COURSE OUTCOMES WITH PO MAPPING (R16)

Course Name: ELECTRICAL CIRCUIT ANALYSIS -II

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C211.1	To Solve three- phase circuits under balanced and unbalanced condition.	Analyze
C211.2	Able to find the transient response of electrical networks for different types of excitations.	Apply
C211.3	Able to Find parameters for different types of network.	Apply
C211.4	Realize electrical equivalent network for a given network transfer function	Under stand
C211.5	Extract different harmonics components from the response of an electrical network.	Evaluate

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C211.1	3	3	2	2	-	-	-	-	-	-	-	-	3	2
C211.2	2	3	2	2	2	-	-	-	-	-	-	-	3	2
C211.3	3	3	3	1	2	-	-	-	-	-	-	-	3	1
C211.4	3	3	2	2	1	-	-	-	-	-	-	-	3	1
C211.5	2	2	3	2	1	-	-	-	-	-	-	-	2	2
Avg	2.6	2.8	2.4	1.8	1.5	-	-	-	-	-	-	-	2.8	1.6

1-Low; 2- Medium; 3-High

Course Name: ELECTRICAL MACHINES -I

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C212.1	To Understand the concepts of electromechanical energy conversion.	Understand
C212.2	To Analyze the ill-effects of armature reaction and improve commutation in dc machines.	Analyze
C212.3	To Discuss the torque production mechanism and control the speed of dc motors.	Comprehension
C212.4	Analyze the performance of single phase transformers.	Analyze
C212.5	Predetermine regulation, losses and efficiency of single phase transformers.	Synthesis
C212.6	Able to understand the concepts of parallel transformers, control voltages with tap changing methods and achieve three-phase to two-phase transformation	Understand

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C212.1	3	3	2	2	-	-	-	-	-	-	-	-	3	3
C212.2	3	3	2	2	-	1	-	-	-	-	-	-	3	3
C212.3	3	3	2	1	3	2	-	-	-	-	-	-	3	3
C212.4	3	3	2	2	2	-	-	-	-	-	-	-	3	3
C212.5	3	3	3	2	1	-	-	-	-	-	-	-	2	3
C212.6	3	3	2	2	2	1	-	-	-	-	-	-	2	3
Avg	3	3	2.1	1.8	2	1.3	-	-	-	-	-	-	2.3	3

Course Name: BASIC ELECTRONICS AND DEVICES

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C213.1	Understand the concepts of Semiconductor Technology.	Under stand
C213.2	Appraise the construction & operation of electronic devices.	Analyze
C213.3	Develop the biasing circuits using the electronic devices.	Create
C213.4	model the amplifier circuits	Apply
C213.5	Analyze the characteristics of the devices.	Analyze

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C213.1	3	-	2	-	3	-	-	-	-	-	-	-	2	2
C213.2	3	-	2	-	2	-	-	-	-	-	-	-	3	2
C213.3	3	2	3	1	2	-	-	-	-	-	-	-	3	2
C213.4	2	1	3	1	3	-	-	-	-	-	-	-	2	-
C213.5	3	-	1	2	2	-	-	-	-	-	-	-	1	2
Avg	2.8	1.5	2.2	1.3	2.4	-	-	-	-	-	-	-	2.2	2

1-Low; 2- Medium; 3-High

Course Name: ELECTROMAGNETIC FIELDS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C214.1	Determine electric fields and potentials using Guass's law or solving Laplace's or Possion's equations, for various electric charge distributions.	Under stand
C214.2	Calculate and design capacitance, energy stored in dielectrics.	Create
C214.3	Calculate the magnetic field intensity due to current, the application of Ampere's law and the Maxwell's second and third equations.	Apply
C214.4	determine the magnetic forces and torque produced by currents in magnetic field	Evaluate
C214.5	Determine self and mutual inductances and the energy stored in the magnetic field.	Evaluate
C214.6	Calculate induced EMF; understand the concepts of displacement current and Poynting vector.	Under stand

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C214.1	3	3	2	1	-	-	-	-	-	-	-	-	3	2
C214.2	2	2	3	1	-	-	-	-	-	-	-	-	1	2
C214.3	3	3	2	2	2	-	-	-	-	-	-	-	3	1
C214.4	3	3	1	1	-	-	-	-	-	-	-	-	2	3
C214.5	2	3	2	3	1	-	-	-	-	-	-	-	3	2
C214.6	3	3	2	2	-	-	-	-	-	-	-	-	1	2
Avg	2.6	2.8	2	1.6	1.5	-	-	-	-	-	-	-	2.2	2

1-Low; 2- Medium; 3-High

Course Name: THERMAL AND HYDRO PRIMEMOVERS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C215.1	To make the student learn about the constructional features, operational details of various types of internal combustion engines through the details of several engine systems and the basic air standard cycles, that govern the engines.	Under stand
C215.2	To train the student in the aspects of steam formation and its utilities through the standard steam data tables and charts. To make the student correlate between the air standard cycles and the actual cycles that govern the steam turbines.	Create
C215.3	To impart the knowledge of gas turbine fundamentals, the governing cycles and the method to improve the efficiency of gas turbines.	Evaluate
C215.4	To teach the student about the fundamental of fluid dynamic equations and its applications fluid jets.	Analyze
C215.5	To make the student learn about the constructional features, operational details of various types of hydraulic turbines.	Under stand

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C215.1	3	-	2	-	2	1	2	-	-	-	-	-	-	1
C215.2	3	-	3	-	1	-	-	-	-	-	-	-	-	1
C215.3	3	1	3	2	1	-	-	-	-	-	-	-	-	-
C215.4	2	2	3	3	2	-	-	-	-	-	-	-	-	1
C215.5	3	2	2	1	2	-	-	-	-	-	-	-	2	2
Avg	2.8	1.6	2.6	2	1.6	1	2	-	-	-	-	-	2	1.2

1-Low; 2- Medium; 3-High

Course Name: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C216.1	The Learner is equipped with the knowledge of estimating the Demand and demand elastic ties for a product..	Under stand
C216.2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs	Apply
C216.3	The pupil is also ready to understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units	Analyze
C216.4	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis.	Create
C216.5	The Learner can able to evaluate various investment project proposals with the help of capital budgeting techniques for decision making.	Evaluate

