B.S.ABDUR RAHMAN UNIVERSITY, CHENNAI – 48.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGG

LESSON PLAN

1. Course Title : Optical Communication Networks **5. Semester   : I**

2. Course Code : ECY 008   **6. Academic Year : 2011-12**

3. Course Faculty : Mr.S.SADHISH PRABHU   **7. Department   : ECE**

4. Theory / Practical : Theory course   **8. No. of Credits   : 3**

9. Course Learning Objectives:

To impart the knowledge on

- the Optical network components for Optical Network communication.
- various Network architecture and topologies for optical networks.
- the issues in the network design and operation for wavelength routing in optical networks.

10. Course pre-requisites:

- Some basic knowledge of optical communication and networking

- Exposure to optical devices.

11. Schedule of teaching and learning

[As per Annexure-I]

12. Course material and References

The course material will be made available to the students in the form of CD, which they can copy it in their systems. Alternatively, it will be sent by mail to individual students by the class representative.

REFERENCES:

1. Rajiv Ramaswami and Kumar Sivarajan, Optical Networks: A practical perspective, Morgan Kaufmann, 2nd edition, 2001.
2. Vivek Alwayn, Optical Network Design and Implementation, Pearson Education, 2004.
3. Hussein T.Mouftab and Pin-Han Ho, Optical Networks: Architecture and Survivability, Kluwer Academic Publishers, 2002.
4. Biswanath Mukherjee, Optical Communication Networks, McGraw Hill, 1997.

13. Assessment Scheme:

The following shall be the assessment method for this course.

Sl.no	Details	Weightage%
1	Assessment 1 : Unit 1 and Unit 2 Assignment 1: Students will be asked to submit assignments topologies and its applications.	40+10 = 50
2	Assessment 2 : Unit 3 and Unit 4 Assignment 2: Students will be asked to deliver seminars on various optical communication network topics.	40+10 = 50

Sl.no	Details	Weightage%
1	Out of the three assessments the internals for 50 will be awarded on considering two assessment marks	50
2	End semester examination	50
	Total	100

14. Expected outcome of the course:

At the end of the course, the student's student will understand:

- the optical networking components.
- the architecture of SONET/SDH and network elements.
- the wavelength routing networks.

Date :   **Course Faculty**

Head of Department

Sl. No.	No.of Per-iod(s)	Topic	Mode of delivery	Teaching Aids	Ref / Sour
Unit 1: OPTICAL NETWORKING COMPONENTS					
1	1	First generation optical networks	Lecture	B.board	R1
2	1	Second generation optical networks	Lecture	B.board	R1
3	1	Components: couplers	Lecture	B.board	R1
4	1	Components: isolators	Lecture	B.board	R1
5	1	Components: circulators	Lecture	B.board	R1
6	1	Components: multiplexers	Lecture	B.board	R1
7	1	Components: filters	Lecture	B.board	R1
8	1	Components: amplifiers	Lecture	B.board	R1
9	1	Components: switches and wavelength converters	Lecture	B.board	R1
Unit 2: SONET AND SDH NETWORKS					
10	1	Integration of TDM signals	Lecture	B.board	R1,R4
11	1	Layers, Framing, Transport overhead,	Lecture	B.board	R1,R4
12	1	Alarms	Lecture	B.board	R1,R4
13	1	Multiplexing	Lecture	B.board	R1,R4
14	1	Network elements	Lecture	B.board	R1,R4
15	1	Topologies	Lecture	B.board	R1,R4
16	1	Protection architectures	Lecture	B.board	R1,R4
17	1	Ring architectures	Lecture	B.board	R1,R4
18	1	Network Management.	Lecture	B.board	R1,R4
Unit 3: BROADCAST – AND- SELECT NETWORKS					
19	1	Topologies	Lecture	B.board	R1
20	1	Single-hop	Lecture	B.board	R1
21	1	Multihop	Lecture	B.board	R1
22	1	Shuffle net	Lecture	B.board	R1
23	2	Multihop networks	Lecture	B.board	R1
24	2	Media-Access control protocols	Lecture	B.board	R1
25	1	Test beds	Lecture	B.board	R1
Unit 4: WAVELENGTH-ROUTING NETWORKS					
26	1	Node designs	Lecture	B.board	R2,R3
27	1	Issues in Network design	Lecture	B.board	R2,R3
28	1	Issues in Network design operation	Lecture	B.board	R2,R3
29	1	Optical layer cost Tradeoffs	Lecture	B.board	R2,R3
30	2	Routing assignment	Lecture	B.board	R2,R3
31	2	Wavelength assignment	Lecture	B.board	R2,R3
32	1	Wavelength routing test beds	Lecture	B.board	R2,R3

Unit 5: HIGH CAPACITY NETWORKS					
33	1	SDM approaches	Lecture	B.board	R2,R3
34	1	TDM approaches	Lecture	B.board	R2,R3
35	1	WDM approaches	Lecture	B.board	R2,R3
36	1	Application areas	Lecture	B.board	R2,R3
37	1	Optical TDM Networks: Multiplexing Synchronization	Lecture	B.board	R2,R3
38	1	Optical TDM Networks: Demultiplexing Synchronization	Lecture	B.board	R2,R3
39	1	Broadcast networks	Lecture	B.board	R2,R3
40	1	Switch-based networks	Lecture	B.board	R2,R3
41	1	OTDM test beds	Lecture	B.board	R2,R3