

C107.4	3	2	1	-	1	-	-	-	-	-	-	-	2	1
C107.5	3	2	1	-	1	-	-	-	-	-	-	-	2	1
C107.6	3	2	1	-	1	-	-	-	-	-	-	-	2	1
C107	3	2	1	-	1	-	-	-	-	-	-	-	2	1

Semester: 02		
Course Title: ELECTRIC CIRCUIT ANALYSIS		Course Code:20EE201
CO.No.	Course Outcome statement	
C113.1	Apply Engineering fundamentals to solve Kirchhoff's laws to simple and complex circuits.	
C113.2	Apply Engineering fundamentals, Mathematics to Source transformation techniques for analysis of electrical circuit.	
C113.3	Apply Network theorems to linear circuits and to solve simple and complex problems.	
C113.4	Compute the frequency response of Series and Parallel resonance and analyze tuned circuits.	
C113.5	Analyze the transient response of RLC Circuits under DC and AC excitation using Laplace transform.	
C113.6	Analyze three phase balanced and unbalanced star, delta network.	

Semester: 02														
Course Name: ELECTRIC CIRCUIT ANALYSIS												Course Code: 20EE201		
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C113.1	3	2	1	-	-	-	-	2	2	2	-	-	2	2
C113.2	3	2	1	-	-	-	-	2	2	2	-	-	2	2
C113.3	3	2	1	-	-	-	-	2	2	2	-	-	2	2
C113.4	3	2	1	-	-	-	-	2	2	2	-	-	2	2
C113.5	3	3	2	1	-	-	-	2	2	2	-	-	2	2
C113.6	3	3	2	1	-	-	-	2	2	2	-	-	2	2
C113	3	3	2	1	-	-	-	2	2	2	-	-	2	2

Semester: 02		
Course Title: ELECTRIC CIRCUITS LABORATORY		Course Code:20EE2L2
CO.No.	Course Outcome statement	
C116.1	Solve simple problems using Kirchhoff's laws and verify the same experimentally	
C116.2	Solve simple problems using network theorems and verify the same experimentally	
C116.3	Determine the Time Constant of RC and RL series circuit and verify the same using hardware.	
C116.4	Measure self, mutual inductance of a coil	
C116.5	Design and simulate series and parallel resonance circuit.	
C116.6	Design and simulate three phase balanced and unbalanced star, delta network	

Semester: 02														
Course Name: ELECTRIC CIRCUITS LABORATORY												Course Code: 20EE2L2		
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C116.1	3	2	1	-	1	-	-	1	2	1	-	-	2	1
C116.2	3	2	1	-	1	-	-	1	2	1	-	-	2	1
C116.3	3	2	1	-	1	-	-	1	2	1	-	-	2	1
C116.4	3	2	1	-	1	-	-	1	2	1	-	-	2	1

C116.5	3	2	1	-	1	-	-	1	2	1	-	-	2	1
C116.6	3	2	1	-	1	-	-	1	2	1	-	-	2	1
C116	3	2	1	-	1	-	-	1	2	1	-	-	2	1

Semester:03		
Course Title: ELECTROMAGNETIC THEORY		Course Code:20EE303
CO.No.	Course Outcome statement	
C204.1	Apply the knowledge of vector calculus to static electromagnetic fields.	
C204.2	Apply the knowledge of engineering fundamentals to the solutions of electrostatics related to electric field.	
C204.3	Apply the principles of electrostatics related to electric potential.	
C204.4	Apply the principles of magneto statics related to magnetic field.	
C204.5	Apply Maxwell's equations in differential and integral forms.	
C204.6	Apply Maxwell's equations to uniform plane wave propagation in different media.	

Semester:03														
Course Name: ELECTROMAGNETIC THEORY		Course Code: 20EE303												
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C204.1	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C204.2	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C204.3	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C204.4	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C204.5	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C204.6	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C204	3	2	1	-	-	-	-	1	1	1	-	-	2	1

Semester:03		
Course Title: ELECTRICAL MACHINES-I		Course Code:20EE304
CO.No.	Course Outcome statement	
C205.1	Apply the knowledge of engineering fundamentals to calculate the required field turns and brush adjustment to compensate the armature reaction.	
C205.2	Apply the knowledge of engineering fundamentals to calculate the efficiency of D.C motor to identify its applications based on requirement.	
C205.3	Apply the knowledge of engineering fundamentals to control the speed of DC motors and to calculate the efficiency of DC machine in different methods.	
C205.4	Apply the knowledge of engineering fundamentals to calculate the efficiency and voltage regulation of single phase transformer.	
C205.5	Apply the knowledge of engineering fundamentals to determine the power conversion efficiency of autotransformer and copper saving.	
C205.6	Apply the knowledge of engineering fundamentals to Calculate the efficiency of single and three phase distribution transformer by direct loading and indirect loading.	

Semester:03														
Course Name: ELECTRICAL MACHINES - I		Course Code: 20EE304												
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C205.1	3	2	1	-	-	-	-	1	1	1	-	-	2	1

C205.2	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C205.3	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C205.4	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C205.5	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C205.6	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C205	3	2	1	-	-	-	-	1	1	1	-	-	2	1

Semester:04	
Course Name : ELECTRICAL MACHINES – II	
Course Code : 20EE401	
CO	Course Outcomes statement
C210.1	Apply the knowledge of engineering fundamentals to calculate the various methods of voltage regulation of Synchronous generator.
C210.2	Apply the knowledge of engineering fundamentals to calculate the sharing of Real and Reactive power in Parallel operation of synchronous generator.
C210.3	Analyze the variation of armature current and power factor of synchronous motor for various field excitations at no load and full load.
C210.4	Apply the knowledge of engineering fundamentals to calculate the change in input power, losses and output power of three phase induction motor for various load conditions.
C210.5	Apply the knowledge of engineering fundamentals to calculate the starting torque and current of three phase induction motor for different starters.
C210.6	Apply the knowledge of engineering fundamentals to Calculate the equivalent circuit parameters and efficiency of single phase induction motor

Semester:04														
Course Name: ELECTRICAL MACHINES – II												Course Code: 20EE401		
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C210.1	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C210.2	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C210.3	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C210.4	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C210.5	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C210.6	3	2	1	-	-	-	-	1	1	1	-	-	2	1
C210	3	2	1	-	-	-	-	1	1	1	-	-	2	1

Semester:04	
Course Title: TRANSMISSION AND DISTRIBUTION	
Course Code:20EE402	
CO.No.	Course Outcome statement
C211.1	Apply the knowledge of engineering fundamentals to calculate the transmission network parameters for various configurations.
C211.2	Apply the knowledge of engineering fundamentals to predict the performance of transmission line.
C211.3	Apply the knowledge of engineering fundamentals, science, and mathematics to calculate the sag of transmission line.
C211.4	Apply the knowledge of engineering fundamentals to calculate the voltage distribution in insulator strings and determine the string efficiency of insulator.
C211.5	Apply the knowledge of engineering fundamentals to compute the electrical parameter of underground cable.
C211.6	Explain the types of distribution system.

