

Name of the faculty : Virender Singh

Discipline : ECE

Semester : 6th

Subject : WIRELESS AND MOBILE COMMUNICATION

Theory				
Week	Lecture Day	Topic (Including Assignment test)	Topic	Practical Day
1st	1st	Wireless Communication Basics	Study the features, specification and working of cellular mobile	1st
	2nd	Advantages of wireless communication		2nd
	3rd	Electromagnetic waves.		3rd
2nd	4th	Frequency Spectrum used. Cellular Network Systems.	Measurement of signal strength at various points from a transmitting antenna	4th
	5th	Propagation considerations Rang		5th
	6th	Atmospheric Effect		6th
3rd	7th	Geographic Effect	Demonstration of Base Trans Receiver(BTS) with nearby cellular tower	7th
	8th	Fading		8th
	9th	Doppler Effect		9th

4th	10th	Multipath Effect	Observing call processing of GSM trainer kit.	10th
	11th	Introduction to 1G and 2G Cell area		11th
	12th	Cell Site Structure		12th
5th	13th	Capacity of cell	Visit to Mobile Switching Centre Repair of a GSM mobile phone	13th
	14th	Frequency Reuse (Concept)		14th
	15th	Interference (Co-channel, Adjacent channel) Power Control for reducing Interference		15th
6th	16th	Fundamentals of cellular network planning Coverage planning		16th
	17th	Capacity planning		17th
	18th	Cell splitting and sectoring		18th
7th	19th	Introduction to Multiple Access.Frequency Division Multiple Access (FDMA)		19th

	20th	Time Division Multiple Access (TDMA)		20th
	21st	Distinction between TDMA FDD and TDMA TDD		21st
8th	22nd	Code Division Multiple Access (CDMA), WCDMA		22nd
	23rd	Introduction of Global Systems for Mobile Communication (GSM) and its architecture, Introduction of CDMA System, comparison of CDMA and GSM Systems		23rd
	24th	Same as above		24th
9 th	25th	Introduction of GPRS, EDGE, Bluetooth and Wi-fi.		25th
	26th	Same topic		26th
	27th	Introduction to Architecture and Features of UMTS		27th
10th	28th	HSPA (High Speed Packet Access).		28th

	29th	Features and Architecture of LTE (Long Term Evolution).		29th
	30th	Assembling and disassembling of GSM phone 6		30th
11th	31st	Study parts of Mobile Phone		31st
	32nd	Testing of various parts		32nd

Lesson Plan

Name of the Faculty : Manju Kaushik

Discipline : ECE

Semester : 6th

Subject : INDUSTRIAL AUTOMATION

Work Load (Lecture / Practical) per week (in hours): 14 week

Week	Theory	
	Lecture day	Topic (including assignment / test)
1 st	1	Introduction about Subject
	2	Unit 1. Concept of PLC, Building blocks of PLC
	3	Functions of various blocks
2 nd	4	Limitations of relays. Advantages of PLCs over electromagnetic relays
	5	Different programming languages, PLC manufacturer
	6	Revision of chapter 1
3 rd	7	Unit 2 Basic operation and principles of PLC
	8	Scan Cycle Memory structures, I/O structure
	9	Programming terminal, power supply
4 th	10	Revision of chapter 2
	11	Assignment 1
	12	Revision of 1st sessional test
5 th	13	1st sessional test
	14	Unit 3. Basic instructions like latch, master control self holding relays.
	15	Timer instruction like retentive timers, resetting of timers
6 th	16	Counter instructions like up counter, down counter, resetting of counters.
	17	Arithmetic Instructions (ADD,SUB,DIV,MUL etc.) - MOV instruction
	18	RTC(Real Time Clock Function) - Watch Dog Timer
7 th	19	Comparison instructions like equal, not equal, greater, greater than equal, less than, less than equal
	20	Programming based on basic instructions, timer, counter, and comparison instructions using ladder program.
	21	Revision of chapter 3
8 th	22	Unit 4. Concept of DCS
	23	DCS I/O hardware
	24	Remote Terminal Unit
9 th	25	Assignment 2
	26	Revision of chapter 4
	27	Revision of 2nd sessional test
10 th	28	2nd sessional test
	29	Unit 5. Block Diagram of SCADA
	30	Difference between Open Architecture and Dedicated system
11 th	31	Difference between DCS and SCADA
	32	Revision chapter 5
	33	Unit 6. Introduction to electric drives
12 th	34	AC Drive for Speed and Direction control
	35	Types of AC drives
	36	Assignment 3
13 th	37	Revision of chapter 6
	38	3rd sessional test
	39	Revision of chapter 1,2
14 th	40	Revision of chapter 3,4
	41	Revision of chapter 5,6
	42	Revision of very short answer questions

