Continued...)  
Lecture 19 - SSB - SC  
Lecture 20 - SSB - SC (Continued...)  
Lecture 21 - VSB-SC  
Lecture 22 - VSB-SC (Continued...)  
Lecture 23 - Effect of Carrier Synchronization  
Lecture 24 - Comparison of Different Modulation Technique  
Lecture 25 - PLL  
Lecture 26 - PLL (Continued...)  
Lecture 27 - PLL (Continued...)  
Lecture 28 - PLL (Continued...) and LTI  
Lecture 29 - Dispersion

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

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- Lecture 30 - Channel Nonlinearities and Multipath Effects
- Lecture 31 - Probability Theory
- Lecture 32 - Probability Theory (Continued...)
- Lecture 33 - Probability Theory (Continued...)
- Lecture 34 - Probability Theory (Continued...)
- Lecture 35 - Probability Theory (Continued...)
- Lecture 36 - Probability Theory (Continued...)
- Lecture 37 - Probability Theory (Continued...)
- Lecture 38 - Random Process
- Lecture 39 - Random Process (Continued...)
- Lecture 40 - Random Process (Continued...)
- Lecture 41 - Random Process (Continued...)
- Lecture 42 - Random Process (Continued...)
- Lecture 43 - Random Process (Continued...)
- Lecture 44 - Noise Analysis - DSB-SC
- Lecture 45 - Noise Analysis - AM
- Lecture 46 - Noise Analysis - SSB-SC
- Lecture 47 - Frequency Modulation
- Lecture 48 - Frequency Modulation (Continued...)
- Lecture 49 - Frequency Modulation (Continued...)
- Lecture 50 - Frequency Modulation (Continued...)
- Lecture 51 - Frequency Modulation (Continued...)
- Lecture 52 - Frequency Modulation (Continued...)
- Lecture 53 - FM Noise Analysis
- Lecture 54 - FM Noise Analysis (Continued...)
- Lecture 55 - FM Noise Analysis (Continued...)>
- Lecture 56 - Sampling Theorem
- Lecture 57 - Sampling Theorem (Continued...)
- Lecture 58 - FDM Vs TDM
- Lecture 59 - Flat Top Vs Natural Sampling
- Lecture 60 - Pulse Coded Modulation



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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Modern Digital Communication Techniques

Subject Co-ordinator - Prof. Suvra Sekhar Das

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction of Digital Communication System  
Lecture 2 - Introduction of Digital Communication System (Continued...)  
Lecture 3 - Introduction of Digital Communication System (Continued...)  
Lecture 4 - Introduction of Digital Communication System (Continued...)  
Lecture 5 - Introduction of Digital Communication System (Continued...)  
Lecture 6 - Source Coding  
Lecture 7 - Source Coding (Continued...)  
Lecture 8 - Source Coding (Continued...)  
Lecture 9 - Source Coding (Continued...)  
Lecture 10 - Source Coding (Continued...)  
Lecture 11 - Source Coding (Continued...)  
Lecture 12 - Source Coding (Continued...)  
Lecture 13 - Source Coding (Continued...)  
Lecture 14 - Source Coding (Continued...)  
Lecture 15 - Analog to Digital Conversion  
Lecture 16 - Analog to Digital Conversion (Continued...)  
Lecture 17 - Characterization of Signals and Systems  
Lecture 18 - Characterization of Signals and Systems (Continued...)  
Lecture 19 - Characterization of Signals and Systems (Continued...)  
Lecture 20 - Characterization of Signals and Systems (Continued...)  
Lecture 21 - Characterization of Signals and Systems (Continued...)  
Lecture 22 - Characterization of Signals and Systems (Continued...)  
Lecture 23 - Characterization of Signals and Systems (Continued...)  
Lecture 24 - Memoryless Modulation  
Lecture 25 - Memoryless Modulation (Continued...)  
Lecture 26 - Memoryless Modulation (Continued...)  
Lecture 27 - Memoryless Modulation (Continued...)  
Lecture 28 - Memoryless Modulation (Continued...)  
Lecture 29 - Memoryless Modulation (Continued...)

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

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- Lecture 30 - Memoryless Modulation (Continued...)
- Lecture 31 - Memoryless Modulation (Continued...)
- Lecture 32 - Memoryless Modulation (Continued...)
- Lecture 33 - With Memory Modulation
- Lecture 34 - With Memory Modulation (Continued...)
- Lecture 35 - With Memory Modulation (Continued...)
- Lecture 36 - With Memory Modulation (Continued...)
- Lecture 37 - With Memory Modulation (Continued...)
- Lecture 38 - With Memory Modulation (Continued...)
- Lecture 39 - With Memory Modulation (Continued...)
- Lecture 40 - Optimum Receivers for AWGN
- Lecture 41 - Optimum Receivers for AWGN (Continued...)
- Lecture 42 - Optimum Receivers for AWGN (Continued...)
- Lecture 43 - Optimum Receivers for AWGN (Continued...)
- Lecture 44 - Optimum Receivers for AWGN (Continued...)
- Lecture 45 - Optimum Receivers for AWGN (Continued...)
- Lecture 46 - Performance of Digital Modulation Techniques
- Lecture 47 - Performance of Digital Modulation Techniques (Continued...)
- Lecture 48 - Performance of Digital Modulation Techniques (Continued...)
- Lecture 49 - Performance of Digital Modulation Techniques (Continued...)
- Lecture 50 - Performance of Digital Modulation Techniques (Continued...)
- Lecture 51 - Performance of Digital Modulation Techniques (Continued...)
- Lecture 52 - Performance of Digital Modulation Techniques (Continued...)
- Lecture 53 - Channel Estimation and Equalization
- Lecture 54 - Channel Estimation and Equalization (Continued...)
- Lecture 55 - Channel Estimation and Equalization (Continued...)>
- Lecture 56 - Channel Estimation and Equalization (Continued...)
- Lecture 57 - Synchronization Techniques
- Lecture 58 - Synchronization Techniques (Continued...)
- Lecture 59 - Synchronization Techniques (Continued...)
- Lecture 60 - Synchronization Techniques (Continued...)

