Government College of Engineering, Salem - 11

Department of Electrical and Electronics Engineering

M.E. - Power Electronics and Drive

COs - POs and PSO Mapping

Course Articulation Matrix – 22 Regulation

Semester - I															
22PEC110Power Semiconductor Devices and Components															
		Program Outcomes												**Program Specific Outcomes**	
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Recall the overview of power semiconductor switches	1	3	1	1	1	1	3	1	1	1	1	-	1	3	1
2	Analyze the thermal requirements of power semiconductor devices	1	1	3	3	1	1	3	1	1	2	1	-	1	1	2
3	Discuss the basic concepts of ZVS and ZCS	1	1	2	2	2	1	1	1	1	3	1	-	1	1	2
4	Evaluate the design aspects of various magnetic components according to specific requirements.	2	3	2	3	3	1	2	2	1	2	2	-	2	3	1
5	Develop the design concepts of circuit elements	2	2	3	2	3	1	2	3	1	2	2	-	2	2	2
Average		1.4	2.0	2.2	2.2	2.0	1.0	2.2	1.6	1.0	2.0	1.4	-	1.4	2.0	1.6

Semester - I																
22PEC12-Analysis Of Power Converters																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Get expertise in the working modes and operation of Power converters.	2	1	1	-	-	-	-	1	1	1	-	-	3	2	1
2	Select and design dc-dc converter topologies for a broad range of power conversion applications.	1	3	3	2	2	-	1	1	1	1	1	-	1	3	2
3	Design single phase and three phase inverters for various applications	1	3	3	2	2	-	1	1	1	1	1	-	1	3	2
4	Formulate and design the current source inverter.	1	3	3	2	2	-	1	1	1	1	1	-	1	3	2
5	Identify suitable modulation techniques for Power Electronics Converters	1	2	2	3	1	-	1	1	1	1	1	-	2	2	1
Average		1.2	2.4	2.4	2.2	1.7	-	1.0	1.0	1.0	1.0	1.0	-	1.6	2.6	1.6

Semester - I																
22PEC13-Advanced Power Electronics Laboratory																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Model power electronics converter/Inverter in software	-	3	-	3	3	-	2	3	1	-	1	-	2	1	1
2	Simulate any power electronic converter/Inverter	1	-	2	-	3	1	2	3	-	1	1	-	2	1	1
3	Obtain numerical solutions of partial, differential and integral equations	-	2	1	3	2	-	-	1	-	-	2	-	3	1	1
4	Test single phase full converter for any type of R and RL load	-	-	-	3	3	-	2	2	1	2	-	-	3	1	1
5	Test single phase full converter for dc motors	1	-	1	-	3	1	-	2	2	-	1	-	2	1	1
Average		1.0	2.0	1.3	3.0	2.8	1.0	2.0	2.2	1.3	1.5	1.2	-	2.4	1.0	1.0

Semester - I																
22PEC14-Advanced Digital Control Laboratory																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Understand the peripheral requirements for controlling the circuit	1	1	1	1	1	1	1	1	1	1	1	-	1	1	-
2	Understand and implement the configurations of various required peripherals	1	1	1	1	1	1	1	1	1	1	1	-	1	1	-
3	Write coding to implement the devised control technique	1	1	1	1	1	1	1	1	1	1	1	-	1	1	-
4	Understand and implement the measurement principles through digital techniques	1	1	1	1	1	1	1	1	1	1	1	-	1	1	1
5	Develop algorithms for implementation of controls and implement isolation techniques for power control	1	1	1	1	1	1	1	1	1	1	1	-	1	1	-
Average		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	-	1.0	1.0	1.0

Semester - I																
22MLC-10Research Methodology and IPR																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Understand research problem formulation	2	2	1	3	1	-	-	-	-	-	1	-	2	1	-
2	Analysis research related information	-	3	2	2	1	1	-	3	-	1	-	-	2	1	-
3	Follow research ethics	-	-	2	-	-	1	1	1	-	3	1	-	-	-	-
4	Understand that today's world is controlled by computer, Information technology, but tomorrow's world is ruled by ideas, concepts and creativity.	-	-	-	2	1	-	-	-	-	2	1	-	-	-	2
5	Understand that IPR production provides an incentive to inventors for further research work and investment in R& D, which leads to creation of new and better products, and in turn brings about economic growth and social benefits.	-	-	-	-	2	1	-	1	-	-	1	-	-	-	3
Average		2.0	2.5	1.6	1.4	1.2	1.0	1.0	1.6	-	2.0	1.0	-	0.8	1.0	3.0

