B. P. Poddar Institute of Management & Technology

Department of Electronics & Communication Engineering

Course Outcomes and Their Mapping with POs/PSOs

Academic Year: 2018-19

Optical Communication & Network (EC 703B)

COURSE PRE-REQUISITES:

C.CODE	COURSE NAME	DESCRIPTION	SEM
EC 501	Analog Communication	Elements of communication, Concept of modulation, Concept of different multiplexing	V
EC 601	Digital Communication	Digital modulation demodulation techniques	VI

COURSE OBJECTIVES:

1	Explain the basic idea of optical fiber communication systems.
2	Discuss the characteristics and limitations of system components like laser, LED, different optical detectors, external modulators, optical fiber, optical amplifiers etc.
3	Introduce the concept of wavelength division multiplexing (WDM).
4	Develop the concepts of optical networks

COURSE OUTCOMES:

Sl. NO	DESCRIPTION	Blooms Level	PO(1..12) MAPPING	PSO(1..2) MAPPING
	Students will be able to:			
C403B.1	Explain the basic principle of optical fiber communication	L2 Understand	PO1, PO3, PO7, PO12	PSO1, PSO2
C403B.2	Calculate loss and dispersion in optical fibers	L3 Apply	PO1, PO2, PO3, PO4, PO7, PO12	PSO1, PSO2
C403B.3	Select appropriate optical source and detector for a specific optical fiber communication system.	L5 Evaluate	PO1, PO2, PO3, PO4, PO7, PO12	PSO1, PSO2
C403B.4	Appraise the performance of point to point link.	L4 Analyze	PO1, PO2, PO3, PO4, PO7, PO12	PSO1, PSO2
C403B.5	Calculate assessment parameters for various optical networks.	L3 Apply	PO1, PO3, PO7, PO12	PSO1, PSO2
COURSE OVERALL PO/PSO MAPPING: PO1, PO2, PO3, PO4, PO7, PO12, PSO1, PSO2				

MAPPING OF CO WITH PO/PSO (DETAILED; HIGH: 3; MEDIUM: 2; LOW: 1)**:**

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403B.1	3	-	1	-	-	-	1	-	-	-	-	1	1	1
C403B.2	3	2	1	1	-	-	1	-	-	-	-	1	1	1
C403B.3	3	2	1	1	-	-	1	-	-	-	-	1	2	2
C403B.4	3	3	2	2	-	-	1	-	-	-	-	1	3	3
C403B.5	3	-	1	-	-	-	1	-	-	-	-	1	3	3
C403B	**3**	**2.3**	**1.2**	**1.3**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**1**	**2**	**2**

* For Entire Course, PO /PSO Mapping; 1 (Low); 2(Medium); 3(High) Contribution to PO/PSO

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Dr. Ivy Majumdar

L/ T No.	Topics to be Covered	Text/ References	Teaching Aid	Teaching Methodology
L1	Familiarization of the students with Institute and Department Vision, Mission, PEOs, POs, PSOs, COs and Course Overview		PPT, GGB, chalk, duster	Lecture
L2	Introduction to communication systems: Principles, components; Different forms of communications in brief.	T1	PPT, GGB, chalk, duster	Lecture
L3	Optical Fibre wave guide: Structure, Single and Multimode operation, Attenuation.	T1	PPT, GGB, chalk, duster	Lecture
L4	Material and wave guide dispersion.	T1	PPT, GGB, chalk, duster	Lecture
T1	Problems on optical fiber losses & attenuations		PPT, GGB, chalk, duster	Problem solving, classroom discussion
L5	Light Emitting Diode; principle, structures, power and efficiency, coupling to fibres.	T1	PPT, GGB, chalk, duster	Lecture
L6	Laser diodes; principle, double heterostructure, gain and index guiding,	T1, T2	PPT, GGB, chalk, duster	Lecture
T2	Problems on LED			Problem solving, classroom discussion, Quiz
L7	Distributed lasers, Quantum Well Lasers;	T1, T2	PPT, GGB, chalk, duster	Lecture
L8	Modes and narrow linewidth lasers. Modulation; Bandwidth for modulation.	T1	PPT, GGB, chalk, duster	Lecture
L9	Optical transmitters: components.	T2	GGB, chalk, duster	Lecture
T3	Problems on LASER			Problem solving, classroom discussion, Quiz
L10	Optical Detectors: Device types, optical detection principles, efficiency, responsivity, bandwidth.	T1	PPT, GGB, chalk, duster	Lecture
L11	Preamplifiers; noise sources, signal to noise ratio.	T1, T2	PPT, GGB, chalk, duster	Lecture
T4	Problems on optical detectos			Problem solving, classroom discussion, Quiz
L12	Point-to-point link and Wavelength Division Multiplexing: Building blocks; Multiplexing;	T2	PPT, GGB, chalk, duster	Lecture
L13	Intensity Modulation.	T2	PPT, GGB, chalk, duster	Lecture

