

**ACADEMIC LESSON PLAN FOR SUMMER SEMESTER FEB. - 2023**

Dept. Of Electronics &amp; Telecommunication, Govt. Polytechnic, Balasore.

Name of the Faculty: DEBASISH MOHAPATRA. (PTGF, ETC)


**LESSON PLAN (SUMMER-2023)**

Discipline: ETC	Semester:6th	Name of the Teaching Faculty: DEBASISH MOHAPATRA (PTGF)
Subject: Advance Communication Engineering/TH.1	No of Days /per week class allotted: 5	Semester From date: 14.02.2023 No of Weeks:15
Week	Class Day	Theory / Practical Topics
1st	1st	<b>1. RADAR &amp; NAVIGATION AIDS.</b> 1.1 Basic Radar, advantages & applications
	2nd	1.2 Working principle of Simple Radar system , its types
	3rd	1.3 Radar range equation & Performance factor of radar.
	4th	1.4 Working principle of Pulsed Radar system.
	5th	1.5 Function of radar indication and Working principle of moving target indicator.
2nd	1st	1.6 Define Doppler effect & Working principle of C.W Radar.
	2nd	1.7 Radar aids to Navigation
	3rd	1.8 MTI Radar- working principle
	4th	1.9 Aircraft landing system.
	5th	1.10 Navigation Satellite System.(NAVSAT) & GPS System
3rd	1st	<b>2. SATELLITE COMMUNICATION.</b> 2.1 Basic Satellite Transponder & Kepler's Laws
	2nd	2.2 Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories
	3rd	2.3 Concept of Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage
	4th	2.4 Working of the Satellite sub system
	5th	2.5 Satellite frequency allocation and frequency bands.
4th	1st	2.6 General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink)
	2nd	2.7 Working principle of direct broadcast system (DBS)
	3rd	2.8 Working principle of VSAT system.
	4th	2.9 Define multiple accessing & name various types.
	5th	2.10 Time Division Multiple Accessing(TDMA) & – block diagram, its advantages & dis-advantages.
5th	1st	Code Division Multiple Accessing (CDMA) – block diagram, its advantages & dis-advantages.
	2nd	2.11 Satellite Application- Communication Satellite(MSAT),
	3rd	Digital Satellite Radio.
	4th	2.12 Working principle of GPS Receiver & Transmitter & applications.
	5th	2.13 Optical Satellite Link transmitter & Receiver
6th	1st	<b>3. OPTICAL FIBER COMMUNICATION.</b> 3.1 Basic principle of Optical communication. 3.2 Compare the advantage and disadvantage of optical fibres & metallic cables
	2nd	3.3 Electromagnetic Frequency and wave line spectrum

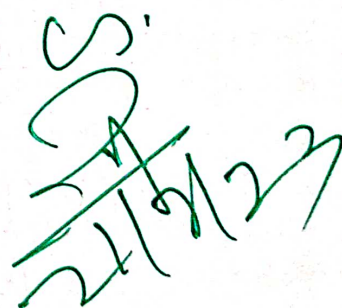


	3rd	3.4 Types of optical fibres&principles of propogation in a fibre using Ray Theory
	4th	3.5 Optical fiber construction
	5th	3.6 Define terms: Velocity of propagation, Critical angle, Acceptance angle numericalaperture
7th	1st	3.7 Optical fibre communication system- block diagram & working principle
	2nd	3.8 Modes of propagation and index profile of optical fiber
	3rd	3.9 Types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index
	4th	3.10 Attenuation in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion
	5th	3.11 Optical sources(Transmitter) & types – LED- semiconductor laser diodes
8th	1st	3.12 LASER -its working principles, block diagram using laser feedback control circuit
	2nd	3.13 Optical detectors – PIN and APD diodes &Block diagram using APDConnectors and splices –Optical cables - Couplers
	3rd	3.14 Optical repeater & Single Channel system
	4th	3.15 Applications of optical fibres – civil, Industry and Military application
	5th	3.16 Concept of Wave Length Division Multiplexing (WDM) principles.
9th	1st	<b>4. TELECOMMUNICATION SYSTEM</b>
	2nd	4.1 Working of Electronic Telephone System. (Telephone Set)
	3rd	4.2 Function of switching system.
	4th	4.3 Space and time switching.
	5th	4.4 Numbering plan of telephone networks (National Schemes & International Numbering)
10th	1st	4.5 Working principle of a PBX & Digital EPABX.
	2nd	Working principle of Digital EPABX.
	3rd	4.6 Units of Power Measurement.
	4th	4.7 Working principle of Internet Protocol Telephone
	5th	4.8 Working principle of Internet Telephone
11th	1st	<b>5. DATA COMMUNICATION</b> 5.1
	2nd	Basic concept of Data Communication
	3rd	5.2 Architecture, Protocols and Standards
	4th	5.3 Data Communication Circuits
	5th	5.4 Types of Transmission
12th	1st	Transmission Modes
	2nd	5.5 Data Communication codes
	3rd	5.6 Basic idea of Error control
	4th	Error Detection
	5th	5.7 MODEM & its basic block diagram common features Voice Band Modem

13th		<b>6. WIRELESS COMMUNICATION</b> <span style="float: right;">6.1</span>
	1st	Basic concept of Cell Phone, frequency reuse channel assignment strategic
	2nd	handoff co-channel Interference and system capacity of a Cellular Radio systems.
	3rd	6.2 Concept of improving coverage and capacity in cellular system (Cell Splitting, Sectoring)
	4th	6.3 Wireless Systems and its Standards.
14th	5th	6.4 Discuss the GSM (Global System for Mobile) service and features.
	1st	6.5 Architecture of GSM system &
	2nd	GSM mobile station & channel types of GSM system.
	3rd	6.6 working of forward and reverse CDMA channel,
	4th	the frequency and channel specifications
15th	5th	6.7 Architecture and features of GPRS.
	1st	6.8 Discuss the mobile TCP, IP protocol.
	2nd	6.9 Working of Wireless Application Protocol (WAP).
	3rd	6.10 Features of SMS, MMS, 1G, 2G,
	4th	3G, 4G & 5G Wireless network.
	5th	6.11 Smart Phone and discuss its features indicate through Block diagram.

  
 Signature of the Faculty

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 14/2/23

CS.  
  
 21/9/23