



Indra Ganesan

COLLEGE OF ENGINEERING

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
Accredited by NAAC with 'B+' Grade, 2(f) & 12B Status Institution by UGC

IG Valley, Madurai Main Road, Manikandam, Tiruchirappalli - 620012

NAAC DOCUMENTS

QUALITY INDICATOR FRAME WORK

CRITERION – 2

TEACHING-LEARNING AND EVALUATION

SUBMITTED BY

IQAC

INTERNAL QUALITY ASSURANCE CELL
INDRA GANESAN COLLEGE OF ENGINEERING



Criteria 2	Teaching-Learning and Evaluation	350
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Key Indicator-2.6 Student Performances and Learning Outcome (90)

2.6.1 Programme Outcomes (POs) and Course Outcomes (COs) for all programmes offered by the institution are stated and displayed on website

**DEPARTMENT OF ELECTRICAL & ELECTRONICS
ENGINEERING R2021**

INDRA GANESAN COLLEGE OF ENGINEERING

IG Valley, Manikandam, Tiruchirappalli, Tamil Nadu – 620 012, India
(Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai-25)

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

REGULATION -2021

COURSE OUTCOMES

SEM-II

E106- EE3251 Electric Circuit Analysis

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E106.1	Ability to analyze electrical circuits	1,2,3,4,6,10,11,12	1,2
E10.2	Ability to apply circuit theorems	1,2,3,4,6,10,11,12	1,2
E105.3	Ability to analyze transients circuits	1,2,3,4,6,10,11,12	1,2
E105.4	Analyze Phasor diagrams and analysis of three phase circuits	1,2,3,4,6,10,11,12	1,2
E105.5	Acquire the knowledge Power measurement in three phase circuits.	1,2,3,4,6,10,11,12	1,2
E105.6	Analyze Quality factor and Bandwidth	1,2,3,4,6,10,11,12	1,2

Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
CO1	3	3	3	2	2	-	2	1	-	-	-	3	3	3	3
CO2	3	3	3	3	2	-	2	1	-	-	-	3	3	3	3
CO3	3	3	3	3	2	-	2	1	-	-	-	3	3	3	3
CO4	3	3	3	3	2	-	2	1	-	-	-	3	3	3	3
CO5	3	3	3	3	2	-	2	1	-	-	-	3	3	3	3
CO6	3	3	3	3	2	-	2	1	-	-	-	3	3	3	3
Avg.	3	3	3	2.8	2	-	2	1	-	-	-	3	3	3	3

E109- EE3271 Electric Circuits Laboratory

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E109.1	Apply circuit theorems and concepts in engineering applications	1,2,3,4,6,10,11,12	1,2
E109.2	Simulate electric circuits	1,2,3,4,6,10,11,12	1,2
E109.3	Design and Simulation of series resonance circuit	1,2,3,4,6,10,11,12	1,2
E109.4	Design and Simulation of parallel resonant circuits	1,2,3,4,6,10,11,12	1,2
E109.5	Simulation and experimental verification of electrical circuit problems using Superposition theorem.	1,2,3,4,6,10,11,12	1,2

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E109.6	Simulation and Experimental validation of R-C electric circuit transients	1,2,3,4,6,10,11,12	1,2
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Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	3	-	2	1.5	3	-	-	3	3	3	2
2	3	3	3	3	3	-	2	1.5	3	-	-	3	3	3	2
3	3	3	3	3	3	-	2	1.5	3	-	-	3	3	3	2
4	3	3	3	3	3	-	2	1.5	3	-	-	3	3	3	2
5	3	3	3	3	3	-	2	1.5	3	-	-	3	3	3	2
Avg.	3	3	3	3	3	-	2	1.5	3	-	-	3	3	3	2

SEM-III

E202- EE3301 ELECTROMAGNETIC THEORY

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E202.1	Discuss a basic knowledge the basic mathematical concepts related to electromagnetic vectorfields.	1,2,3,4,9,10,11,12	1,2
E202.2	Explain the basic concepts about electrostatic fields, electrical potential, energy density and their applications	1,2,3,4,6,9,10,11,12	1,2
E202.3	acquire the knowledge in magneto static fields, magnetic flux density, vectorpotential and its applications	1,2,3,4,6,7,9,10,11,12	1,2
E202.4	Describe types the different methods of emf generation and Maxwell's equations.	1,2,3,4,6,10,11,12	1,2
E202.5	the basic concepts electromagnetic waves and characterizing parameters	1,2,3,4,10,11,12	1,2
E202.6	Summarize knowledge on properties and behavior of fluids.	1,2,3,4,10,11,12	1,2

Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	-	-	-	3	1	-	-	-	1	3	2	1
CO2	3	2	1	2	-	-	1	1	-	-	-	1	3	2	1
CO3	3	2	1	2	-	-	1	1	-	-	-	1	3	2	1
CO4	3	2	1	2	-	-	1	1	-	-	-	1	3	2	1
CO5	3	2	1	2	-	-	1	1	-	-	-	1	3	2	1
Avg.	3	2	1	2	-	-	1.4	1	-	-	-	1	3	2	1

E203- EE3302 DIGITAL LOGIC CIRCUITS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs

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E203.1	Explain the concepts combinational and sequential Circuits	1,2,3,4,6,10,11,12	1,2
E203.2	Determine Shear force and bending moment in beams and understand concept of theory of simple bending.	1,2,3,4,6,10,11,12	1,2
E203.3	Calculate various number systems and simplify the logical expressions using Boolean functions	1,2,3,4,6,10,11,12	1,2
E203.4	Apply basic various synchronous and asynchronous circuits.	1,2,3,4,6,10,11,12	1,2
E203.5	Analyze sequential circuits and PLDs	1,2,3,4,6,10,11,12	1,2
E203.6	Digital simulation for development of application oriented logic circuits.	1,2,3,4,6,10,11,12	1,2

Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
CO1	3	3	3	1	3	-	-	1	-	-	-	1	3	-	1
CO2	3	3	3	1	3	-	-	1	-	-	-	1	3	-	1
CO3	3	3	3	1	3	-	-	1	-	-	-	1	3	-	1
CO4	3	3	3	1	3	-	-	1	-	-	-	1	3	-	1
CO5	3	3	3	1	3	-	-	1	-	-	-	1	3	-	1
Avg	3	3	3	1	3	-	-	1	-	-	-	1	3	-	1

E205 – EE3303 ELECTRICAL MACHINES – I

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E205.1	to analyze the magnetic-circuits	1,2,3,4,5,10,11,12	1,2
E205.2	to acquire the knowledge in constructional details of transformers	1,2,3,4,5,10,11,12	1,2
E205.3	Identify the concepts of electromechanical energy conversion	1,2,3,4,5,10,11,12	1,2
E205.4	acquire the knowledge in working principles of DC Generator	1,2,3,4,5,10,11,12	1,2
E205.5	Acquire the knowledge in working principles of DC Motor	1,2,3,4,5,10,11,12	1,2
E205.6	to acquire the knowledge in various losses taking place in D.C. Machines	1,2,3,4,5,10,11,12	1,2



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Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
CO1	3	3	1	1	1	-	-	1	-	-	-	1	3	2	2
CO2	3	3	1	1	1	-	-	1	-	-	-	1	3	1	1
CO3	3	3	1	1	1	-	-	1	-	-	-	1	3	1	1
CO4	3	3	1	1	1	-	-	1	-	-	-	1	3	3	2
CO5	3	3	1	1	1	-	-	1	-	-	-	1	3	3	2
CO6	3	3	1	1	1	-	-	1	-	-	-	1	3	3	2
Avg	3	3	1	1	1	-	-	1	-	-	-	1	3	3	3


E208- EE3311 ELECTRICAL MACHINES LABORATORY-I

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E208.1	Experiment practical knowledge on DC Generator	1,2,3,4,8,9,11,12	1,2
E208.2	Analyze types of DC Generator	1,2,3,4,8,9,11,12	1,2
E208.3	Demonstrate practical knowledge generators	1,2,3,4,8,9,11,12	1,2
E208.4	Experiment practical knowledge on DC Motors	1,2,3,4,8,9,11,12	1,2
E208.5	Experiment practical knowledge on DC Transformers	1,2,3,4,8,9,11,12	1,2
E208.6	Demonstrate practical knowledge generators & Transformers	1,2,3,4,8,9,11,12	1,2

Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
CO1	3	3	1	1	-	-	-	-	1	-	-	-	3	1	1
CO2	3	3	1	1	-	-	-	-	1	-	-	-	3	3	2
CO3	3	3	1	1	-	-	-	-	1	-	-	-	3	3	2
CO4	3	3	1	1	-	-	-	-	1	-	-	-	2	3	2
CO5	3	3	1	1	-	-	-	-	1	-	-	-	2	3	2
CO6	3	3	1	1	-	-	-	-	1	-	-	-	2	3	1
Avg	3	3	1	1	-	-	-	-	1	-	-	-	2.5	2.6	1.6


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SEM- IV

E212 – EE3401 TRANSMISSION AND DISTRIBUTION

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E212.1	Determine the importance and the functioning of transmission line parameters	1,2,3,4,6,10,11,12	1,2
E212.2	Analyze the concepts of Lines and Insulators.	1,2,3,4,6,10,11,12	1,2
E212.3	To acquire knowledge on the performance of Transmission lines	1,2,3,4,6,10,11,12	1,2
E212.4	To acquire the importance of distribution of the electric power in power system	1,2,3,4,6,10,11,12	1,2
E212.5	To Perceive knowledge on Underground Cabilitys	1,2,3,4,6,10,11,12	1,2
E212.6	To become familiar with the function of different components used in Transmission and Distribution levels of power system and modeling of these components.	1,2,3,4,6,10,11,12	1,2

Mapping of COs, C, PSOs with Pos

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	-	-	-	-	-	1	-	-	-	-	3	1	1
CO2	3	2	1	1	-	1	-	2	-	-	-	-	3	2	1
CO3	3	2	1	1	-	1	-	2	-	-	-	-	3	3	1
CO4	3	2	1	1	-	1	-	2	-	-	-	-	3	3	1
CO5	3	2	1	1	-	1	-	2	-	-	-	-	3	3	1
Avg	2.8	1.8	1	1		1	-	1.8					3	2.4	1

E214 - EE 3403 MEASUREMENTS AND INSTRUMENTATION

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E214.1	To acquire knowledge on Basic functional elements of instrumentation	1,2,3,4,6,9,10,11,12	1,2
E214.2	Identify the concepts of Fundamentals of electrical and electronic instruments	1,2,3,4,6,10,11,12	1,2
E214.3	Ability to compare between various measurement techniques	1,2,3,4,10,11,12	1,2
E214.4	To acquire knowledge on Various storage and display devices	1,2,3,4,10,11,12	1,2
E214.5	Explain the understand the concepts Various transducers and the data acquisition systems	1,2,3,4,6,10,11,12	1,2
E214.6	Ability to model and analyze electrical and electronic Instruments and understand the operational features of display Devices and Data Acquisition System.	1,2,3,4,10,11,12	1,2

Mapping of COs, C, PSOs with POs

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COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
CO1	3	2	3	-	3	2	-	2	-	-	-	3	3	3	3
CO2	3	2	3	2	-	-	-	-	-	3	-	3	3	3	3
CO3	3	2	3	-	3	2	-	-	-	-	-	3	3	3	3
CO4	3	2	3	-	-	-	-	2	-	-	-	-	3	3	3
CO5	3	2	3	2	3	-	-	-	-	3	-	3	3	3	3
Avg	3	2	3	2	3	2	-	2	-	3	-	3	3	3	3

E215-EE3404 MICROPROCESSORS AND MICROCONTROLLERS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E215.1	Ability to acquire knowledge in Addressing modes & instruction set of 8085 & 8051.	1,2,3,4,10,11,12	1,2
E215.2	Ability to need & use of Interrupt structure 8085 & 8051	1,2,3,4,10,11,12	1,2
E215.3	Ability to understand the importance of Interfacing	1,2,3,4,10,11,12	1,2
E215.4	Ability to explain the architecture of Microprocessor and Microcontroller.	1,2,3,4,10,11,12	1,2
E215.5	Ability to write the assembly language programme	1,2,3,4,10,11,12	1,2
E215.6	Ability to develop the Microprocessor and Microcontroller based applications	1,2,3,4,10,11,12	1,2

Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS01	PS02	PS03
CO1	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
CO2	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
CO3	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
CO4	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
CO5	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3
Avg	2	1	2	3	-	-	-	1	-	-	-	3	3	1	3

