SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Instrumentation)
Semester: III
Syllabus with Effect from: June - 2010

Paper Code: PS03EINS02	**Total Credit: 4**
Title Of Paper: Optoelectronics	

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.