Semester - II																
22PEC210Modelling And Analysis of Electrical Machines																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Acquire knowledge about the DC machines and AC machines and their magnetic circuits.	2	1	1	1	3	1	3	1	1	1	1	-	1	1	1
2	Develop mathematical model of AC & DC machines and perform transient analysis on them.	2	1	3	3	1	1	3	1	1	1	1	-	1	3	3
3	Understand the different types of reference frame theories and transformation relationships and Apply reference frame theory to AC machines	2	2	2	2	3	1	3	1	1	3	1	-	2	2	2
4	Analyze the steady state and dynamic operation of three phase induction motor and special machines using transformation theory based mathematical Modelling	2	3	2	3	3	1	2	2	1	2	1	-	3	2	3
5	Select strategies to control the torque for a given application.	2	2	3	3	3	1	2	1	1	2	2	-	2	3	3
Average		2.0	1.8	2.2	2.4	2.6	1.0	2.6	1.2	1.0	1.8	1.2	-	1.8	2.2	2.4

Semester - II																
22PEC22 -Modern Electrical Drives																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Select suitable drives for industries.	1	-	-	-	2	1	2	-	2	1	2	-	3	2	1
2	Analyse various characteristics of electrical drives with single and three phase converters.	1	3	3	2	2	1	2	2	1	-	1	-	2	1	1
3	Suggest suitable speed control method for the electrical drives	1	-	-	2	2	1	-	2	1	-	1	-	3	2	1
4	Operate power electronics converters in continuous/discontinuous mode	1	-	2	2	2	-	2	2	-	-	1	-	2	2	1
5	Use closed loop control schemes for electrical motor drives.	1	2	3	2	3	-	2	2	-	1	1	-	3	2	1
Average		1.0	2.5	2.6	1.6	2.2	1.0	2.0	2.0	1.3	0.4	1.2	-	2.6	1.8	1.0

Semester - II																
22PEC23-Power Electronics For Renewable Energy System Laboratory																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Identification of suitable analog and digital controller for the converter design.	2	-	3	3	3	-	2	3	2	-	2	-	3	2	1
2	Test the power electronics converters/Inverters	2	3	3	-	3	1	2	3	1	1	1	-	3	2	1
3	Know the significance of gate driver, sensing and protection circuits in power converters.	2	3	-	-	2	1	1	1	-	-	1	-	3	1	1
4	Design the power converters such as AC-DC, DC-DC, and AC-AC converters for Solar energy systems	-	-	3	3	3	1	2	3	1	-	1	-	2	1	1
5	Design the power converters such as AC-DC, DC-DC, and AC-AC converters for Wind energy systems Identification of suitable analog and digital controller for the converter design.	2	3	3	-	3	-	2	3	-	1	1	-	2	1	1
Average		2.0	3.0	3.0	3.0	2.8	1.0	1.8	2.6	1.3	1.0	1.2	-	2.6	1.4	1.0

Semester - II																
22PEC24-Advanced Electrical Drives Laboratory																
		Program Outcomes												**Program Specific Outcomes**		
Course Outcomes		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
1	Design closed loop control for PMSM and SRM drives.	2	-	3	2	-	1	-	2	-	1	-	-	1	1	-
2	Analyze the operation of VSI and CSI fed induction motor drives	1	3	-	-	-	-	-	1	-	-	-	-	1	1	-
3	Select suitable inverter configuration and control for three phase induction motor drives.	3	-	1	-	-	-	-	1	-	-	2	-	1	1	-
4	Analyze the operation of synchronous motor drives.	1	3	-	-	-	-	-	2	-	-	-	-	1	1	1
5	Use digital control for special motor drives.	2	-	-	3	1	-	-	1	-	-	-	-	1	1	1
Average		1.8	3.0	2.0	2.5	1.0	1.0	-	1.4	-	1.0	2.0	-	1.0	1.0	1.0