Vidya Jyothi Institute of Technology

(An Autonomous Institution)

(Accredited by NAAC & NBA, Approved by AICTE New Delhi & Permanently Affiliated to JNTUH)

Aziz Nagar Gate, C.B. Post, Hyderabad-500 075

Department of Electrical and Electronics Engineering

- **Program Educational Objectives [PEOs]**
- **Program Specific Outcomes [PSOs]**
- **Program Outcomes[POs]**
- **Course Outcomes [COs]**
- **CO - PO PSO Mappings**

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Department of Electrical and Electronics Engineering

Program Educational Objectives (PEOs)	
PEO 1:	Equip graduates with a sound foundation in mathematics, science and engineering fundamentals, necessary to build a prospective career.
PEO 2:	Graduates will excel in giving solutions to real-time problems through technical expertise and operational skill set in the field of Electrical Engineering.
PEO 3:	Graduates will act with integrity in catering the need-based requirements blended with ethics and professionalism

Program Specific Outcomes (PSOs)	
PSO 1:	Conceptualize electrical and electronics systems, employ control strategies for power electronics related applications to prioritize societal requirements.
PSO 2:	Apply the appropriate techniques and modern engineering hardware and software tools in electrical engineering to engage in multi-disciplinary environments.

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Department of Electrical and Electronics Engineering

Program Outcomes (POs)	
PO 1:	**Engineering Knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2:	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3:	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4:	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5:	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6:	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7:	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8:	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9:	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10:	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11:	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12:	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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Course Outcomes (COs)

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Department of Electrical and Electronics Engineering

II YEAR I SEMSTER

Course name: COMPLEX ANALYSIS AND FOURIER TRANSFORMS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Work with the functions of complex variables and evaluation of complex differentiation.
CO2	Acquire the knowledge of complex power series and integration.
CO3	Apply the knowledge of contour integration to evaluate real integrals in engineering problems and acquire the knowledge of evaluating of conformal mapping and bilinear transformations.
CO4	Study Fourier series and define it for various types of functions.
CO5	Apply Fourier sine and cosine integral theorems for a given function f(x), evaluate Fourier transforms, sine and cosine transforms.

Course name: PROFESSIONAL COMMUNICATION

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Acquire enhanced personality
CO2	Exhibit appropriate professional etiquette
CO3	Practice team building with strong communication skills
CO4	Develop problem solving skills and decision-making
CO5	Demonstrate effective presentation skills

Course name: POWER SYSTEMS-I

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the principle of generation of electric power in thermal, hydro, nuclear and gas power stations.
CO2	Apply concepts in distribution systems to solve voltage drop calculations.
CO3	Interpret the arrangement and operation of AIS and GIS substations.
CO4	Analyze methods to improve the power factor and voltage control.
CO5	Evaluate economic aspects of power generation and tariff.

Course name: NETWORK ANALYSIS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Apply network theorems for the analysis of electrical networks.
CO2	Obtain the transient and steady-state response of electrical circuits.
CO3	Apply graph theory to formulate network equations.
CO4	Analyze two port networks.
CO5	Evaluate circuits in the sinusoidal steady-state (Three-phase).

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Department of Electrical and Electronics Engineering

Course name: ELECTRO MAGNETIC FIELDS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the basic laws of electromagnetism.
CO2	Obtain the electric and magnetic fields' concepts for simple configurations under static Conditions.
CO3	Analyze time varying electric and magnetic fields.
CO4	Examine Maxwell's equations in different forms and different media.
CO5	Apply electromagnetic concepts to electrical machines

Course name: ELECTRICAL MACHINES- I

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the principle and operation of DC generators.
CO2	Analyze the performance characteristics of DC Generators.
CO3	Explain the operation and performance characteristics of DC Motors.
CO4	Identify the speed control methods of DC motors.
CO5	Evaluate the efficiency of DC machines using different testing methods.

