



UTKAL INSTITUTE OF ENGINEERING & TECHNOLOGY

DISCIPLINE: Electronics & Telecommunication Engg.	SEMESTER: 5th Sem	NAME OF THE TEACHING FACULTY: Er.Y Rajani		
SUBJECT: WAVE PROPAGATION & BROADBAND COMMUNICATION	No of Days/Per week class allotted: 4 Class P/W(60)	Semester From Date:15/09/2022 To Date:22/12/2022 No. Of Weeks: 15		
WEEK	CLASS DAY	THEORY TOPICS	REMARKS	
1 st	1 st	Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only)	Date	Dean/Principal
	2 nd	Classification based on Modes of Propagation-Ground wave, Ionosphere, Sky wave propagation, Space wave propagation		
	3 rd	Definition – critical frequency, max. useable frequency, skip distance, fading, Duct propagation & Troposphere scatter propagation actual height and virtual height		
	4 th	Radiation mechanism of an antenna-Maxwell equation.		
2 nd	1 st	Doubt clear class		
	2 nd	gain, Directivity, effective aperture, polarization, input impedance, efficiency, Radiator resistance, Bandwidth, Beam width, Radiation pattern		
	3 rd	Antenna -types of antenna: Mono pole and dipole antenna and omni directional antenna		
	4 th	Assignment		

3 rd	1 st	Assignment question Discussion		
	2 nd	Operation of following antenna with advantage & applications. a) Directional high frequency antenna : , Yagi & Rohmbus only		
	3 rd	b) UHF & Microwave antenna.: Dish antenna (with parabolic reflector) & Horn antenna		
	4 th	Basic Concepts of Smart Antennas- Concept and benefits of smart antennas		
4 th	1 st	Fundamentals of transmission line.		
	2 nd	Equivalent circuit of transmission line & RF equivalent circuit		
	3 rd	Characteristics impedance, methods of calculations & simple numerical.		
	4 th	Losses in transmission line.		
5 th	1 st	Class Test		
	2 nd	Standing wave – SWR, VSWR, Reflection coefficient, simple numerical.		
	3 rd	Doubt clear class		
	4 th	Quarter wave & half wavelength line		
6 th	1 st	Revision of Last Class		
	2 nd	Assignment		
	3 rd	Impedance matching & Stubs – single & double		
	4 th	Primary & secondary constant of X-mission line.		
7 th	1 st	Define-Aspect ratio, Rectangular Switching. Flicker, Horizontal Resolution, Video bandwidth, Interlaced scanning, Composite video signal, Synchronization pulses		
	2 nd	Doubt Clear Class		
	3 rd	TV Transmitter – Block diagram & function of each block.		
	4 th	Monochrome TV Receiver -Block diagram & function of each block.		

8 th	1 st	Assignment question Discussion		
	2 nd	Colour TV signals (Luminance Signal & Chrominance Signal,(I & Q,U & V Signals)		
	3 rd	Types of Televisions by Technology- cathode-ray tube TVs, Plasma Display Panels, Digital Light Processing (DLP),Liquid Crystal Display (LCD)		
	4 th	Organic Light-Emitting Diode (OLED) Display, Quantum Light-Emitting Diode (QLED) – only Comparison based on application		
9 th	1 st	Discuss the principle of operation - LCD display, Large Screen Display.		
	2 nd	CATV systems & Types & networks		
	3 rd	Revision Class		
	4 th	Digital TV Technology-Digital TV Signals, Transmission of digital TV signals & Digital TV receiver Video programme processor unit.		
10 th	1 st	Define Microwave Wave Guides.		
	2 nd	Internal Question Discussion		
	3 rd	Doubt clear class		
	4 th	Operation of rectangular wave guides and its advantage.		
11 th	1 st	Doubt Clear Class		
	2 nd	Revision		
	3 rd	Propagation of EM wave through wave guide with TE & TM modes.		
	4 th	Class Test		
12 th	1 st	Circular wave guide.		
	2 nd	Revision Class		
	3 rd	Operational Cavity resonator		
	4 th	Working of Directional coupler, Isolators & Circulator		
13 th	1 st	Microwave tubes-Principle of operational of two Cavity Klystron.		
	2 nd	Principle of Operations of Travelling Wave Tubes		
	3 rd	Principle of Operations of Travelling Wave Tubes		

	4 th	Principle of Operations of Cyclotron		
14 th	1 st	Principle of Operations of Tunnel Diode & Gunn diode		
	2 nd	Broadband communication system- Fundamental of Components and Network architecture		
	3 rd	question discussion for semester exam		
	4 th	Cable broadband data network- architecture, importance & future of broadband telecommunication internet based network.		
15 th	1 st	SONET(Synchronous Optical Network)- Signal frame components topologies advantages applications, and disadvantages		
	2 nd	ISDN - ISDN Devices interfaces, services, Architecture, applications,		
	3 rd	BISDN -interfaces & Terminals, protocol architecture applications		
	4 th	Sample paper question discussion		

Jyotiprakash Swain

HOD

Chittaranjan Panda

DEAN

[Signature]

PRINCIPAL