

# Government Polytechnic LOHARU

## Lesson Plan ( SEPT 2023 -DEC 2023)

<b>NAME OF FACULTY</b>	:	<b>MRS. ANSHU BHALLA</b>
<b>DISCIPLINE</b>	:	<b>Electronics and Communication Engg.</b>
<b>SEMESTER</b>	:	<b>5th</b>
<b>SUBJECT</b>	:	<b>OFC</b>
<b>LESSON PLAN DURATION:</b>		<b>15 weeks</b>
<b>WORK LOAD (LECTURE/ PRACTICAL): LECTURES - 03 , PRACTICALS –03</b>		

Week	Theory		Practical	
	Lecture day	Topic (Including assignment / test)	Practical Day	Topic
1st	1st	<b>Introduction to Optical fiber Communication</b>	1st (3Hours)	To set up fiber analog link
	2nd	Historical perspective		
	3rd	Basic communication systems, optical frequency range		
2nd	4th	Advantages of optical fibre communication, application of fibre optic communication	2nd (3Hours)	To set up optic digital link
	5th	Electromagnetic spectrum used		
	6th	Advantages and disadvantages of optical communication.		
3rd	7th	Principle of light penetration	3rd (3Hours)	To measure bending losses in optical fibers
	8th	Reflection, critical angle. <b>Revision of Unit 1</b>		
	9th	<b>UNIT 2. Optical Fibers and Cables:</b>		
4th	10th	Fiber types & construction	4th (3Hours)	<b>Revision</b>
	11th	Multimedia and monomode fibers		
	12th	Step index and graded index fibers		
5th	13th	Acceptance angle	5th (3Hours)	To observe and measure the splice or connector loss
	14th	Types of optical fiber cables		
	15th	Optical fiber cable connectors OFC splicing techniques		
6th	16th	<b>Revision/ Seminar/ Expert lecture</b>	6th (3Hours)	To measure and calculate numerical aperture of optical fiber
	17th	<b>Assignment No. 1, Sessional Test - 1, Quiz</b>		
	18th	<b>UNIT 3. Losses in optical fiber cable:</b>		
7th	19th	Absorption Losses, Bending losses.	7th (3Hours)	To observe characteristics of optical source
	20th	Scattering Losses, Radiation losses		
	21st	Compelling losses and Bending losses. Dispersion and its types		
8th	22nd	Types of dispersion and its effect on data rate	8th (3Hours)	<b>Revision</b>
	23rd	Testing of losses using OTDR		
	24th	<b>Revision of Unit 3</b>		
9th	25th	<b>UNIT 4. Optical sources :</b>	9th (3Hours)	To observe characteristics of optical defector
	26th	Characteristics of light source used in optical communication, principle of operation of LED		
	27th	Different type of LED structures used and their brief description		
	28th	Injection Laser diode and its principle of operation	10th	

10th	29th	Different types of injection laser diodes	(3Hours)	To splice the available optical fiber.
	30th	Comparison of LED and ILD		

Week	Lecture day	Topic (Including assignment / test)	Practical Day	Topic
11th	31st	<b>Revision/ Seminar</b>	11th (3Hours)	To connect a fiber with conector at both ends.
		<b>Assignment No. 2, Sessional Test - 2, Quiz</b>		
	32nd	<b>UNIT 5. Optical Detectors:</b>		
	33rd	Characteristics of photo detectors used in optical communication		
12th	34th	PIN diode	12th (3Hours)	<b>Revision</b>
	35th	Avalanche photo diode (APD)		
	36th	Noice in detectors		
13th	37th	<b>Revision of Unit 5</b>	13th (3Hours)	To identify and use various components and tools used in optical fiber communication.
	38th	<b>UNIT 6. Optical Amplifiers:</b>		
		Types of optical amplifiers		
	39th	Semiconductor & fiber optical amplifiers		
14th	40th	Principle of operation of SOA	14th (3Hours)	<b>Revision</b>
	41st	Types of SOA. EDFA		
	42nd	Raman amplifiers		
15th	43rd	Comparison of SOA, EDFA and Raman Amplifiers	15th (3Hours)	<b>Viva Voice</b>
	44th	<b>Revision/ Seminar/ Expert lecture</b>		
	45th	<b>Assignment No. 3, Sessional Test - 3, Quiz</b>		