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

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

Subject Co-ordinator - Prof. Shyamal Kumar Das Mandal

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1

Lecture 2

Lecture 3

Lecture 4

Lecture 5

Lecture 6

Lecture 7

Lecture 8

Lecture 9

Lecture 10

Lecture 11

Lecture 12

Lecture 13

Lecture 14

Lecture 15

Lecture 16 - Human Auditory System

Lecture 17

Lecture 18

Lecture 19 - Time Domain Methods in Speech Processing

Lecture 20

Lecture 21 - Introduction to Liner Prediction

Lecture 22 - Autocorrelation Method of LPC analysis

Lecture 23 - Autocorrelation Method of LPC analysis (Continued...)

Lecture 24 - Lattice Formulations of Linear Prediction

Lecture 25 - Lattice Formulations of Linear Prediction (Continued...)

Lecture 26

Lecture 27

Lecture 28

Lecture 29

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

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- Lecture 30
- Lecture 31 - Segmental and Supra-segmental features of speech signal
- Lecture 32 - Cepstral Transform Coefficients (CC) Parameters extraction
- Lecture 33 - Mel Frequency Cepstral Coefficients
- Lecture 34 - MFCC features vector
- Lecture 35 - Fundamental Frequency (F0) Detection of speech signal
- Lecture 36 - Frequency Domain Fundamental Frequency Detection Algorithms
- Lecture 37 - Text to Speech Synthesis
- Lecture 38 - Text to Speech Synthesis (Continued...)
- Lecture 39 - Automatic Speech Recognition
- Lecture 40 - Statistical Modeling of Automatic Speech Recognition
- Lecture 41 - Speech based Technology Development for e-learning
- Lecture 42 - Prosody Modeling
- Lecture 43 - Fundamental frequency contour modeling
- Lecture 44 - Fundamental frequency contour modeling (Continued...)

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Analog Circuits and Systems through SPI

Subject Co-ordinator - Prof. Mrigank Sharad

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Basic Analog Design Part I  
Lecture 2 - Basic Analog Design Part I (Continued...)  
Lecture 3 - Basic Analog Design Part II  
Lecture 4 - Basic Analog Design Part II (Continued...)  
Lecture 5 - Basic Analog Design Part III  
Lecture 6 - Basic Analog Design Part III (Continued...)  
Lecture 7 - Basic Analog Design Part III (Continued...)  
Lecture 8 - Basic Analog Design Part III (Continued...)  
Lecture 9 - Basic Analog Design Part III (Continued...)  
Lecture 10 - Basic Analog Design Part III (Continued...)  
Lecture 11  
Lecture 12  
Lecture 13  
Lecture 14  
Lecture 15  
Lecture 16  
Lecture 17  
Lecture 18  
Lecture 19  
Lecture 20  
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Lecture 24  
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Lecture 28  
Lecture 29

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

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Lecture 56  
Lecture 57  
Lecture 58

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

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

Subject Co-ordinator - Prof. Goutam Das

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction to Communication Networks  
Lecture 2 - Introduction to Communication Networks (Continued...)  
Lecture 3 - Introduction to Communication Networks (Continued...)  
Lecture 4 - Circuit Switch Networks  
Lecture 5 - Space switch Architecture  
Lecture 6 - Space switch Architecture (Continued...)  
Lecture 7 - Space Switch Architecture (Continued...)  
Lecture 8 - Space Switch Architecture (Continued...)  
Lecture 9 - Space Switch Architecture (Continued...)  
Lecture 10 - Time Switch  
Lecture 11 - Space Time Switch  
Lecture 12 - Space Time Switch (Continued...)  
Lecture 13 - Synchronisation  
Lecture 14 - Synchronisation (Continued...)  
Lecture 15 - Introduction to Queuing Theory  
Lecture 16 - Arrival and Service Process  
Lecture 17 - Poisson Process  
Lecture 18 - poisson process (Continued...)  
Lecture 19 - Memorylessness  
Lecture 20 - Little's Theorem  
Lecture 21 - Little's Theorem (Continued...)  
Lecture 22 - D T M C  
Lecture 23 - D T M C (Continued...)  
Lecture 24 - D T M C To C T M C  
Lecture 25 - C T M C  
Lecture 26 - M/M/1 Queue  
Lecture 27 - M/M/m And M/M/m/m System  
Lecture 28 - Introduction to Data Networks  
Lecture 29 - Introduction to Data Networks (Continued...)

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

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- Lecture 30 - Introduction to Data Networks (Continued...)
- Lecture 31 - Layered Architecture
- Lecture 32 - Layered Architecture (Continued...)
- Lecture 33 - Broadband Access - Dail Up/ADSL
- Lecture 34 - Broadband Access - DSL, Aloha
- Lecture 35 - Aloha/Slotted Aloha
- Lecture 36 - Slotted Aloha
- Lecture 37 - Slotted Aloha (Continued...)
- Lecture 38 - Slotted Aloha- Stability Analysis
- Lecture 39 - Slotted Aloha- Stability Analysis (Continued...)
- Lecture 40 - Stabilized Slotted Aloha-bayesian Estimation
- Lecture 41 - Binary Back- off Algorithm
- Lecture 42 - Effect of Physical Media
- Lecture 43 - PON and Ethernet MAC
- Lecture 44 - PON and Ethernet MAC (Continued...)
- Lecture 45 - CSMA/CD
- Lecture 46 - CSMA/CA
- Lecture 47 - CSMA/CA (Continued...)
- Lecture 48 - CSMA/CA (Continued...)
- Lecture 49 - CSMA/CA (Continued...)
- Lecture 50 - Learning Bridges
- Lecture 51 - Learning Bridges (Continued...)
- Lecture 52 - Distributed Spanning Tree
- Lecture 53 - Distributed Spanning Tree (Continued...)
- Lecture 54 - Internet Protocol
- Lecture 55 - Internet Protocol (Continued...)
- Lecture 56 - Subnet and ARP
- Lecture 57 - ARP and DHCP
- Lecture 58 - DHCP and Routing



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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Signal Processing Techniques and its App

