BIT POLYTECHNIC,BALASORE

LESSON PLAN

Discipline: Electronics & Telecommunication Engineering	**Semester:** 6th, Summer	**Name of the Faculty:** Madhusmita Nayak Lecturer
Subject: Advance Communication Engineering, Theory-1		

Week	Class Day	Theory Topics
1st	1st	**RADAR & NAVIGATION AIDS,** Explain basic Radar, advantages & applications
	2nd	Explain working principle of Simple Radar system , its types
	3rd	Derive maximum Radar range equation & explain the Performance factor of radar
	4th	Explain Working principle of Pulsed Radar system
	5th	Explain Function of radar indication and Working principle of moving target indicator
2nd	1st	Explain Doppler effect &Working principle of C.W Radar
	2nd	Explain Radar aids to Navigation
	3rd	Explain MTI Radar- working principle
	4th	Explain Aircraft landing system
	5th	Explain Navigation Satellite System.(NAVSAT) and GPS System
3rd	1st	3D RADAR and Doppler RADAR
	2nd	Revision
	3rd	Quiz
	4th	**SATELLITE COMMUNICATION**, Explain Basic Satellite Transponder & Kepler's Laws
	5th	Explain Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories
4th	1st	Explain Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage
	2nd	Explain Working of the Satellite sub system
	3rd	Explain Satellite frequency bands, General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink

	4th	Explain Working principle of direct broadcast system (DBS)
	5th	Explain Working principle of VSAT system
5th	1st	Define multiple accessing & name various types
	2nd	Explain Time Division Multiple Accessing(TDMA)
	3rd	Explain Code Division Multiple Accessing (CDMA) – block diagram, its advantages & dis-advantages
	4th	Explain Satellite Application- Communication Satellite(MSAT), Digital Satellite Radio
	5th	Explain Working principle of GPS Receiver & Transmitter& applications
6th	1st	Explain Optical Satellite Link transmitter & Receiver
	2nd	Revision
	3rd	Quiz
	4th	**OPTICAL FIBER COMMUNICATION**, Explain Basic principle of Optical communication
	5th	State the advantage and disadvantage of optical fibres over metallic cables. Electromagnetic Frequency and wave line spectrum
7th	1st	Classify optical fibres & state the principles of propagation in a fibre using Ray Theory
	2nd	Explain Optical fiber construction. Define: Velocity of propagation, Critical angle, Acceptance angle, numerical aperture.
	3rd	Explain Optical fibre communication system- block diagram & it's working principle
	4th	State different Modes of propagation and index profile of optical fiber: Single-mode step index, Multi-mode step index, Multi-mode Graded index
	5th	Explain different losses in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Explain different optical dispersion: material Dispersion, waveguide dispersion, Intermodal dispersion
8th	1st	Explain Optical sources(Transmitter) & types – LED
	2nd	Explain semiconductor laser diodes, its working principles, block diagram using laser feedback control circuit
	3rd	Explain PIN and APD diodes & Block diagram using APD Connectors and splices –Optical cables – Couplers, Optical detectors
	4th	Explain Optical repeater & Single Channel system,
	5th	Applications of optical fibres – civil, Industry and Military application
9th	1st	Explain Wave Length Division Multiplexing (WDM).
	2nd	Revision
	3rd	Quiz
	4th	**TELECOMMUNICATION SYSTEM**, Explain Working of Electronic Telephone System.
	5th	Explain Function of switching system.& Call procedures
	1st	Explain Space and time switching
	2nd	Explain Numbering plan of telephone networks (National Schemes & International Numbering

	3rd	Explain Working principle of a PBX
	4th	Explain Digital EPABX, Units of Power Measurement
	5th	Explain Working principle of Internet Protocol Telephone
11th	1st	Explain Working principle of Internet Telephone
	2nd	Revision
	3rd	**DATA COMMUNICATION**, Explain Basic concept of Data Communication
	4th	Explain Architecture, Protocols and Standards
	5th	Explain Data Communication Circuits
12th	1st	Explain Types of Transmission & Transmission Modes
	2nd	Explain Data Communication codes
	3rd	Explain Basic idea of Error control & Error Detection
	4th	Explain MODEM & its basic block diagram & common features Voice Band Modem
	5th	Revision
13th	1st	Quiz
	2nd	**WIRELESS COMMUNICATION**, Explain Basic concept of Cell Phone.
	3rd	Explain Frequency reuse, channel assignment strategies, handoff, co-channel Interference and system capacity of Cellular Radio system.
	4th	Explain the concept of improving coverage and capacity in cellular system (Cell Splitting, Sectoring)
	5th	Explain Wireless Systems and its Standards
14th	1st	Discuss the GSM (Global System for Mobile) service and features
	2nd	Explain Architecture of GSM system & GSM mobile station &channel types of GSM system
	3rd	Explain working of forward and reveres CDMA channel, the frequency and channel specifications
	4th	Explain Architecture and features of GPRS. 6.8 Discuss the mobile TCP, IP protocol
	5th	Explain Working of Wireless Application Protocol (WAP)
15th	1st	Explain Features of SMS, MMS, 1G,2G, 3G, 4G& 5G Wireless network
	2nd	Explain Smart Phone and discuss its features indicate through Block diagram
	3rd	Revision
	4th	Question Discussion
	5th	Quiz