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C216.1	-	-	-	-	-	3	2	-	2	-	2	2	-	-
C216.2	-	-	-	-	-	2	2	2	3	2	3	1	-	-
C216.3	-	-	-	-	-	3	2	1	2	-	1	1	-	-
C216.4	-	-	-	-	-	2	1	2	2	1	2	2	-	-
C216.5	-	-	-	-	-	1	2	2	2	-	2	2	-	-
Avg	-	-	-	-	-	2.2	1.8	1.8	2.2	1.5	2	1.6	-	-

1-Low; 2- Medium; 3-High

Course Name: THERMAL AND HYDRO LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C217.1	Identify the various fuel characterizations through experimental testing.	Evaluate
C217.2	Analyze the performance characteristics of an internal combustion engines	Analyze
C217.3	Understand the functionality of the major components of the IC Engines and effects of operating conditions on their performance	Under stand
C217.4	Analyze an appropriate turbine with reference to given situation in power plants.	Analyze
C217.5	Estimate performance parameters of a given Centrifugal and Reciprocating pump.	Apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C217.1	2	2	2	1	2	-	2	-	-	-	-	-	2	2
C217.2	2	2	2	-	2	-	-	-	-	-	-	-	2	2
C217.3	3	1	2	-	-	-	-	-	-	-	-	-	2	1
C217.4	3	2	2	-	2	-	-	-	-	-	-	-	-	2
C217.5	1	1	-	-	-	-	-	-	-	-	-	-	-	1
Avg	2.2	1.6	2	1	2	-	2	-	-	-	-	-	2	1.6

1-Low; 2- Medium; 3-High

Course Name: ELECTRICAL CIRCUITS LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C218.1	The Student should be able to apply various theorems.	Apply
C218.2	Determination of self and mutual inductances	Analyze
C218.3	Able to draw locus diagrams, waveforms and phasor diagrams for lagging and leading networks..	Evaluate
C218.4	The student should able to know the difference between single phase and three phase	Under stand
C218.5	Two port parameters of a given electric circuits.	Evaluate

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C218.1	3	3	3	2	1	-	-	-	-	-	-	-	3	2
C218.2	3	2	2	2	-	-	-	-	-	-	-	-	3	2
C218.3	3	3	3	2	-	-	-	-	-	-	-	-	3	3
C218.4	3	1	2	2	2	-	-	-	-	-	-	-	2	3
C218.5	3	3	2	3	1	-	-	-	-	-	-	-	3	2
Avg	3	2.4	2.4	2.2	1.3	-	-	-	-	-	-	-	2.8	2.4

1-Low; 2- Medium; 3-High

Course Name: ELECTRICAL MEASUREMENTS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C221.1	Choose right type of instrument for measurement of voltage and current for ac and dc.	Evaluation
C221.2	Choose right type of instrument for measurement of power and energy – able to calibrate energy meter by suitable method	Evaluation
C221.3	Calibrate ammeter and potentiometer. •	Application
C221.4	To select suitable bridge for measurement of electrical parameters	Comprehension
C221.5	Application of the ballistic galvanometer and flux meter for magnetic measuring instruments	Application
C221.6	Able to measure frequency and phase difference between signals using CRO.	Comprehension

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO2
C221.1	3	3	2	1	-	-	-	-	-	-	-	-	3	2
C221.2	2	2	3	1	-	-	-	-	-	-	-	-	1	2
C221.3	3	3	2	2	2	-	-	-	-	-	-	-	3	1
C221.4	3	3	1	1	-	-	-	-	-	-	-	-	2	3
C221.5	2	3	2	3	1	-	-	-	-	-	-	-	3	2
C221.6	3	3	2	2	-	-	-	-	-	-	-	-	1	2
Avg	2.6	2.8	2	1.6	1.5	-	-	-	-	-	-	-	2.2	2

Course Name: ELECTRICALMACHINES -II

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C222.1	Explain the operation and performance of three phase induction motor	Understand
C222.2	Analyze the torque-speed relation, performance of induction motor and induction generator	Analyze
C222.3	Explain design procedure for transformers and three phase induction motors	Understand
C222.4	Implement the starting of single phase induction motors	Apply
C222.5	Perform winding design and predetermine the regulation of synchronous generators.	Create
C222.6	Avoid hunting phenomenon, implement methods of staring and correction of power factor with synchronous motor.	Apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C222.1	3	3	3	2	2	3	-	-	-	-	-	1	2	3
C222.2	3	3	2	2	2	2	-	-	-	-	-	1	2	3
C222.3	3	3	3	2	1	2	-	-	-	-	-	1	3	3
C222.4	3	3	2	3	1	2	-	-	-	-	-	1	2	2
C222.5	2	2	2	3	1	2	-	-	-	-	-	1	2	2
C222.6	3	2	2	2	1	2	-	-	-	-	-	1	3	2
Avg	2.8	2.7	2.5	2.4	1.5	2.2						1	2.3	2.5

1-Low; 2- Medium; 3-High

Course Name: SWICTHING THEROY AND LOGIC DESIGN

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C223.1	Understand number systems, binary addition and subtraction, 2's complement representation and operations with this representation and understand the different binary codes.	Understand
C223.2	Explain switching algebra theorems and apply them for logic functions	Comprehension
C223.3	Identify the importance of SOP and POS canonical forms in the minimization or other optimization	Comprehension
C223.4	Discuss about digital logic gates and their properties.	Understand
C223.5	Evaluate functions using various types of minimizing algorithms like Boolean algebra, Karnaugh map or tabulation method	Evaluation
C223.6	Analyze the design procedures of Combinational & sequential logic circuits.	Analyze

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C223.1	3	-	2	-	3	-	-	-	-	-	-	-	2	2
C223.2	3	-	2	-	2	-	-	-	-	-	-	-	3	2
C223.3	3	2	3	1	2	-	-	-	-	-	-	-	3	2
C223.4	2	1	3	1	3	-	-	-	-	-	-	-	2	-
C223.5	3	-	1	2	2	-	-	-	-	-	-	-	1	2
C223.6	2	-	1	1	2								1	1
Avg	2.8	1.5	2.2	1.3	2.4	-	-	-	-	-	-	-	2.2	2