Subject Co-ordinator - Prof. Shyamal Kumar Das Mandal

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction  
Lecture 2 - Signal and its Types  
Lecture 3 - Characteristics of a Signal  
Lecture 4 - Digitization of Signal  
Lecture 5 - Digitization of Signal (Continued...)  
Lecture 6 - Concept of Frequency in Continuous-time and Discrete-time Signal  
Lecture 7 - Tutorial 1  
Lecture 8 - Discrete Time Signal  
Lecture 9 - Discrete Time System  
Lecture 10 - D.T.S (L.T.I System)  
Lecture 11 - Linear Time-Invariant Systems (Continued...)  
Lecture 12 - Correlation  
Lecture 13 - Tutorial 02  
Lecture 14 - Z-Transform  
Lecture 15 - Z-Transform Properties  
Lecture 16 - Pole and Zero in Z-Transform  
Lecture 17 - Inverse Z-Transform  
Lecture 18 - Frequency-Domain Representation of Discrete Signals and L.T.I Systems  
Lecture 19 - Discrete Fourier Transform (DFT)  
Lecture 20 - Discrete Fourier Transform Linear Transform View  
Lecture 21 - Discrete Fourier Transform Linear Transform View (Continued...)  
Lecture 22 - Properties of Discrete Fourier Transform  
Lecture 23 - Properties of Discrete Fourier Transform (Continued...)  
Lecture 24 - Properties of Discrete Fourier Transform (Continued...)  
Lecture 25 - Properties of Discrete Fourier Transform (Continued...)  
Lecture 26 - Linear Filtering  
Lecture 27 - Tutorial 5  
Lecture 28 - Two Dimensional Discrete Fourier Transform  
Lecture 29 - Discrete Cosine Transform

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- Lecture 30 - Frequency analysis of long signal using DFT
- Lecture 31 - Short-Time Fourier Transform (STFT)
- Lecture 32 - STFT Synthesis
- Lecture 33 - Fast Fourier Transform (FFT) Algorithms
- Lecture 34 - Fast Fourier Transform (FFT) Algorithms (Continued...)
- Lecture 35 - Radix-2 FFT Algorithms
- Lecture 36 - Radix-2 FFT Algorithms (Continued...)
- Lecture 37 - Spectrum and spectrogram
- Lecture 38 - Digital Filter
- Lecture 39 - FIR Filter
- Lecture 40 - Linear Symmetric and Anti-symmetric filter
- Lecture 41 - FIR Filter Design
- Lecture 42 - Frequency Sampling Method
- Lecture 43 - Design Optimum equiripple Linear-Phase FIR Filters (optimization methods)
- Lecture 44 - Infinite Impulse Response (IIR) Filters
- Lecture 45 - Traditional Analog Filter Design
- Lecture 46 - Chebyshev filter Design Method
- Lecture 47 - Analogue filter to digital filter transformation
- Lecture 48 - Linear Prediction and Optimum Linear Filters
- Lecture 49 - Autocorrelation Method for Linear Prediction
- Lecture 50 - Covariance Method for Linear Prediction
- Lecture 51 - Lattice Formulations of Linear Prediction
- Lecture 52 - Lattice Formulations of Linear Prediction (Continued...)
- Lecture 53 - Introduction to Multirate Signal Processing
- Lecture 54 - Analysis of Decimation and Interpolation
- Lecture 55 - Fractional Rate Conversion
- Lecture 56 - Implementations of Decimator and Interpolator
- Lecture 57 - Sample Rate Conversion by Stages
- Lecture 58 - Power Spectrum Estimation
- Lecture 59 - Power Spectrum Estimation (Continued...)
- Lecture 60 - Tutorial 6: Tutorial for Final Examination

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

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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

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- 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  
Lecture 16  
Lecture 17  
Lecture 18  
Lecture 19  
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Lecture 26  
Lecture 27  
Lecture 28  
Lecture 29

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

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Lecture 30  
Lecture 31  
Lecture 32  
Lecture 33  
Lecture 34  
Lecture 35  
Lecture 36  
Lecture 37  
Lecture 38  
Lecture 39  
Lecture 40  
Lecture 41  
Lecture 42  
Lecture 43  
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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## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

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

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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

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- 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

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- 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

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- 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

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- 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

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- 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, SiO<sub>2</sub>, SiN and other materials
- Lecture 29 - Plasma Deposition Process

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

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- 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

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

- 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

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

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- 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
- 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 CCCS
- 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

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

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- Lecture 69 - Substitution theorem
- Lecture 70 - Substituting a voltage or current source with a resistor
- Lecture 71 - Solutions
- Lecture 72 - Extensions to Superposition and Substitution theorem
- Lecture 73 - Thevenin's theorem
- Lecture 74 - Worked out example
- Lecture 75 - Norton's theorem
- Lecture 76 - Worked out example
- Lecture 77 - Maximum power transfer theorem
- Lecture 78 - Preliminaries.
- Lecture 79 - Two port parameters
- Lecture 80 - y parameters
- Lecture 81 - y parameters
- Lecture 82 - Solutions.
- Lecture 83 - z parameters
- Lecture 84 - z parameters
- Lecture 85 - h parameters
- Lecture 86 - h parameters
- Lecture 87 - g parameters
- Lecture 88 - g parameters
- Lecture 89 - Calculations with a two-port element
- Lecture 90 - Calculations with a two-port element.
- Lecture 91 - Degenerate cases
- Lecture 92 - Relationships between different two-port parameters
- Lecture 93 - Equivalent circuit representation for two ports
- Lecture 94 - Reciprocity
- Lecture 95 - Proof of reciprocity of resistive two-ports
- Lecture 96 - Proof for 4-terminal two-ports
- Lecture 97 - Reciprocity in terms of different two-port parameters
- Lecture 98 - Reciprocity in circuits containing controlled sources
- Lecture 99 - Examples
- Lecture 100 - Solutions..
- Lecture 101 - Feedback amplifier using an opamp
- Lecture 102 - Ideal opamp
- Lecture 103 - Negative feedback around the opamp
- Lecture 104 - Finding opamp signs for negative feedback
- Lecture 105 - Example
- Lecture 106 - Analysis of circuits with opamps
- Lecture 107 - Inverting amplifier