Semester:04															
Course Name: TRANSMISSION AND DISTRIBUTION												Course Code: 20EE402			
CO-PO/PSO Mapping															
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
C211.1	3	2	1	-	-	-	-	2	2	2	-	-	2	2	
C211.2	3	2	1	-	-	-	-	2	2	2	-	-	2	2	
C211.3	3	2	1	-	-	-	-	2	2	2	-	-	2	2	
C211.4	3	2	1	-	-	-	-	2	2	2	-	-	2	2	
C211.5	3	2	1	-	-	-	-	-	-	-	-	-	2	2	
C211.6	2	1	-	-	-	-	-	-	-	-	-	-	2	2	
C211	3	2	1	-	-	-	-	2	2	2	-	-	2	2	

Semester:04	
Course Name : LINEAR INTEGRATED CIRCUITS AND APPLICATIONS Course Code : 20EE403	
CO	Course Outcomes
C212.1	Explain the IC fabrication process and discuss the fabrication of active and passive components.
C212.2	Apply the knowledge of engineering fundamentals to develop the expression for gain and output voltage of the given Op-Amp circuits.
C212.3	Apply the knowledge of engineering fundamentals to determine the oscillating/cutoff frequency of waveform generators and filters and also discuss the operation of Op-Amp circuits using diodes.
C212.4	Discuss the internal functional blocks and applications of special ICs 555, 566, 565, and AD633 ICs.
C212.5	Explain the operation of voltage regulator ICs namely LM78XX, LM79XX, LM317 and LM723.
C212.6	Discuss the operation of μ A78S40 switching regulator, LM 380 power amplifier and ICL 8038 function generator IC.

Semester:04															
Course Name: LINEAR INTEGRATED CIRCUITS AND APPLICATIONS												Course Code: 20EE403			
CO-PO/PSO Mapping															
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
C212.1	2	1	-	-	-	-	-	-	-	-	-	-	1	1	
C212.2	3	2	1	-	-	-	-	2	2	2	-	-	2	1	
C212.3	3	2	1	-	-	-	-	2	2	2	-	-	2	1	
C212.4	2	1	-	-	-	-	-	2	2	2	-	-	1	1	
C212.5	2	1	-	-	-	-	-	-	-	-	-	-	1	1	
C212.6	2	1	-	-	-	-	-	-	-	-	-	-	1	1	
C212	2	1	1	-	-	-	-	1	1	1	-	-	1	1	

Semester:04	
Course Title: MEASUREMENTS AND INSTRUMENTATION	
Course Code:20EE404	
CO.No	Course Outcome statement
C213.1	Apply the knowledge of Engineering fundamentals to compute the different statistical parameters.

C213.2	Explain the concepts of fundamentals of Electrical and Electronic instruments
C213.3	Apply the knowledge of Engineering fundamentals to classify AC and DC bridges and formulate balance equation to calculate unknown resistance, inductance and capacitance
C213.4	Discuss the concepts of transformer ratio bridge and self balancing bridge.
C213.5	Explain the various storage and display devices.
C213.6	Explain the construction and working of different types of transducer.

Semester:04														
Course Name: MEASUREMENTS AND INSTRUMENTATION											Course Code: 20EE404			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C213.1	3	2	1	-	-	-	-	2	2	2	-	-	2	1
C213.2	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C213.3	3	2	1	-	-	-	-	2	2	2	-	-	2	1
C213.4	2	1	-	-	-	-	-	2	2	2	-	-	2	1
C213.5	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C213.6	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C213	2	1	1	-	-	-	-	1	1	1	-	-	2	1

Semester:04	
Course Name : ENVIRONMENTAL SCIENCE AND ENGINEERING	Course Code : 20HS401
CO	Course Outcomes statement
C214.1	Describe the environment, ecosystem and their significances.
C214.2	Explain the threats to biodiversity.
C214.3	Describe the sources, effects, control methods of environmental pollution.
C214.4	Explain the knowledge on various natural resources and its effect on environment due to over utilization.
C214.5	Describe the disposal techniques of solid waste and record the consequences of natural disasters.
C214.6	Outline the social issues as welfare, sustainability etc., and relate with population growth.

Semester:04														
Course Name: Environmental Science and Engineering											Course Code: 20EE404			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C214.1	-	-	1	-	-	2	3	2	2	-	-	-	-	-
C214.2	-	-	1	-	-	2	3	2	2	-	-	-	-	-
C214.3	-	-	1	-	-	2	3	2	2	-	-	-	-	-
C214.4	-	-	1	-	-	2	3	2	2	-	-	-	-	-
C214.5	-	-	1	-	-	2	3	2	2	-	-	-	-	-
C214.6	-	-	1	-	-	2	3	2	2	-	-	-	-	-
C214	-	-	1	-	-	2	3	2	2	-	-	-	-	-

Semester:04	
Course Name : ELECTRICAL MACHINES – II	Course Code : 20EE401
CO	Course Outcomes statement
C210.1	Apply the knowledge of engineering fundamentals to calculate the various methods of voltage regulation of Synchronous generator.