1-Low; 2- Medium; 3-High

Course Name: CONTROL SYSTEMS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C224.1	Derive the transfer function of physical systems and determination of overall transfer function using block diagram algebra and signal flow graphs.	Understand
C224.2	Determine time response specifications of second order systems and to determine error constants.	Apply
C224.3	Analyze absolute and relative stability of LTI systems using Routh's stability criterion and the root locus method	Analyze
C224.4	Analyze the stability of LTI systems using frequency response methods.	Analyze
C224.5	Design Lag, Lead, Lag-Lead compensators to improve system performance from Bode diagrams.	Create
C224.6	Represent physical systems as state models and determine the response. Understanding the concepts of controllability and observability.	Understand

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C224.1	3	3	3	3	1	-	-	-	-	-	-	-	3	2
C224.2	3	2	2	3	1	-	-	-	-	-	-	-	2	2
C224.3	3	3	2	3	-	-	-	-	-	-	-	-	3	2
C224.4	3	2	2	2	1	-	-	-	-	-	-	-	2	2
C224.5	3	2	3	2	-	-	-	-	-	-	-	1	3	2
C224.6	3	2	2	2	-	-	-	-	-	-	-	-	2	2
Avg	3	2.6	2.3	2.5	1	-	-	-	-	-	-	1	2.5	2

1-Low; 2- Medium; 3-High

Course Name: POWER SYSTEMS-I

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C225.1	Identify the different components of thermal power plants.	Understand
C225.2	Find out the different components of nuclear Power plants.	Remember
C225.3	Classify the different components of air and gas insulated substations	Understand
C225.4	Identify single core and three core cables with different insulating materials.	Apply
C225.5	Analyze the different economic factors of power generation and tariffs.	Analyze

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C225.1	3	2	1	2	-	1	-	-	-	-	-	1	3	2
C225.2	2	1	2	1	-	1	-	-	-	-	-	1	2	2
C225.3	2	2	1	3	-	1	-	-	-	-	-	1	3	1
C225.4	3	2	3	1	-	1	-	-	-	-	-	-	2	2
C225.5	2	1	3	2	-	-	-	-	-	-	-	1	2	2
Avg	2.4	1.6	2	1.8	-	1	-	-	-	-	-	1	2.4	1.8

1-Low; 2- Medium; 3-High

Course Name: MANAGEMENT SCEINCE

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C226.1	Managers manage business organizations in the dynamic global environment Organizations develop and maintain competitive advantage	Remembering
C226.2	Business decisions are made using various tools and techniques to remain competitive	Analyzing
C226.3	Managers use problem-solving strategies and critical thinking skills in real-life situations	Applying
C226.4	Different areas of the business (i.e., Manufacturing/Service, Marketing, Financ and Human Resource Management) support the vision and mission.	Understanding)
C226.5	Managers implement successful planning	Understanding

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C226.1						2	3	2	1	2	2	1		
C226.2						2	2	2	2	2	1	1		
C226.3						2	2	2	2	1	2	1		
C226.4						2	3	2	2	1	2	1		
C226.5						2	3	2	2	1	2	1		
Avg						2	2.6	2	1.8	1.4	1.8	1		

1-Low; 2- Medium; 3-High

Course Name: ELECTRICAL MACHINES-I LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C227.1	Determine and predetermine the performance of DC machines and Transformers	Understand
C227.2	Control the speed of DC motor.	Analyze
C227.3	Obtain three phase to two phase transformation	Apply
C227.4	Calculate OC & SC test on single phase transformer	Evaluate
C227.5	Conduct Brake test on DC shunt motor.	Apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C227.1	3	2	3	1	-	-	-	-	-	-	-	--	3	3
C227.2	2	3	3	2	-	-	-	-	-	-	-	-	2	2
C227.3	3	2	1	3	-	-	-	-	-	-	-	-	3	1
C227.4	3	2	3	2	-	-	-	-	-	-	-	1	2	3
C227.5	3	2	3	2	-	-	-	-	-	-	-	-	3	1
Avg	2.8	2.2	2.6	2	-	-	-	-	-	-	-	1	2.6	2

1-Low; 2- Medium; 3-High

Course Name: ELECTRONIC DEVICES AND CIRCUITS LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C228.1	Identification, Specifications, Testing of R, L, C Components (Colour Codes), Potentiometers, Coils, Gang condensers, Relays, Bread Boards.	Understand
C228.2	Identification,Specifications and Testing of active devices, Diodes, bjts, jfets, leds, lcds, SCR, UJT.	Understand
C228.3	Soldering Practice- Simple circuits using active and passive components	Apply
C228.4	Study and operation of Ammeters, Voltmeters, Transformers, Analog and Digital Multimeter, Function	Remember
C228.5	Function Generator, Regulated Power Supply and CRO.	Apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C228.1	3	2	3	2	-	-	-	-	-	-	-	-	3	3
C228.2	2	3	2	3	-	-	-	-	-	-	-	-	2	2
C228.3	3	2	3	2	-	-	-	-	-	-	-	-	2	1
C228.4	2	2	1	1	-	-	-	-	-	-	-	-	3	2
C228.5	3	3	3	1	-	-	-	-	-	-	-	-	2	2
Avg	2.6	2.4	2.4	1.8	-	-	-	-	-	-	-	-	2.4	2

1-Low; 2- Medium; 3-High

Course Name: POWER SYSTEMS-II

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C311.1	Get thorough knowledge on calculation of transmission line parameters and their performance analysis.	Remember
C311.2	Analyze the performance of short, medium and long length transmission lines and factors affecting the performance of transmission lines.	Analyze
C311.3	Understand the necessity and design the transmission lines mechanically.	Apply
C311.4	Analyze the performance of transmission line system under different transient conditions.	Analyze
C311.5	Understand the operation of different types of overhead line insulators, underground cables and analyze the underground cables for transmission and distribution systems.	Understand

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C311.1	3	3	3	2	-	-	-	-	-	-	-	-	3	3
C311.2	3	3	2	2	-	1	-	-	-	-	-	-	3	2
C311.3	3	3	2	1	3	-	-	-	-	-	-	-	3	2
C311.4	3	3	2	2	2	1	-	-	-	-	-	-	3	3
C311.5	3	3	3	2	1	-	-	-	-	-	-	-	3	3
Avg	3	3	2.4	1.8	2	1	-	-	-	-	-	-	3	2.6