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- Lecture 108 - Summing amplifier
- Lecture 109 - Instrumentation amplifier
- Lecture 110 - Negative resistance and Miller effect
- Lecture 111 - Finding opamp signs for negative feedback-circuits with multiple opamps
- Lecture 112 - Opamp supply voltages and saturation
- Lecture 113 - KCL with an opamp and supply currents
- Lecture 114 - Solutions...
- Lecture 115 - Circuits with storage elements (capacitors and inductors)
- Lecture 116 - First order circuit with zero input-natural response
- Lecture 117 - First order RC circuit with zero input-Example
- Lecture 118 - First order circuit with a constant input
- Lecture 119 - General form of the first order circuit response
- Lecture 120 - First order RC circuit with a constant input-Example
- Lecture 121 - First order circuit with piecewise constant input
- Lecture 122 - First order circuit with piecewise constant input-Example
- Lecture 123 - First order circuit-Response of arbitrary circuit variables
- Lecture 124 - Summary
- Lecture 125 - Does a capacitor block DC?
- Lecture 126 - Finding the order of a circuit
- Lecture 127 - First order RC circuits with discontinuous capacitor voltages
- Lecture 128 - Summary
- Lecture 129 - First order RL circuits
- Lecture 130 - First order RL circuit with discontinuous inductor current-Example
- Lecture 131 - First order RC circuit with an exponential input
- Lecture 132 - First order RC response to its own natural response
- Lecture 133 - First order RC response to a sinusoidal input
- Lecture 134 - First order RC response to a sinusoidal input-via the complex exponential
- Lecture 135 - Summary
- Lecture 136 - Three methods of calculating the sinusoidal steady state response
- Lecture 137 - Calculating the total response including initial conditions
- Lecture 138 - Why are sinusoids used in measurement?
- Lecture 139 - Second order system natural response
- Lecture 140 - Second order system as a cascade of two first order systems
- Lecture 141 - Second order system natural response-critically damped and underdamped
- Lecture 142 - Generalized form of a second order system
- Lecture 143 - Numerical example
- Lecture 144 - Series and parallel RLC circuits
- Lecture 145 - Forced response of a second order system
- Lecture 146 - Steady state response calculation and Phasors

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- Lecture 147 - Phasors (Continued...)
- Lecture 148 - Magnitude and Phase plots
- Lecture 149 - Magnitude and phase plots of a second order system
- Lecture 150 - Maximum power transfer and Conjugate matching

## 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

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- 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

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- 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 - Embeddel 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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- 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 - Understanding 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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- 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

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

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

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

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- Lecture 30 - FSM Design Problems
- Lecture 31 - State Minimization
- Lecture 32 - State Assignment
- Lecture 33 - Timing Sequential Circuits
- 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
- Lecture 48 - Signed Number Representation
- Lecture 49 - Signed Number Addition
- Lecture 50 - Adder/Subtractor
- Lecture 51 - Fast Adders
- Lecture 52 - Multiplication
- Lecture 53 - Closing



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

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

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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 - NOC:Circuit Analysis for Analog Designers

Subject Co-ordinator - Prof. Shanthi Pavan

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Course Introduction and Motivation
- Lecture 2 - Kirchoff's Current and Voltage Laws, and the Incidence Matrix
- Lecture 3 - Power Conservation and Tellegen's Theorem
- Lecture 4 - Intuition behind Tellegen's Theorem
- Lecture 5 - Tellegen's Theorem and reciprocity in linear resistive networks
- Lecture 6 - Why is reciprocity useful in practice?
- Lecture 7 - Inter-reciprocity in linear time-invariant networks
- Lecture 8 - Inter-reciprocity in linear time-invariant networks (Continued...)
- Lecture 9 - Inter-reciprocity in networks with ideal operational amplifiers
- Lecture 10 - Review of Modified Nodal Analysis (MNA) of linear networks
- Lecture 11 - MNA stamps of controlled sources - the VCCS and VCVS
- Lecture 12 - MNA stamps of controlled sources - the CCCS and C CVS
- Lecture 13 - Inter-reciprocity in linear networks - using the MNA stamp approach
- Lecture 14 - The Adjoint Network
- Lecture 15 - MNA stamp of an ideal opamp
- Lecture 16 - Properties of circuits with multiple ideal opamps
- Lecture 17 - Introduction to Analog Active Filters
- Lecture 18 - Magnitude approximation principles
- Lecture 19 - The maximally flat (Butterworth) approximation
- Lecture 20 - The Butterworth Approximation (Continued...)
- Lecture 21 - Connection between magnitude response and pole locations in an all-pole filter
- Lecture 22 - Cascade-of-biquads, realization of stray-insensitive first-order section
- Lecture 23 - Opamp-RC biquadratic sections
- Lecture 24 - Active-RC biquads and Impedance scaling
- Lecture 25 - Opamp-RC biquadratic sections (Continued...)
- Lecture 26 - High-order filters using cascade of biquads, Dynamic range scaling in opamp-RC filters
- Lecture 27 - The finite gain-bandwidth model of nonideal opamps
- Lecture 28 - Effect of finite opamp bandwidth on an active-RC integrator
- Lecture 29 - Effect of finite opamp bandwidth on an active-RC biquad

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

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- Lecture 30 - Visualization and mitigation of the effect of Q-enhancement
- Lecture 31 - Transconductance-Capacitance integrators
- Lecture 32 - Introduction to noise in electrical networks
- Lecture 33 - Noise processed by a linear time-invariant system
- Lecture 34 -  $kT/C$  noise in a sample-and-hold circuit
- Lecture 35 - Noise in RLC networks
- Lecture 36 - Total integrated noise in RLC Networks
- Lecture 37 - Bode's Noise Theorem - Frequency domain
- Lecture 38 - Input referred noise in electrical networks - Part 1
- Lecture 39 - Input referred noise in electrical networks - Part 2
- Lecture 40 - Input referred noise and the noise factor
- Lecture 41 - Noise Factor Examples
- Lecture 42 - Introduction to distributed networks, the ideal transmission line
- Lecture 43 - Solving the wave equation in an ideal transmission line
- Lecture 44 - Transmission line circuit analysis : The short circuited and open circuited line
- Lecture 45 - Transmission line circuit analysis, the reflection coefficient, open and short-circuited lines
- Lecture 46 - Transmission line driven by a source, power in a transmission line
- Lecture 47 - The Smith chart
- Lecture 48 - The need for scattering parameters
- Lecture 49 - Scattering Parameters: Introduction
- Lecture 50 - Example scattering matrix calculations
- Lecture 51 - Scattering matrices properties
- Lecture 52 - Measuring the S-parameters of a one-port
- Lecture 53 - The one-port vector network analyzer
- Lecture 54 - The two-port vector network analyzer
- Lecture 55 - Weak nonlinearity in electronic circuits, second-order harmonic distortion, HD2 and IM2
- Lecture 56 - Weak nonlinearity in electronic circuits, second-order intermodulation distortion
- Lecture 57 - Gain compression and third-order harmonic distortion
- Lecture 58 - Third-order intermodulation distortion
- Lecture 59 - Weak nonlinearities in circuits: Intuition behind the method of current injection
- Lecture 60 - Weak nonlinearities in circuits: Calculating nonlinear components
- Lecture 61 - Current-injection analysis of distortion in a negative feedback system
- Lecture 62 - Current-injection analysis of distortion in a negative feedback system (Continued...)
- Lecture 63 - Course summary and recap

