Optical Communication & N/W
EC703B
Contacts: 3L
Credits: 3

Introduction to communication systems: [2]
Principles, components; Different forms of communications in brief, advantages of optical fibre communication, spectral characteristics.

Optical Fibre wave guide: [2]
Structure, Single and Multimode operation; Attenuation, Material and wave guide dispersion.

Optical Sources: [5]
Light Emitting Diode; principle, structures, power and efficiency, coupling to fibres.
Laser diodes; principle, double heterostructure, gain and index guiding, distributed lasers.
Quantum Well Lasers; Modes and narrow linewidth lasers.
Modulation; Bandwidth for modulation, Optical transmitters: components.

Optical Detectors: [2]
Device types, optical detection principles, efficiency, responsivity, bandwidth. Preamplifiers; noise sources, signal to noise ratio.

Point-to-point link and Wavelength Division Multiplexing: [11]
Building blocks; Multiplexing; Intensity Modulation/Direct Detection system; Principle of Regeneration; WDM link, Optical amplifiers; EDFA, SOA, Raman amplifier, Fabry-Perot filters. Dispersion compensation and management, Link analysis and Bit-Error-Rate calculation.

Optical Network: [4]
LAN, MAN, WAN; Topologies: bus, star, ring; Ethernet; FDDI; Telecom networking:SDH/SONET.

Different forms of access networks: [4]
Telephony; ISDN; Cable TV; Broadcast and Switched Networks; HFC networks; FTTC and FTTHnetworks; All optical networks.

Books:
1. Optical Networks – A practical perspective : Rajiv Ramaswami, K. N. Sivarajan, Galen H. Sasaki (Morgan-Kaufman)
2. Optical Fibre Communication : John M. Senior (Pearson)
3. Optical Fibre Communication : Gerd Kaiser (TMH)
4. Optical Communication Systems : John Gawar (PHI)