

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

NPTEL Video Course - Electrical Engineering - NOC:Fiber Optic Communication Technology

Subject Co-ordinator - Prof. Deepa Venkitesh

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction to FOCT
Lecture 2 - Communication through the ages
Lecture 3 - Communication
Lecture 4 - Communication
Lecture 5 - Digital Communication for Optical Communication
Lecture 6 - Digital modulation
Lecture 7 - Digital modulation
Lecture 8 - Optical communication system
Lecture 9 - Assignment Discussion - Week 1
Lecture 10 - Optical Sources
Lecture 11 - Semiconductor gain media- structure, spectrum
Lecture 12 - Optical sources
Lecture 13 - External Quantum Efficiency
Lecture 14 - Modulation Bandwidth of LED
Lecture 15 - Optical and Electrical Bandwidth of LED
Lecture 16 - Emission Pattern of LED
Lecture 17 - Optical Sources
Lecture 18 - Laser Diodes
Lecture 19 - Laser Diodes
Lecture 20 - Laser Diodes
Lecture 21 - Assignment Discussion - Week 2
Lecture 22 - Laser Diodes
Lecture 23 - Laser Diodes
Lecture 24 - Laser rate equation
Lecture 25 - Laser rate equation
Lecture 26 - Laser power derivation
Lecture 27 - Modulation Response of Laser - 1
Lecture 28 - Modulation Response of Laser - 2
Lecture 29 - Modulation Response of Laser - 3

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- Lecture 30 - Setbacks of direct modulation of laser
- Lecture 31 - Setbacks of direct modulation of laser
- Lecture 32 - Assignment Discussion - Week 3
- Lecture 33 - Recap of direction modulation consequences
- Lecture 34 - Noise in Lasers
- Lecture 35 - Relative Intensity Noise
- Lecture 36 - Laser Phase Noise - 1
- Lecture 37 - Laser Phase Noise - 2
- Lecture 38 - Effect of Laser Phase Noise
- Lecture 39 - Electro-optic phase modulation
- Lecture 40 - Electro-optic intensity modulator
- Lecture 41 - Biasing of MZM
- Lecture 42 - Biasing of MZM
- Lecture 43 - Line coding schemes and their bandwidth requirements
- Lecture 44 - Assignment Discussion - Week 4
- Lecture 45 - Introduction to optical Fiber
- Lecture 46 - Attenuation in optical fibers
- Lecture 47 - Fiber Modes
- Lecture 48 - Modes of a step index fiber - 1
- Lecture 49 - Modes of a step index fiber - 2
- Lecture 50 - Modes of a step index fiber - 3
- Lecture 51 - Modes of a step index fiber - 4
- Lecture 52 - Modes of a step index fiber - 5
- Lecture 53 - Modes and Cut-off conditions
- Lecture 54 - Universal b-V curves
- Lecture 55 - Modal Profiles in step index fiber
- Lecture 56 - Mode Field Diameter
- Lecture 57 - Dispersion- Intermodal dispersion derivation
- Lecture 58 - Dispersion-Bit rate distance Product
- Lecture 59 - Phase Velocity and Group Velocity - 1
- Lecture 60 - Phase Velocity and Group Velocity - 2
- Lecture 61 - Material dispersion
- Lecture 62 - Waveguide dispersion
- Lecture 63 - Total Dispersion in optical fiber
- Lecture 64 - Polarization mode dispersion
- Lecture 65 - Photodetectors concepts
- Lecture 66 - p-n and p-i-n Photodetectors
- Lecture 67 - Avalance Photodetector
- Lecture 68 - Direct detection receiver and sources of noise

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- Lecture 69 - Quantifying noises in direct detection receivers
- Lecture 70 - SNR and Operation Regimes
- Lecture 71 - Noise Equivalent power and SNR in APDs
- Lecture 72 - Coherent Receivers
- Lecture 73 - SNR analysis of coherent receivers
- Lecture 74 - Performance Evaluation - 1
- Lecture 75 - Performance Evaluation - 2
- Lecture 76 - Performance Metrics
- Lecture 77 - Performance Metrics
- Lecture 78 - Quantum limit of photodetection
- Lecture 79 - Optical Amplifier
- Lecture 80 - Erbium doped fiber amplifier - 1
- Lecture 81 - Erbium doped fiber amplifier - 2
- Lecture 82 - Erbium doped fiber amplifier - 3
- Lecture 83 - Erbium doped fiber amplifier - 4
- Lecture 84 - Link Design - Rise Time Budget
- Lecture 85 - Link Design - Case Study
- Lecture 86 - Link Design - Passive Optical Network and long haul link
- Lecture 87 - Dispersion - Recap
- Lecture 88 - Dispersion Compensation - Pulse Propagation with dispersion
- Lecture 89 - Pulse propagation - 2
- Lecture 90 - Dispersion Compensation - Dispersion Transfer Function
- Lecture 91 - Dispersion Compensation - Case Study
- Lecture 92 - Dispersion Compensation - WDM and DSP
- Lecture 93 - Nonlinear Effects- Nonlinear refractive Index
- Lecture 94 - Self Phase Modulation
- Lecture 95 - Cross Phase Modulation
- Lecture 96 - Scattering Processes in optical fibers
- Lecture 97 - Stimulated Brillouin Scattering
- Lecture 98 - Stimulated Raman Scattering
- Lecture 99 - Components - Directional Couplers
- Lecture 100 - Components - VOA, Polariser, Polarisation Controllers
- Lecture 101 - Components - Isolator
- Lecture 102 - Components - Circulator, Definitions
- Lecture 103 - Components - Wavelength filters
- Lecture 104 - Components - Arrayed Waveguide Gratings, WSS
- Lecture 105 - Balanced Detection
- Lecture 106 - Polarisation Diverse Coherent Receiver
- Lecture 107 - Phase and Polarisation Diverse Coherent Receiver

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- Lecture 108 - Overview of impairments in coherent optical communication
- Lecture 109 - Transceiver impairments - Generation and Compensation
- Lecture 110 - Channel Impairments - Generation and Compensation
- Lecture 111 - Demo video
- Lecture 112 - Introduction to Optical Networks
- Lecture 113 - Layers of Optical Network
- Lecture 114 - SDH/SONET Layering, Frame Structure
- Lecture 115 - Physical Networks Topologies
- Lecture 116 - Topology specific Link Design
- Lecture 117 - Network Protection
- Lecture 118 - Access Networks- PON
- Lecture 119 - Optical Interconnects, Data Centers
- Lecture 120 - Optical communication for Wireless Fronthauling