TCET/FRM/IP-02/09 Revision: A

Semester Plan
(Theory)

Semester: VII Course: EXTC

Subject: Optical Communication Network Class: BE- B

S.No.	Bridge courses/Technology	Duration (Week/hrs)	Modes of Learning	Recommended Sources
1.	**Prerequisite course:** Analog Communication Data Coommunication	06 Hours	Technology Based learning	Analog Communication by Keneddy Data Communication by Forouzan

Class Room Teaching

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
1		L1.1	**SOP**	LCD Projector	10/07/17		
2		L1.2	OBE	LCD Projector	10/07/17		
3		L1.3	OCN (Lab)	LCD Projector	11/07/17		
4	1	L2.1	Block diagram of optical fiber communication, System advantages	BB&LCD Projector	17/07/17	M1.6	
5	1	L2.2	Loss and bandwidth window	BB&LCD Projector	17/07/17	M1.8	

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
6	1	L2.3	Ray Theory, Total internal reflection, Acceptance angle	BB&LCD Projector	18/07/17	M1.9 M1.9.2	
7	1	L2.4	Numerical aperture, and Skew rays	BB&LCD Projector	18/07/17	M1.9.3 M1.9.4	
8	1	L2.5	Problem based on numerical aperture	BB	19/07/17	M1.9.4	
9	1	L2.6	EM waves, modes in planer guide, phase and group velocities,	BB	20/07/17	M1.10 M1.11	
10	1	L3.1	Types of fibers	LCD Projector	25/07/17	M1.12	
11	1	L3.2	Problem based on types of fibers	BB	25/07/17	M1.12	
12	1	L3.3	Refractive index profile and mode transmission	LCD Projector	26/07/17	M1.13	
13	1	L3.4	Fiber material, fiber cables and fiber fabrication	BB	27/07/17	M1.14 M1.16	
14	1	L4.1	Fiber joints, Fiber connectors, Splices.	LCD Projector	1/8/17	M1.17 M1.18	
15	2	L4.2	Attenuation, absorption, linear and nonlinear scattering losses	LCD Projector	1/8/17	M2.1	
16	2	L4.3	Bending losses, modal dispersion	LCD Projector	2/8/17	M2.2.6	

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
17	2	L4.4	Waveguide dispersion	LCD Projector	03/08/17	M2.2	
18	2	L5.1	Dispersion shifted and dispersion flattened fibers	LCD Projector	8/8/17	M2.2.1	
19	2	L5.2	Non linear effects Measurements of attenuation	LCD Projector	8/8/17	M2.2.4	
20	2	L5.3	Measurements of attenuation	LCD Projector	9/8/17	M2.2.6	
21	2	L5.4	Dispersion and OTDR	LCD Projector	10/8/17	M2.3 M2.5	
22	3	L6.1	Working principle and characteristics of sources (LED, LASER	LCD Projector	15/08/17	M3.1	
23	3	L6.2	Optical amplifiers , Working principle and characteristics of detectors (PIN, APD)	BB &LCD Projector	15/08/17	M3.2	
24	3	L6.3	Noise analysis in detectors, coherent and non-coherent detection	LCD Projector	16/08/17	M3.3	
25	3	L8.1	Receiver structure, receiver performance	LCD Projector	31/08/17	M3.4	

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
26	3	L9.1	Point to point links system considerations	LCD Projector	5/09/17	M3.5	
27	3	L9.2	Link power budget, rise time budget	LCD Projector	5/09/17	M3.6	
28	4	L9.3	Circulators, multiplexers, Filters, Fiber gratings	LCD Projector	6/09/17	M4.6	
29	4	L9.4	Fabry Perot filters, arrayed waveguide grating	LCD Projector	7/09/17	M4.6.8	
30	4	L10.1	Switches and wavelength converters	LCD Projector	12/09/17	M4.6.12 M4.6.18	
31	4	L10.2	SONET and SDH standards, architecture of optical transport networks (OTNs	LCD Projector	12/09/17	M4.7	
32	4	L10.3	Network topologies, protection schemes in SONET/SDH	LCD Projector	13/09/17	M4.7.7	
33	4	L10.4	Operational principle of WDM, WDM network elements and Architectures	LCD Projector	14/09/17	M4.8	
34	4	L11.1	Introduction to DWDM, Solitons	LCD Projector	19/9/17	M4.8.2	