C210.2	Apply the knowledge of engineering fundamentals to calculate the sharing of Real and Reactive power in Parallel operation of synchronous generator.
C210.3	Analyze the variation of armature current and power factor of synchronous motor for various field excitations at no load and full load.
C210.4	Apply the knowledge of engineering fundamentals to calculate the change in input power, losses and output power of three phase induction motor for various load conditions.
C210.5	Apply the knowledge of engineering fundamentals to calculate the starting torque and current of three phase induction motor for different starters.
C210.6	Apply the knowledge of engineering fundamentals to Calculate the equivalent circuit parameters and efficiency of single phase induction motor

Semester:04														
Course Name: ELECTRICAL MACHINES LABORATORY - II											Course Code: 20EE4L1			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C215.1	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C215.2	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C215.3	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C215.4	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C215.5	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C215.6	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C215	3	2	1	-	-	-	-	-	2	-	-	-	2	1

Semester:04	
Course Name: LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY Course Code : 20EE4L2	
CO	Course Outcomes statement
C216.1	Conduct an experiment to design and implement the combinational logic circuit for the given Boolean function.
C216.2	Conduct an experiment to design and verify the truth table of sequential logic circuits (code converters, parity generator, parity checker, encoders, decoders, multiplexer and demultiplexer).
C216.3	Conduct an experiment to design and implement the Counters and Shift registers.
C216.4	Conduct an experiment to design and testing of Op-Amp circuits (inverting amplifier, non inverting amplifier, adder, comparator, integrator and differentiator).
C216.5	Conduct an experiment to show the astable and monostable mode response using Timer IC NE/SE 555, to show the voltage to frequency characteristics of VCO IC NE/SE 566 and also to demonstrate the variability voltage regulator using IC LM317.
C216.6	Analyze the input and output performance of inverting and Non-inverting Amplifier using PSPICE/SIMULINK.

Semester:04	
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Course Name: LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY												Course Code: 20EE4L2		
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C216.2	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C216.3	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C216.4	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C216.5	3	2	1	-	-	-	-	-	2	-	-	-	2	1
C216.6	3	3	2	-	-	-	-	-	2	-	-	-	2	1
C216	3	2	1	-	-	-	-	-	2	-	-	-	2	1

Semester:04	
Course Name : TECHNICAL SEMINAR	
Course Code : 20EE4L3	
CO	Course Outcomes statement
C217.1	Function effectively as on individual and as a member or leader in diverse things and in multidisciplinary setting
C217.2	Communicate effectively an engineering activities
C217.3	Able to comprehend and write effective reports
C217.4	Make effective presentation
C217.5	Have the preparation and ability to engage in independent and lifelong learning
C217.6	Apply ethical principle and commit to professional ethics in presenting technical videos/PPT.

Semester:04														
Course Name: TECHNICAL SEMINAR												Course Code: 20EE4L2		
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C216.1	-	-	-	-	-	-	-	2	2	2	-	2	-	2
C216.2	-	-	-	-	-	-	-	2	2	2	-	2	-	2
C216.3	-	-	-	-	-	-	-	2	2	2	-	2	-	2
C216.4	-	-	-	-	-	-	-	2	2	2	-	2	-	2
C216.5	-	-	-	-	-	-	-	2	2	2	-	2	-	2
C216.6	-	-	-	-	-	-	-	2	2	2	-	2	-	2
C216	-	-	-	-	-	-	-	2	2	2	-	2	-	2

Semester:05	
Course Title: POWER SYSTEM ANALYSIS	
Course Code:20EE501	
CO.No	Course Outcome statement
C301.1	Apply the mathematical and engineering knowledge to form bus admittance matrix and impedance matrix.
C301.2	Apply Gauss-Seidel and Newton Raphson methods to solve the load flow problem.
C301.3	Analyze the power system under steady state symmetrical fault.
C301.4	Analyze the power system under unsymmetrical faults.
C301.5	Analyze the transient stability of the power system using equal area criterion.
C301.6	Analyze the transient stability of the power system using swing equation.

Semester:05														
Course Name: POWER SYSTEM ANALYSIS											Course Code: 20EE501			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C301.1	3	2	1	-	-	1	1	2	1	-	-	1	2	2
C301.2	3	2	1	-	-	-	-	-	-	-	-	-	2	2
C301.3	3	3	2	1	-	1	1	2	1	-	-	1	2	2
C301.4	3	3	2	1	-	1	1	2	1	-	-	1	2	2
C301.5	3	3	2	1	-	-	-	-	-	-	-	-	2	2
C301.6	3	3	2	1	-	-	-	-	-	-	-	-	2	2
C301	3	3	2	1	-	1	1	1	1	-	-	1	2	2

Semester:05			
Course Name : POWER ELECTRONICS		Course Code : 20EE502	
CO	Course Outcomes statement		
C302.1	Explain the significance of switching devices and its application to power converters and its characteristics		
C302.2	Compare the operation of two, three Pulse Converters and draw output waveforms with and without source and load inductance		
C302.3	Apply the knowledge of engineering fundamentals to develop the expression for DC-DC converters		
C302.4	Analyze the operation of single phase and three phase Inverters		
C302.5	Explain the operation of different modulation Techniques of PWM inverters.		
C302.6	Explain the operation of single & three phase AC Voltage controller and cyclo converters		

Semester:05														
Course Name: POWER ELECTRONICS											Course Code: 20EE502			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C302.1	3	2	1	-	-	-	-	2	2	2	-	-	2	1
C302.2	3	2	1	-	-	-	-	2	2	2	-	-	2	1
C302.3	3	2	1	-	-	-	-	2	2	2	-	-	2	1
C302.4	2	1	-	-	-	-	-	-	2	-	-	-	2	1
C302.5	3	2	1	-	-	2	2	1	1	1	-	2	2	1
C302.6	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C302	3	2	1	-	-	1	1	1	1	1	-	1	2	1

Semester:05			
Course Title: DIGITAL SIGNAL PROCESSING		Course Code:20EE503	
CO.No	Course Outcome statement		
C303.1	Identify the type of given discrete time signals and systems.		
C303.2	Apply Z-transform to analyze the given discrete time systems.		
C303.3	Apply FFT algorithm to compute DFT.		
C303.4	Design IIR filter using impulse invariant and bilinear transformation techniques for the given specifications.		
C303.5	Design FIR filter using windowing techniques (Rectangular, Hamming and Hanning) for the given specifications.		
C303.6	Explain the architecture of digital signal processors and its addressing modes.		