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Design and Analysis of VLSI Subsystems

Subject Co-ordinator - Prof. Madhav Rao

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Understanding Silicon  
Lecture 2 - Introduction to NMOS  
Lecture 3 - NMOS Transistor Working  
Lecture 4 - PMOS Transistor  
Lecture 5 - MOS Capacitances  
Lecture 6 - Non Ideal MOS model  
Lecture 7 - Short channel current model  
Lecture 8 - Short channel current model analysis  
Lecture 9 - Channel Length modulation index  
Lecture 10 - DC characteristics of Inverter  
Lecture 11 - Transfer characteristics of Inverter  
Lecture 12 - Skewed Inverter  
Lecture 13 - Skewed Inverter and threshold voltage  
Lecture 14 - Equivalent of transistors in series  
Lecture 15 - Transmission Gate  
Lecture 16 - Bad CMOS Buffer - Part 1  
Lecture 17 - Bad CMOS Buffer - Part 2  
Lecture 18 - Noise margin characteristics of inverter  
Lecture 19 - Noise margin parameters  
Lecture 20 - Introduction to Delay in CMOS  
Lecture 21 - Transient analysis of CMOS Inverter  
Lecture 22 - RC approximated delay  
Lecture 23 - Switching Resistance  
Lecture 24 - CMOS Inverter approximated to RC Circuit  
Lecture 25 - Elmore delay  
Lecture 26 - Delay of FO4 inverter  
Lecture 27 - Extracting capacitances of 3-Nand gate for delay estimation  
Lecture 28 - Characterizing Delay of NOR gate  
Lecture 29 - Linear Delay model

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

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- Lecture 30 - Logical effort and Parasitic delay
- Lecture 31 - Logical effort and Parasitic delay for different gates
- Lecture 32 - Logical effort for short-channel current model
- Lecture 33 - Ring Oscillator design
- Lecture 34 - Optimizing Gate Size
- Lecture 35 - Optimizing Gate Sizes Example
- Lecture 36 - Optimizing the Stages for an inverter path
- Lecture 37 - Optimizing the Stages for a General Circuit
- Lecture 38 - Decoder Design
- Lecture 39 - Introduction to Combinational Circuit and assymmetric gates
- Lecture 40 - Assymmetric Gates analysis
- Lecture 41 - Assymmetric Gates analysis using short-channel current model
- Lecture 42 - Introduction to Skewed gates
- Lecture 43 - Skewed gates and best P/N ratio
- Lecture 44 - vIntroduction to Pseudo NMOS
- Lecture 45 - Psudeo NMOS gates
- Lecture 46 - Other Logic Family
- Lecture 47 - Dynamic Logic and Domino logic
- Lecture 48 - Domino gates
- Lecture 49 - Introduction to Stick Diagram
- Lecture 50 - Stick Diagram for different gates
- Lecture 51 - Applying Eulers path for stick diagram representations
- Lecture 52 - Multiplexer design and layout
- Lecture 53 - Introduction to Interconnects
- Lecture 54 - Interconnects - RC delay, and Energy
- Lecture 55 - Introduction to crosstalks in interconnects
- Lecture 56 - Transient analysis in Crosstalk
- Lecture 57 - Introduction to Repeaters in Interconnect Engineering
- Lecture 58 - Repeater Design
- Lecture 59 - Energy and delay analysis for interconnectwith repeaters
- Lecture 60
- Lecture 61 - Introduction to Power
- Lecture 62 - Switching Power and Energy Estimation
- Lecture 63 - Activity factor and estimating dynamic power for a combinational circuit design
- Lecture 64 - Analyzing Dynamic Power
- Lecture 65 - Energy estimation through driving factor
- Lecture 66 - Energy expression in terms of delay
- Lecture 67 - Voltage Scaling
- Lecture 68 - DVFS

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

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- Lecture 69 - Introduction to subthreshold leakage current model
- Lecture 70 - Subthreshold leakage current and Gate leakage current
- Lecture 71 - Estimating Static Power
- Lecture 72 - Introduction to CMOS Latch design
- Lecture 73 - CMOS Latch Design
- Lecture 74 - CMOS Latch and flipflop design
- Lecture 75 - Static Timing Analysis
- Lecture 76 - Static Timing Analysis (Continued...)
- Lecture 77 - Static Timing Analysis - Part 2
- Lecture 78 - Static Timing Analysis - Part 2.1
- Lecture 79 - Static Timing Analysis - Part 3
- Lecture 80 - TPDQ and TPCQ
- Lecture 81 - Static Timing Analysis - Part 4
- Lecture 82 - Static Timing Analysis - Part 5
- Lecture 83 - Static Timing Analysis - Part 6
- Lecture 84 - SET and CLEAR enabled Latch and Flipflop Design
- Lecture 85 - 1-bit Adder design
- Lecture 86 - Adder-Part2
- Lecture 87 - PG architecture - Part 1
- Lecture 88 - PG architecture - Part 2
- Lecture 89 - Carry Skip Adder
- Lecture 90 - Carry Look Ahead and Carry Increment Adder
- Lecture 91 - Other Adder Subsystems
- Lecture 92 - Approximate Multipliers - Part 1
- Lecture 93 - Approximate Multipliers - Part 2
- Lecture 94 - Approximate Adder



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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Digital Protection of Power System

