BIT POLYTECHNIC,BALASORE

LESSON PLAN

Discipline: ETC	**Semester:5th,**	**Name of the Teaching Faculty:** **Madhusmita Nayak**
Subject: Wave Propagation and Broadband Communication Theory-4	**No. of Days/Week Class Allotted -4**	**No. of Weeks: 15**
Week	**Class Day**	**Theory/ Topics**
1st	1st	Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only)
	2nd	Classification based on Modes of Propagation-Ground wave, Ionosphere, Sky wave propagation, Space wave propagation.
	3rd	Definition – critical frequency, max. useable frequency, skip distance, fading, Duct propagation & Troposphere scatter propagation actual height and virtual height.
	4th	Definition - Antenna gains, Directive gain, Directivity, effective aperture, polarization, input impedance, efficiency, Radiator resistance, Bandwidth, Beam width, Radiation pattern.
2nd	1st	Antenna -types of antenna: Mono pole and dipole antenna and omni directional antenna.
	2nd	Operation of following antenna with advantage & applications. a) Directional high frequency antenna : , Yagi & Rohmbus only b) UHF &Microwave antenna.: Dish antenna (with parabolic reflector) & Horn antenna.
	3rd	Revision, Doubt clearance
	4th	Basic Concepts of Smart Antennas- Concept and benefits of smart antennas.
3rd	1st	Fundamentals of transmission line.

		Equivalent circuit of transmission line & RF equivalent circuit.
	2nd	Characteristics impedance, methods of calculations & simple numerical. Losses in transmission line.
	3rd	Standing wave – SWR, VSWR, Reflection coefficient, simple numerical. Quarter wave & half wavelength line.
	4th	ASSIGNMENT CHECK
4th	1st	TEST
	2nd	Impedance matching & Stubs – single & double. Primary & secondary constant of X-mission line.
	3rd	Define-Aspect ratio, Rectangular Switching. Flicker, Horizontal Resolution, Video bandwidth, Interlaced scanning, Composite video signal, Synchronization pulses.
	4th	TV Transmitter – Block diagram & function of each block. Monochrome TV Receiver -Block diagram & function of each block.
5th	1st	**Quiz Test 1**
	2nd	Types of Televisions by Technology- cathode-ray tube TVs, Plasma Display Panels, Digital Light Processing (DLP), Liquid Crystal Display (LCD), Organic Light-Emitting Diode (OLED) Display, Quantum Light-Emitting Diode (QLED) – **only Comparison based on application.**
	3rd	Discuss the principle of operation - LCD display, Large Screen Display. CATV systems & Types & networks.
	4th	Digital TV Technology-Digital TV Signals, Transmission of digital TV signals & Digital TV receiver Video programme processor unit.
6th	1st	Revision
	2nd	Doubt clearance
	3rd	Digital TV Technology-Digital TV Signals, Transmission of digital TV signals & Digital TV receiver Video programme processor unit.
	4th	Define Microwave Wave Guides
7th	1st	ASSIGNMENT CHECK
	2nd	Operation of rectangular wave gives and its advantage.
	3rd	Propagation of EM wave through wave guide with TE & TM modes.
	4th	Circular wave guide.
8th	1st	Operational Cavity resonator.
	2nd	Distributing study materials.
	3rd	Working of Directional coupler, Isolators & Circulator.
	4th	Microwave tubes-Principle of operational of two Cavity Klystron.

9th	1st	Principle of Operations of Travelling Wave Tubes .
	2nd	Principle of Operations of Cyclotron
	3rd	Revising the taught portions
	4th	Microwave tubes-Principle of operational of two Cavity Klystron.
10th	1st	Operational Cavity resonator
	2nd	Revision
	3rd	TEST
	4th	Broadband communication system-Fundamental of Components and Network architecture.
11th	1st	Cable broadband data network- architecture, importance & future of broadband telecommunication internet based network.
	2nd	SONET(Synchronous Optical Network)-Signal frame components topologies advantages applications, and disadvantages .
	3rd	Supplying the study materials
	4th	Revision
12th	1st	Doubt clearance
	2nd	Cable broadband data network- architecture, importance & future of broadband telecommunication internet-based network.
	3rd	Broadband communication system-Fundamental of Components and Network architecture.
	4th	**Quiz Test-2**
13th	1st	SONET (Synchronous Optical Network)-Signal frame components topologies advantages applications, and disadvantages .
	2nd	ISDN - ISDN Devices interfaces, services, Architecture, applications,
	3rd	ISDN - ISDN Devices interfaces, services, Architecture, applications,
	4th	BISDN -interfaces & Terminals, protocol architecture applications
14th	1st	BISDN -interfaces & Terminals, protocol architecture applications
	2nd	Revising taught portions
	3rd	Assignment checking
	4th	Doubt clearance
15th	1st	Class test
	2nd	Previous year question Discussion
	3rd	Previous year question Discussion
	4th	Previous year question Discussion