Semester:05														
Course Name: DIGITAL SIGNAL PROCESSING										Course Code: 20EE503				
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C303.2	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C303.3	3	2	1	-	-	-	-	-	-	-	-	-	2	1
C303.4	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C303.5	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C303.6	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C303	3	2	1	-	1	-	-	1	1	1	-	-	2	1

Course Name : CONTROL SYSTEMS										Course Code : 20EE504				
CO	Course Outcomes										Unit	K – CO	POs	PSOs
C304.1	Apply the knowledge of mathematics, Engineering fundamentals to develop mathematical models for physical system and simplify it using reduction techniques.										I	K3	1,2,3	1
C304.2	Apply the knowledge of mathematics, Engineering fundamentals to compute the time domain responses of first and second-order systems to test inputs.										II	K3	1,2,3	1
C304.3	Analyze the stability of the system using different frequency domain methods.										III	K4	1,2,3,4	1
C304.4	Design the compensators and their selection to meet desired response.										III	K4	1,2,3,4	1
C304.5	Analyze the behavior of closed loop systems using tools such as Root locus technique, Routh Hurwitz and Nyquist Criteria										IV	K4	1,2,3,4	1
C304.6	Apply the knowledge of mathematics, Engineering fundamentals to develop state space models.										V	K3	1,2,3	1

Semester:05														
Course Name: CONTROL SYSTEMS										Course Code: 20EE504				
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C304.1	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C304.2	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C304.3	3	2	1	-	-	-	-	-	-	-	-	-	2	1
C304.4	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C304.5	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C304.6	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C304	3	2	1	-	1	-	-	1	1	1	-	-	2	1

Course Name : Microprocessors, Microcontrollers And Applications										Course Code : 20EE505				
CO	Course Outcomes										Unit	K – CO	POs	PSOs
C305.1	Develop and execute programs in 8086 microprocessor.										I	K3	1,2,3	1
C305.2	Explain the System Bus structure of 8086 microprocessor.										II	K2	1,2	1
C305.3	Illustrate the interfacing of peripheral with microprocessor										III	K2	1,2	1

	and microcontroller				
C305.4	Explain the architecture and Interrupt structure of 8051.	III	K2	1,2	1
C305.5	Design microcontroller based Temperature control and stepper motor control system.	IV	K3	1,2,3	1
C305.6	Explain the architecture of ARM processor.	V	K2	1,2	1

Semester:05														
Course Name: MICROPROCESSORS, MICROCONTROLLERS AND APPLICATIONS											Course Code: 20EE505			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C305.1	3	2	1	-	-	-	-	2	2	2	-	-	2	1
C305.2	3	2	1	-	-	-	-	2	2	2	-	-	1	1
C305.3	3	2	1	-	-	-	-	2	2	2	-	-	1	1
C305.4	2	1	-	-	-	-	-	-	-	-	-	-	1	1
C305.5	3	2	1	-	-	-	-	-	-	-	-	-	2	1
C305.6	2	1	-	-	-	-	-	-	-	-	-	-	1	1
C305	3	2	1	-	-	-	-	1	1	1	-	-	1	1

Semester:05				Course Code: 200E403			
Course Name : Computer Communication Networks							
CO	Course Outcomes			Unit	K-CO	POs	PSOs
COE305.1	Explain the basic concepts of communication networks			1	K2	1,2	1,2
COE305.2	Apply the error detection and error correction methods for bit streams			2	K3	1,2,3,8,9,10	1,2
COE305.3	Classify various media access control protocols techniques of communication networks			2	K2	1,2,8,9,10,12	1,2
COE305.4	Utilize various types of routing techniques to forward packets			3	K2	1,2,8,9	1,2
COE305.5	Illustrate the mechanisms involved in transport layer			4	K2	1,2,8,9,10	1,2
COE305.6	Classify different application layer protocols			5	K2	1,2,8,9,10,12	1,2

Semester:05														
Course Name: COMPUTER COMMUNICATION NETWORKS											Course Code: 200E403			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C303.1	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C303.2	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C303.3	3	2	1	-	-	-	-	-	-	-	-	-	2	1
C303.4	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C303.5	3	2	1	-	2	-	-	1	1	1	-	-	2	1
C303.6	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C303	3	2	1	-	1	-	-	1	1	1	-	-	2	1

Semester:05	Course Code : 20EE5L1
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Course Name : CONTROL AND INSTRUMENTATION LABORATORY					
CO	Course Outcomes	Exp	K – CO	POs	PSOs
C307.1	Analyze the characteristics of P, PI and PID controllers experimentally and analyze the stability of the control system using MATLAB.	1,2	K4	1,2,3,4,9	1
C307.2	Compute the transfer function of a Field controlled DC motor experimentally and analyze the response of Lag, Lead and Lag-Lead Compensators.	3,4	K3	1,2,3,9	1
C307.3	Analyze the transient response of Position Control system experimentally and analyze the Characteristics of Synchro - Transmitter-Receiver.	5,6	K4	1,2,3,4,9	1
C307.4	Use MATLAB for the Simulation of Control Systems.	7	K3	1,2,3,9	1
C307.5	Analyze the basic concepts of bridge networks and to analyze the Dynamics of Sensors/Transducers.	8,9	K4	1,2,3,4,9	1
C307.6	Measure the Power and Energy experimentally and analyze signal conditioning circuits.	10,11	K4	1,2,3,4,9	1

Semester:05														
Course Name: CONTROL AND INSTRUMENTATION LABORATORY											Course Code: 20EE5L1			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C307.1	3	3	2	1	-	-	-	-	2	-	-	-	2	-
C307.2	3	2	1	-	-	-	-	-	2	-	-	-	2	-
C307.3	3	3	2	1	-	-	-	-	2	-	-	-	2	-
C307.4	3	2	1	-	-	-	-	-	2	-	-	-	2	-
C307.5	3	3	2	1	-	-	-	-	2	-	-	-	2	-
C307.6	3	3	2	1	-	-	-	-	2	-	-	-	2	-
C307	3	3	2	1	-	-	-	-	2	-	-	-	2	-

Semester:05											Course Code : 20EE5L2			
Course Name : Microprocessors And Microcontrollers Laboratory														
CO	Course Outcomes										Exp	K – CO	POs	PSOs
C308.1	Develop an assembly language program for arithmetic, Logical operations using 8086 processor also Move a data block without overlap.										1,2	K3	1,2,3,5,6,9	1,2
C308.2	Develop program for code conversion, decimal arithmetic, Matrix operations and Floating point operations.										3,4	K3	1,2,3,5,6,9	1,2
C308.3	Develop program for Counters and Time Delay and Traffic light controller.										5,6	K3	1,2,3,5,6,9	1,2
C308.4	Develop programs for serial communication and Stepper motor control										7,8	K3	1,2,3,5,6,9	1,2
C308.5	Demonstrate the program of Serial interface, Parallel interface, A/D, D/A interface and Waveform Generation										9,10	K3	1,2,3,5,6,9	1,2
C308.6	Develop an assembly language program for arithmetic, Logical operations, Square and Cube program, Find 2's complement of a number using 8051 microcontroller.										11,12	K3	7,8,10,11	2

