Department of Electrical Engineering
EE22004 EMI

Lesson Plan

S. No.	Topic	No. of lecture required	COs
1	INTRODUCTION, BASICS OF MEASUREMENT , STANDARDS OF MEASUREMENTS	1	**CO1**
2	CHARACTERISTICS OF MEASUREMENTS, STATIC, DYNAMIC CHARACTERISTICS	1	**CO1**
3	ERRORS AND CLSSIFICATION , ERRORS ANALYSIS AND PROBLEM solving.	2	**CO1**
4	CLASSIFICATION OF INSTRUMENTS	1	**CO1**
5	MECHANISM OF ELECTROMECHANICAL INSTRUMENTS ,PERMANENT MAGNET MOVING COIL INSTRUMENTS, MOVING-IRON INSTRUMENTS	2	**CO1**
6	ELECTRODYNAMOMETER-TYPE INSTRUMENTS,ELECTROSTATIC INSTRUMENTS AND INDUCTION-TYPE INSTRUMENTS	2	**CO2**
7	EXTENSION OF INSTRUMENTS RANG,COMPARISON BETWEEN DIFFERENT TYPES OF INSTRUMENTS	2	**CO2**
8	POWER MEASUREMENTS (WATT METER METHOD) PROBLEM BASED ON WATTMETERS	2	**CO2**
9	ENERGY METER, MAXIMUM DEMAND INDICATOR	3	**CO2**
10	POWER FACTOR METER, FREQUENCY METER, TRI VECTOR METER	1	**CO2**
11	ERROR ESTIMATION AND ITS COMPENSATION	2	**CO2**
12	CALIBRATION AND TESTING	2	**CO2**
13	MAXWELL, HAY'S, OWEN, ANDERSON BRIDGES WITH APPLICATION, ADVANTAGES DISADVANTAGES	2	**CO3**
14	DE-SAUTY, SCHERING, WEIN BRIDGE AND ITS APPLICATION, ADVANTAGES DISADVANTAGES	3	**CO3**
15	TYPE OF RANGE IN RESISTANCE, MEASUREMENT OF SMALL RESISTANCE(3METHODS)	2	**CO3**
16	MEASUREMENT OF MEDIUM AND HIGH RESISTANCE	2	**CO3**

17	INTRODUCTION of TRANSDUCER, CLASSIFICATION,RTD,STRAIN GAUGE, THERMOCOUPLE	2	**CO4**
18	THERMISTER, LVDT	1	**CO4**
19	CAPACITIVE TRANSDUCER, BLOCK DIAGRAM OF DAS(DAQ)	2	**CO4**
21	D TO A CONVERTER(3 TYPES),A-D CONVERTER (5 TYPES)	2	
22	INTODUCTION TO CRO, BLOCK DIAGRAM, DEFLECTION SENSITIVITY,RANGE OF EXTENSION OF FREQUENCY	1	**CO5**
23	TYPE OF OSCILLOSCOPES,Q-METER	1	**CO5**
24	INTRODUCTION TO THE DSO, LISSAJOUS PATTERN, TYPE OF SWEEP	1	**CO5**
	Total	**40**	

