SARDAR PATEL UNIVERSITY
Programme: B.Sc (Electronics & Communication)
Semester: VI
Syllabus with effect from:November/December-2013

Paper Code: US06CELC04	Total Credit: 3
Title Of Paper: Optical Fiber Communication	

Unit	Description in detail	Weighting (%)
I	**Basic of Optical fiber** Introduction, elements of fiber optic communication system, advantages, optical spectral band, nature of light, structure of fiber optic cable, Basic optical laws: reflection, refraction, snell's law, total internal reflection, Acceptance angle, Numerical Aperture, ray propagation theory: meridional and skew rays.	
II	**Modes of Optical fiber and Fiber Fabrication techniques** Modes of propagation, Index profile, step index: Single mode, Multimode, Graded – Index Fiber, Plastic fiber, glass fiber, fiber material, and Fiber fabrication techniques: (OVPD, VAD, MCVD, PAMCVD), Double crucible method, splicing and joining of fibers: Fusion splices, Sleeve splices, V-Groove Splices.	
III	**Signal degradation in optical fiber** Introduction, Attenuation: attenuation unit, absorption loss, scattering loss, Bending loss: macro bending and Micro bending, core and Cladding losses, Dispersion : Inter modal and Intra modal, material dispersion, waveguide dispersion.	
IV	**Optical Sources and Detectors** Optical Sources: Introduction, review of semiconductor physics, Light emitting Diode, structure of LED, Light source material, Surface emitting LED, edge emitter LED, Laser Diode, structure, Comparison of LED Vs LASER, Optical Detectors: introduction, PIN photo detector, Avalanche Photodiode.	

Basic Text & Reference Books:-

- Optical Fiber Communication –Gerd Keiser (4th Edition)
- Optical Fiber Communication: Principles and Practice-J.M Senior (PHI)
- Optical Fiber Communication-D.C Agarwal (wheeler Publication)
- Fiber Optic communication –V.B.Patel (ATUL PRAKASHAN)
- Digital Communication Systems with Satellite and fiber Optic Application- Harold Kolimiris (Pearson Education Asia)