1-Low; 2- Medium; 3-High

Course Name: RENEWABLE ENERGY SOURCES

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C312.1	Analyze solar radiation data, extraterrestrial radiation, and radiation on earth's surface.	Analyze
C312.2	Design solar thermal collectors, solar thermal plants	Create
C312.3	Design solar photo voltaic systems	Create
C312.4	Develop maximum power point techniques in solar PV and wind energy systems	Apply
C312.5	Explain wind energy conversion systems, wind generators, power generation	Understand
C312.6	Explain basic principle and working of hydro, tidal, biomass, fuel cell and geothermal systems	Understand

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C312.1	3	2	2	2	2	-	2	-	-	-	-	-	2	2
C312.2	3	2	2	2	2	-	-	-	-	-	-	-	2	3
C312.3	3	1	3	1	2	-	-	-	-	-	-	-	2	3
C312.4	3	2	2	2	2	-	2	-	-	-	-	-	1	2
C312.5	2	2	3	2	2	-	-	-	-	-	-	-	2	3
C312.6	3	2	2	2	2	-	-	-	-	-	-	-	2	3
Avg	2.8	1.8	2.3	1.8	2	-	2	-	-	-	-	-	1.8	2.6

1-Low; 2- Medium; 3-High

Course Name: SIGNALS AND SYSTEMS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C313.1	Characterize the signals and systems and principles of vector spaces, Concept of orthgonality	Understand
C313.2	Analyze the continuous-time signals and continuous-time systems using Fourier series, Fourier transform and Laplace transform	Analyze
C313.3	Apply sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back	Apply
C313.4	Understand the relationships among the various representations of LTI systems	Understand
C313.5	Understand the Concepts of convolution, correlation, Energy and Power density spectrum and their relationships	Analyze
C313.6	Apply z-transform to analyze discrete-time signals and systems.	Apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C313.1	1	2	3	2	1	-	-	-	-	-	-	-	2	
C313.2	3	2	2	1	2	-	-	-	-	-	-	-	1	2
C313.3	1	2	2	2	2	-	-	-	-	-	-	-	2	2
C313.4	1	1	2	2	2	-	-	-	-	-	-	-	1	2
C313.5	2	2	1	2	2	-	-	-	-	-	-	-	2	2
C313.6	2	1	1	1	2	-	-	-	-	-	-	-	2	1
Avg	1.6	1.6	1.8	1.6	1.8								1.6	1.8

1-Low; 2- Medium; 3-High

Course Name: PULSE AND DIGITAL CIRCUITS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C314.1	Design linear and non-linear wave shaping circuits.	Analyze
C314.2	Apply the fundamental concepts of wave shaping for various switching and signal generating circuits	Apply
C314.3	Design different multi-vibrators and time base generators	Evaluate
C314.4	Utilize the non sinusoidal signals in many experimental research areas	Apply
C314.5	Understand the concepts of logic gates and sampling circuits	Understand

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C314.1	2	2	2	3	2	-	-	-	-	-	-	-	2	1
C314.2	1	2	1	2	2	-	-	-	-	-	-	-	1	2
C314.3	2	2	2	3	1	-	-	-	-	-	-	-	2	1
C314.4	1	1	2	2	2	--	-	-	-	-	-	-	1	2
C314.5	1	1	2	2	1	-	-	-	-	-	-	-	1	2
Avg	1.5	1.5	1.6	2.1	1.6								1.5	1.5

1-Low; 2- Medium; 3-High

Course Name: POWER ELECTRONICS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C315.1	Explain the characteristics of various power semiconductor devices and analyze the static and dynamic characteristics of SCR's.	Understand
C315.2	Explain the operation of single phase full–wave converters and analyze harmonics in the input current	Analyze
C315.3	Explain the operation of three phase full–wave converters	Analyze
C315.4	Analyze the operation of different types of DC-DC converters	Apply
C315.5	Explain the operation of inverters and application of PWM techniques for voltage control and harmonic mitigation	Apply
C315.6	Analyze the operation of AC-AC regulators	Understand

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C315.1	2	2	2	3	3	-	-	-	-	-	-	-	2	2
C315.2	2	2	3	3	2	-	-	-	-	-	-	-	3	2
C315.3	2	2	2	3	2	-	-	-	-	-	-	-	2	2
C315.4	3	2	3	2	2	-	-	-	-	-	-	-	2	2
C315.5	2	2	3	2	2	-	-	-	-	-	-	-	3	3
C315.6	2	2	1	2	2	-	-	-	-	-	-	-	2	1
Avg	2.1	2	2.3	2.5	2								2.3	2

1-Low; 2- Medium; 3-High

Course Name: ELECTRICAL MACHINES –II LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C316.1	Able to assess the performance of single phase induction motor	Understand
C316.2	Able to assess the performance of three phase induction motors	Understand
C316.3	Able to control the speed of three phase induction motor.	Apply
C316.4	Able to predetermine the regulation of three–phase alternator by various methods.	Evaluate
C316.5	Able to find the X_d/ $X_q$ratio of alternator and asses the performance of three–phase synchronous motor	Analyze

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C316.1	1	2	2	2	2	-	-	-	-	-	-	-	1	2
C316.2	1	2	2	1	2	-	-	-	-	-	-	-	2	2
C316.3	1	2	2	2	2	-	-	-	-	-	-	-	1	2
C316.4	2	1	2	2	1	-	-	-	-	-	-	-	2	2
C316.5	2	1	2	2	1	-	-	-	-	-	-	-	1	1
Avg	1.5	1.5	1.8	1.8	1.6								1.16	1.5

1-Low; 2- Medium; 3-High

Course Name: CONTROL SYSTEMS LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C317.1	Able to analyze the performance and working Magnetic amplifier, D.C and A.C. servo motors and synchronous motors.	Analyze
C317.2	Able to design P,PI,PD and PID controllers	Design
C317.3	Able to design lag, lead and lag–lead compensators	Design
C317.4	Able to control the temperature using PID controller	Apply
C317.5	Able to determine the transfer function of D.C.motor	Analyze
C317.6	Able to control the position of D.C servo motor performance	Apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C317.1	1	1	2	1	1	-	-	-	-	-	-	-	1	1
C317.2	2	2	1	2	1	-	-	-	-	-	-	-	1	2
C317.3	2	2	1	2	2	-	-	-	-	-	-	-	2	2
C317.4	1	1	1	1	2	-	-	-	-	-	-	-	1	1
C317.5	1	1	1	1	1	-	-	-	-	--	-	-	1	1
C317.6	1	1	1	1	1	-	-	-	-	-	-	-	1	1
Avg	1.3	1.3	1.1	1.3	1.3								1.16	1.3

