Model Template for Scheme of Course Work

to be submitted by the Faculty of B.Tech/M.Tech/MCA I semester on or before 11.10.2013 to bhanucvk@gvpce.ac.in and yadavalliraghu@yahoo.com

SCHEME OF COURSE WORK

Course Details:

Course Title	**: ANALYSIS OF POWER ELCTRONIC CONVERTER-II**		
Course Code	**: 12EE2210**	**L T P C**	**:4 0 0 3**
Program:	**: M.Tech.**		
Specialization:	**: Power Electronics and Drives**		
Semester	**:II Sem**		
Prerequisites	**: POWER ELECTRONICS AND BASIC NETWORK ANALYSIS**		
Courses to which it is a prerequisite	**: SWITCH MODE AC & DC POWER SUPPLIES**		

Course Outcomes (COs): At the end of the course students will be able to understand

1	Resonant converters-ZVS and ZCS
2	Switching DC power supplies
3	Power conditioners and UPS
4	Principle of PWM& Space vector PWM
5	Concept of current harmonics and their effects

Program Outcomes (POs):

1	Be a part of competent workforce in the area of Static Power Electronics Converters and power electronic converter fed electrical drives and power quality issues .
2	Apply soft computing techniques for Power Electronic Systems and Electric Drives.
3	Understand large scale Power Electronic Converter Systems, Electric Drives and issues involved through modeling, analysis and simulation.
4	Apply present day techniques and tools to solve Power electronic and electric drives problems relevant to india and other countries
5	To gain necessary skills in using state-of-the-art simulation tools such as PLEXIM, SABER, OPAL-RT Lab, dSPACE, MULTISIM , LABVIEW and other Tools for analysis , design and trouble shooting of power electronics converters and various Electric drives .
6	Collaborate with industries on problems of relevance to them while planning/organizing graduate dissertations towards expanding sphere of interaction..
7	Improve soft skills of students through seminars and organization of technology workshops, writing research/project reports as a part of graduate education.
8	Encourage life-long learning through professional bodies (such as IEEE. Institute of Engineers (India) ,etc)
9	Imbibe social responsibilities and ethical practices towards creating a work force for national growth

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Course Outcome Versus **Program Outcomes:**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO-1			S	S					
CO-2			S	M					
CO-3				M			M		
CO-4			M	S					
CO-5			M	M	S	S			

S - Strongly correlated, *M* - *Moderately* correlated, *Blank* - *No correlation*

Assessment Methods:	Assignment / Quiz / Seminar / Case Study / Mid-Test / End Exam

Teaching-Learning and Evaluation

Week	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	Introduction, Switch mode inductive current switching, zero voltage and zero current switchings,	CO-1	Explain Switch mode inductive current switching	▫ Lecture	Assignment (Week 2 - 4)
2	Classification of resonant converters-load resonant converters-resonant switch converters-resonant dc link converters. Basic resonant circuit concepts-series resonant circuits-parallel resonant circuits.	CO-1	Describe resonant switch converters Explain resonant circuit concepts-series resonant circuits-parallel resonant circuits.	▫ Lecture	Mid-Test 1 (Week 9)
3	Load resonant converters-series loaded resonant dc-dc converters-parallel loaded resonant dc-dc converters.	CO-1	Describe parallel loaded resonant dc-dc converters.	▫ Lecture	
4	Resonant switch converters-ZCS resonant switch converters-ZVS resonant converters,Comparison of ZCS and ZVS topology.	CO-1	Explain ZCS resonant switch converters	▫ Lecture	
5	Introduction, Linear power supplies, overview of switching power supplies, Flyback converters (derived from buck-boost converters	CO-2	What is Linear power supplies	▫ Lecture	
6	forward converter (derived from step-down converter), push-pull converter (derived from step-down converter).	CO-2	Explain forward converter	▫ Lecture	
7	Half bridge converter (derived from step down converter),	CO-2	Describe Half bridge converter with circuit and waveforms	▫ Lecture	
	Half bridge converter (derived from	CO-2	Describe Half bridge	▫	

8	step down converter),		converter		
	Mid-Test 1				
9	Introduction, Power line disturbances-types of disturbances-sources of disturbances	CO-3	What are the Power line disturbances	▫ Lecture	
10	effect of sensitive equipment, power conditioners, UPSs-rectifiers-batteries-Inverters-static transfer switch	CO-3	What are the effect of power line disturbances on sensitive equipment	▫ Lecture	Mid-Test 2 (Week 18)
11	Principle of PWM, Principle of space vector	CO-4	Explain Principle of space vector	▫ Lecture	Assignment (Week 11-13)
12	converter switching states, linear or under modulation region,	CO-4	Explain space vector PWM	▫ Lecture	
13	PWM over modulation region, implementation steps	CO-4	Explain the implementation steps	▫ Lecture	
14	Introduction, generation of current harmonics, need for improved utility interface.	CO-5	Explain need for improved utility interface.	▫ Lecture	
15	current harmonics and power factor, harmonic standards and recommended practices,	CO-5	Explain standards and recommended practices	▫ Lecture	
16	improved single phase utility interface, improved three phase utility interface, electromagnetic interference	CO-5	single phase utility interface	▫ Lecture	
17	improved single phase utility interface, improved three phase utility interface, electromagnetic interference	CO-5	three phase utility interface, electromagnetic interference	▫ Lecture	
18	**Mid-Test 2**				
19/20	**END EXAM**				