



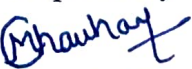
LESSON PLAN

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING ABVGIT PRAGATINAGAR, SHIMLA, H.P.

Course: Diploma			Duration: 3 Years	
Subject Title: Optical Communication & Networking			Session: August - December, 2026	
Subject Teacher: Manish Chauhan			Semester: 5 th	
Total Lectures: 56			Lectures: 4/ Week	
Week	Chapter to be Covered	Topic to be Covered	Learning Outcomes	Reference
1 st	1	Overview about subject Introduction: Historical perspective, basic optical fibre communication systems, optical frequency range, advantages of optical fiber communication.	Students will learn about the basic OFC systems with their frequency response & advantages.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.
2 nd	1	Electromagnetic spectrum used, advantages and disadvantages of optical communication & applications of optical fiber communication.	Students will learn about the importance of electromagnetic spectrum and applications of OFC.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.
3 rd	1	Principle of light penetration in optical fiber, reflection, refraction, critical angle, numerical aperture & acceptance angle.	Students will learn about the working principle of OFC and its related parameters.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.
4 th	3	Optical Fibres and Cables: Constructional details of various optical fibers, multimode and mono-mode fibers, step index and graded index fibers & types of optical fiber cables. Assignment-1 to be allotted.	Students will learn about the optical fiber cables types, modes and their constructional details.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.
5 th	3	Optical Fibers cable connectors and splicing techniques (Mechanical, fusion) Class Test - 1 to be conducted.	Students will learn about the connectors used in optical fibre cables and splicing techniques of OFC.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.
6 th	3	Losses in Optical Fiber Cable: Attenuation, Absorption Losses, Scattering Losses, Radiation Losses & Connector Losses. Technical Seminar/ Quiz Contest to be conducted.	Students will learn about the various losses occurred in optical fibre communication system.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.
7 th	3	Bending Losses, Dispersion: Types and its effect on data rate and Testing of losses using OTDR (Optical Time Domain Reflectometer).	Students will learn about the working principle of OTDR and how losses can be measured through OTDR.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.

8 th	4	Optical Sources: Characteristics of light used in OFC, working principle of LED, different types of LED structures and their uses.	Students will learn about the various sources used in OFC with their working.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.
9 th	4	Working principle of Injection laser diode, different injection laser diodes, comparison of LED and ILD Declamation/Group Discussion to be conducted.	Students will learn about the comparative analysis of optical sources.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.
10 th	5	Optical Detectors: Characteristics of photo detectors used in optical communication Class Test - 2 to be conducted.	Students will learn about the features of optical detectors.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.
11 th	5	Working of PIN diode and avalanche photo diode (APD) and noises in detectors. Assignment-2 to be allotted.	Students will learn about the working principle of various optical detectors.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi.
12 th	6	Optical Amplifiers: Types of optical amplifiers, semiconductor & fiber optical amplifiers Functional types, principal of operation of SOA, types of SOA. House Test	Students will learn about the working principle and types of optical amplifiers used in OFC.	1. Optical fiber Communication by John M Senior, Prentice Hall of India, New Delhi. 2. Optical fiber Communication by Gerd Keiser, McGraw Hill International Editions.
13 th	6	FPA, TWA, SOA applications, advantages, Drawbacks, EDFAS, Raman amplifiers. Optical Fiber System Application: Role of OFC in Fiber to the x (FTTx). Assignment-3 to be allotted.	Students will learn about the working of different types of amplifiers and role of OFC in x(FTTx) system.	1. Optical fiber Communication by Gerd Keiser, McGraw Hill International Editions. https://searchnetworking.techtarget.com/definition/fiber-to-the-x-FTTx
14 th	7	NGN (Next Generation Network), NFS (Need for Spectrum), IOT (Internet of Things).	Students will learn about the next generation system, spectrum used in OFC and basic concept about Internet of Things.	https://www.itu.int/osg/csd/wtpf/wtpf2009/ngn.html https://www.ctia.org/news/what-is-spectrum-a-brief-explainer https://www.zdnet.com/article/what-is-the-internet-of-things

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