KL University
Department of Electronics & Computer Engineering
M.Tech (wcsn) First Semester 2015-2017

Course Code : 15-EM51F4
Course Title : Optical Network
Course Structure : 3-0-0
Credits : 3

SYLLABUS:

Unit 1:
Introduction
Introduction to WDM optical networks-WDM networks architectures- issues in wavelength routed networks. Wavelength routing algorithms: Introduction- Classification of RWA algorithms-RWA algorithms- fairness and admission control- distributed control protocols.

Unit 2:
Wavelength Convertible Networks
Need for wavelength conversion-wavelength convertible node architectures-converter placement and allocation problems. Wavelength rerouting algorithms: Benefits of wavelength rerouting-issues in wavelength rerouting-light path migration-rerouting schemes-rerouting in networks with sparse wavelength conversion- rerouting in multi fiber networks.

Unit 3:
Virtual Topology Design
Introduction- virtual topology design problems- virtual topology design sub problems-virtual topology design heuristics-need for virtual topology design reconfiguration. Optical multicasting: Introduction to multicast routing-multicasting node architectures- multicast tree generation-source based tree generation-Steiner tree based generation.

Unit 4:
Control and Management
Network management functions, management frame work and protocols, configuration management and adaptation management. Network survivability: failures and recovery-protection in SONET- benefits of optical layer protection-restoration schemes in WDM networks-multiplexing schemes-Traffic grooming in WDM.

Unit 5:
Optical Burst Switching
OBS node architecture-burst switching protocols-wavelength channel scheduling. Optical packet switching and access networks: Introduction-optical packet switching node architecture- contention resolution protocols. Enhanced HFC-FTTC –PON architectures.

Text Books:
1. C. Siva Ram Murthy and Mohan Gurusamy, “WDM Optical Networks: Concepts, Design and Algorithms”, Prentice Hall of India, 2002.
2. Rajiv Ramaswami and Kumar N. Sivarajan, “ Optical Networks: A Practical Perspective, Second edition, Morgan Kaufmann Publishers, 2002.

Reference Book:
1. B.Mukherjee, “Optical Communication Networks”, Mc Graw Hills, New York, 1997.