Semester:05														
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Course Name: MICROPROCESSORS AND MICROCONTROLLERS LABORATORY											Course Code: 20EE5L2			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C308.1	3	2	1	-	1	1	-	-	2	-	-	-	2	1
C303.2	3	2	1	-	1	1	-	-	2	-	-	-	2	1
C308.3	3	2	1	-	1	1	-	-	2	-	-	-	2	1
C308.4	3	2	1	-	1	1	-	-	2	-	-	-	2	1
C308.5	3	2	1	-	1	1	-	-	2	-	-	-	2	1
C308.6	-	-	-	-	-	-	-	-	-	2	2	-	2	1
C308	3	2	1	-	1	1	-	-	2	2	2	-	2	1

Semester:06		
Course Title Name: SOLIDSTATEDRIVES		Course Code:20EE601
CO	Course Outcome statement	
C310.1	Explain the basics and importance of electric drives.	
C310.2	Explain the operation of the various converter fed separately excited dc motor drives.	
C310.3	Describe the operation of the various Choppers fed separately excited dc motor drives.	
C310.4	Explain the various solid state speed control methods of induction motor drives.	
C310.5	Discuss the various speed control methods of synchronous motor drives and applications.	
C310.6	Apply the knowledge of Electrical Engineering fundamentals to develop current and speed controllers for a closed loop solid state dc motor drive.	

Semester:06														
Course Name: SOLID STATE DRIVES		Course Code: 20EE601												
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C310.1	3	2	1	-	-	-	-	2	2	2	-	-	1	2
C310.2	3	2	1	-	-	-	-	2	2	2	-	-	1	2
C310.3	3	2	1	-	-	-	-	2	2	2	-	-	1	2
C310.4	2	1	-	-	-	-	-	-	-	-	-	-	1	2
C310.5	2	1	-	-	-	-	-	-	-	-	-	-	1	2
C310.6	3	2	1	-	-	1	1	1	1	1	-	1	1	2
C310	3	2	1	-	-	1	1	1	1	1	-	1	1	2

Course Name : POWER SYSTEM OPERATION AND CONTROL		Course Code : 20EE602			
CO	Course Outcomes	Unit	K – CO	POs	PSOs
C311.1	Apply electrical engineering knowledge to calculate the values of load distribution parameters.	I	K3	1,2,3	1,2
C311.2	Analyze the modeling for two area control system with and without controller	II	K4	1,2,3,4	1,2
C311.3	Explain various types of excitation system and derive the modeling of AVR	III	K2	1,2	1,2
C311.4	Solve the Unit Commitment problems using priority method	IV	K3	1,2,3	1,2
C311.5	Solve the Economic Dispatch problems	IV	K3	1,2,3	1,2
C311.6	Explain the data acquisition and control in power systems and to analyze the contingency of power system	V	K3	1,2,3	1,2

Semester:06	
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Course Name: POWER SYSTEM OPERATION AND CONTROL											Course Code: 20EE602			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C311.1	3	2	1	-	-	1	1	2	1	-	-	-	2	2
C311.2	3	3	2	1	-	-	-	-	-	-	-	-	2	2
C311.3	2	1	-	-	-	-	-	-	-	-	-	-	2	2
C311.4	3	2	1	-	-	1	1	2	2	-	-	1	2	2
C311.5	3	2	1	-	-	1	1	2	2	-	-	1	2	2
C311.6	3	2	1	-	-	1	1	-	-	-	-	1	2	2
C311	3	2	1	1	-	1	1	1	1	-	-	1	2	2

Semester:06		
Course Title: EMBEDDED SYSTEMS		Course Code:20EE603
CO.No	Course Outcome statement	
C312.1	Explain the basic build process of embedded systems	
C312.2	Describe the different types of I/O device ports, buses and different interfaces for data transfer in embedded networking	
C312.3	Explain the interrupt service mechanism and device drivers.	
C312.4	Explain the basic concept of Real Time Operating Systems	
C312.5	Apply the knowledge of programming concepts of Embedded Systems for various applications	
C312.6	Explain the different phases and modeling of the EDLC.	

Semester:06														
Course Name: EMBEDDED SYSTEMS		Course Code: 20EE603												
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C312.1	3	2	1	-	-	-	-	-	-	-	-	-	1	1
C312.2	3	2	1	-	-	-	-	2	2	2	-	-	2	1
C312.3	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C312.4	3	2	1	-	-	-	-	2	2	2	-	-	1	1
C312.5	3	2	1	-	-	-	-	2	2	2	-	-	2	1
C312.6	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C312	3	2	1	-	-	-	-	1	1	1	-	-	2	1

Course Name : OBJECT ORIENTED PROGRAMMING		Course Code : 20IT301			
CO	Course Outcomes	Unit	K – CO	POs	PSOs
C313.1	Realize the Object-Oriented Programming concepts and Basics of java Programming tool.	I	K3	1,2,3	1
C313.2	Apply the concepts of inheritance and interfaces using java programs	II	K3	1,2,3	1
C313.3	Construct java exceptions and I/O streams	III	K3	1,2,3	1
C313.4	Illustrate multithread concepts and generics in java	IV	K3	1,2,3	1
C313.5	Design and develop interactive java application using AWT	V	K3	1,2,3	1
C313.6	Design and develop interactive java application using Swing	V	K3	1,2,3	1

Semester:06	
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Course Name: OBJECT ORIENTED PROGRAMMING											Course Code: 20IT301			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C313.1	3	2	1	-	3	-	-	2	2	2	-	-	3	1
C313.2	3	2	1	-	3	-	-	2	2	2	-	-	3	1
C313.3	3	2	1	-	3	-	-	-	-	-	-	-	3	1
C313.4	3	2	1	-	3	-	-	-	-	-	-	-	3	1
C313.5	3	2	1	-	3	-	-	-	-	-	-	-	3	1
C313.6	3	2	1	-	3	-	-	-	-	-	-	-	3	1
C313	3	2	1	-	3	-	-	1	1	1	-	-	3	1

Semester:06		Course Code : 20EE6A2						
Course Name : DESIGN OF ELECTRICAL APPARATUS								
CO	Course Outcomes				Unit	K – CO	POs	PSOs
C314A 2.1	Explain the design considerations for rotating and static electrical machines.				I	K3	1,2,3	1,2
C314A 2.2	Design lap and wave winding for DC machines.				I	K3	1,2,3	1,2
C314A 2.3	Analyze the design parameters of single and three phase transformer.				II	K4	1,2,3,4	1,2
C314A 2.4	Design armature and field of DC machines.				III	K3	1,2,3	1,2
C314A 2.5	Design stator and rotor of induction motor.				IV	K3	1,2,3	1,2
C314A 2.6	Design stator and rotor of synchronous machines.				V	K3	1,2,3	1,2