1-Low; 2- Medium; 3-High

Course Name: ELECTRICAL MEASUREMENTS LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C318.1	To be able to measure the electrical parameters voltage, current, power, energy.	Analyze
C318.2	To be able to measure electrical characteristics of resistance, inductance and capacitance	Understand
C318.3	To be able to test transformer oil for its effectiveness	Understand
C318.4	To be able to measure the parameters of inductive coil	Analyze

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C318.1	2	1	1	1	1	-	-	-	-	-	-	-	2	1
C318.2	2	2	1	1	1	-	-	-	-	-	-	-	2	2
C318.3	1	1	1	1	1	-	-	-	-	-	-	-	1	1
C318.4	1	1	1	1	1	-	-	-	-	-	-	-	1	1
Avg	1.3	1.1	1	1	1								1	0.8

1-Low; 2- Medium; 3-High

Course Name: INTELLECTUAL PROPERTY RIGHTS AND PATENTS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C319.1	IPR Laws and patents pave the way for innovative ideas which are instrumental for inventions to seek Patents.	Understand
C319.2	Student get an insight on Copyrights, Patents and Software patents which are instrumental for further advancements	Apply
C319.3	Understand Imparting IPR protections and regulations for further advancement, so that the students can familiarize with the latest developments.	Understand
C319.4	Evaluate the concepts of trade marks and trade Secrets	Evaluate
C319.5	Understand the topics related to Cyber Law and Cyber Crime	Apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C319.1	-	--	-	-	-	2	1	2	2	2	-	-	-	--
C319.2	-	--	-	-	-	1	1	2	2	1	-	-	-	--
C319.3	-	--	-	-	-	2	2	2	2	2	-	-	-	-
C319.4	-	--	-	-	-	1	2	2	1	1			-	--
C319.5						2	1	2	2	2			-	-
Avg	-	-	-	-	-	1.5	1.3	1.8	1.6	1.5	-	-	-	-

1-Low; 2- Medium; 3-High

Course Name: POWER ELECTRONIC CONTROLLERS & DRIVES

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C321.1	To learn the fundamentals of electric drive and different electric braking methods	remember
C321.2	To analyze the operation of three phase converter controlled dc motors and four quadrant operation of dc motors using dual converters	analyse
C321.3	To discuss the converter control of dc motors in various quadrants	understand
C321.4	To understand the concept of speed control of induction motor by using AC voltage controllers and voltage source inverters	understand
C321.5	To learn the principles of static rotor resistance control and various slip power recovery schemes	remember
C321.6	To understand the speed control mechanism of synchronous motors	analyse

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C321.1	2	3	2	2	3	-	-	-	-	-	-	2	2	3
C321.2	2	2	1	2	2	-	-	-	-	-	-	3	2	2
C321.3	2	2	2	3	2	-	-	-	-	-	-	2	3	2
C321.4	3	2	2	2	2	-	-	-	-	-	-	3	2	3
C321.5	2	2	2	3	2	-	-	-	-	-	-	2	3	2
C321.6	3	2	2	2	3	-	-	-	-	-	-	3	2	3
Avg	2.3	2.16	1.8	2.3	2.2	-	-	-	-	-	-	2.5	2.3	2.5

1-Low; 2- Medium; 3-High

Course Name: POWER SYSTEM ANALYSIS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C322.1	To development the impedance diagram (p.u) and formation of Y_{bus}	Evaluate
C322.2	To analyse the different load flow methods	Analyse
C322.3	To study the concept of the Z_{bus}building algorithm	Understand
C322.4	To understand short circuit calculation for symmetrical faults	Understand
C322.5	To discuss the effect of unsymmetrical faults and their effects	Remember
C322.6	To study the rotor angle stability of power systems.	Analyse

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C322.1	3	2	1	2	2	-	-	-	-	-	-	2	3	2
C322.2	2	2	1	3	2	-	-	-	-	-	-	2	2	3
C322.3	2	2	2	3	2	-	-	-	-	-	-	2	3	2
C322.4	2	3	1	3	2	-	-	-	-	-	-	2	2	3
C322.5	2	3	1	2	2	-	-	-	-	-	-	2	3	2
C322.6	3	2	1	2	3	-	-	-	-	-	-	2	2	3
Avg	2.3	2.2	1.16	2.4	2.16	-	-	-	-	-	-	2	2.5	2.5

1-Low; 2- Medium; 3-High

Course Name: MICROPROCESSORS AND MICROCONTROLLERS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C323.1	To study the organization and architecture of Micro Processor	understand
C323.2	To analyse addressing modes to access memory	analyse
C323.3	To understand 8051 micro controller architecture	understand
C323.4	To discuss the programming principles for 8086 and 8051	remember
C323.5	To implement the interfacing of MP with IO as well as other devices	apply
C323.6	To develop cyber physical systems .	create

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C323.1	2	2	1	2	2	-	-	-	-	-	-	2	2	2
C323.2	1	2	1	3	2	-	-	-	-	-	-	2	2	2
C323.3	2	2	2	2	2	-	-	-	-	-	-	1	1	2
C323.4	1	2	1	3	2	-	-	-	-	-	-	2	1	2
C323.5	2	2	1	2	2	-	-	-	-	-	-	2	2	2
C323.6	2	2	1	2	3	-	-	-	-	-	-	2	1	2
Avg	1.6	2	1.2	2.2	2.16	-	-	-	-	-	-	1.8	1.5	2

1-Low; 2- Medium; 3-High

Course Name: DATA STRUCTURES THROUGH C++

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C324.1	To be familiar with basic techniques of object oriented principles	understand
C324.2	To analyse exception handling using C++	analyse
C324.3	To be familiar with the concepts like Inheritance, Polymorphism	understand
C324.4	To Solve problems using data structures such as linear lists, stacks, queues, hash tables	remember
C324.5	To implement advanced data structures such as balanced search trees, AVLTrees, and B Trees	apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C324.1	3	2	1	2	2	-	-	-	-	-	-	2	3	1
C324.2	2	2	1	2	3	-	-	-	-	-	-	2	2	2
C324.3	2	2	2	2	3	-	-	-	-	-	-	2	3	1
C324.4	2	2	1	2	3	-	-	-	-	-	-	2	2	2
C324.5	2	2	1	2	2	-	-	-	-	-	-	2	2	1
Avg	2.2	2	1.2	2	2.6	-	-	-	-	-	-	2	2.4	1.4