B. TECH SECOND YEAR (4 YDC) ELECTRICAL ENGINEERING

LESSON PLAN

SUBJECT NAME :EE22006 NETWORK THEORY

CLASS :B.TECH II YEAR ELECTRICAL

LECT NO.	TOPIC	CO
1	Classification of circuit elements and sources	CO1
2	Kirchhoff's law, Concept of super node and supermesh, Power, Energy, Passivity Loop and Nodal equations	
3	Magnetically coupled circuit	
4	Problems on Magnetic circuit	
5	Network topology	
6	Numericals on thevenin's theorem norton's theorem	
7	Numericals based on maximum power transfer theorem reciprocity theorem millman's theorem	
8	Numericals based on compensation theorem and tellegen's theorem	
9	First order circuits, Source free RL circuit, Source free RC circuit	CO2
10	RL & RC circuit with source	
11	Numericals based on first order circuits	
12	Introduction to second order circuits	
13	Different solutions of characteristic equations	
14	AC transients	
15	Responses based on step ramp impulse and arbitrary inputs	
16	Circuit elements models and transform of signal waveforms	
17	Laplace transformation, Numericals based on laplace transformation	
18	Initial and final value theorem, Circuit element model, Transform of signal waveform	
19	Numericals	
20	Network functions poles and zeros	CO3
21	Discussion on two port parameters with applications	
22	Two part parameters (Z, Y, ABCD, A'B'C'D', h, g)	
23	Interconnection of two port networks (Series, Parallel)	
24	Interconnection of two port networks (Cascade)	
25	Numericals based on two port network models	
26	Numericals based on two port network models	
27	Polyphase circuit introduction	CO4
28	Balanced to three phase connections	
29	Unbalanced three phase connections	
30	Concept of Neutral shift	
31	Complex power and Power factor improvement	
32	Numericals on three phase circuit	
33	Numericals on three phase circuit and Power factor improvement	
34	Fourier analysis of periodic waveforms	CO5
35	Frequency spectrum	
36	Power and energy of complex waveforms	
37	Frequency response plot	
38	Series and parallel resonance	
39	Concept of attenuator filter equalizers	
40	Design of low pass and high pass filters using passive elements	

ELECTRICAL ENGINEERING DEPARTMENT
B.tech II Year (4 YDC)
EE22443: Electrical Workshop - I

CO1	1. To get acquainted with various tools, symbols used in the electrical system .
CO2	Prepare estimate for electrical wiring in the domestics applications.
CO3	Provide effective earthing solution in domestic as well as industrial domain.
CO4	Suggest suited illumination devices as per application requirement.
CO5	Repair and maintain , electrical appliances and make robust joint in electrical connection.

S.No.	AIM OF EXPERIMENT	Lab	COs	Pos	PSOs
1	Introduction of tools, Electrical materials, Symbol and Abbreviation.	2	CO1	1,2	1
2	To make T joint and Straight joint.	2	CO5	1,2	1,2
3	To Study Staircase wiring.	2	CO2	3,12	1,2
4	To Study and estimate House wiring	2	CO2	3,12	1,2
5	To Study Fluorescent tube light	2	CO4	1,3	1,2
6	To Study high pressure mercury vapour lamp (H.P.M.V)	2	CO4	1,3	1,2
7	To Study Sodium vapour lamp	2	CO4	1,3	1,2
8	To study different types of earthing system and measure the earth resistance.	2	CO3	1,3,12	1,2,3
9	To study repairing of Home Appliances such as Heater, Electric iron , Fans etc. .	2	CO5	1,6,9,12	1,2,3

ELECTRICAL ENGINEERING DEPARTMENT
B.Tech. THIRD YEAR SEM A (4 YDC)
EE 32009: CONTROL SYSTEM

Course Outcomes

EE32009(T).1: Develop mathematics models (TF and state space) of various physical systems.
EE32009(T).2: Define time domain and frequency domain specifications of a control system.
EE32009(T).3: Determine stability of a control system using time domain techniques and design appropriate controller for a given problem.
EE32009(T).4: Propose alternate solution via compensator design to get desired frequency domain specifications.
EE32009(T).5: Explain concepts of controllability and observability as well design of state feedback controller.

Unit No.	Topics	Number of lectures	CO Mapping	PO	PSO
1	Introduction	1	CO1	1	1
	Modelling of Dynamic Systems and Simulation	1	CO1	2,3	1
	concept of transfer function, Block diagram reduction method	1	CO1	2	1
	Signal flow graph method	1	CO1	3,5	1
	Analogue simulation, linearity, impulse response	1	CO1	2	1
	Mason's gain formula	1	CO1	2	1
	a-c and d-c Servomotors, servo-amplifiers (a-c & d-c) using	1	CO1	1,4	1
	Gyro, Resolver component study	1	CO1	4	1

