



GOVERNMENT POLYTECHNIC, BALASORE

Government of Odisha

ସରକାରୀ ବହୁବୃତ୍ତି ଅନୁଷ୍ଠାନ, ବାଲେଶ୍ଵର

LESSON PLAN (WINTER-2026)

Discipline: ELECTRONICS & TELECOMMUNICATION ENGINEERING	Semester: 5 TH	Name of the Teaching Faculty: Prakash Chandra Das
Subject: WAVE PROPAGATION & BROAD BAND COMMUNICATION ENGINEERING	No of Days / Per week class allotted: 3	Semester From date: 14 TH July, 2026 No of Weeks: 15
Week	Class Day	Theory / Practical Topics
1st	1st	WAVE PROPAGATION & ANTENNA (12) 1.1 Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only)
	2nd	1.2 Classification based on Modes of Propagation-Ground wave, Ionosphere, Sky wave propagation, Space wave propagation
	3rd	1.2 Classification based on Modes of Propagation-Ground wave, Ionosphere, Sky wave propagation, Space wave propagation
2nd	1st	1.3 Definition: critical frequency, max. useable frequency, skip distance, fading, Duct propagation & Troposphere scatter propagation actual height and virtual height
	2nd	1.4 Radiation mechanism of an antenna, Maxwell equation
	3rd	1.5 Definition: Antenna gains, Directive gain, Directivity, effective aperture, polarization, input impedance, efficiency, Radiator resistance, Bandwidth, Beam width, Radiation pattern
3rd	1st	1.6 Antenna: Mono pole and dipole antenna
	2nd	and omni directional antenna 1.7 Operation of the following antenna with advantages & applications
	3rd	1.7.1 Directional high frequency antenna: Yagi & Rohmbus only
4th	1st	1.7.2 UHF & Microwave antenna.: Dish antenna (with parabolic reflector)
	2nd	Horn antenna
	3rd	1.8 Basic Concepts of Smart Antenna: Concept and benefits of smart antennas
5th	1st	TRANSMISSION LINES (6) 2.1 Fundamentals of transmission line 2.2 Equivalent circuit of transmission line & RF equivalent circuit
	2nd	2.3 Characteristics impedance, methods of calculations & simple numerical
	3rd	2.3 Characteristics impedance, methods of calculations & simple numerical
6th	1st	2.4 Losses in transmission line 2.5 Standing wave: SWR, VSWR,
	2nd	Reflection coefficient, simple numerical
	3rd	Reflection coefficient, simple numerical
7th	1st	TELEVISION ENGINEERING (10) 3.1 Define: Aspect ratio, Rectangular Switching. Flicker, Horizontal Resolution, Video bandwidth, Interlaced scanning, Composite video signal, Synchronization pulses

	2nd	Interlaced scanning, Composite video signal, Synchronization pulses
	3rd	3.2 TV Transmitter: Block diagram & function of each block.
	1st	3.3 Monochrome TV Receiver: Block diagram & function of each block.
8th	2nd	3.4 Colour TV signals (Luminance Signal & Chrominance Signal, I & Q, U & V Signals)
	3rd	3.5 Types of Televisions by Technology (Concept only): cathode-ray tube TVs, Plasma Display Panels, Digital Light Processing (DLP), Liquid Crystal Display (LCD),
	1st	Organic Light-Emitting Diode (OLED) Display, Quantum Light- Emitting Diode (QLED)
9th	2nd	3.6 Discuss the principle of operation: LCD display, Large Screen Display.
	3rd	3.7 Digital TV Technology: Digital TV Signals, Transmission of digital TV signals
	1st	Digital TV receiver Video programme processor unit
10th	2nd	MICROWAVE ENGINEERING (9)
	3rd	4.1 Define Microwave Wave Guides
	3rd	4.2 Operation of rectangular wave guides and its advantage
11th	1st	4.3 Propagation of EM wave through wave guide with TE & TM modes
	2nd	4.4 Working of Directional coupler
	3rd	Isolators & Circulator
12th	1st	4.5 Microwave tubes-Principle of operation of two Cavity Klystron
	2nd	4.6 Principle of Operations of Cyclotron
	3rd	4.7 Principle of Operations of Tunnel Diode & Gunn diode
13th	1st	4.7 Principle of Operations of Tunnel Diode & Gunn diode
	2nd	Broadband communication (8) 5.1 Broadband communication system: Fundamental of Components and Network architecture
	3rd	5.1 Broadband communication system: Fundamental of Components and Network architecture
14th	1st	5.2 Cable broadband data network: architecture, importance & future of broadband telecommunication internet based network
	2nd	5.2 Cable broadband data network: architecture, importance & future of broadband telecommunication internet based network
	3rd	5.3 ISDN: ISDN Devices interfaces, services, Architecture, applications
15th	1st	5.3 ISDN: ISDN Devices interfaces, services, Architecture, applications
	2nd	5.4 BISDN: Interfaces & Terminals, protocol architecture applications
	3rd	5.4 BISDN: Interfaces & Terminals, protocol architecture applications


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