Semester:06														
Course Name: DESIGN OF ELECTRICAL APPARATUS											Course Code: 20EE6A2			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C314A2.1	3	2	1	-	-	-	-	-	-	-	-	-	2	1
C314A2.2	3	2	1	-	-	-	-	-	-	-	-	-	2	1
C314A2.3	3	3	2	1	-	-	-	-	-	-	-	-	2	1
C314A2.4	3	2	1	-	-	-	-	-	-	-	-	-	2	1
C314A2.5	3	3	2	1	-	-	-	1	1	1	-	-	2	1
C314A2.6	3	2	1	-	-	-	-	-	-	-	-	-	2	1
C314A2	3	2	1	1	-	-	-	1	1	1	-	-	2	1

Semester:06		Course Code : 20EE6B2						
Course Name : SPECIAL ELECTRICAL MACHINES								
CO	Course Outcomes				Unit	K – CO	POs	PSOs
C315B 2.1	Explain the construction and Principle of operation of stepper motor				I	K2	1,2	1
C315B 2.2	Discuss the construction and Principle of operation of SRM				II	K2	1,2	1
C315B 2.3	Describe the construction and Principle of operation of Permanent Magnet Brushless DC Motor				III	K2	1,2	1
C315B	Explain the operation Microprocessor Based controller for				III	K2	1,2	1

2.4	PMBLDC				
C315B 2.5	Discuss the Principle of operation of Permanent Magnet Synchronous Motor	IV	K2	1,2	1
C315B 2.6	Describe the construction and Principle of operation of Synchronous Reluctance Motors	V	K2	1,2	1

Semester:06														
Course Name: SPECIAL ELECTRICAL MACHINES											Course Code: 20EE6B2			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C315B2.1	2	1	-	-	-	-	-	2	2	2	-	-	2	1
C315B2.2	2	1	-	-	-	-	-	2	2	2	-	-	2	1
C315B2.3	2	1	-	-	-	-	-	2	2	2	-	-	2	1
C315B2.4	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C315B2.5	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C315B2.6	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C315B2	2	1	-	-	-	-	-	1	1	1	-	-	2	1

Semester:06		Course Code : 20EE6L1			
Course Name : Power Electronics And Drives Laboratory					
CO	Course Outcomes	Exp	K – CO	POs	PSOs
C316.1	Conduct on experiment to generate the gate pulse of SCR using R, RC and UJT triggering circuit and differentiate the VI characteristics of power electronics devices.	1,2,3	K3	1,2,3,9	1,2
C316.2	Conduct on experiment to analyze the performance of the designed single phase AC to DC semi converter and fully controlled converter with R and RL load using MATLAB simulation tool.	4,5	K4	1,2,3,4,9	1,2
C316.3	Conduct on experiment to analyze the performance of the designed step down and step up MOSFET based choppers using MATLAB simulation tool.	6	K4	1,2,3,4,9	1,2
C316.4	Conduct on experiment to analyze the performance of the designed AC –AC converters and Switched mode power converter using MATLAB simulation tool.	7,8	K4	1,2,3,4,9	1,2
C316.5	Conduct on experiment to show the frequency response of single phase PWM inverter and inverter fed induction motor drive.	9,10	K3	1,2,3,9	1,2
C316.6	Demonstrate the speed control of the given Micro controller based DC drive by conducting suitable experiment.	11	K3	1,2,3,9	1,2

Semester:06														
Course Name: POWER ELECTRONICS AND DRIVES LABORATORY											Course Code: 20EE6L1			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C316.1	3	2	1	-	-	-	-	-	2	-	-	-	2	2
C316.2	3	3	2	1	1	-	-	-	2	-	-	-	2	2
C316.3	3	3	2	1	1	-	-	-	2	-	-	-	2	2
C316.4	3	3	2	1	1	-	-	-	2	-	-	-	2	2
C316.5	3	2	1	-	-	-	-	-	2	-	-	-	2	2

C316.6	3	2	1	-	-	-	-	-	2	-	-	-	2	2
C316	3	3	2	1	1	-	-	-	2	-	-	-	2	2

Semester:06		Course Code : 20CS6L3			
Course Name : Object Oriented And Java Programming Laboratory					
CO	Course Outcomes	Exp	K – CO	POs	PSOs
C318.1	Develop and implement Java programs for simple applications that make use of classes, packages.	1,2	K3	1,2,3,5,8	1,2
C318.2	Develop and implement Java programs with inheritance and interfaces.	3,4	K3	1,2,3,5,8	1,2
C318.3	Develop Java programs to implement function polymorphism.	5,6	K3	1,2,3,5,8	1,2
C318.4	Develop simple java programs with use of files and exceptions.	7,8	K3	1,2,3,5,8	1,2
C318.5	Develop simple java programs by implementing multithread concepts.	9,10	K3	1,2,3,5,8	1,2
C318.6	Develop simple java program by using generic concepts.	11,12	K3	1,2,3,5,8	1,2

Semester:06														
Course Name: OBJECT ORIENTED AND JAVA PROGRAMMING LABORATORY		Course Code: 20CS6L3												
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C318.1	3	2	1	-	3	-	-	1	1	1	-	-	3	2
C318.2	3	2	1	-	3	-	-	1	1	1	-	-	3	2
C318.3	3	2	1	-	3	-	-	1	1	1	-	-	3	2
C318.4	3	2	1	-	3	-	-	1	1	1	-	-	3	2
C318.5	3	2	1	-	3	-	-	1	1	1	-	-	3	2
C318.6	3	2	1	-	3	-	-	1	1	1	-	-	3	3
C318	3	2	1	-	3	-	-	1	1	1	-	-	3	2

Semester:07		Course Code : 20EE701			
Course Name : PROTECTION AND SWITCHGEAR					
CO	Course Outcomes	Unit	K – CO	POs	PSOs
C401.1	Explain the Over voltage Protection of Power Systems	1	K2	1,2	1,2
C401.2	Explain the characteristics and functions of Electromagnetic type protective relays	2	K2	1,2	1,2
C401.3	Describe the various abnormal conditions in power system apparatus and to select a suitable protection scheme	3	K2	1,2	1,2
C401.4	Develop assembly language programming for numerical over current, directional and distance protection	4	K3	1,2,3,5,8,12	1,2
C401.5	Analyze the circuit interruption problems	5	K4	1,2,3,4	1,2
C401.6	Explain the operation of Air, Oil, SF6 and Vacuum Circuit Breakers	5	K2	1,2	1,2