	Concept and mathematical theory of feedback, return ratio, return	1	CO1	3	1
	understanding the necessity of feedback as real control action supplemented by a small example	1	CO1	3	1
2	Time-Domain Analysis of Feedback Control Systems with Typical reference test signals	1	CO2	2	1
	transient behaviour Proportional plus derivative	1	CO2	2	1
	rate feedback control actions for improving the transient response	1	CO2	2,3	1
	Steady state behaviour	1	CO2	2,4	1
	Types of open loop transfer functions, Steady state errors	1	CO2	2	1
	improvement of steady state errors	1	CO2	2,3	1
3	Frequency-Domain Analysis of Feedback Control system	1	CO2	4	1,2
	Concept of frequency-domain analysis, Bode plots	1	CO2,3	3,4	1,2
	Numerical Exmple	1	CO3,4	3,4	1
	Polar plots	1	CO3	4,5	1,2
	Bode of closed loop transfer function Mp	1	CO3,4	3,4	1
	Systems Bode plots of error transfer functions, Principle of	1	CO3,CO4	4	1

	Nyquist criteria	1	CO3	4,5	1
	Conditionally stable closed loop systems	1	CO3	3	1
	Transportation lag, Constant M and constant N loci	1	CO3	5	1
	Root locus and example	1	CO3	3,4	1
4	Compensation Techniques, need, Different types of compensation	1	CO4	4	2
	Phase-lead and Phase-lag compensation	1	CO4	4,5	2
	Design of compensating networks for the desired frequency-domain	1	CO4	3,4	2
	Examples	1	CO4	3,4	2
5	Fundamentals of state space: concept of state and state variable.	1	CO5	1,2	1
	Representation of linear system through state dynamics	1	CO5	1,2	1
	Calculation of Eigen-values and Eigen-vectors	1	CO5	1,2	1
	Modal matrix, Modal transformation	1	CO5	1,2	1
	Elementary understanding controllability and observability,	1	CO5	5	1
	BIBO stability, asymptotic stability	1	CO5	2	1
	Routh-Hurwitz stability analysis	1	CO2,3	2	1

	Nyquist stability analysis and relative stability	1	CO2,3	2	1,2
	state feedback control. - concept of stability, gain margin and phase	1	CO3	2,3	1
	Total	40			

Department of Electrical Engineering
EE32007 Power Electronics-I Session
Faculty: Dr. Shailendra Kumar sharma
Lesson Plan

Course Outcome:

EE32007(T).1: Recognize and apply fundamental concepts of static switches in design of switching converters.

EE32007(T).2: Classify topologies of single phase and three phase line commutated power converter circuits, analyse their performances and apply in selection of appropriate converter for field problem.

EE32007(T).3: Apply the knowledge of synchronization, isolation and firing pulse generation in developing firing schemes for line commutated converters.

EE32007(T).4: Demonstrate the knowledge of Dual Converters technology in applying speed control schemes of DC machines

EE32007(T).5: Identify the topologies of cyclo-converters and AC voltage controllers, compare their performances for real time applications.

S. No.	Topic	No. of lecture required	COs	POs	PSOs
1	Introduction of power electonics, Structure and operation of semiconductor power devices	1	1	1,2	1
2	static and dynamic characteristics	1	1	1,2	1
3	series and parallel operation of devices	1	1	1,2	1
4	Design of Heat removal & sink, ratings of devices	2	1	1,2	1
5	Design of snubber circuits and device data sheet interpretation	2	1	1,2	1
6	Basics of Power converters	1	2	2,3	1
7	Classification of single phase and three phase converters, types of loa	1	2	2,3	1,2
8	Steady state analysis of controlled converters and evaluation of perfo	2	2	2,3	1
9	Transfer characteristics	1	2	2,3	1,2
10	Effect of load inductance, back emf, freewheel diode, overlap and its e	2	2	2,3	1
11	Harmonic analysis and solving numerical problems	2	2	2,3,4	1,2
12	Discuss Control circuits	2	3	1,2	2
13	Firing circuit requirements for line commutated converters	1	3	1,2	1
14	Synchronization, isolation, pulse transformer	1	3	1,2	1,2
15	opto-coupler, UJT, PUT, BJT based firing circuit	2	3	1,2	1
16	IC TCA-785 based firing circuit.	2	3	1,2	2
17	concept of Dual converters	1	4	1,2	1
18	Operation in circulating and non-circulating mode	1	4	2,3	1,2
19	line loading, sub harmonic, control problems	2	4	2,3	1,2
21	Four quadrant operation, and power circuit.	2	4	1,2,3	1
22	Numerical Problem based on dual converter	2	4	3,4	1,2
23	Cycloconverter-Operation, control problems	2	5	1,2,3	1
24	Various power circuits, AC power controller-fully controlled and semi-c	2	5	2	2
25	Harmonic analysis, integral cycle control.	2	5	1,2	2
26	Numerical Problem based on Cyclo converter converter	2	5	2,3	1,2
	Total	**40**			