1-Low; 2- Medium; 3-High

Course Name: VLSI DESIGN

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C325.1	To Understand the properties of MOS active devices and simple circuits	understand
C325.2	To configure when using MOS active devices and the reason for such encumbrances as ratio rules by which circuits can be interconnected in silicon.	analyse
C325.3	To Know three sets of design rules with which nMOS and CMOS designs may be fabricated.	analyse
C325.4	To Understand the scaling factors determining the characteristics of MOS circuits	understand
C325.5	To implement performance of MOS circuits in silicon.	apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C325.1	2	2	1	2	2	-	-	-	-	-	-	3	2	3
C325.2	2	2	1	2	3	-	-	-	-	-	-	2	2	2
C325.3	3	2	2	2	3	-	-	-	-	-	-	3	2	3
C325.4	2	2	1	2	3	-	-	-	-	-	-	2	2	2
C325.5	2	2	1	2	2	-	-	-	-	-	-	2	2	3
Avg	2.2	2	1.2	2	2.6	-	-	-	-	-	-	2.4	2	2.6

1-Low; 2- Medium; 3-High

Course Name: POWER ELECTRONICS LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C326.1	To study the characteristics of various power electronic devices	understand
C326.2	To analyze gate drive circuits of IGBT.	analyse
C326.3	To analyze the performance of single–phase and three–phase full–wave bridge converters with both resistive and inductive loads	analyse
C326.4	To understand the operation of single phase AC voltage regulator with resistive and inductive loads	understand
C326.5	To evaluate the working of Buck converter, Boost converter, single–phase square wave inverter and PWM inverter	evaluate

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C326.1	3	2	2	2	2	-	-	-	-	-	-	3	2	3
C326.2	2	2	1	3	2	-	-	-	-	-	-	2	3	2
C326.3	2	2	2	2	3	-	-	-	-	-	-	2	2	3
C326.4	2	2	1	2	2	-	-	-	-	-	-	2	3	2
C326.5	2	2	2	3	3	-	-	-	-	-	-	2	2	3
Avg	2.2	2	1.6	2.4	2.4	-	-	-	-	-	-	2.2	2.4	2.6

1-Low; 2- Medium; 3-High

Course Name: MICRO MPROCESSORS AND MICRO CONTROLLERS LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C327.1	To write assembly language program using 8086 micro based on arithmetic, logical, and shift operations	understand
C327.2	To interface 8086 with I/O and other devices	apply
C327.3	To interface 8255 , 8259 and 8279 with devices	apply
C327.4	To do parallel and serial communication using 8051 .	analyse
C327.5	To do parallel and serial communication using PIC 18 micro controllers.	analyse

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C327.1	3	2	2	3	2	-	-	-	-	-	-	2	2	2
C327.2	2	2	1	3	2	-	-	-	-	-	-	2	2	2
C327.3	3	2	1	2	3	-	-	-	-	-	-	2	2	3
C327.4	2	2	1	2	2	-	-	-	-	-	-	2	1	2
C327.5	2	2	2	3	3	-	-	-	-	-	-	2	2	3
Avg	2.4	2	1.4	2.6	2.4	-	-	-	-	-	-	2	1.8	2.4

1-Low; 2- Medium; 3-High

Course Name: DATASTRUCTURES THROUGH C LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C328.1	To design and analyze the time and space efficiency of the data structure	analyse
C328.2	To identity the appropriate data structure for given problem	apply
C328.3	To implement Prim's Algorithm , Dijkstra's Algorithm and Kruskal's Algorithm of data structure	evaluate
C328.4	To Implement Data Searching using divides and conquers technique	analyse
C328.5	To apply practical knowledge on the application of data structures	apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C328.1	2	3	2	2	2	-	-	-	-	-	-	2	3	1
C328.2	2	2	1	3	2	-	-	-	-	-	-	2	2	2
C328.3	2	2	1	2	3	-	-	-	-	-	-	3	2	1
C328.4	2	3	1	2	2	-	-	-	-	-	-	2	2	2
C328.5	2	2	2	3	3	-	-	-	-	-	-	2	3	1
Avg	2	2.4	1.4	2.4	2.4	-	-	-	-	-	-	2.2	2.4	1.4

1-Low; 2- Medium; 3-High

Course Name: PROFESSIONAL ETHICSAND HUMAN VALUES

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C329.1	Understand the basic perception of profession, professional ethics and role of human values in governing profession Understanding	Understanding
C329.2	Bring consensus in controversial engineering decisions through the application of theories of ethics and moral development while playing the role of engineering professionals	Application
C329.3	Apply professional codes in Research and development while playing different roles as professionals by not sacrificing ethical issues.	Application
C329.4	Aware of responsibilities of an engineer for safety and risk	Remembering
C329.5	Understand the concepts of loyalty, collegiality and collective bargaining in solving complex engineering problems and in shunning occupational crimes.	Understanding
C329.6	Acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives.	Remembering

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C329.1	-	-	-	-	-	2	-	3	-	-	-	-	-	-
C329.2	-	-	---	-	1	-	-	3	-	-	-	-	-	-
C329.3	-	-	-	-	-	1	-	3	-	-	-	-	-	-
C329.4	-	-	-	-	-	2	-	3	-	-	-	-	-	-
C329.5	-	-	-	-	-	1	2	3	-	-	--	-	-	-
C329.6	-	-	-	-	-	1	-	3	--	-	-	-	--	-
Avg	-	-	-	-	1	1.4	2	3	-	-	-	-	-	-

