

## Lesson Plan

Discipline: ETC		Semester-6th Summer-2024	Name of the Teaching Faculty: Sri Jogeswar Naik(Lect. ETC Engg)
Sl. No.	Subject-Th.1- ADVANCE COMMUNICATION ENGINEERING	No. Of Days/Week class alloted:05	Semester From date: 16.01.2024 To date: 26.04.2024 (No of weeks: 15)
	Weeks/Months	Class Day	Topic
1	3rd week 16 jan To 20 jan	1st	1. RADAR & NAVIGATION AIDS
		2nd	1.1 Basic Radar, advantages & applications
		3rd	1.2 Working principle of Simple Radar system , its types
		4th	1.3 Radar range equation & Performance factor of radar
		5th	1.4 Working principle of Pulsed Radar system.
2	4th week 22 jan To 27 jan	1st	1.5 Function of radar indication and Working principle of moving target indicator.
		2nd	1.6 Define Doppler effect & Working principle of C.W Radar.
		3rd	1.7 Radar aids to Navigation.
		4th	1.8 MTI Radar- working principle
		5th	1.8 Aircraft landing system.
3	th week 29 jan To 1st week 03 fe	1st	1.9 Navigation Satellite System.(NAVSAT) & GPS System
		2nd	2. SATELLITE COMMUNICATION
		3rd	2.1 Basic Satellite Transponder & Kepler's Laws.
		4th	2.2 Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories
		5th	2.3 Concept of Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage .
4	2nd week 05 feb To 10 feb	1st	2.4 Working of the Satellite sub system
		2nd	2.5 Satellite frequency allocation and frequency bands.
		3rd	2.6 General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink)
		4th	2.7 Working principle of direct broadcast system (DBS)
		5th	2.8 Working principle of VSAT system.
5	3rd week 12 feb To 17 feb	1st	2.9 Define multiple accessing & name various types
		2nd	2.10 Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA) – block diagram, its advantages & disadvantages
		3rd	2.11 Satellite Application- Communication Satellite(MSAT), Digital Satellite Radio
		4th	2.12 Working principle of GPS Receiver & Transmitter &
		5th	2.13 Optical Satellite Link transmitter & Receiver
6	4th week 19 feb To 24 feb	1st	3. OPTICAL FIBER COMMUNICATION.
		3rd	3.1 Basic principle of Optical communication.
		3rd	Basic principle of Optical communication.
		4th	3.2 Compare the advantage and disadvantage of optical fibres & metallic cables
		5th	3.3 Electromagnetic Frequency and wave line spectrum

7	7th week 26 feb To 1st week 02 mar	1st	3.4 Types of optical fibres & principles of propagation in a fibre using Ray Theory
		2nd	3.5 Optical fiber construction
		3rd	3.6 Define terms: Velocity of propagation, Critical angle, Acceptance angle, numerical aperture
		4th	3.7 Optical fibre communication system - block diagram & working principle
		5th	3.8 Modes of propagation and index profile of optical fiber
8	2nd week 04 march To 09 march	1st	3.9 Types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index
		2nd	3.10 Attenuation in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion
		3rd	3.11 Optical sources (Transmitter) & types – LED- semiconductor laser diodes
		4th	3.12 LASER -its working principles, block diagram using laser feedback control circuit
		5th	3.13 Optical detectors – PIN and APD diodes & Block diagram using APD Connectors and splices – Optical cables - Couplers
9	3rd week 11 march To 16 march	1st	3.14 Optical repeater & Single Channel system
		2nd	3.15 Applications of optical fibres – civil, Industry and Military application
		3rd	3.16 Concept of Wave Length Division Multiplexing (WDM) principles
		4th	4. TELECOMMUNICATION SYSTEM
		5th	4.1 Working of Electronic Telephone System. (Telephone Set)
10	4th week 18 march To 23 march	1st	4.2 Function of switching system. & Call procedures
		2nd	4.3 Space and time switching.
		3rd	4.4 Numbering plan of telephone networks (National Schemes & International Numbering)
		4th	4.5 Working principle of a PBX & Digital EPABX
		4th	4.6 Units of Power Measurement.
11	5th week 25 march To 30 march	1st	4.7 Working principle of Internet Protocol Telephone.
		2nd	4.8 Working principle of Internet Telephone.
		3rd	5. Data Communication
		4th	5.1 Basic concept of Data Communication
		5th	5.2 Architecture, Protocols and Standards
12	1st week 01 april To 06 april	1st	5.3 Data Communication Circuits
		2nd	5.4 Types of Transmission & Transmission Modes
		3rd	5.5 Data Communication codes
		4th	5.6 Basic idea of Error control & Error Detection
		5th	5.7 MODEM & its basic block diagram & common features Voice Band Modem

13	2nd week 08 april To 13 april	1st	6. WIRELESS COMMUNICATION
		2nd	6.1 Basic concept of Cell Phone, frequency reuse channel assignment strategic 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.
		5th	6.4 Discuss the GSM (Global System for Mobile) service and features.
14	3rd week 15 april To 20 april	1st	6.5 Architecture of GSM system & GSM mobile station & channel types of GSM system
		2nd	6.6 working of forward and reverses CDMA channel, the frequency and channel specifications
		3rd	6.7 Architecture and features of GPRS.
		4th	6.8 Discuss the mobile TCP, IP protocol.
		5th	6.9 Working of Wireless Application Protocol (WAP).
15	4th week 22 april To 26 april	1st	6.10 Features of SMS, MMS, 1G, 2G, 3G, 4G & 5G Wireless network.
		2nd	6.11 Smart Phone and discuss its features indicate through Block diagram.
		3rd	Data Communication Circuits
		4th	Architecture, Protocols and Standards
		5th	Data Communication codes

Signature of the Faculty