

UTKALMANI GOPABANDHU INSTITUTE OF
ENGINEERING, ROURKELA



LESSON PLAN

SESSION: 2023-2024

DEPARTMENT OF ELECTRONICS AND
TELECOMMUNICATION ENGINEERING

SUBJECT CODE: Th.4

NAME OF THE SUBJECT: WAVE PROPAGATION AND BROADBAND COMMUNICATION

BRANCH: ELECTRONICS & TELECOMMUNICATION

SEMESTER: DIPLOMA 5TH SEM

NUMBER OF CLASSES ALLOTTED PER WEEK: 4

TOTAL PERIODS ALLOTTED TO THE SUBJECT ACCORDING TO SCTEVT: 60

NAME OF THE FACULTY: MANINI MONALISA PRADHAN

UTKALMANI GOPABANDHU INSTITUTE OF ENGINEERING, ROURKELA



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SUBJECT CODE: Th.4

NAME: wave propagation and Broadband Communication
BRANCH: ELECTRONICS & TELECOMMUNICATION

SEMESTER: DIPLOMA -V

PERIODS PER WEEK: 4

NAME OF THE FACULTY: MANINI MONALISA PRADHAN

No. of periods per week: 4(As per AICTE)

No of classes allotted per week offline mode: 04(01/08/2023 to 30/11/2023)

Week/Date	Lecture	Topic to be covered	Remarks
1 st week 01/08/2023 to 05/08/2023	1 st	Effect of environments such as reflection, Interference, Diffraction	
2 nd week 07/08/2023 to 12/08/2023	1 st	Classification based on modes of propagation	
	2 nd	Ground wave	
	3 rd	Ionosphere	
	4 th	Sky wave	
3 rd week 14/08/2023 to 19/08/2023	1 st	Space wave propagation	15/08/2023(holiday) Need one extra class for adjustment
	2 nd	Critical frequency	
	3 rd	Maximum usable frequency	
	4 th	Skip distance	
4 th week 21/08/2023 to 26/08/2023	1 st	Fading	
	2 nd	Dot propagation	
	3 rd	Troposphere scatter, actual height , virtual height	
	4 th	Radiation mechanism and Maxwell equation	
5 th week 28/08/2023 to 02/09/2023	1 st	Antenna gain ,directivity, effective aperture, polarization	30/08/2023(holiday) Need one extra class for adjustment
	2 nd	Input impedance, efficiency, Radiator resistance	
	3 rd	Bandwidth, beam width, radiation pattern	
	4 th	Antenna types- monopole,dipole,omnidirectional	

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Week/Date	Lecture	Topic to be covered	Remarks
6 th week 04/09/2023 to 09/09/2023	1 st	Yagi, Rohmbus, Dish and smart antenna	06/09/2023(holiday) Need one extra class for adjustment
	2 nd	Fundamentals of transmission line	
	3 rd	Equivalent circuit of transmission line	
	4 th	Characteristics impedance, losses in transmission line	
7 th week 11/09/2023 to 16/09/2023	1 st	SWR, VSWR, Reflection coefficient	
	2 nd	Quarter wave and wavelength line	
	3 rd	Impedance matching	
	4 th	Stubs -single and double	
8 th week 18/09/2023 to 23/09/2023	1 st	Primary and secondary constant of transmission line	19/09/2023 to 20/09/2023(holidays) Need two extra classes for adjustment
	2 nd	Aspect ratio, Rectangular switching, flicker	
	3 rd	Horizontal Resolution, video bandwidth	
	4 th	Line scanning, Composite video signal ,synchronisation pulses	
9 th week 25/09/2023 to 30/09/2023	1 st	Monochrome Tv Receiver block diagram and functions	29/09/2023 (holiday) Need one extra class for adjustment
	2 nd	Colour Tv signal -Luminance and chrominance signal	
	3 rd	CRT TV, Plasma display panels	
	4 th	Digital light processing, LCD	
10 th week 02/10/2023 to 07/10/2023	1 st	OLED	02/10/2023(holiday) Need one extra class for adjustment
	2 nd	QLED	
	3 rd	LCD	
	4 th	Large screen display	

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11 th week 09/10/2023 to 14/10/2023	1 st	CATV system and type of Network	
	2 nd	Digital TV	
	3 rd	Transmission of digital TV signal	
	4 th	Define Microwave and waveguide	
12 th week 16/10/2023 to 21/10/2023	1 st	Operation of Rectangular Waveguide	
	2 nd	Advantages of Rectangular Waveguide	
	3 rd	Propagation of EM wave through wave guide with TE	
	4 th	Propagation of EM wave through wave guide with TM	
13 th week 23/10/2023 to 28/10/2023	1 st	Circular waveguide	23/10/2023 to 28/10/2023(holidays) Need four extra classes for adjustment
	2 nd	Working of circular waveguide	
	3 rd	Cavity resonator	
	4 th	Operational cavity resonator	
14 th week 30/10/2023 to 04/11/2023	1 st	Working of Directional Coupler	
	2 nd	Working of isolator	
	3 rd	Working of Circulator	
	4 th	Principle of two cavity klystron	
15 th week 06/11/2023 to 11/11/2023	1 st	Operation of two cavity klystron	
	2 nd	Construction of Traveling wave Tube	
	3 rd	Principle of operation Traveling wave Tube	
	4 th	Principle of operation Cyclotron	

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16 th week 13/11/2023 to 18/11/2023	1 st	Principle of operation of Tunnel diode	
	2 nd	Principle of operation of Gun diode	
	3 rd	Broadband Communication-Component and Network architecture	
	4 th	Cable broad band data network –importance and future of broadband Telecommunication	
17 th week 20/11/2023 to 25/11/2023	1 st	Cable broad band data network architecture	
	2 nd	SONET-Signal frame component topologies	
	3 rd	SONET –Advantages application and disadvantages	
	4 th	ISDN devices interference	
18 th week 27/11/2023 to 30/11/2023	1 st	ISDN-services	27/11/2023(holiday) Need one extra class for adjustment
	2 nd	ISDN-architecture and application	
	3 rd	BISDN-interference and terminals	
	4 th	BISDN-Protocol architecture application	

