NUST School of Electrical Engineering and Computer Sciences
(Photonic Network MSIT-8 2nd Semester)

Title	:	PHOTONIC NETWORK	**Course Code :**	CC890
Credits	:	3+0	**Department**	: CSE
Semester Duration	:	March 10, 2008- June 28, 2008	**Revision Date:**	11th Mar 08

Instructor

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Goals and Objectives

The intent is to provide the students with a sound understanding of the fundamentals of optical networks, including system architecture, performance, components and technology.

Course Description

This course starts with the growing demand for bandwidth, optical network architecture, and how the network has evolved over time. It then moves onto properties of optical fiber, first generation, second generation and third generation networks and advance technologies wherein it discusses how DWDM works including a discussion on optical cross-connects and switches and certain emerging areas in photonic networks. The later part of the course has a strong emphasis on design of photonic networks.

Pre-Requisites or background study required

Text book

Optical Networks by Rajiv Ramaswami and K N Sivaranjan
Optical networks & WDM by Walter Goralski
Optical Fiber Communication systems by John M Senior

Reference books

Fiber Optics Technology by Stewart Personick
Fiber Optic Communications by Gerad Lachs

Reference sites

- http://www.engineeringlab.com/fiberoptics.html
- http://www-users.aston.ac.uk/~blowkj/photonicnetworks/syllabus.htm
- http://www.ibk.tuwien.ac.at/~saleksic/Lectures/PhotNet/PNetHP.htm

Course Contents

Introduction and Overview of Photonics
Optical Transmitters
Optical Amplifiers
Optical Receivers
Fiber Optic Fundamentals
Wavelength Routed Networks
Optical Burst Switching
Access Networks
OLTs, ONUs, OADM, OXC
Optical Networking and IP
SONET/SDH
WDM and DWDM
Performance analysis of optical networks
Emerging trends in optical networks

Weightage (tentative)

- Quizzes: 10%
- Assignments: 5%
- Term paper 20%
- Mid Term 20%
- Final 45%

Computer Usage simulation projects on OPTISIM software