1-Low; 2- Medium; 3-High

Course Name: UTILIZATION OF ELECTRICAL ENERGY

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C411.1	Able to identify a suitable motor for electric drives and industrial applications	understand
C411.2	Able to identify most appropriate heating or welding techniques for suitable applications	analyze
C411.3	Able to understand various level of luminosity produced by different illuminating sources	understand
C411.4	Able to estimate the illumination levels produced by various sources and recommend the most efficient illuminating sources and should be able to design different lighting systems by taking inputs and constraints in view.	evaluate
C411.5	Able to determine the speed/time characteristics of different types of traction motors.	analyze
C411.6	Able to estimate energy consumption levels at various modes of operation.	apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C411.1	3	1	1	2	1	-	-	-	-	-	-	-	1	-
C411.2	1	3	1	2	1	-	-	-	-	-	-	--	1	1
C411.3	1	3	1	1	3	-	-	-	-	-	-	--	1	-
C411.4	1	1	2	1	1	-	-	-	-	-	-		-	1
C411.5	1	3	1	2	1	-	-	-	-	-	-	-	1	1
C411.6	1	1	1	2	1	-	-	-	-	-	-	-	-	-
Avg	1.3	2	1.1	1.6	1.3								1	1

1-Low; 2- Medium; 3-High

Course Name: LINEAR IC APPLICATIONS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C412.1	Design circuits using operational amplifiers for various applications.	create
C412.2	Analyze and design amplifiers and active filters using Op-amp.	Analyse
C412.3	Diagnose and trouble-shoot linear electronic circuits.	understand
C412.4	Understand the gain-bandwidth concept and frequency response of the amplifier configurations.	create
C412.5	Understand thoroughly the operational amplifiers with linear integrated circuits.	analyse

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C412.1	2	1	1	2	1	-	-	-	-	-	-	-	2	-
C412.2	1	2	1	2	1	-	-	-	-	-	-	--	-	1
C412.3	1	2	1	-	-	-	-	-	-	-	-	-	1	1
C412.4	2	1	2	1	1	-	-	-	-	-	-	-	1	1
C412.5	2	2	2	1	2	-	-	-	-	-	-	-	2	1
Avg	1.6	1.6	1.4	1.5	1.2	-	-	-	-	-	-	-	1.5	1

1-Low; 2- Medium; 3-High

Course Name: POWER SYSTEM OPERATION AND CONTROL

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C413.1	Compute optimal scheduling of Generators.	Create
C413.2	Understand hydrothermal scheduling.	Understand
C413.3	Execute the unit commitment problem.	Apply
C413.4	Understand importance of the frequency.	Remember
C413.5	Examine the importance of PID controllers in single area and two area systems.	Analyze
C413.6	Differentiate reactive power control and compensation for transmission line.	Analyze

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C413.1	3	3	2	2	-	-	-	-	-	-	-	-	3	3
C413.2	3	3	2	2	-	1	-	-	-	-	-	-	3	3
C413.3	3	3	2	1	3	2	-	-	-	-	-	-	3	3
C413.4	3	3	2	2	2	-	-	-	-	-	-	-	3	3
C413.5	3	3	3	2	1	-	-	-	-	-	-	-	2	3
C413.6	3	3	2	2	2	1	-	-	-	-	-	-	2	3
Avg	3	3	2.1	1.8	2	1.3	-	-	-	-	-	-	2.3	3

1-Low; 2- Medium; 3-High

Course Name: SWITCHGEAR AND PROTECTION

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C414.1	Able to understand the principles of arc interruption for application to high voltage circuit breakers of air, oil, vacuum, SF6 gas type	understand
C414.2	Ability to understand the working principle and operation of different types of electromagnetic protective relays.	analyse
C414.3	Students acquire knowledge of faults and protective schemes for high power generator and transformers.	analyse
C414.4	Improves the ability to understand various types of protective schemes used for feeders and bus bar protection.	create
C414.5	Able to understand different types of static relays and their applications.	understand
C414.6	Able to understand different types of over voltages and protective schemes required for insulation co–ordination.	evaluate

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C414.1	2	1	1	-	1	-	-	-	-	-	-	-	2	2
C414.2	1	-	-	-	1	-	-	-	-	-	-	-	2	1
C414.3	3	1	1	2	1	-	-	-	-	-	-	-	1	1
C414.4	1	2	1	1	1	1	-	-	-	-	-	-	1	1
C414.5	2	1	1	1	1	1	-	-	-	-	-	-	1	-
C414.6	2	1	1	-	1	1	-	-	-	-	-	-	2	1
Avg	1.8	1.2	1	1.3	1	1	-	-	-	-	-	-	1.5	1.2

1-Low; 2- Medium; 3-High

Course Name: PROGAMMABLE LOGIC CONTROLLERS & APPLICATIONS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C415.1	Understand the PLCs and their I/O modules.	understand
C415.2	Develop control algorithms to PLC using ladder logic.	evaluate
C415.3	Manage PLC registers for effective utilization in different applications.	understand
C415.4	Design PID controller with PLC.	create
C415.5	Analyze and applications of PLC.	apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C415.1	1	2	1	1	1	-	-	-	-	-	-	-	1	-
C415.2	2	1	3	-	-	-	-	-	-	-	-	-	1	1
C415.3	1	2	1	-	-	-	-	-	-	-	-	-	2	1
C415.4	2	3	1	1	1	-	-	-	-	-	-	-	2	2
C415.5	2	3	2	1	1	-	-	-	-	-	-	-	2	-
Avg	1.6	2.2	1.6	1	1	-	-	-	-	-	-	-	1.6	1.3

1-Low; 2- Medium; 3-High

Course Name: SPECIAL ELECTRICAL MACHINES

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C415.1	Distinguish between brush dc motor and brush less dc motor..	analyze
C415.2	Explain the performance and control of stepper motors, and their applications.	understand
C415.3	Explain theory of operation and control of switched reluctance motor.	understand
C415.4	Explain the theory of travelling magnetic field and applications of linear motors	remember
C415.5	Understand the significance of electrical motors for traction drives.	analyze

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C415.1	2	1	1	-	1	-	-	-	-	-	-	-	2	2
C415.2	1	1	3	3	1	-	-	-	-	-	-	-	1	2
C415.3	-	-	2	1	1	-	-	-	-	-	-	-	1	2
C415.4	-	-	2	1	-	-	-	-	-	-	-	-	1	2
C415.5	1	1	1	-	1	-	-	-	-	-	-	-	1	2
Avg	1.3	1	1.8	1.6	1	-	-	-	-	-	-	-	1.2	2

