

**SARDAR PATEL UNIVERSITY**  
**Programme & Subject: M.Sc (Instrumentation & Control)**  
**Semester: III**  
**Syllabus with effect from – June - 2016**

<b>Paper Code: PS03EINC02</b>	<b>Total Credit: 4</b>
<b>Title Of Paper: Optoelectronics</b>	

Unit	Description in Detail	Weightage (%)
I	Optical Sources: LED- Introduction, Structures & Characteristics, LASER-Basic Concepts, Optical Emission from Semiconductors & Non-semiconductor Lasers.	25%
II	Optical Detectors: Introduction, Detection Principles, Absorption, Quantum Efficiency, Responsivity, Long Wavelength Cutoff, Phototransistors & Photoconductive Detectors.	25%
III	Optical Fiber: Ray Theory, Single-mode Fibers, Attenuation, Losses, Dispersion & Polarization, Modes & Cables, Alignment, Splices, Connectors, Couplers, Receiver Noise, Optical Amplifiers, Optoelectronic Integration, Optical Computation.	25%
IV	Optical Transmitter-Receiver Circuit, Analog-Digital Systems, Optical Multiplexing, Optical Fiber systems: Detection System, Modulation Formats & Demodulation Schemes, Optical Fiber Measurements: Attenuation, Dispersion, Refractive Index Profile, Cutoff Wavelength, Numerical Aperture, Fiber Diameter, Field Measurements, Applications: Industrial, Sensor Systems, Local Area Networks.	25%

**Basic Text & Reference Books:-**

- Optical Fiber Communications – Principles and Practice, John M. Senior, Pearson Education.
- Semiconductor Optoelectronic Devices, Pallabh Bhattacharya, Prentice Hall of India Private Limited.
- Advanced Electronic Communication System, Wayne Tomasi, Prentice Hall of India Private Limited.