Department of Electrical Engineering

Subject Code: EE42005 Subject Name: DIGITAL SIGNAL PROCESSING

Faculty: M.P.S. CHAWLA

Lesson Plan

S. No.	Topic	No. of lecture required	COs	POs	PSOs
1	Discrete-time signals: sequences and systems, linear time-invariant systems and their properties, Difference equations.	1	CO1	1,2	1
2	Frequency-domain representation of discrete-time signals and systems, Representation of sequences by Fourier transforms and respective properties.	1	CO1	1	1
3	Sampling of Continuous-Time Signals and z-Transform - Frequency-domain representation of sampling, Reconstruction of a band-limited signal from its samples	1	CO1	2	1
4	Discrete-time processing of continues-time signals, Continuous-time processing of discrete-time signals.	1	CO2	2	1
5	z-transform and its properties, Properties of the region of convergence for the z-transform, Inverse z-transform & transform using contour integration.	2	CO3	2,3	1
6	Complex convolution theorem, Parseval's relation, Unilateral z-transform.	2	CO3	3,4	1
7	Transform Analysis of Linear Time-Invariant Systems - Frequency response of LTIV systems	2	CO2	4	1
8	Systems functions frequency response for rational system functions, Relationship between magnitude and phase, All-pass systems, Minimum-phase systems.	2	CO2	4	1
9	Structures of Discrete-Time Systems	2	CO3	3	2
10	Signal representation of linear constant coefficient difference equations	2	CO3	3,4	2

11	Basic structures of IIR systems, Transposed forms.	1	CO4	3	2
12	Basic network structures for FIR systems.	2	CO4	2	1
13	Filter Design Techniques - Design of discrete-time IIR filters from continuous-time filters	2	CO4	3,4	3
14	Frequency transformations of low-pass IIR filters	2	CO4	3	1
15	Computer-aided design for discrete-time IIR filters	2	CO4	4	3
16	Design of FIR filters by windowing, Kaiser Window.	2	CO4	2	3
17	Discrete Fourier Transform and its Computation - Discrete Fourier series and its properties	2	CO5	1	1
18	Sampling the Fourier transform Fourier representation of finite-duration sequences: Discrete Fourier Transform, Properties of DFT	2	CO5	1	1
19	Linear convolution using the discrete Fourier transform.	1	CO5	3	2
20	Computation of Discrete Fourier Transform Efficient computation of the DFT	2	CO5	3	2
21	Goertzel algorithm, Decimation-in-time algorithm	2	CO5	4	2
22	Decimation-in frequency FFT algorithms	2	CO5	2	1
23	Implementation of the DFT using convolution.	2	CO5	3	2
	Total	**40**			

Department of Electrical Engineering																			
Sub. Name	**Power Quality**	**Sub Code**		**EE42252**															
Faculty	**RITU SAXENA**		**0**																
				Engg Know.	Prob. Ana.	Dsgn	cplx prob	Mod tool	Engg &soc	Env &sus	Eth	Tem Wrk	Com	Prj Mgm	Life Lrng				
Lect#	**Unit#**	**learning contents**	**CO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**	
1	1	Introduction of Power Qualtiy,Definition of power quality problem	CO1	1	1											1			
2		Terms used in power quality, power quality issue		1	1											1			
3		Power quality issue: discription of different types of issues		1	1											1			
4		Electric power quality standards		1												1			
5		Electric power quality standards : discuss in details power quality standards		1												1			
				3	2	0	0	0	0	0	0	0	0	0	0	3	0	0	
6	2	Power frequency disturbance, common power frequency disturbances	CO2	1	1											1			
7		Common power frequency disturbances (discription of different types of commom power frequency disturbaances),		1	1											1			
8		Voltage sag & interruptions, isolation transformer		1	1											1			
9		Isolation transformer, voltage regulator		1	1											1			