Subject Co-ordinator - Prof. Bhaveshkumar R. Bhalja

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Introduction to Digital Relays - I  
Lecture 2 - Introduction to Digital Relays - II  
Lecture 3 - Components of Digital Relays  
Lecture 4 - Fundamentals of Digital Relays  
Lecture 5 - Phasor Estimation Algorithm - I  
Lecture 6 - Phasor Estimation Algorithm - II  
Lecture 7 - Phasor Estimation Algorithm - III  
Lecture 8 - Phasor Estimation Algorithm - IV  
Lecture 9 - Phasor Estimation Algorithm - V  
Lecture 10 - Frequency Estimation Algorithm  
Lecture 11 - Digital Protection of Transformer - I  
Lecture 12 - Digital Protection of Transformer - II  
Lecture 13 - Digital Protection of Transformer - III  
Lecture 14 - Digital Protection of Transformer - IV  
Lecture 15 - Digital Protection of Transformer - V  
Lecture 16 - Digital Protection of Induction Motors - I  
Lecture 17 - Digital Protection of Induction Motors - II  
Lecture 18 - Digital Protection of Induction Motors - III  
Lecture 19 - Digital Protection of Generators - I  
Lecture 20 - Digital Protection OF Generators - II  
Lecture 21 - Coordination of Overcurrent Relays for Distribution Network - I  
Lecture 22 - Coordination of Overcurrent Relays for Distribution Network - II  
Lecture 23 - Coordination of Overcurrent Relays for Distribution Network - III  
Lecture 24 - Coordination of Overcurrent Relays for Distribution Network - IV  
Lecture 25 - Coordination of Overcurrent Relays for Distribution Network - V  
Lecture 26 - Coordination of Overcurrent Relays for Distribution Network - VI  
Lecture 27 - Load Shedding and Frequency Relaying - I  
Lecture 28 - Load Shedding and Frequency Relaying - II  
Lecture 29 - Islanding Detection

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

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- Lecture 30 - Digital Distance Relaying Scheme for transmission Line - I
- Lecture 31 - Digital Distance Relaying Scheme for transmission Line - II
- Lecture 32 - Introduction to Phasor Measurement Unit - I
- Lecture 33 - Introduction to Phasor Measurement Unit - II
- Lecture 34 - Introduction to Phasor Measurement Unit - III
- Lecture 35 - Introduction to IEC 61850 - I
- Lecture 36 - Introduction to IEC 61850 - II
- Lecture 37 - Application of Big-Data Analytics in Power System Protection
- Lecture 38 - Cyber Security Issues in Power System Network
- Lecture 39 - Protection of Hybride AC/DC Microgrid: Issues and Challenges
- Lecture 40 - Application of AI-Based Techniques in Digital Protection

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Physics of Nanoscale Devices

Subject Co-ordinator - Prof. Vishvendra Singh Poonia

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Introduction  
Lecture 2 - Introduction and Course Overview  
Lecture 3 - Basics of Quantum Mechanics  
Lecture 4 - Electron in a Potential Well  
Lecture 5 - Electrons in Solids  
Lecture 6 - KP Model  
Lecture 7 - KP Model, Effective Mass  
Lecture 8 - Bands, Effective Mass, DOS  
Lecture 9 - Effective Mass, DOS  
Lecture 10 - Density of States  
Lecture 11 - Density of States  
Lecture 12 - Density of States - 3D, 2D  
Lecture 13 - Density of States - 2D, 1D, 0D  
Lecture 14 - DOS, Fermi Function  
Lecture 15 - Fermi-Dirac Distribution  
Lecture 16 - Fermi Function, General Model of Transport  
Lecture 17 - General Model of Transport - I  
Lecture 18 - General Model of Transport - II  
Lecture 19 - General Model of Transport - III  
Lecture 20 - General Model of Transport, Modes  
Lecture 21 - Modes - I  
Lecture 22 - Modes - II  
Lecture 23 - Modes, Diffusive Transport  
Lecture 24 - Diffusive Transport  
Lecture 25 - Diffusive Transport, Conductance  
Lecture 26 - Conductance, Bulk Transport - I  
Lecture 27 - Conductance, Bulk Transport - II  
Lecture 28 - Resistance: Ballistic and Diffusive Cases - I  
Lecture 29 - Resistance: Ballistic and Diffusive Cases - II

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

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- Lecture 30 - Resistance: Ballistic and Diffusive Cases - III
- Lecture 31 - Resistance: Diffusive Case
- Lecture 32 - The Idea of Mobility
- Lecture 33 - Voltage Drop in Ballistic Conductor
- Lecture 34 - 1D and 2D Realistic Conductors
- Lecture 35 - Introduction to MOSFET - I
- Lecture 36 - Introduction to MOSFET - II
- Lecture 37 - MOSFET: A Barrier Controlled Device
- Lecture 38 - MOSFET Electrical Characteristics
- Lecture 39 - MOSFET IV Characteristics - I
- Lecture 40 - MOSFET IV Characteristics - II
- Lecture 41 - MOSFET IV Characteristics - III
- Lecture 42 - MOSFET IV Characteristics - Traditional Approach
- Lecture 43 - MOSFET: Transport - I
- Lecture 44 - MOSFET: Transport - II
- Lecture 45 - MOSFET: Landauer Transport
- Lecture 46 - Landauer Transport and Ballistic MOSFET
- Lecture 47 - Ballistic MOSFET
- Lecture 48 - Ballistic Injection Velocity
- Lecture 49 - Velocity Saturation in Ballistic MOSFET and Electrostatics
- Lecture 50 - MOS Electrostatics
- Lecture 51 - MOS Electrostatics
- Lecture 52 - MOSFET: Electrostatics, Threshold Voltage
- Lecture 53 - MOSFET: 2D Electrostatics
- Lecture 54 - MOSFET: 2D Electrostatics and Quantum Confinement
- Lecture 55 - ETSOI MOSFETs, Quantum Confinement, Strain Engineering
- Lecture 56 - Strain Engineering, Thermoelectric Effects
- Lecture 57 - Thermoelectric Effects
- Lecture 58 - Thermoelectric Effects, Quantum Dot Devices
- Lecture 59 - Quantum Dot Devices
- Lecture 60 - Quantum Dot Devices - IV Characteristics, DFT, Course Summary

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

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

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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  $\Delta S$

Lecture 17 - Interface state density effects on  $\Delta S$ . 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

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

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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  $\epsilon$ -insensitive Loss function, examples of SVM learning
- Lecture 36 - Overview of SMO and other algorithms for SVM;  $\nu$ -SVM and  $\nu$ -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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## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Enclosure Design of Electronics Equipmen

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

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Enclosure design for Electronics Equipment Introduction

Lecture 2 - Aspects and features that are non electrical and are essential to Electronic Product Realisation

Lecture 3 - Enclosure Design in electronic equipment

Lecture 4 - Design as applied to small electronics products and projects

Lecture 5 - Sketching in design for communication

Lecture 6 - Sketching as a tool with example and exercise

Lecture 7 - Sketching Part 2

Lecture 8 - Enclosures to Product design

Lecture 9 - Examples of product enclosures ID\_PD

Lecture 10 - Enclosures with detailing

Lecture 11 - Alternate Designs in an everyday item

Lecture 12 - Sheet metal in small equipment (PSU)

