



GOVERNMENT POLYTECHNIC, BALASORE

Government of Odisha

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ, ବାଲେଶ୍ଵର

ACADEMIC LESSON PLAN FOR SUMMER SEMESTER - 2025

DEPT. OF ELECTRONICS & TELECOMMUNICATION, GOVT. POLYTECHNIC, BALASORE

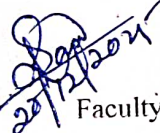
NAME OF THE FACULTY: ER. LIPIKA SANDHA (LECT. STAGE -I)

TH.1: Advance Communication Engineering

WEEK	CLASS DAY	THEORY TOPICS
DISCIPLINE: ELECTRONICS & TELECOMMUNICATION ENGINEERING	SEMESTER:6 TH	NAME OF THE TEACHING FACULTYS: ER. LIPIKA SANDHA (LECT. STAGE -I) ER. PRAKASH CHANDRA DAS
SUBJECT: ADVANCE COMMUNICATION ENGINEERING	NO. OF DAYS/PER WEEK CLASS ALLOTTED: 5	SEMESTER FROM DATE: 22 , DECEMBER 2025 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY TOPICS
1 ST	1 ST	1. RADAR & NAVIGATION AIDS 1.1 Basic Radar, advantages & applications
	2 ND	1.2 Working principle of Simple Radar system , its types
	3 RD	1.3 Radar range equation & Performance factor of radar.
	4 TH	1.4 Working principle of Pulsed Radar system
	5 TH	1.5 Function of radar indication and Working principle of moving target indicator
2 ND	1 ST	1.6 Define Doppler effect & Working principle of C.W Radar
	2 ND	1.7 Radar aids to Navigation
	3 RD	1.8 MTI Radar- working principle
	4 TH	1.9 Aircraft landing system
	5 TH	1.10 Navigation Satellite System.(NAVSAT) & GPS System
3 RD	1 ST	2.1 Basic Satellite Transponder & Kepler's Laws
	2 ND	2.2 Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories
	3 RD	2.3 Concept of Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage
	4 TH	2.3 Concept of Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage
	5 TH	2.4 Working of the Satellite sub system
4 TH	1 ST	2.5 Satellite frequency allocation and frequency bands
	2 ND	2.6 General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink)
	3 RD	2.7 Working principle of direct broadcast system (DBS)
	4 TH	2.8 Working principle of VSAT system
	5 TH	2.9 Define multiple accessing & name various types.
5 TH	1 ST	2.10 Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA) – block diagram, its advantages & dis-advantages.
	2 ND	2.10 Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA) – block diagram, its advantages & dis-advantages.
	3 RD	2.11 Satellite Application- Communication Satellite(MSAT), Digital Satellite

		Radio.
	4 TH	2.12 Working principle of GPS Receiver & Transmitter& applications
	5 TH	2.13 Optical Satellite Link transmitter & Receiver
6 TH	1 ST	3.1 Basic principle of Optical communication
	2 ND	3.2 Compare the advantage and disadvantage of optical fibres&metallic cables
	3 RD	3.3 Electromagnetic Frequency and wave line spectrum
	4 TH	3.4 Types of optical fibres&principles of propogation in a fibre using Ray Theory
	5 TH	3.5 Optical fiber construction 3.6 Define terms: Velocity of propagation, Critical angle, Acceptance angle numericalaperture
7 TH	1 ST	3.7 Optical fibre communication system- block diagram & working principle
	2 ND	3.8 Modes of propagation and index profile of optical fiber
	3 RD	3.9 Types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index
	4 TH	3.10 Attenuation in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion
	5 TH	3.11 Optical sources(Transmitter) & types – LED- semiconductor laser diodes
8 TH	1 ST	3.12 LASER -its working principles, block diagram using laser feedback control circuit
	2 ND	3.13 Optical detectors – PIN and APD diodes &Block diagram using APDConnectors and splices –Optical cables – Couplers
	3 RD	3.14 Optical repeater & Single Channel system
	4 TH	3.15 Applications of optical fibres – civil, Industry and Military application
	5 TH	3.16 Concept of Wave Length Division Multiplexing (WDM) principles.
9 TH	1 ST	4.1 Working of Electronic Telephone System. (Telephone Set)
	2 ND	4.2 Function of switching system.& Call procedures
	3 RD	4.2 Function of switching system.& Call procedures
	4 TH	4.3 Space and time switching.
	5 TH	4.4 Numbering plan of telephone networks (National Schemes & International Numbering)
10 TH	1 ST	4.5 Working principle of a PBX & Digital EPABX
	2 ND	4.5 Working principle of a PBX & Digital EPABX
	3 RD	4.6 Units of Power Measurement.
	4 TH	4.7 Working principle of Internet Protocol Telephone
	5 TH	4.8 Working principle of Internet Telephone
11 TH	1 ST	5.1 Basic concept of Data Communication.
	2 ND	5.2 Architecture, Protocols and Standards
	3 RD	5.2 Architecture, Protocols and Standards
	4 TH	5.3 Data Communication Circuits
	5 TH	5.4 Types of Transmission & Transmission Modes
12 TH	1 ST	5.5 Data Communication codes
	2 ND	5.5 Data Communication codes
	3 RD	5.6 Basic idea of Error control & Error Detection
	4 TH	5.6 Basic idea of Error control & Error Detection
	5 TH	5.7 MODEM & its basic block diagram& common features Voice Band Modem
13 TH	1 ST	6.1 Basic concept of Cell Phone,frequency reuse channel assignment

		strategic handoff cochannel Interference and system capacity of a Cellular Radio systems.
	2 ND	6.1 Basic concept of Cell Phone, frequency reuse channel assignment strategic-handoff cochannel Interference and system capacity of a Cellular Radio systems.
	3 RD	6.2 Concept of improving coverage and capacity in cellular system (Cell Splitting, Sectoring)
	4 TH	6.3 Wireless Systems and its Standards.
	5 TH	6.4 Discuss the GSM (Global System for Mobile) service and features.
14th	1 ST	6.5 Architecture of GSM system & GSM mobile station & channel types of GSM system.
	2 ND	6.5 Architecture of GSM system & GSM mobile station & channel types of GSM system.
	3 RD	6.6 working of forward and reverses CDMA channel, the frequency and channel specifications
	4 TH	6.7 Architecture and features of GPRS.
	5 TH	6.8 Discuss the mobile TCP, IP protocol.
15 TH	1 ST	6.8 Discuss the mobile TCP, IP protocol.
	2 ND	6.8 Discuss the mobile TCP, IP protocol.
	3 RD	6.9 Working of Wireless Application Protocol (WAP).
	4 TH	6.10 Features of SMS, MMS, 1G, 2G, 3G, 4G & 5G Wireless network.
	5 TH	6.11 Smart Phone and discuss its features indicate through Block diagram.


20/12/2024
Faculty


H.O.D 20/12/25