Semester:07			
Course Name: PROTECTION AND SWITCHGEAR		Course Code: 20EE701	

CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C401.1	2	1	-	-	-	-	-	-	-	-	-	-	2	2
C401.2	3	2	1	-	-	-	-	-	-	-	-	-	2	2
C401.3	3	2	1	-	-	-	-	2	2	2	-	-	2	2
C401.4	3	2	1	-	2	-	-	2	2	2	-	-	3	3
C401.5	3	3	2	1	-	-	-	2	2	2	-	-	3	3
C401.6	2	1	-	-	-	-	-	-	-	-	-	-	2	2
C401	3	2	1	1	1	-	-	1	1	1	-	-	2	2

Semester:07														
Course Title: RENEWABLE ENERGY SYSTEMS											Course Code:20EE702			
CO.No.	Course Outcome statement													
C402.1	Describe about renewable Energy Sources and technologies. Outline the Environmental consequences of fossil fuel.													
C402.2	Discuss the basic principle and types of solar PV system and thermal energy systems													
C402.3	Explain the basic principles, types and Grid integration issues of Wind Energy Conversion Systems													
C402.4	Summarize the electrical power from bio-mass energy and Hydro energy													
C402.5	Describe the electrical power from geothermal energy, Ocean energy, Hydrogen energy and Fuel cell.													
C402.6	Explain the different types of Hybrid energy systems with their advantages and disadvantages													

Semester:07														
Course Name: RENEWABLE ENERGY SYSTEMS											Course Code: 20EE702			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C402.1	2	1	-	-	-	-	-	2	2	2	-	-	2	1
C402.2	2	1	-	-	-	-	-	2	2	2	-	-	2	1
C402.3	2	1	-	-	-	-	-	2	2	2	-	-	2	1
C402.4	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C402.5	2	1	-	-	-	2	2	1	1	1	-	2	2	1
C402.6	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C402	2	1	-	-	-	1	1	1	1	1	-	1	2	1

Semester:07									
Course Name : SOLAR PHOTOVOLTAIC FUNDAMENTALS AND APPLICATIONS						Course Code : 20OE105			
CO	Course Outcomes					Unit	K-CO	POs	PSOs
CO1	Summarize the basics of Photovoltaic systems.					I	K2	1, 2, 3	1, 2, 3
CO2	Explain the component of stand- alone photovoltaic systems					II	K2	1, 2, 3	1, 2, 3
CO3	Explain the component of grid connected photovoltaic systems					III	K2	1, 2, 3	1, 2, 3
CO4	Summarize the basics of Hybrid systems.					IV	K2	1, 2, 3	1, 2, 3
CO5	Explain the selection criteria for a given Photovoltaic application.					V	K2	1, 2, 3	1, 2, 3

CO6	Design of various components of solar PV systems.	V	K3	1, 2, 3	1, 2, 3
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Semester:07														
Course Name: SOLAR PHOTOVOLTIC FUNDAMENTALS AND APPLICATIONS											Course Code: 20OE105			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C403.1	3	2	1	-	-	-	-	2	2	2	-	-	2	1
C403.2	3	2	1	-	-	-	-	2	2	2	-	-	2	1
C403.3	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C403.4	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C403.5	2	1	-	-	-	-	-	-	-	-	-	-	2	1
C403.6	3	2	1	-	-	-	-	2	2	2	-	-	3	2
C403	3	2	1	-	-	-	-	1	1	1	-	-	2	1

Semester:07											Course Code : 20EE7A1			
Course Name : FIBRE OPTICS AND LASER INSTRUMENTS														
CO	Course Outcomes										Unit	K -CO	POs	PSOs
C404A5.1	Explain the principle, transmission, dispersion and attenuation characteristics of optical fibers										I	K2	1,2	1
C404A5.2	Explain the principle of Fibre Optical sources and Optical detectors.										I	K2	1,2	1
C404A5.3	Illustrate the optical fibers for its use as communication medium and as sensor as well which have important applications in production, manufacturing industrial and biomedical applications.										II	K2	1,2	1
C404A5.4	Describe the Fiber Scattering loss Measurement, Fiber Absorption Measurement and Fiber dispersion measurements										II	K2	1,2	1
C404A5.5	Discuss the laser theory and laser generation system.										IV	K2	1,2	1
C404A5.6	Explain the laser theory for the selection of lasers for a specific Industrial and medical application.										V	K2	1,2	1

Semester:07														
Course Name: FIBER OPTICS AND LASER INSTRUMENTATION											Course Code: 20EE7A1			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C404A5.1	2	1	-	-	-	-	-	2	2	1	-	-	1	1
C404A5.2	2	1	-	-	-	-	-	2	2	1	-	-	1	1
C404A5.3	2	1	-	-	-	-	-	2	2	1	-	-	1	1
C404A5.4	2	1	-	-	-	-	-	-	-	-	-	-	1	1
C404A5.5	2	1	-	-	-	-	-	-	-	-	-	-	1	1
C404A5.6	2	1	-	-	-	-	-	-	-	-	-	-	1	1
C404A5	2	1	-	-	-	-	-	1	1	1	-	-	1	1

Semester:07											Course Code : 20CS401			
Course Name : COMPUTER ORGANIZATION AND ARCHITECTURE														
CO	Course Outcomes										Unit	K -CO	POs	PSOs
C405B5.1	Explain the computer organization components, instructions and addressing modes.										I	K2	1,2	1
C405B5.2	Compute the arithmetic operations such as Addition, Subtraction, Multiplication and Division.										II	K3	1-3,8,9	1

C405B5.3	Discuss the basics of MIPS implementation and pipelining.	III	K2	1,2,8-10,12	1
C405B5.4	Illustrate the basic concepts of parallelism, multi-core processor, GPU & Clusters.	IV	K2	1,2,8,9,12	1
C405B5.5	Describe the memory technologies & I/O systems.	V	K2	1,2,8-10,12	1
C405B5.6	Utilize Raspberry-pi for demonstrating memory systems.	V	K3	1-3,5,8,9,12	1,2

Semester:07														
Course Name: COMPUTER ORGANIZATION AND ARCHITECTURE											Course Code: 20CS401			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C405B5.1	2	1	-	-	-	-	-	-	-	-	-	-	2	-
C405B5.2	3	2	1	-	-	-	-	1	1	1	-	-	3	1
C405B5.3	3	2	1	-	-	-	-	1	1	1	-	1	2	1
C405B5.4	3	2	1	-	-	-	-	1	1	1	-	1	2	1
C405B5.5	2	1	-	-	-	-	-	-	-	-	-	1	2	1
C405B5.6	3	2	1	-	1	-	-	-	-	-	-	1	2	1
	3	2	1	-	1	-	-	1	1	1	-	1	2	1