Course name: BASIC SIMULATION TOOLS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the basic commands & operators of MATLAB & PSPICE
CO2	Develop the program for matrix multiplication & inversion in MATLAB
CO3	Analyze the series RL,RC& RLC circuits using Simulink for DC & DC excitation using MATLAB.
CO4	Design DC network and single phase half wave & full wave rectifier using PSPICE.
CO5	Analyze the transient response of series RL, RC, RLC circuits for DC & AC excitation using PSPICE.

Course name: ELECTRICAL CIRCUITS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Design circuit and conduct experiments for verification of electrical theorems such as Thevenin's, Norton's theorem, Superposition theorem etc.
CO2	Find Resonance in series and parallel R, L, C Circuits& locus concepts practically.
CO3	Examine Self inductance, Mutual inductance and Coefficient of coupling and Analyze RMS, Average Value, Form Factor and Peak Factor of Complex wave.
CO4	Determine two port parameters practically.
CO5	Measure Active power & Reactive power for star and delta connected balanced loads.

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Department of Electrical and Electronics Engineering

II YEAR II SEMESTER

Course name: NUMERICAL METHODS AND PARTIAL DIFFERENTIAL EQUATIONS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Develop skills in solving engineering problems involving algebraic and transcendental equations.
CO2	Acquires the knowledge of interpolation in predicting future out comes based on the present knowledge and also to fit different types of curves.
CO3	To know various types of numerical methods in solving engineering problems.
CO4	Classify the nature of second and higher order partial differential equations and find the solutions of linear and nonlinear PDE.
CO5	To apply partial differential equations in different engineering problems.

Course name: FLUID MECHANICS AND HYDRAULIC MACHINES

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Explain fluid properties, types of fluid flows and formulate one and three dimensional compressible fluid flow problems and solve the same.
CO2	Apply conservation of mass, energy and momentum laws to fluid flow problems in engineering applications and study the losses in pipes.
CO3	Compute drag and lift forces using theory of boundary layer and understand the basics of turbo machinery.
CO4	Analyze practical problems of various turbines used in Industry and hydro power plants.
CO5	Solve various engineering problems related to centrifugal and reciprocating pumps used in agriculture, domestic and industrial applications.

Course name: ELECTRONIC DEVICES & CIRCUITS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Demonstrate the concepts of semiconductor theory.
CO2	Interpret the characteristics of different semiconductor devices with its applications.
CO3	Apply different biasing techniques of transistors for amplification.
CO4	Analyze transistor amplifiers using small signal model.
CO5	Analyze FET amplifiers using small signal model.

Course name: ELECTRICAL MACHINES – II

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the operation and performance analysis of single phase transformer.
CO2	Analyze various methods of connections of three phase transformers.
CO3	Understand the construction & operation of three phase induction motor.
CO4	Analyze the performance of three phase induction motor.
CO5	Understand the construction & operation of single phase induction motor.

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Department of Electrical and Electronics Engineering

Course name: POWER SYSTEMS – II

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand transmission line parameters.
CO2	Observe the performance of transmission lines.
CO3	Analyze transient behavior of transmission lines.
CO4	Evaluate mechanical design of transmission lines.
CO5	Understand the construction, grading and capacitance of underground cables.

Course name: CONTROL SYSTEMS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the basic concepts of control system and develop the mathematical model of simple electrical and mechanical systems.
CO2	Apply the transient response of first and second order systems through time domain specifications.
CO3	Sketch root locus technique to know the conditional stability of the system.
CO4	Calculate the relative stability of the systems with the help of frequency domain indices and design compensators to meet the desired specifications of the systems.
CO5	Analyze systems using modern control theory through state space analysis.

Course name: ELECTRICAL MACHINES – I LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Examine the losses, Output and efficiency of DC motors
CO2	Identify the losses, Output and efficiency of DC generators
CO3	Apply speed control methods on DC motors.
CO4	Analyze the magnetization characteristics of DC shunt generator to determine its parameters.
CO5	Infer the efficiencies of DC Series Machines.

Course name: ELECTRONIC DEVICES AND CIRCUITS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand basic concepts of electronic devices and circuits.
CO2	Analyze the characteristics of electronic devices and circuits.
CO3	Apply the concepts of electronics devices and circuits to find various parameters.
CO4	Evaluate the behavior of basic electronic devices.
CO5	Analyze the characteristics of FET and UJT.