E216 – EE3405 ELECTRICAL MACHINES – II

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E216.1	Explain the construction and working principle of synchronous Generator	1,2,3,4,6,10,11,12	1,2
E216.2	MMF curves and armature windings.	1,2,3,4,6,10,11,12	1,2
E216.3	Acquire knowledge on Synchronous motor.	1,2,3,4,6,10,11,12	1,2
E216.4	Explain the construction and working principle of Three phase Induction Motor	1,2,3,4,6,10,11,12	1,2
E216.5	Explain the construction and working principle of special machines	1,2,3,4,6,10,11,12	1,2

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E216.6	Ability to predetermine the performance characteristics of Synchronous Machines	1,2,3,4,6,10,11,12	1,2
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Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	3	3	-	-	1	-	-	-	-	3	3	2
CO2	3	3	2	3	3	-	-	1	-	-	-	-	3	3	2
CO3	3	3	2	3	3	-	-	1	-	-	-	-	3	3	2
CO4	3	3	2	3	3	-	-	1	-	-	-	-	3	3	2
CO5	3	3	1	1	2	-	-	1	-	-	-	-	3	3	2
CO6	3	3	1	1	2	-	-	1	-	-	-	-	3	3	2
Avg	3	3	1.6	2.3	2.6	-	-	1	-	-	-	-	3	3	2

E218 –EE3411 ELECTRICAL MACHINES LABORATORY - II

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E218.1	Ability to understand and analyze EMF and MMF methods	1,2,3,4,6,8,9,10,12	1,2
E218.2	Ability to analyze the characteristics of V and Inverted V curves	1,2,3,4,6,8,9,10,12	1,2
E218.3	Ability to understand the importance of Synchronous machines	1,2,3,4,6,8,9,10,12	1,2
E218.4	Ability to understand the importance of Induction Machine	1,2,3,4,6,8,9,10,12	1,2
E218.5	Ability to acquire knowledge on separation of losses	1,2,3,4,6,8,9,10,12	1,2

Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1	1	-	-	-	1.5	1	-	-	3	3	3	2
CO2	3	3	1	1	-	-	-	1.5	1	-	-	3	3	3	2
CO3	3	3	1	1	-	-	-	1.5	1	-	-	3	3	3	1
CO4	3	3	1	1	-	-	-	1.5	1	-	-	3	3	3	1
CO5	3	3	1	1	-	-	-	1.5	1	-	-	2	3	3	2
Avg	3	3	1	1	-	-	-	1.5	1	-	-	2.8	3	3	1.6

SEM-V

E301- EE3501 POWER SYSTEM ANALYSIS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E301.1	Ability to model the power system under steady state operating condition	1,2,3,4,8,10,11,12	1,2
E301.2	Apply iterative techniques for power flow analysis	1,2,3,4,8,10,11,12	1,2
E301.3	Ability to model and carry out short circuit studies on power system	1,2,3,4,8,10,11,12	1,2

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E301.4	Ability to model and analyze stability problems in power system	1,2,3,4,8,10,11,12	1,2
E301.5	Ability to acquire knowledge on Fault analysis	1,2,3,4,8,10,11,12	1,2
E301.6	Ability to model and understand various power system components and carry outpower flow, short circuit and stability studies	1,2,3,4,8,10,11,12	1,2

Mapping of COs, C, PSOs with Pos

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	1	1	-	-	-	1	-	-	-	1	-	2
CO2	3	3	3	2	1	-	-	-	1	-	-	-	1	1	1
CO3	3	3	3	2	1	-	-	-	1	-	-	1	1	1	1
CO4	3	2	2	2	2	-	-	-	1	-	-	1	1	1	2
CO5	3	3	2	2	2	-	-	-	1	-	-	1	1	1	1
Avg	3	2.6	2.4	1.8	1.4	-	-	-	1	-	-	1	1	1	1.4

E302 – EE3591 POWER ELECTRONICS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E302.1	Ability to analyse AC-AC AC converters	1,2,3,4,6,7,10,11,12	1,2
E302.2	Ability to analyse DC-DC converters	1,2,3,4,6,7,10,11,12	1,2
E302.3	Ability to analyse DC-AC converters	1,2,3,4,6,7,10,11,12	1,2
E302.4	Ability to choose the converters for real time applications	1,2,3,4,6,7,10,11,12	1,2
E302.5	Ability to analyse Chopper circuits	1,2,3,4,6,7,10,11,12	1,2
E302.6	Ability to analyse Inverters circuits	1,2,3,4,6,7,10,11,12	1,2

