# 2<sup>nd</sup> Semester

## TELECOMMUNICATION NETWORK AND OPTICAL SWITCHING

**MODULE – I**                                                                                               (8 hours)

**Introduction** Evolution, simple telephone communication, basis of switching system, telecommunication networks.

**Electronic space division switching** Stored program control, centralized and distributed SPC, software architecture, application software, enhanced software, two and three stage networks.

**MODULE – II**                                                                                             (10 hours)

**Time Division Switching** Basic time division space switching, basic time division time switching, time multiplexed space and time switching, combination switching, three-stage combination switching.

**Traffic Engineering** Network traffic load and parameters, Grade of service, modeling switching systems, incoming traffic, blocking models and loss estimates.

**MODULE – III**                                                                                           (12 hours)

**OPTICAL NETWORK ARCHITECTURES**  Introduction to Optical Networks; Layered Architecture-Spectrum partitioning, Network Nodes, Network Access Stations, Overlay Processor, Logical network overlays.

**OPTICAL SWITCHING**  Free-space optical switching – multistage optical interconnection networks- back plane optical interconnects, optical memory for switching – logic functionality – nonlinear fiber couplers, photonic switch architectures based on TDM, WDM, OCX, ATM.

**MODULE – IV**                                                                                            (8 hours)

**OPTICAL INTERNET NETWORKS**  Optical Circuit switching- Optical Burst switching- Optical packet switching – Unbuffered Networks, Buffering Startegies- MPLS in WDM Networks -Types MPLS Nodes – Multi protocol lambda switching – MPLS and Optical TE similarities – IP, MPLS and Optical control planes –LSP routing.

**Textbooks:**

1.Thiagarajan Viswanathan, Telecommunication Switching Systems and Networks by, PHI Learning Pvt. Ltd., New Delhi.

2.Alberto Leon-Gracia and IndraWidjaja, Communication Networks, Tata McGraw Hill Education Pvt. Ltd., New Delhi.

3. Thomas E. Stern, Georgios Ellinas, Krishna Bala, "Multiwavelength Optical Networks – Architecture, Design and control ", Cambridge University Press, 2nd Edition, 2009.

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4. Rajiv Ramaswami and Kumar N. Sivarajan, "Optical Networks : A Practical Perspective", Harcourt Asia Pte Ltd., Second Edition 2006.

5. C. Siva Ram Moorthy and Mohan Gurusamy, "WDM Optical Networks : Concept, Design and Algorithms", Prentice Hall of India, Ist Edition, 2002.

6. Uyless Black, " Optical Network: Third Generation Transport System",Pearson Education, Ist edition,2002.