

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

Discipline: Diploma	Semester: <u>V</u>	Name of the Teaching Faculty <u>L. Ganjali Ashuvar</u>
Subject: <u>Advanced Communication</u>	No. of days per week Class Allotted:	Semester from Dt. <u>14/02/23</u> to Dt. <u>23/05/23</u> No. of Weeks: <u>15</u>
Week	Class Day	Theory / Practical Topics
<u>Unit - 1</u>		
1st Week	1st day	Radar & Navigation Aids. 1: → Basic Radar, advantages & applications.
	2nd day	2: → Working principle of Simple Radar system, its types.
	3rd day	3: → Radar range equation and performance factor of radar.
	4th day	4: → Working principle of pulsed Radar system.
	5th 1st day	5: → Function of radar indication and working principle of moving target indicator.
2nd Week	2nd day	6: → Define Doppler effect & working principle of C-W Radar.
	3rd day	7: → Radar aids to navigation.
	4th day	8: → MTI Radar - Working principle
	5th day	9: → Aircraft landing system.
	1st day	10: → Navigation satellite system.
3rd Week		<u>Unit - 2</u>
		Satellite Communication: -
	2nd day	1: → Basic satellite transponder & Kepler's laws.
	3rd day	2: → Satellite orbital patterns and elevation (LEO, MEO & GEO) Categories
	4th day	3: → Concept of Geostationary satellite calculate its height, velocity & round trip time delay & their advantage and disadvantage
	5th day	4: → Working of the satellite Sub system.

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

Week	Class Day	Theory / Practical Topics
4th Week	1st day	5: → Satellite frequency allocation and frequency bands.
	2nd day	6: → General structure of satellite link system (uplink, down link, Transponder, crosslink)
	3rd day	7: → Working principle of direct broadcast system (DBS)
	4th day	8: → Working principle of VSAT system.
5th Week	1st day	9: → Define multiple accessing and name various types.
	2nd day	10: → Time Division Multiple Accessing (TDMA) & code Division Multiple Accessing (CDMA) - block diagram, its advantages & disadvantages.
	3rd day	11: → Satellite Application - communication Satellite (MSAT) - Digital Satellite Radio.
	4th day	12: → Working principle of GPS receiver & Transmitter & applications.
	5th day	13: → Optical satellite link transmitter & Receiver.
6th Week		<u>Unit - 3</u>
	1st day	Optical Fiber Communication: → 1: → Basic principle of optical communication
	2nd day	2: → Compare the advantage and disadvantage of optical fibres & metallic cables. 3: → Electromagnetic Frequency and wave length spectrum.

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

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7th Week	3rd day	4:→ Types of optical fibers & principles of propagation in a fibre using Ray theory.
	4th day	5:→ Optical fiber construction.
	5th day	6:→ Define terms: Velocity of propagation, critical angle, Acceptance angle, numerical aperture.
	1st day	7:→ Optical fibre communication system, block diagram & working principle.
	2nd day	8:→ Modes of propagation and index profile of optical fiber.
	3rd day	9:→ Types optical fiber configuration: single-mode step index, multi-mode step index, multi-mode graded index.
	4th day	10:→ Attenuation in optical fibers - Absorption losses, scattering, losses bending losses, core and cladding losses - Dispersion - material Dispersion, waveguide dispersion, internal dispersion.
8th Week	1st day	11:→ Optical sources (Transmitter) & types - LED - semiconductor laser diodes
	2nd day	12:→ LASER - its working principles, block diagram using laser feedback control circuit.
	3rd day	13:→ Optical detectors - PIN and APD diodes & block diagram using APD connectors and splices, optical cables-couplers

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

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9th Week	4th day	14: → Optical repeater and single channelled system.
	5th day	15: → Applications of optical fibres civil, industry and military application.
	1st day	16: → Concept of wave length Division Multiplexing (WDM) principles.
10th Week		<u>Unit 4</u>
		Telecommunication System:-
	2nd day	1: → Working of Electronic Telephone system. (Telephone set)
	3rd day	2: → Function of switching system & call procedures.
	4th day	3: → Space and time switching.
	5th day	4: → Numbering plan of telephone networks.
	1st day	5: → Working principle of a PAX & Digital EPAX.
	2nd day	6: → Units of Power Measurement
	3rd day	7: → Working Principle of Internet protocol Telephone.
	4th day	8: → Working principle of Internet Telephone.
11th Week		<u>Unit - 5</u>
		Data Communication: →
	5th day	1: → Basic concept of Data communication
11th Week	1st day	2: → Architecture, Protocols and standards.
	2nd day	3: → Data Communication circuits

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

Week	Class Day	Theory / Practical Topics
12th Week	3rd day	4:→ Types of Transmission & Transmission Modes.
	4th day	5:→ Data Communication Codes.
	5th day	6:→ Basic idea of Error Control & Error Detection.
	1st day	7:→ MODEM & its basic block diagram & common features voice Band modem.
13th Week		<u>Unit-6</u>
		Wireless Communication:→
	2nd day	1:→ Basic Concept of cell Phone frequency reuse channel assignment strategic handoff co-channel interference and system capacity of a cellular Radio systems.
	3rd day	
	4th day	2:→ Wireless Systems and its standards.
	1st day	3:→ Concept of improving coverage and capacity in cellular system.
	2nd day	4:→ Discuss the GSM (Global-system for mobile) service and features.
	3rd day	5:→ Architecture of GSM system and GSM mobile station & channel types of GSM system.
	4th day	6:→ Working of forward and reverse CDMA channel the frequency and channel specifications.
	5th day	

DHABALESWAR INSTITUTE OF POLYTECHN

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Week	Class Day	Theory / Practical Topics
14th Week	1st day	7: → Architecture and feature of GPRS.
	2nd day	8: → Discuss the mobile TCP, IP Protocol.
	3rd day	9: → Working of Wireless application protocol (WAP)
	4th day	10: → Features of SMS, MMS, 1G, 2G, 3G, 4G & 5G Wireless network.
15th Week	1st day	11: → Smart phone and discuss its features indicate through block diagram.