Mapping of COs, C, PSOs with Pos

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	-	-	2	1	-	-	3	3	3	3	3
CO2	3	3	3	3	-	-		1	-	-	-	-	3	3	3
CO3	3	3	3	3	-	-	2	1	-	-	2	-	3	3	3
CO4	3	3	3	3	-	-	1	1	-	-	2	3	3	3	3
CO5	3	3	3	3	-	-	1	1	-	-	2	3	3	3	3
Avg.	3	3	3	3	-	-	1.5	1	-	-	2.25	3	3	3	3

E303 – EE3503 CONTROL SYSTEMS

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E303.1	Ability to develop various representations of system based on the knowledge of Mathematics, Science and Engineering fundamentals	1,2,3,4,10,11,12	1,2

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E303.2	Ability to do time domain and frequency domain analysis of various models of linearsystem.	1,2,3,4,10,11,12	1,2
E303.3	Ability to interpret characteristics of the system to develop mathematical model.	1,2,3,4,10,11,12	1,2
E303.4	Ability to design appropriate compensator for the given specifications	1,2,3,4,6,10,11,12	1,2
E303.5	Ability to come out with solution for complex control problem	1,2,3,4,6,8,10,11,12	1,2
E303.6	Ability to understand use of PID controller in closed loop system.	1,2,3,4,6,8,10,11,12	1,2

Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	-	-	1	-	-	-	3	3	3	3
CO2	3	3	3	3	3	-	-	1	-	-	-	3	3	3	3
CO3	3	3	3	3	3	-	-	1	-	-	-	3	3	3	3
CO4	3	3	3	3	3	-	-	1	-	-	-	3	3	3	3
CO5	3	3	3	3	3	-	-	1	-	-	-	3	3	3	3
Avg.	3	3	3	3	3	-	-	1	-	-	-	3	3	3	3

E304 – EE3012 ELECTRICAL DRIVES

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E304.1	Understand the basic requirements of motor selection for different load profiles	1,2,3,4,10,11,12	1,2
E304.2	Analyze the steady state behavior and stability aspects of drive systems.	1,2,3,4,10,11,12	1,2
E304.3	Analyze the dynamic performance of the DC drive using converter	1,2,3,4,10,11,12	1,2
E304.4	Simulate the AC drive.	1,2,3,4,6,10,11,12	1,2
E304.5	Design the controller for electrical drives	1,2,3,4,6,8,10,11,12	1,2
E304.6	Analyze the dynamic performance of the DC drive using chopper control.	1,2,3,4,6,8,10,11,12	1,2

Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	3	-	-	1	-	-	-	2	3	3	2
CO2	3	2	2	3	3	-	-	1	-	-	-	2	3	3	2
CO3	3	2	2	3	3	-	-	1	-	-	-	2	3	3	3
CO4	3	2	2	3	3	-	-	1	-	-	-	2	3	3	3
CO5	3	2	2	3	3	-	-	1	-	-	-	2	3	3	3
CO6	3	2	2	3	3	-	-	1	-	-	-	2	3	3	3
Avg	3	2	2	3	3	-	-	1	-	-	-	2	3	3	2

E305 – EE3014 POWER ELECTRONICS FOR RENEWABLE ENERGY SYSTEM

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After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E305.1	Examine the available renewable energy sources	1,2,3,4,10,11,12	1,2
E305.2	Demonstrate the working principles of electrical machines and power converters used for wind energy conversion system	1,2,3,4,10,11,12	1,2
E305.3	Demonstrate the principles of power converters used for solar PV systems	1,2,3,4,10,11,12	1,2
E305.4	Examine the available hybrid renewable energy systems	1,2,3,4,6,10,11,12	1,2
E305.5	Simulate AC-DC converters, buck/boost converters	1,2,3,4,6,8,10,11,12	1,2
E305.6	Simulate AC-AC converters and PWM inverters.	1,2,3,4,6,8,10,11,12	1,2

Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	-	2	-	-	-	-	-	-	2	-	2	3	3	3
CO2	3	-	2	-	-	-	-	-	-	2	-	2	3	3	3
CO3	3	-	2	-	-	-	-	-	-	2	-	2	3	3	3
CO4	3	-	3	-	-	-	-	-	-	2	-	2	3	3	3
CO5	3	3	2.25	3	3	-	-	3	-	2	-	3	3	3	3
Avg	3	3	2	3	3	-	-	3	-	2	-	2.2	3	3	3