10		voltage regulator (single phase ac voltage controller) and numerical problem		1	1												1		
11		Static UPS systems, numerical problem		1	1												1		
12		Static UPS system (classification of UPS system) and numerical problem		1													1		
				3	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0
13	3	Electrical transients ,types and causes of transients	CO3			1				1							1	1	
14		Types and causes of transients (discuss factors of transients)				1				1							1	1	
15		Atmospheric causes ,switching on or off				1				1							1	1	
16		Switching on or off (discuss the different examples of switching on or off), interruption of fault circuits				1				1							1	1	
17		Interruption of fault circuits (discuss diferent types of faults circuits)				1				1							1	1	
18		Capacitor switching transients , motor start transients				1				1							1	1	
19		Motor start transients (details of motor start transients)				1				1							1	1	
20		Motor start transients ,power factor correction				1											1	1	
21		Power factor correction (discuss different types of method)				1											1	1	
				0	0	3	0	0	0	2	0	0	0	0	0	0	3	3	0
22		Harmonics , definition of harmonics		1		1	1										1	1	

23	4	Causes of voltage and current harmonics	CO4	1		1	1									1	1		
24		Individual and total harmonic distortion		1		1	1									1	1		
25		Individual and total harmonic distortion (total harmonic distortion discuss in detail)		1		1	1									1	1		
26		Individual and total harmonic distortion and numerical problem		1		1	1									1	1		
27		Effects of harmonics on power system devices		1		1	1									1	1		
28		Effects of harmonics on power system devices (discuss different types of harmonics on power system devices)		1		1	1									1	1		
29		Guidelines for harmonic voltage and current limitation		1		1	1									1	1		
30		Guidelines for harmonic voltage and current limitation (discuss different types of guidelines for harmonic voltage and current)		1		1	1									1	1		
31		Harmonic current mitigation techniques		1		1										1	1		
32		Harmonic current mitigation techniques (discuss different types of harmonic current mitigation techniques)		1		1										1	1		
				3	0	3	2	0	0	0	0	0	0	0	0	3	3	0	
33		Power Quality monitoring and conditioning , monitoring considerations			1														
34		Power quality measurement equipment			1			1								1	1	1	

35	5	Power quality measurement equipment (discuss types of euipment)	CO5		1			1								1	1		
36		Power quality monitoring standards ,shunt compensator			1											1	1		
37		Series compensators , custom power devices			1											1	1		
38		Custom power devices (discuss different types of custom power devices)			1											1	1		
39		DSTATCOM ,DVR														1	1		
40		UPQC and its application														1	1		
				0	2	0	0	1	0	0	0	0	0	0	0	3	3	1	

Shri G.S. Institute of Technology and Science, Indore (MP)
Department of Electrical Engineering
EE32005: Microprocessor and Operating System

Lecture Plan

Lect#	Unit#	learning contents	CO
1	1	Register transfer, Bus and Memory Transfer,	CO1
2		Arithmetic micro-operations, Four-bit arithmetic circuit,	
3		logic micro-operations, Shift micro-operation.	
4		Single stage of ALU. Evolution and development of microprocessor,	
5		internal organization of 8-bit microprocessor 8085,	
6		System clock, bus cycle, timing diagram	
7	2	Types of main memory,	CO2
8		RAM/ROM interface and addressing decoding technique.	
9		Memory Mapped I/O and Peripherals I/O	
10		Serial I/O	
11		Serial I/O	
12	3	Software model, addressing modes,	CO3
13		instruction set, assembly and machine language programming,	
14		instruction set, assembly and machine language programming,	
15		Counters, Time delays.	
16		Counters, Time delays.	
17		Stack	
18		Subroutines	
19		Interrupts	
20		Interrupts	
21	4	Programmable Peripheral Interface(8255),	CO4
22		Programmable Peripheral Interface(8255),	
23		Programmer timer(8254)	
24		Keyboard and Display controller(8279)	
25		ADC/DAC	
26		DMA controller(8237),	
27	5	Types of operating system, services,	CO5
28		utilities, system calls	
29		Disk allocation methods,	
30		disk schedulers	
31		Case study of UNIX and DOS.	
32		Process Concept, Scheduling concept	
33		Types of Schedulers, Process State Diagram, Scheduling Algorithms	
34		Paging Segmentation, Paged Segmentation	
35		Demand Paging	