Lecture 13 - Layouts and Materials of small equipment

Lecture 14 - Materials used for construction

Lecture 15 - Materials choice

Lecture 16 - Aluminium for common equipment

Lecture 17 - Use of Aluminium extrusions

Lecture 18 - Application of Sheet metal

Lecture 19 - Sheet Metal bending

Lecture 20 - Development of enclosures for bending

Lecture 21 - Video of Fabrication

Lecture 22 - What can be done in the lab Bending

Lecture 23 - Issues in bending and folding

Lecture 24 - Making a quick model

Lecture 25 - Detailing in plastic

Lecture 26 - Fabricating with flat plastic

Lecture 27 - Video in ID Lab

Lecture 28 - Off the shelf enclosures

Lecture 29 - Ready made enclosures

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

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- Lecture 30 - Application documentation and Selection
- Lecture 31 - Index of protection, Safety
- Lecture 32 - NEMA and related
- Lecture 33 - Testing for IP class
- Lecture 34 - Sealed Enclosures Video
- Lecture 35 - Public utility boxes
- Lecture 36 - EMI Sealing
- Lecture 37 - Sealed Enclosures 2
- Lecture 38 - Gasketing practice
- Lecture 39 - Gasketing Basics
- Lecture 40 - Off the shelf Aluminum enclosures
- Lecture 41 - Understanding
- Lecture 42 - Heat sink enclosures
- Lecture 43 - Detailing of Built in Heat sink boxes
- Lecture 44 - Connector basics
- Lecture 45 - Connectors - Part 2
- Lecture 46 - Common connectors
- Lecture 47 - Connectors (multi way) and CoAx
- Lecture 48 - MIL C connectors
- Lecture 49 - CAD in Layout Drawing
- Lecture 50 - Types of CAD
- Lecture 51 - CAD for enclosure Design
- Lecture 52 - Egpt layout with CAD
- Lecture 53 - CAD sample Example
- Lecture 54 - CAD Layout
- Lecture 55 - Detailing with CAD
- Lecture 56 - Integrating Products with CAD
- Lecture 57 - Product Detailing
- Lecture 58 - Components CAD Physical Models
- Lecture 59 - Sheet Metal and Plastic common details
- Lecture 60 - Sample of Simple Organic Shapes
- Lecture 61 - Conclusion

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Design of Photovoltaic Systems

Subject Co-ordinator - Prof. L. Umanand

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - A historical perspective
- Lecture 2 - PV cell characteristics and equivalent circuit
- Lecture 3 - Model of PV cell
- Lecture 4 - Short Circuit, Open Circuit and peak power parameters
- Lecture 5 - Datasheet study
- Lecture 6 - Cell efficiency
- Lecture 7 - Effect of temperature
- Lecture 8 - Temperature effect calculation example
- Lecture 9 - Fill factor
- Lecture 10 - PV cell simulation
- Lecture 11 - Identical cells in series
- Lecture 12 - Load line
- Lecture 13 - Non-identical cells in series
- Lecture 14 - Protecting cells in series
- Lecture 15 - Interconnecting modules in series
- Lecture 16 - Simulation of cells in series
- Lecture 17 - Identical cells in parallel
- Lecture 18 - Non-identical cells in parallel
- Lecture 19 - Protecting cells in parallel
- Lecture 20 - Interconnecting modules
- Lecture 21 - Simulation of cells in parallel
- Lecture 22 - Practicals - Measuring i-v characteristics
- Lecture 23 - Practicals - PV source emulation
- Lecture 24 - Introduction
- Lecture 25 - Insolation and irradiance
- Lecture 26 - Insolation variation with time of day
- Lecture 27 - Earth centric viewpoint and declination
- Lecture 28 - Solar geometry
- Lecture 29 - Insolation on a horizontal flat plate

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

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- Lecture 30 - Energy on a horizontal flat plate
- Lecture 31 - Sunrise and sunset hour angles
- Lecture 32 - Examples
- Lecture 33 - Energy on a tilted flat plate
- Lecture 34 - Energy plots in octave
- Lecture 35 - Atmospheric effects
- Lecture 36 - Airmass
- Lecture 37 - Energy with atmospheric effects
- Lecture 38 - Clearness index
- Lecture 39 - Clearness index and energy scripts in Octave
- Lecture 40 - Sizing PV for applications without batteries
- Lecture 41 - Sizing PV Examples
- Lecture 42 - Batteries - intro
- Lecture 43 - Batteries - Capacity
- Lecture 44 - Batteries - C-rate
- Lecture 45 - Batteries - Efficiency
- Lecture 46 - Batteries - Energy and power densities
- Lecture 47 - Batteries - Comparison
- Lecture 48 - Battery selection
- Lecture 49 - Other energy storage methods
- Lecture 50 - PV system design - Load profile
- Lecture 51 - PV system design - Days of autonomy and recharge
- Lecture 52 - PV system design - Battery size
- Lecture 53 - PV system design - PV array size
- Lecture 54 - Design toolbox in octave
- Lecture 55 - MPPT concept>
- Lecture 56 - Input impedance of DC-DC converters - Boost converter
- Lecture 57 - Input impedance of DC-DC converters - Buck converter
- Lecture 58 - Input impedance of DC-DC converters - Buck-Boost converter
- Lecture 59 - Input impedance of DC-DC converters - PV module in SPICE
- Lecture 60 - Input impedance of DC-DC converters -Simulation - PV and DC-DC interface
- Lecture 61 - Impedance control methods
- Lecture 62 - Impedance control methods- Reference cell - voltage scaling
- Lecture 63 - Impedance control methods- Reference cell - current scaling
- Lecture 64 - Impedance control methods- Reference cell - Sampling method
- Lecture 65 - Impedance control methods- Reference cell - Power slope method 1
- Lecture 66 - Impedance control methods- Reference cell - Power slope method 2
- Lecture 67 - Impedance control methods- Reference cell - Hill climbing method
- Lecture 68 - Practical points - Housekeeping power supply