1-Low; 2- Medium; 3-High

Course Name: ELECTRICAL SIMULATION LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C416.1	Able to simulate integrator circuit, differentiator circuit, Boost converter, Buck converter, full convertor and PWM inverter.	understand
C416.2	Able to simulate transmission line by incorporating line, load and transformer models	evaluate
C416.3	Able to perform transient analysis of RLC circuit and single machine connected to infinite bus(SMIB)	create
C416.4	Analysis of RLE loads	Analyze
C416.5	Simulation on d.c separately excitation	evaluate

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C416.1	1	2	-	2	2	-	-	-	-	-	-		1	3
C416.2	1	1	-	2	-	-	-	-	-	-	-		1	3
C416.3	-	2	2	2	-	-	-	-	-	-	-		1	3
C416.4	-	2	2	1	-	-	-	-	-	-	-		2	3
C416.5	1	1	2	2	-	-	-	-	-	-			2	3
Avg	1	1.6	2	1.8	2	-	--	--	-	-	-	-	1.4	3

1-Low; 2- Medium; 3-High

Course Name: POWER SYSTEMS LAB

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C416.1	Able to analyze Sequence impedances of 3 phase Transformer.	analyze
C416.2	Sequence impedances of 3 phase Alternator by Fault Analysis& Sequence impedances of 3 phase Alternator by Direct method	evaluate
C416.3	Basics of Dielectric strength of Transformer oil & Calibration of Tong Tester 8 Load flow studies using Gauss-seidel method	Understand
C416.4	Understand Load flow studies using N-R method & Transient Stability Analysis	Understand
C416.5	Transient Stability Analysis Load frequency control with &without control	apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C416.1	2	2	1	3	-	-	-	-	-	-	-	-	-	2
C416.2	2	2	-	2	-	-	-	-	-	-	-	-	-	3
C416.3	1	1	3	-	-	-	-	-	-	-	-	-	-	2
C416.4	-	1	1	3	2	-	-	-	-	-	-	-	2	3
C416.5	1	1	-	1	3	-	-	-	-	-	-	---	-	2
Avg	1.5	1.4	1.6	2.2	2.5	-	-	-	-	-	-	-	2	2.4

1-Low; 2- Medium; 3-High

Course Name: DIGITAL CONTROL SYSTEMS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C421.1	Identify the basic elements and structures of digital control systems	Apply
C421.2	Relate Splane and Z plane to do state space analysis	Understand
C421.3	The stability criterion for digital systems and methods adopted for testing the same are explained.	Evaluate
C421.4	Analyze the stability, controllability and observability of digital control systems	Analyze
C421.5	Design conventional and state space methods	Create

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C421.1	3	3	3	2	2	-	-	-	-	-	-	-	1	1
C421.2	2	2	2	2	1	-	-	-	-	-	-	-	1	1
C421.3	3	3	2	1	1	-	-	-	-	-	-	-	1	1
C421.4	2	3	2	2	2	-	-	-	-	-	-	-	1	1
C421.5	3	2	3	2	1	-	-	-	-	-	-	1	1	1
Avg	2.6	2.6	2.4	1.8	1.4	-	-	-	-	-	-	1	1	1

1-Low; 2- Medium; 3-High

Course Name: H.V.D.C. TRANSMISSION

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C422.1	Learn different types of HVDC levels and basic concepts	Understand
C422.2	Know the operation of converters	Remember
C422.3	Acquire control concept of reactive power control and AC/DC load flow.	Analyze
C422.4	Demonstrate converter faults, protection and harmonic effects	Apply
C422.5	Design low pass and high pass filters	Create

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C422.1	2	3	3	2	2	-	-	-	-	-	-	-	1	1
C422.2	2	2	3	2	1	-	-	-	-	-	-	-	1	1
C422.3	2	3	3	3	1	2	-	-	-	-	-	-	1	1
C422.4	2	3	2	2	2	1	-	-	-	-	-	-	1	1
C422.5	3	2	3	2	2	-	-	-	-	-	-	-	1	1
Avg	2	2.6	2.6	2.16	1.66	1.5	-	-	-	-	-	-	1	1

1-Low; 2- Medium; 3-High

Course Name: ELECTRICAL DISTRIBUTION SYSTEMS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C423.1	Understand various factors of distribution system.	Understand
C423.2	Design the substation and feeders.	Create
C423.3	Determine the voltage drop and power loss	Evaluate
C423.4	Demonstrate the protection and its coordination.	Apply
C423.5	Understand the effect of compensation for p.f improvement.	Remember
C423.6	To Weigh the effect of voltage control.	Evaluate

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C423.1	2	3	3	2	2	-	-	-	-	-	-	-	1	1
C423.2	2	2	3	2	1	-	-	-	-	-	-	-	1	1
C423.3	2	3	3	3	1	2	-	-	-	-	-	-	1	1
C423.4	2	3	2	2	2	1	-	-	-	-	-	-	1	1
C423.5	3	2	3	2	2	-	-	-	-	-	-	-	1	1
C423.6	1	3	2	2	2					-		-	1	1
Avg	2	2.6	2.6	2.16	1.66	1.5	-	-	-	-	-	-	1	1

1-Low; 2- Medium; 3-High

Course Name: FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEMS

Course Outcomes (COs)

Course Outcome	Course Outcome Statement	Bloom's Taxonomylevel
C424.1	Understand power flow control in transmission lines using FACTS controllers.	Understand
C424.2	Explain operation and control of voltage source converter.	Create
C424.3	Analyze compensation methods to improve stability and reduce power oscillations in the transmission lines.	Analyze
C424.4	Explain the method of shunt compensation using static VAR compensators.	Evaluate
C424.5	Understand the methods of compensations using series compensators.	Remember
C424.6	Explain operation of Unified Power Flow Controller(UPFC)	Apply

Mapping CO with PO/PSO

Course Outcomes	Program Outcomes												Program Specific Outcomes	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2
C424.1	3	3	3	2	2	-	-	-	-	-	-	-	1	1
C424.2	2	2	2	2	1	-	-	-	-	-	-	-	1	1
C424.3	3	3	2	1	1	-	-	-	-	-	-	-	1	1
C424.4	2	3	2	2	2	-	-	-	-	-	-	-	1	1
C424.5	3	2	3	2	1	-	-	-	-	-	-	-	1	1
C424.6	3	2	3	3	2	-	-	-	-	-	-	1	1	1
Avg	2.6	2.5	2.5	2	1.5	-	-	-	-	-	-	1	1	1

1-Low; 2- Medium; 3-High