Lesson Plan

Name of Faculty : **Bhupender Singh**
Discipline : **Electronics & Comm. Eng.**
Semester : **6th**
Subject : **MICROWAVE AND RADAR ENGINEERING**
Lesson Plan Duration : **16 weeks**

Work load (Lecture /Practical) per week (in hours): Lectures—04, Practical—03

week	Lecture Day	Topic (Including Assignment/ Test	Practical Day	Topic
1 st	1	Introduction to microwaves and its applications,	1 st	General idea's for lab Equipment's
	2	Classification on the basis of its frequency bands (HF, VHF, UHF, L, S, C, X, KU, KA, mm, SUB, mm)		
	3	Rectangular and circular wave guides and their applications		
2 nd	4	Mode of wave Guide	2 nd	To measure the electronics and mechanical tuning range of a reflex klystron
	5	Propagation constant of a rectangular wave guide		
	6	cut off wavelength, guide wavelength and their relationship with free space wavelength (no mathematical derivation)		
3 rd	7	Impossibility of TEM mode in a wave guide	3 rd	To measure the electronics and mechanical tuning range of a reflex klystron
	8	REVISION /Assignment		
	9	Constructional features, characteristics and application of tees, bends		
4 th	10	Constructional features, characteristics and application of matched termination & twists	4 th	To measure VSWR of a given load.
	11	Constructional features, characteristics and application of detector, mount, slotted section		
	12	Constructional features, characteristics and application of directional coupler		
5 th	13	Constructional features, characteristics and application of fixed and variable attenuator	5 th	To measure VSWR of a given load.
	14	Constructional features, characteristics and application of isolator, circulator		
	15	Constructional features, characteristics and application of duplex, coaxial to wave guide adapter		
6 th	16	Assignment/ Test	6 th	To measure the Klystron frequency by slotted section method
	17	Basic concepts of thermionic emission and vacuum tubes		
	18	Effects of interelectrode capacitance, Lead Inductance and Transit time on the high frequency performance of conventional vacuum tubes		

7 th	19	steps to extend their high frequency operations	7 th	To measure the Klystron frequency by slotted section method
	20	Construction, characteristics, operating principles and typical applications of Multi cavity klystron		
	21	Construction, characteristics, operating principles and typical applications of Reflex klystron		
8 th	22	Construction, characteristics, operating principles and typical applications of Multi-cavity magnetron	8 th	Revision
	23	Construction, characteristics, operating principles and typical applications of Traveling wave tube		
	24	Construction, characteristics, operating principles and typical applications of Gunn diode and Impatt diode		
9 th	25	Revision	9 th	To measure the directivity and coupling of a directional coupler.
	26	Expert Lecture/ Quiz		
	27	General Trams and views for microwayse antennas		
10 th	28	Structure characteristics and typical applications of Horn antennas	10 th	To measure the directivity and coupling of a directional coupler.
	29	Structure characteristics and typical applications of Dish antennas		
	30	Revision / Quiz /expert Lecture		
11 th	31	Block diagram and working principles of microwave communication link.	11 th	To plot radiation pattern of a horn antenna in horizontal and vertical planes.
	32	Troposcatter Communication Troposphere and its properties		
	33	Troposcatter Communication Troposphere and its properties		
12 th	34	Tropospheric duct formation and propagation	12 th	To plot radiation pattern of a horn antenna in horizontal and vertical planes.
	35	Tropospheric duct formation and propagation		
	36	Roposcatter propagation.		
13 th	37	Assignment	13 th	To verify the properties of magic tee.
	38	Revision		
	39	Introduction to radar, its various applications		
14 th	40	radar range equation (no derivation) and its applications	14 th	To verify the properties of magic tee.
	41	Block diagram and operating principles of basic pulse radar		
	42	Concepts of ambiguous range, radar area of cross-section and its dependence on frequency		

15 th	43	Block diagram and operating principles with application of CW (Doppler radar)	15 th	Revision/ viva
	44	Block diagram and operating principles with application of FMCW radar		
	45	Block diagram and operating principles of MTI radar.		
16 th	46	Radar display- PPI	16 th	Revision/ viva
	47	Introduction to VSAT transponders multiple access techniques		
	48	VSAT and its features		