Sr. No	Module No.	Lesson No.	Topics Planned (Technology to be used)	Teaching Aids Required	Planned /Completion Date	Resource Book Reference	Remarks
35	5	L11.2	OTDM, multiplexing and de-multiplexing	LCD Projector	19/9/17	M6.3	
36	5	L11.3	Synchronization and broadcast OTDM networks	LCD Projector	20/9/17	M6.4	
37	5	L12.1	OTDN networks, optical access networks, and future access networks	LCD Projector	26/09/17	M5.6	
38	5	L13.1	Transmission system model,	LCD Projector	3/10/17	M5.6	
39	5	L13.2	Power Penalty	LCD Projector	3/10/17	M6.6.2	
40	5	L.13.3	Receiver optical amplifiers, Crosstalk, Dispertion,	LCD Projector	4/10/17	M6.6.5 M6.6.6	
41	6	L13.4	Network management functions	LCD Projector	5/10/17	M6.10	
42	6	L14.1	Performance management	LCD Projector	06/10/17	M6.7.3	
43	6	L15.1	Fault management		12/10/17	M6.7.4	
44	7	L15.2	University Paper		12/10/17		
45	7	L15.3	Revision and Doubt solving	LCD Projector	17/10/17		
Remark:: Course:		Syllabus Coverage:		Practice Session:		Beyond Syllabus:	
No. of (lectures planned)/(lecture taken): (45) / ( )							

Bridge courses Objective: Bridging of gaps with respect to prerequisites and industry skills or to carryout research in signal processing field**. (20 Hrs / Semester / student)**				
S.No.	**Bridge courses/Technology**	**Duration (Week/hrs)**	**Modes of Learning**	**Recommended Sources**
1	**Advanced course:** Fiber Optics (NPTEL Course)	20 Hours	Technology Based learning	https://onlinecourses.nptel.ac.in/noc17_ph01/preview

Text Books:

1. G Agrwal, ―Fiber optic communication Systems‖, John Wiley and Sons, 3rd Edition, New York 2014.
2. S.C. Gupta-Optical Fiber Communication and its Applications, Prentice-Hall of India, 2004.

Reference Books:

1. John M. Senior, ―Optical Fiber Communication‖, Prentice Hall of India Publication, Chicago, 3rd Edition, 2013
2. Gred Keiser, ―Optical Fiber Communication‖, Mc-Graw Hill Publication , Singapore, 4th Edition, 2012
3. Rajiv Ramaswami and Kumar N. Sivarajan, ―Optical Networks: A Practical Perespective, Elsevier Publication Elsevier India Pvt.ltd, 3rd Edition, 2010

Digital Reference:

- Wikipedia
- Google
- https://www.youtube.com/watch?v=Hx10fwjVV90
- http://www.cablinginstall.com/articles/2012/09/google-animated-video.html

SD	SD	SD
(Dr. Sujata Kulkarni)	**(Dr. Vinitkumar Dongre)**	**(Dr. R. R. Sedamkar)**
Name & Signature of Faculty	Signature of HOD	Signature of Principal /Dean (Academics)
Date:	Date:	Date:

Note:

1. Plan date and completion date should be in compliance
2. Courses are required to be taught with emphasis on resource book, course file, text books, reference books, digital references etc.
3. Planning is to be done for 15 weeks where 1st week will be AOP, 2nd -13th for effective teaching and 14th -15th week for effective university examination oriented teaching, mock practice session and semester consolidation.
4. According to university syllabus where lecture of 4 hrs/per week is mentioned minimum 55 hrs and in case of 3 lectures per week minimum 45 lectures are to be engaged are required to be engaged during the semester and therefore accordingly semester planning for delivery of theory lectures shall be planned.
5. In order to improve score in NBA, faculty members are also required to focus course teaching beyond university prescribed syllabus and measuring the outcomes w.r.t learning course and programme objectives.
6. Text books and reference books are available in syllabus. Here only additional references w.r.t. non –digital/ digital sources can be written (if applicable)
7. Technology to be used in class room during lecture shall be written below the topic planned within the bracket.