DISCIPLINE: Electrical & Electronics Engg.	SEMESTER: 6th Semester	NAME OF THE TEACHING FACULTY: Mr.Bibhuti Gampai, PTGF in EEE
SUBJECT: ADVANCE COMMUNICATION ENGINEERING (TH-01)	NO OF DAYS/PER WEEK CLASSES ALLOTTED:5	SEMESTER FROM DATE: 22.12.2025 TO DATE: 18.04.2026 NO OF WEEKS:15

Week	Class Day	Topics
		1. RADAR & NAVIGATION AIDS
1st	1st	Basic Radar, advantages & applications
	2nd	Working principle of Simple Radar system , its types
	3rd	Radar range equation &Performance factor of radar.
	4th	Working principle of Pulsed Radar system.
	5th	Function of radar indication and Working principle of moving target indicator.
2nd	1ST	Define Doppler effect & Working principle of C.W Radar.
	2ND	Radar aids to Navigation
	3RD	MTI Radar- working principle, Aircraft landing system.
	4TH	Navigation Satellite System.(NAVSAT) & GPS System
	5th	ASSIGNMENT
3rd		**2. SATELLITE COMMUNICATION**
	1st	Basic Satellite Transponder & Kepler's Laws
	2nd	Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories
	3RD	Concept of Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage.
	4TH	Working of the Satellite sub system
	5th	Satellite frequency allocation and frequency bands.
4th	1ST	General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink.
	2ND	ASSIGNMENT
	3RD	Working principle of direct broadcast system (DBS)
	4TH	Working principle of VSAT system.
	5th	Define multiple accessing & name various types.
5th	1ST	Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA) – block diagram, its advantages & dis-advantages.
	2ND	Satellite Application- Communication Satellite(MSAT), Digital Satellite Radio.
	3RD	Working principle of GPS Receiver & Transmitter& applications
	4TH	Optical Satellite Link transmitter & Receiver
	5th	CLASS TEST

6th		**3. OPTICAL FIBER COMMUNICATION.**
	1ST	Basic principle of Optical communication.
	2ND	Compare the advantage and disadvantage of optical fibres & metallic cables
	3RD	Electromagnetic Frequency and wave line spectrum
	4st	Types of optical fibres & principles of propogation in a fibre using Ray Theory , Optical fiber construction
	5th	Define terms: Velocity of propagation, Critical angle, Acceptance angle numerical aperture
7th	1ST	Optical fibre communication system- block diagram & working principle
	2ND	Modes of propagation and index profile of optical fiber
	3RD	Types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index
	4st	Attenuation in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion
	5th	Optical sources(Transmitter) & types – LED- semiconductor laser diodes
8th	1ST	LASER -its working principles, block diagram using laser feedback control circuit
	2ND	Optical detectors – PIN and APD diodes &Block diagram using APD Connectors and splices –Optical cables - Couplers
	3RD	Optical repeater & Single Channel system, Applications of optical fibres – civil, Industry and Military application.
	4st	Concept of Wave Length Division Multiplexing (WDM) principles.
	5th	ASSIGNMENT
9th		**4. TELECOMMUNICATION SYSTEM**
	1ST	Working of Electronic Telephone System. (Telephone Set)
	2ND	Function of switching system.& Call procedures
	3RD	Space and time switching.
	4st	Numbering plan of telephone networks(National Schemes & International Numbering)
	5th	ASSIGNMENT
10th	1ST	Working principle of a PBX & Digital EPABX.
	2ND	Units of Power Measurement.
	3RD	Working principle of Internet Protocol Telephone
	4st	Working principle of Internet Telephone
	5th	CLASS TEST

11th		**5. Data Communication**
	1ST	Basic concept of Data Communication
	2ND	Architecture, Protocols and Standards
	3RD	Data Communication Circuits
	4st	Types of Transmission & Transmission Modes
	5th	ASSIGNMENT
12TH	1ST	Data Communication codes
	2ND	Basic idea of Error control & Error Detection
	3RD	MODEM & its basic block diagram& common features Voice Band Modem
	4st	CLASS NOTES REVISION
	5th	CLASS TEST
13TH		**6. WIRELESS COMMUNICATION**
	1ST	Basic concept of Cell Phone,frequency reuse channel assignment strategic handoff co-channel Interference and system capacity of a Cellular Radio systems.
	2ND	Concept of improving coverage and capacity in cellular system (Cell Splitting, Sectoring)
	3RD	Wireless Systems and its Standards.
	4st	ASSIGNMENT
	5th	Discuss the GSM (Global System for Mobile) service and features
14TH	1ST	Architecture of GSM system & GSM mobile station &channel types of GSM system.
	2ND	working of forward and reveres CDMA channel,the frequency and channel specifications
	3RD	ASSIGNMENT
	4st	Architecture and features of GPRS
	5th	Discuss the mobile TCP, IP protocol
15TH	1ST	Working of Wireless Application Protocol (WAP)
	2ND	CLASS NOTES REVISION
	3RD	Features of SMS, MMS, 1G,2G, 3G, 4G& 5G Wireless network
	4st	Smart Phone and discuss its features indicate through Block diagram.
	5th	CLASS TEST

G. Bibhuti
22.12.25
Lecturer.

22.12.25
HOD in EEE

22/12/25
Principal, GP Malkangiri.