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

### LESSON PLAN

**Subject Name: - Optical Communication** **Subject Code: - ECE-419N**
**Year: - 4th** **Semester:- 7th**

| Lecture No | Unit No | Topic | References |
|---|---|---|---|
| L1 | | INTRODUCTION : | PPT |
| L2 | UNIT-1 | Propagation within the fiber, Numerical aperture of fiber | John Power, An Introduction to Fiber optic systems, McGraw Hill International. |
| L3 | | Diffraction, step index and graded index fiber, | |
| L4 | | Modes of propagation in the fiber, Single mode and multi mode fibers. | |
| L5 | | Splices | |
| L6 | | Connectors | |
| L7 | | Numericals | |
| L8 | UNIT-2 | LOSSES IN OPTICAL FIBER : Rayleigh Scattering Losses | John M. Senior,Optical Fiber Communication |
| L9 | | Absorption Losses, Leaky modes | |
| L10 | | mode coupling losses, Bending Losses, | |
| L11 | | Combined Losses in the fiber. | |
| L12 | | DISPERSION EFFECT : Effect of dispersion on the pulse transmission | |
| L13 | | Intermodal dispersion, | |
| L14 | | Material dispersion, , | |
| L15 | | Wave guide dispersion | |
| L16 | | Total dispersion, Transmission rate. | |
| L17 | UNIT-3 | LIGHT SOURCES : LEDS | Gerd Keiser, Optical Fiber Communication |

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| L18 | | Laser Action in semiconductor Lasers, | |
| L19 | | Spectral Characteristics | |
| L20 | | Frequency response. | |
| L21 | | DETECTORS : P-I-N Photodiode, | |
| L22 | | APD Noise Analysisin detectors, | |
| L23 | | Coherent and non-coherent detection, | |
| L24 | | Power Voltage Characteristics, | |
| L25 | | The fiber-optic Communication System, Infrared sensors(eg: TSOP 1738). | |
| L26 | UNIT-4 | Optical Coupler | R. Ramaswamy, Optical Networks, Narosa Publication |
| L27 | | Linear Dividers and | |
| L28 | | WDM and DMUX | |
| L29 | | Optical Link Network | |
| L30 | | Hybrid and Photonic Network | |
| L31 | | Space Switches | |
| L32 | | Combiners | |
| L33 | | Optical Amplifier | |
| L34 | | Single Hop | |
| L35 | | Multi Hop | |
| L36 | | Numericals | |
| L42 | | Revision | |

**Text Book/ Reference Books:**


1. John Power, An Introduction to Fiber optic systems, McGraw Hill International.
2. John Gowar , Optical communication Systems.

3. R. Ramaswamy, Optical Networks, Narosa Publication
4. John M. Senior,Optical Fiber Communication
5. Gerd Keiser, Optical Fiber Communication