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

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- Lecture 69 - Practical points - Gate driver
- Lecture 70 - Practical points - MPPT for non-resistive loads
- Lecture 71 - Simulation - MPPT
- Lecture 72 - Direct PV-battery connection
- Lecture 73 - Charge controller
- Lecture 74 - Battery charger - Understanding current control
- Lecture 75 - Battery charger - slope compensation
- Lecture 76 - Battery charger - simulation of current control
- Lecture 77 - Batteries in series - charge equalisation
- Lecture 78 - Batteries in parallel
- Lecture 79 - Peltier device - principle
- Lecture 80 - Peltier element - datasheet
- Lecture 81 - Peltier cooling
- Lecture 82 - Thermal aspects
- Lecture 83 - Thermal aspects - Conduction
- Lecture 84 - Thermal aspects - Convection
- Lecture 85 - Thermal aspects - A peltier refrigeration example
- Lecture 86 - Thermal aspects - Radiation and mass transport
- Lecture 87 - Demo of Peltier cooling
- Lecture 88 - Water pumping principle
- Lecture 89 - Hydraulic energy and power
- Lecture 90 - Total dynamic head
- Lecture 91 - Numerical solution - Colebrook formula
- Lecture 92 - Octave script for head calculation
- Lecture 93 - PV and Water Pumping Examples
- Lecture 94 - Octave script for hydraulic power
- Lecture 95 - Centrifugal pump
- Lecture 96 - Reciprocating pump
- Lecture 97 - PV power
- Lecture 98 - Pumped hydro application
- Lecture 99 - Grid connection principle
- Lecture 100 - PV to grid topologies Part-I
- Lecture 101 - PV to grid topologies Part-II
- Lecture 102 - PV to grid topologies Part-III
- Lecture 103 - 3ph d-q controlled grid connection intro
- Lecture 104 - 3ph d-q controlled grid connection dq-axis theory
- Lecture 105 - 3ph d-q controlled grid connection AC to DC transformations
- Lecture 106 - 3ph d-q controlled grid connection DC to AC transformations
- Lecture 107 - 3ph d-q controlled grid connection Complete 3ph grid connection

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

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- Lecture 108 - 1ph d-q controlled grid connection
- Lecture 109 - 3ph PV-Grid interface example
- Lecture 110 - SVPWM - discrete implementation
- Lecture 111 - SVPWM - analog implementation
- Lecture 112 - Application of integrated magnetics
- Lecture 113 - Life cycle Costing Growth models
- Lecture 114 - Life cycle Costing Growth model examples
- Lecture 115 - Life cycle Costing Annual payment and present worth factor
- Lecture 116 - Life cycle Costing LCC with example - 1
- Lecture 117 - Life cycle Costing LCC example - 2
- Lecture 118 - Life cycle Costing LCC example - 3

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

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

Subject Co-ordinator - Dr. Srinivas Talabatulla

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Introduction to Photonic Integrated Circuits
- Lecture 2 - Optical Waveguide Theory - Symmetric Waveguides
- Lecture 3 - Optical Waveguide Theory - Asymmetric Waveguides
- Lecture 4 - Vector Modes
- Lecture 5 - Channel Waveguide
- Lecture 6 - Directional Coupler and Coupled Mode Theory
- Lecture 7 - Passive Devices and Beam Propagation Method
- Lecture 8 - Dynamic Devices
- Lecture 9 - Integrated optical Systems and Applications
- Lecture 10 - Fabrication and Characterisation
- Lecture 11 - MOEMS
- Lecture 12 - Ring Resonators
- Lecture 13 - Photonic Band Gap Devices
- Lecture 14 - Lecture Summary

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Neural Science for Engineers

Subject Co-ordinator - Prof. Vikas V

Co-ordinating Institute - IISc - Bangalore

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

- Lecture 1 - Course Outline and Scope
- Lecture 2 - Biological Information Systems
- Lecture 3 - Analogy between Living Systems with Semiconductor Structures
- Lecture 4 - Action Potential - I
- Lecture 5 - Action Potential - II
- Lecture 6 - Synaptic Potential
- Lecture 7 - Threshold and Action Potential Propagation
- Lecture 8 - Anatomy of a Neuron
- Lecture 9 - Neuro Muscular Junction
- Lecture 10 - Spatial and Temporal Summation of neuronal electrical activities
- Lecture 11 - Brain Anatomy Introduction
- Lecture 12 - Architecture of the Nervous System
- Lecture 13 - Architecture of the Nervous System (Continued...)
- Lecture 14 - Analog and Digital Processing in the Neuron - I
- Lecture 15 - Analog and Digital Processing in the Neuron - II
- Lecture 16 - Energy Sources of Neuronal Systems
- Lecture 17 - Skull Demonstration
- Lecture 18 - Brain Anatomy: Skull
- Lecture 19 - Brain Anatomy 3D - I
- Lecture 20 - Brain Anatomy 3D - II
- Lecture 21 - Brain Anatomy 3D - III
- Lecture 22 - Basics of Brain Imaging Techniques
- Lecture 23 - Brain anatomy using MR images - I
- Lecture 24 - Brain anatomy using MR images - II
- Lecture 25 - Spinal Cord Anatomy
- Lecture 26 - Reflexes: Introduction
- Lecture 27 - Monosynaptic Reflexes
- Lecture 28 - Polysynaptic Reflexes
- Lecture 29 - Criteria for electrode material

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- Lecture 30 - Introduction to brain stimulation
- Lecture 31 - Brain Stimulation: Device fabrication - Illustration
- Lecture 32 - Brain Stimulation: Electronic Systems (Current Mirrors)
- Lecture 33 - Brain regions and associated functions
- Lecture 34 - Human vision system - II
- Lecture 35 - Network analysis during visual processing
- Lecture 36 - Control of eye movements
- Lecture 37 - COMSOL Multiphysics for Medical Devices
- Lecture 38 - COMSOL Brain Electrical Stimulation Demo
- Lecture 39 - Human vision system - III
- Lecture 40 - Human auditory system - I
- Lecture 41 - Human auditory system - II
- Lecture 42 - Human auditory system - III
- Lecture 43 - The human balance system
- Lecture 44 - Movement: Introduction
- Lecture 45 - Movement: Synchronization
- Lecture 46 - Movement: Role of Spinal Cord
- Lecture 47 - Movement: Role of Cerebellum
- Lecture 48 - Memory and Learning - I
- Lecture 49 - Memory and Learning - II
- Lecture 50 - Microengineering devices for Neural Signal Acquisition
- Lecture 51 - Microfabrication Process for Multi Electrode Array
- Lecture 52 - Introduction and Applications of Event Related Potentials
- Lecture 53 - ERP Extraction Demonstration