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Department of Electrical and Electronics Engineering

III YEAR I SEMESTER

Course name: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Analyze the scope of managerial economics.
CO2	Apply managerial tools and techniques to attain optimal decisions.
CO3	Analyze how production function is carried out to achieve maximum output.
CO4	Analyze changing business environment in post liberalization scenario.
CO5	Evaluate and interpret the financial statements to make informed decisions.

Course name: SWITCHING THEORY & LOGIC DESIGN

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Manipulate numeric information in different forms, e.g. different bases, signed integers,various codes such as ASCII, gray and BCD.
CO2	Manipulate simple boolean expressions using the theorems and postulates of boolean algebraand to minimize combinational functions.
CO3	Design and analyze small combinational circuits and to use standard combinationalfunctions/building blocks to build larger more complex circuits.
CO4	Design and analyze small sequential circuits and devices and to use standard sequentialfunctions/building blocks to build larger more complex circuits.
CO5	To develop the state diagrams with the knowledge of Mealy and Moore circuits andalgorithmic state machines for binary multipliers.

Course name: ELECTRICAL MACHINES-III

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the construction and principle of operation of synchronous machine. Armature reaction, load characteristics, harmonics in generating EMFetc.
CO2	Solve regulation of synchronous generator using various methods.
CO3	Discuss the parallel operation of alternators, load sharing, change of excitation & prime-mover input.
CO4	Analyze the performance of synchronous motor
CO5	Compare the working principle and applications of various types of special machines.

Course name: POWER ELECTRONICS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand various power electronic devices and their commutation procedure.
CO2	Discuss the operation of various single phase-controlled converters.
CO3	Examine operation of various three phase-controlled converters, AC voltage controllers, Cycloconverters
CO4	Identify the operation of DC-DC converters
CO5	Analyze the operation of DC-AC converters

Department of Electrical and Electronics Engineering

Course name: **ELECTRICAL ENERGY CONSERVATION AND AUDITING**

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the current energy scenario and importance of energy conservation.
CO2	Apply the concepts of Energy Management
CO3	Evaluate Energy efficiency in different Electrical Systems.
CO4	Analyze the energy audit of different Industrial energy systems
CO5	Analyze the energy audit of different Electrical energy systems

Course name: ELECTRICAL ESTIMATION AND COSTING

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Generalize estimation and costing aspects of all electrical equipment.
CO2	Determine the concepts of installation and designs to analyse the cost viability.
CO3	Evaluate design aspects of wiring system, overhead and underground distribution lines, substations and illuminations.
CO4	Estimate the cost of various electrical designs and equipment.
CO5	Analyze overhead and underground transmission and distribution lines.

Course name: **NON-CONVENTIONAL ENERGY SOURCES (Open Elective)**

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Realize the importance of renewable energy sources for energy planning.
CO2	Understand the value of solar energy potential and exploit the solar energy for real world applications.
CO3	Understand the potential of wind energy, types of wind mills, performance characteristics and Betz criteria.
CO4	Analyze the potential of both tidal and ocean thermal energies and learn the extraction methods.
CO5	Know the potential of geothermal, bio-mass energies and learn relevant extraction methods.

Course name: FUNDAMENTALS OF ELECTRICAL POWER GENERATION AND PROTECTION (Open Elective)

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Interpret the operation of thermal power station through its schematic diagram.
CO2	Observe the arrangement of hydroelectric power station through its components.
CO3	Show various components of nuclear power station.
CO4	Describe the operation of gas and diesel power station through its schematic diagram.
CO5	Differentiate various power system protection components.

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Department of Electrical and Electronics Engineering

Course name: ELECTRICAL MACHINES II LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the basic working principle of a transformer; obtain the equivalent circuit parameters, estimate efficiency & regulation at various loads of 1-Φ transformers.
CO2	Apply load sharing concepts of transformers & conversion of 3- Φ to 2- Φ supply for transformers
CO3	Examine the equivalent circuit parameters of a single phase induction motor, determine theperformance characteristics and efficiency by direct and indirect methods of three phase induction motor.
CO4	Analyze the regulation of an alternator by various methods at different power factors.
CO5	Investigate synchronous motor performance curves at various power factors and field currents.