E306-EE3024 DIGITAL SIGNAL PROCESSING

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E306.1	Ability to understand the importance of Fourier transform, digital filters and DSP processors	1,2,3,4,9,10,11,12	1,2
E306.2	Ability to acquire knowledge on Signals and systems & their mathematical representation	1,2,3,4,9,10,11,12	1,2
E306.3	Ability to understand and analyze the discrete time systems	1,2,3,4,9,10,11,12	1,2
E306.4	Ability to analyze the transformation techniques & their computation	1,2,3,4,6,8,9,10,11,12	1,2
E306.5	Ability to understand the types of filters and their design for digital implementation	1,2,3,4,6,8,9,10,11,12	1,2
E306.6	Ability to acquire knowledge on programmability digital signal processor & quantization effects	1,2,3,4,9,10,11,12	1,2

Mapping of COs, C, PSOs with POs

COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	3	2	2	1	-	-	-	-	-	-	-	1	2	1
CO2	2	3	3	2	2	-	-	-	-	-	-	-	2	3	1
CO3	3	3	3	3	3	-	-	-	-	-	-	-	2	2	2
CO4	3	3	3	3	3	-	-	-	-	-	-	-	2	2	2

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CO5	3	3	3	2	1	-	-	-	1	-	-	-	2	2	3
Avg	2.4	3	2.8	2.4	2	-	-	-	1	-	-	-	1.8	2.2	2

E308 – EE3511 POWER ELECTRONICS LABORATORY

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E308.1	Determine the characteristics of SCR, IGBT, TRIAC, MOSFET and IGBT	1,2,3,4,5,6,8,9,10,11,12	1,2
E308.2	Find the transfer characteristics of full converter, semi converter,	1,2,3,4,5,6,8,9,10,11,12	1,2
E308.3	Analyze the voltage waveforms for PWM inverter using various modulation techniques	1,2,3,4,5,6,8,9,10,11,12	1,2
E308.4	Design and experimentally verify the performance of basic DC/DC converter topologies used for SMPS	1,2,3,4,5,6,8,9,10,11,12	1,2
E308.5	Understand the performance of AC voltage controllers by simulation and experimentation	1,2,3,4,5,6,8,9,10,11,12	1,2
E308.6	Find the transfer characteristics of step up and step down choppers by simulation experimentation	1,2,3,4,5,6,8,9,10,11,12	1,2

Mapping of COs, C, PSOs with POs


COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	-	-	1.5	-	-	-	3	3	3	3
CO2	3	3	3	3	3	-	-	1.5	-	-	-	3	3	3	3
CO3	3	3	3	3	3	-	-	1.5	-	-	-	3	3	3	3
CO4	3	3	3	3	3	-	-	1.5	-	-	-	3	3	3	3
CO5	3	3	3	3	3	-	-	1.5	-	-	-	3	3	3	3
Avg	3	3	3	3	3	-	-	1.5	-	-	-	3	3	3	3

E309 – EE3512 CONTROL AND INSTRUMENTATION LABORATORY

After the course, the student should be able to:

CO	Course Outcomes	POs	PSOs
E309.1	Ability to understand control theory and apply them to electrical engineering problems	1,2,3,4,5,6,8,9,10,11,12	1,2
E309.2	Ability to analyze the various types of converters	1,2,3,4,5,6,8,9,10,11,12	1,2
E309.3	Ability to design compensators	1,2,3,4,5,6,8,9,10,11,12	1,2
E309.4	Ability to understand the basic concepts of bridge networks	1,2,3,4,5,6,8,9,10,11,12	1,2
E309.5	Ability to the basics of signal conditioning circuits	1,2,3,4,5,6,8,9,10,11,12	1,2
E309.6	Ability to study the simulation packages	1,2,3,4,5,6,8,9,10,11,12	1,2

Mapping of COs, C, PSOs with POs


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COs	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01	3	3	3	3	3	-	-	1.5	-	-	-	2	3	3	3
C02	3	3	3	3	3	-	-	1.5	-	-	-	2	3	3	3
C03	3	3	3	3	3	-	-	1.5	-	-	-	2	3	3	3
C04	3	3	3	3	3	-	-	1.5	-	-	-	2	3	3	3
C05	3	3	3	3	3	-	-	1.5	-	-	-	2	3	3	3
Avg	3	3	3	3	3	-	-	1.5	-	-	-	2	3	3	3



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