

PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY
Department of Electronics & Communication Engineering

LESSON PLAN

Subject Name: - Fiber Optic Communication
Year: - 4th

Subject Code: - ECP-10A
Semester: - 7th

Lecture No	Unit No	Topic	COs Covered
L 1	UNIT-I	Unit-1: Introduction to the subject Optical communication.	CO1
L 2		Propagation within the fiber, Numerical aperture of fiber	
L 3		Acceptance angle, step index and graded index fiber, Modes of propagation in the fiber	
L 4		Single-mode and multi-mode fibers	
L 5		Single-mode and multi-mode fibers	
L 6		Splices and connectors.	
L 7		Optical Power Launching and Coupling	
L 8		Fiber-to-fiber joints.	
L 9	UNIT-II	Unit 2: LOSSES IN OPTICAL FIBER: Attenuation, Absorption Losses	CO2
L 10		Scattering Losses, Leaky modes, Mode coupling losses, Bending Losses, Combined Losses in the fiber	
L 11		Effect of dispersion on the pulse transmission Intermodal dispersion	
L 12		Material dispersion, Wave guide dispersion	
L 13		Polarization Mode Dispersion, Total dispersion	
L14		Transmission rate. Dispersion Shifted Fibers	
L15		Dispersion Compensating Fibers	
L 16	UNIT-III	Unit 3: LEDS as light Source	CO3
L 17		Laser Action in semiconductor Lasers	
L 18		Semiconductor Lasers for optical communication – Laser modes	
L19		Semiconductor Lasers for optical communication – Laser modes	
L20		Spectral Characteristics, Power Voltage Characteristics, Frequency response.	

L 21		DETECTORS: P-I-N Photodiode	
L 22		Working of APD	
L 23		Noise Analysis in detectors	
L 24		Coherent and non-coherent detection,	
L 25		Working of Infrared sensors	
L 26	UNIT- IV	Unit 4: The fiber-optic Communication System: Design considerations of fiber optic systems	CO4
L 27		Concept of Analog and digital modulation	
L 28		Types of Optical Devices Optical coupler	
L 29		Space switches, linear divider-combiners	
L 30		Space switches, linear divider-combiners	
L 31		WDM: strategy, wavelength division multiplexer and demultiplexer	
L 32		WDM: strategy, wavelength division multiplexer and demultiplexer	
L 33		Working of Optical amplifier	
L 34		OPTICAL NETWORKS: Elements and Architecture of Fiber-Optic Network	
L 35		Optical link network-single hop, multihop	
L 36		Hybrid and photonic networks.	
L 37		Revision	
L 38		Revision	

Suggested Books:

- John Power, An Introduction to Fiber optic systems, McGraw Hill International.
- John Gowar , Optical communication Systems.
- R. Ramaswamy, Optical Networks, Narosa Publication
- John M. Senior, Optical Fiber Communication
- Gerd Keiser, Optical Fiber Communication

References online link:

<https://www.youtube.com/watch?v=ougKUUM3hJA&list=PLHj96QRJ0kOhH8xoXXrOgkMf9ZOvjhqYI>