Course name: ADVANCED COMMUNICATION SKILLS LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Listen to the speakers attentively, accurately and precisely to understand and respond appropriately in different contexts.
CO2	Analyze and communicate intelligently while speaking with professionalism and enact different roles; engage themselves in preparing, organizing and delivering speeches, presentations etc.
CO3	Demonstrate command over English vocabulary and develop the ability to read intelligently and imaginatively for comprehending different contexts.
CO4	Master the mechanics of writing & practice it as a process and communicate the ideas relevantly and coherently.
CO5	Gain employability skills; develop leadership qualities and problem solving skills to apply them for careers at advanced levels in a wide range of English and enrich themselves to meetindustrial needs.

Course name: QUANTITATIVE METHODS & LOGICAL REASONING

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Perform well in various competitive exams and placement drives.
CO2	Solve basic and complex mathematical problems in short time.
CO3	Become strong in Quantitative Aptitude and Reasoning which can be applied for GRE, GATE, GMAT or CAT exam also .
CO4	Develop problem solving skills and analytical abilities, which play a great role in corporate and industry, set up .
CO5	Perform well in various competitive exams and placement drives.

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III YEAR II SEMESTER

Course name: ELECTRICAL MEASUREMENTS AND INSTRUMENTATION

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand different types of measuring instruments and error compensations.
CO2	Discuss the operation of DC Crompton potentiometer and compare the CT and PT with phasor diagram.
CO3	Examine the concepts of power and energy measurement by using wattmeter and energy meter.
CO4	Outline the concept of DC and AC bridges for the measurement of resistance, inductance & capacitance.
CO5	Analyze the concepts of transducers and cathode ray oscilloscopes

Course name: COMPUTER METHODS IN POWER SYSTEMS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Demonstrate the knowledge and ability to develop Y-bus and Z-bus matrices.
CO2	Know the importance of load flow studies and its importance.
CO3	Analyze various types of faults in power systems.
CO4	Assess Steady state stability in power systems.
CO5	Determine the transient state stability.

Course name: POWER SEMICONDUCTOR DRIVES

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the concepts of the dynamics of electric drives and speed control of different types of DC drives.
CO2	Analyze four quadrant operation to control speed of DC drives using dual converters.
CO3	Examine four quadrant operation to control speed of DC drives using choppers.
CO4	Discuss speed control of induction motor drives.
CO5	Demonstrate the speed control of synchronous motor drives.

Course name: SWITCHGEAR & PROTECTION

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Know basic working of circuit breaker and classification of circuit breakers.
CO2	Make out the application of different types of circuits breakers in power systems.
CO3	Understand Principle of operation of over current, directional, differential and distance relays.
CO4	Device protection methods for alternators, transformers, bus-bars.
CO5	Gain concept of neutral grounding and protection Method list from different types of surge

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Department of Electrical and Electronics Engineering

Course name: INTEGRATED CIRCUIT AND APPLICATIONS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Remember the characteristics of different integrated circuits families.
CO2	Infer the different applications of operational amplifiers under different Configurations.
CO3	Recognize the importance of special function integrated circuits on different engineering applications.
CO4	Interpret the need for data converters for real time applications.
CO5	Design and analysis of first order active filter and waveform generators using operational amplifiers.

Course name: CONTROL SYSTEMS & SIMULATION LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Examine the time response of second order systems, synchros, and truth tables verification by PLC.
CO2	Design of AC servomotor and DC servomotor to find out their transfer function practically.
CO3	Design of DC motor, DC generator, and finding out their transfer function practically.
CO4	Analyze magnetic amplifier characteristics.
CO5	Explain stability analysis through bode, Nyquist and root locus plots using simulation software.