L14	Direct Detection system.	T2	PPT, GGB, chalk, duster	Problem solving, classroom discussion
L15	Principle of Regeneration; WDM link.	T2	PPT, GGB, chalk, duster	Lecture
L16	Optical amplifiers; EDFA.	T2	PPT, GGB, chalk, duster	Lecture
L17	SOA,	T2	PPT, GGB, chalk, duster	Lecture
L18	Raman amplifier.	T2	PPT, GGB, chalk, duster	Lecture
L19	Fabry-Perot filters.	T2	GGB, chalk, duster	Lecture.
L20	Dispersion compensation.	T2	PPT, GGB, chalk, duster	Lecture.
L21	Dispersion management.	T2	PPT, GGB, chalk, duster	Lecture.
L22	Link analysis and Bit-Error-Rate calculation	T2	PPT, GGB, chalk, duster	Lecture.
T5	Problems on system budget		PPT, GGB, chalk, duster	Problem solving, classroom discussion
L23	Optical Network: LAN, MAN, WAN; Topologies: bus, star, ring.	T1, T2	PPT, GGB, chalk, duster	Lecture.
L24	Ethernet; FDDI.	T2	PPT, GGB, chalk, duster	Lecture.
L25	Telecom networking: SDH.	T2	GGB, chalk, duster	Lecture.
L26	SONET	T2	PPT, GGB, chalk, duster	Lecture.
L27	Different forms of access networks: Telephony; ISDN; Cable TV;	T2	PPT, GGB, chalk, duster	Lecture.
L28	Broadcast and Switched Networks;;	T2	PPT, GGB, chalk, duster	Problem solving, classroom discussion, quiz
L29	HFC networks	T2	PPT, GGB, chalk, duster	Lecture.
L30	FTTC	T2	PPT, GGB, chalk, duster	Lecture.
L31	FTTH	T2	PPT, GGB, chalk, duster	Lecture.
T6	Discussions on previous year questions and model questions		GGB, chalk, duster	Problem solving, classroom discussion, quiz

GGB: Green glass board.

Text Books:

1. Optical Fibre Communication : John M. Senior (Pearson)

2. Optical Fibre Communication : Gerd Kaiser (TMH)

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GAP WITHIN THE SYLLABUS AND MAPPING TO CO, PO/PSO

S.NO.	DESCRIPTION	PROPOSED ACTIONS	CO MAPPED	PO/PSO MAPPED	LEVEL OF MAPPING
1	FDM & TDM in optical fiber communication	Topics will be discussed in regular class and experiments will be done in Laboratory.	CO3	PO1, PO2, PO3, PO4,PO7 PO12, PSO1, PSO2	3, 2, 2,1,1, 1,3,3

MAPPING OF CO WITH PO/PSO CONSIDERING GAP WITHIN SYLLABUS
(DETAILED; HIGH: 3; MEDIUM: 2; LOW: 1):

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403B.1	3	-	1	-	-	-	1	-	-	-	-	1	1	1
C403B.2	3	2	1	1	-	-	1	-	-	-	-	1	1	1
C403B.3	3	2	2	1	-	-	1	-	-	-	-	1	3	3
C403B.4	3	3	2	2	-	-	1	-	-	-	-	1	3	3
C403B.5	3	-	1	-	-	-	1	-	-	-	-	1	3	3
C403B	**3**	**2.3**	**1.4**	**1.3**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**1**	**2.2**	**2.2**

WEB SOURCE REFERENCES:

1	https://nptel.ac.in/downloads/117101054/
2	http://studentsfocus.com/notes/anna_university/ECE/7SEM/EC6702%20-%20OCN/notes/EC6702_uw_2013_regulation.pdf

JOURNAL REFERENCES:

S.NO.	JOURNAL NAME	ISSN
1	Journal of Optical Communication	2191-6322 (Online)
2	Journal of Optical and Fiber Communications Research, Springer	1867-3007 (Print) 1619-8638 (Online)