

Name of the Faculty : Mohit Kumar, Lecturer (Theory & Practical)
Discipline : Electronics & Communication Engg.
Department : Electronics & Communication Engg.
Semester : 5th
Subject : Optical Fiber Communication
Lesson Plan Duration : 15 weeks

Work load (Lecture / Practical) per week (in hours) : Lectures-03, Practicals -03

Week	Theory		Practical	
	Lecture day	Topic (Including assignment / test)	Practical Day	Topic
1st	1st	UNIT 1. Introduction: Historical perspective	1st (3Hours)	Setting up of fiber analog link
	2nd	Basic communication systems, optical frequency range		
	3rd	Advantages of optical fibre communication, application of fibre optic communication		
2nd	4th	Electromagnetic spectrum used	2nd (3Hours)	Setting up to optic digital link
	5th	Advantages and disadvantages of optical communication.		
	6th	Principle of light penetration		
3rd	7th	Reflection, critical angle.	3rd (3Hours)	Measurement of various losses in optical fibers
	8th	UNIT 2. Optical Fibers and Cables: Fiber types construction		
	9th	Multimedia and monomode fibers		
4th	10th	Step index and graded index fibers	4th (3Hours)	Revision
	11th	Acceptance angle		
	12th	Types of optical fiber cables		
5th	13th	Revision/ Seminar/ Expert lecture	5th (3Hours)	To observe and measure the splice or connector loss
	14th	Assignment No. 1, Sessional Test - 1, Quiz		
	15th	UNIT 3. Losses in optical fiber cable: Absorption Losses, Bending losses.		
6th	16th	Scattering Losses, Radiation losses	6th (3Hours)	To measure and calculate numerical aperture of optical fiber
	17th	Compelling losses and Bending losses.		
	18th	Dispersion, Material dispersion		
7th	19th	wave guide dispersion	7th (3Hours)	To observe characteristics of optical source
	20th	Modal dispersion, total dispersion and bit rate.		
	21st	UNIT 4. Light sources and Detectors: Characteristics of light source used in optical communication, principle of operation of LED		
8th	22nd	Different type of LED structures used and their brief description	8th (3Hours)	Revision
	23rd	LED driving circuitry, Injection Laser diode		
	24th	Different types of injection laser diodes		
9th	25th	Comparison of LED and ILD, non semiconductor laser.	9th (3Hours)	To observe characteristics of optical defector
	26th	Characteristics of photo detectors used in optical communication		
	27th	PIN diode		
10th	28th	Avalanche photo diode (APD)	10th (3Hours)	To Connectorise a fiber with connector at both ends
	29th	Revision/ Seminar/ Expert lecture		
	30th	Assignment No. 2, Sessional Test - 2, Quiz		
11th	31st	UNIT 5. Connectors, Splicing and coupling: Fiber alignment	11th (3Hours)	Introduction to various components and tools used in optical fiber communication
	32nd	Joint losses		

Week	Lecture day	Topic (Including assignment / test)	Practical Day	Topic
	33rd	Splicing, types of splices		
12th	34th	Diffferent types of connectors used	12th (3Hours)	Revision
	35th	couplers, three and four port coupler		
	36th	Star coupler		
13th	37th	Fiber optic switch	13th (3Hours)	A visit to nearby Telephone Exchange
	38th	UNIT 6. Optical Fiber System: Optical transmitter circuit		
	39th	Optical receiver circuit		
14th	40th	Optical power budgeting	14th (3Hours)	Revision
	41st	Multiplexing methods used		
	42nd	Modulation methods used		
15th	43rd	Introduction to SDH, SONET	15th (3Hours)	Viva Voice
	44th	Revision/ Seminar/ Expert lecture		
	45th	Assignment No. 3, Sessional Test - 3, Quiz		