Semester:07											Course Code : 20EE7L1			
COURSE NAME : POWER SYSTEM SIMULATION LABORATORY														
CO	Course Outcomes										Exp	K -CO	POs	PSOs
C406.1	Develop coding to determine the various line parameters of a transmission line.										1	K3	1,2,3,4,5,8,9,10,12	1,2
C406.2	Develop coding to form bus admittance matrix for the given power system network.										2	K3	1,2,3,4,5,8,9,10,12	1,2
C406.3	Develop program to determine the line losses of the given power system network.										3,4	K3	1,2,3,4,5,8,9,10,12	1,2
C406.4	Develop simulink model for fault analysis in the transmission line using bus impedance matrix.										5	K4	1,2,3,4,5,8,9,10,12	1,2
C406.5	Develop the coding to solve the economic dispatch problem in Power system.										7	K3	1,2,3,4,5,8,9,10,12	1,2
C406.6	Analyze the steady state and Transient stability of the given power system using simulation										6,8,9,10	K4	1,2,3,4,5,8,9,10,12	1,2

Semester:07														
Course Name: POWER SYSTEM SIMULATION LABORATORY											Course Code: 20EE702			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C406.1	3	2	1	-	2	-	-	1	1	1	-	1	3	3
C406.2	3	2	1	-	2	-	-	1	1	1	-	1	3	3
C406.3	3	2	1	-	2	-	-	1	1	1	-	1	3	3
C406.4	3	2	1	-	2	-	-	1	1	1	-	1	3	3
C406.5	3	2	1	-	2	-	-	1	1	1	-	1	3	3
C406.6	3	2	1	-	2	-	-	1	1	1	-	1	3	3
C406	3	2	1	-	2	-	-	1	1	1	-	1	3	3

Semester:07											Course Code : 20EE7L2			
Course Name : RENEWABLE ENERGY SYSTEMS LABORATORY														
CO	Course Outcomes										Exp	K -CO	POs	PSOs
C407.1	Analyze VI-Characteristics and Efficiency of 1kWp Solar PV System										2	K4	1,2,3,4,5,9,12	1,2

C407.2	Analyze the Shadowing effect & diode based solution in 1kWp Solar PV System	3	K4	1,2,3,4,5,9,12	1,2
C407.3	Analyze the Performance of Grid connected and Standalone 1kWp Solar Power System.	4	K4	1,2,3,4,5,9,12	1,2
C407.4	Simulate the various Renewable energy sources	1,5,7,9,11	K3	1,2,3,4,5,9,12	1,2
C407.5	Analyze the performance characteristics of micro Wind Energy Generator	6	K4	1,2,3,4,5,9,12	1,2
C407.6	Analyze the performance characteristics of Hybrid (Solar-Wind) Power System.	8	K4	1,2,3,4,5,9,12	1,2

Semester:07														
Course Name: RENEWABLE ENERGY SYSTEMS LABORATORY											Course Code: 20EE702			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C407.1	3	3	2	1	1	-	-	-	1	-	-	1	3	3
C407.2	3	3	2	1	1	-	-	-	1	-	-	1	3	3
C407.3	3	3	2	1	1	-	-	-	1	-	-	1	3	3
C407.4	3	2	1	-	1	-	-	-	1	-	-	1	3	3
C407.5	3	3	2	1	1	-	-	-	1	-	-	1	3	3
C407.6	3	3	2	1	1	-	-	-	1	-	-	1	3	3
C407	3	3	2	1	1	-	-	-	1	-	-	1	3	3

Semester:08						Course Code : 20EE8A3			
Course Name : ELECTRIC VEHICLES AND POWER MANAGEMENT									
CO	Course Outcomes					Unit	K -CO	POs	PSOs
C408A3.1	Explain the operation of Electric vehicles and various energy storage technologies for electrical vehicles					1	K2	1,2	1
C408A3.2	Explain the Architecture of EV's and Power Train Components					2	K2	1,2	1
C408A3.3	Discuss the Control of DC drives					3	K2	1,2	1
C408A3.4	Describe the Control of AC drives					3	K2	1,2	1
C408A3.5	Explain about various types of Battery energy storage system					4	K2	1,2	1
C408A3.6	Generalize the Alternative energy storage system					5	K2	1,2	1

Semester:08														
Course Name: ELECTRIC VEHICLES AND POWER MANAGEMENT											Course Code: 20EE8A2			
CO-PO/PSO Mapping														
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C408A3.1	2	1	-	-	-	-	-	2	2	2	-	-	1	1
C408A3.2	2	1	-	-	-	-	-	2	2	2	-	-	1	1
C408A3.3	2	1	-	-	-	-	-	2	2	2	-	-	1	1
C408A3.4	2	1	-	-	-	-	-	-	-	-	-	-	1	1
C408A3.5	2	1	-	-	-	-	-	2	2	2	-	-	1	1
C408A3.6	2	1	-	-	-	-	-	2	2	2	-	-	1	1

20CS6L3	OOJPLAB	C318	3	2	1	-	3	-	-	1	1	1	-	-	3	3
20EE701	PSG	C401	3	2	1	1	1	-	-	1	1	1	-	-	2	2
20EE702	RES	C402	2	1	-	-	-	1	1	1	1	1	-	1	2	1
20OE105	OE2-SPFA	C403	3	2	1	-	-	-	-	1	1	1	-	-	2	1
20EE7A1	PE3-FOLI	C404 A5	2	1	-	-	-	-	-	1	1	1	-	-	1	1
20CS401	PE4-COA	C405 B5	3	2	1	-	1	-	-	1	1	1	-	1	2	1
20EE7L1	PSS LAB	C406	3	2	1	-	2	-	-	1	1	1	-	1	3	3
20EE7L2	RES LAB	C407	3	3	2	1	1	-	-	-	1	-	-	1	3	3
20EE8A2	PE5-EVPM	C408 A3	2	1	-	-	-	-	-	2	2	2	-	-	1	1
20EE8B1	PE6-EAM	C409 B1	2	1	-	-	-	1	1	2	2	2	-	-	1	1
20EE8L1	Project	C410	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Average	Credits: 174		2.82	1.98	1.21	1.15	1.54	1.45	1.42	1.26	1.40	1.35	2.00	1.53	1.96	1.41