Course name: POWER ELECTRONICS AND SIMULATION LAB

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Examine the characteristics of SCR, MOSFET, & IGBT, and analyze triggering circuits.
CO2	Analyze input and output chrematistics of AC-DC converters.
CO3	Synthesize input and output characteristics of Cycloconverters.
CO4	Examine input and output characteristics of DC-DC Converters.
CO5	Design of converters and inverters using P-Spice software

Course name: PERSONALITY DEVELOPMENT AND BEHAVIORAL SKILLS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Practice optimistic attitude for an efficient, socially viable and multi-faceted personality.
CO2	Demonstrate functions of non-verbal communication in formal context.
CO3	Build effective individual & team dynamics for professional accomplishments.
CO4	Analyze appropriate strategic Interpersonal Skills for productive workplace relationships.
CO5	Correspond in multiple contexts, for varied audiences, across genres and modalities.

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Department of Electrical and Electronics Engineering

IV YEAR I SEMESTER

Course name: MICROPROCESSORS AND INTERFACING DEVICES

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Illustrate the internal architecture of 8086 and8051.
CO2	Understand and apply the fundamentals of assembly level programming of microprocessors and microcontroller.
CO3	Explain the use of interrupts with suitable examples.
CO4	Demonstrate the interfacing of various peripheral devices with the microprocessor8086.
CO5	Design electrical circuitry to the Microcontroller I/O ports in order to interface the controller to external devices

Course name: POWER SYSTEM OPERATION & CONTROL

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the economic operation of power systems.
CO2	Compute optimal loading of generators for the demand.
CO3	Analyze modeling of turbines and automatic controllers
CO4	Apply the knowledge of single area and two area load frequency control.
CO5	Examine reactive power control and compensating equipment.

Course name: COMPUTER METHODS IN POWER SYSTEMS

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Compute Y-bus and Z-bus matrices
CO2	Apply the concepts of load flow studies in power systems.
CO3	Analyze faults using for unit system
CO4	Examine steady state stability of power system.
CO5	Investigate transient stability of power system.

Course name: ELECTRICAL DISTRIBUTION SYSTEMS

After completing this course the student must demonstrate the knowledge and ability to	
CO 1	Distinguish between transmission and distribution systems, classification of loads and their characteristics.
CO 2	Understand design considerations of distribution feeders and sub-stations
CO 3	Compute voltage drop and power loss in feeders.
CO 4	Apply concepts of protection and coordination to distribution systems
CO 5	Examine the power factor improvement and voltage control

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Course name: ELECTRICAL ESTIMATION AND COSTING

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Generalize estimation and costing aspects of all electrical equipment.
CO2	Determine the concepts of installation and designs to analyse the cost viability.
CO3	Evaluate design aspects of wiring system, overhead and underground distribution lines, substations and illuminations.
CO4	Estimate the cost of various electrical designs and equipment.
CO5	Analyze overhead and underground transmission and distribution lines.

Course name: ELECTRICAL MEASUREMENTS LABORATORY

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Calibrate voltmeters, ammeters, single phase energy meter.
CO2	Analyze true and actual values of potentiometer & Power factor meter.
CO3	Verify dielectric property of oil insulation, Analyze the measuring parameters of Anderson & Schering bridge.
CO4	Test displacement, force, strain, inductance, capacitance & resistance using concepts of electricity.
CO5	Examine the output of turns ratio and ratio error of CT.

Course name: MICROPROCESSORS AND MICROCONTROLLERS LABORATORY

After completing this course the student must demonstrate the knowledge and ability to	
CO1	After the completion of this course, a student must demonstrate the knowledge and ability to
CO2	Understand and implement the basic programs of microprocessor (8086).
CO3	Analyse and interpret the interfacing concept of microprocessor (8086) with other Processors.
CO4	Illustrate and show the different programs using Microcontroller (8051)
CO5	Implement and verify the interfacing concepts with 8051 microcontroller.

Course name: INDUSTRY ORIENTED MINI PROJECT

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Examine , Discuss and make links across different core areas of Knowledge
CO2	Investigate and identify required areas, ideate, plan, design and develop models/prototypefor the benefit of the society
CO3	Categorize the domains / disciplines involved and work on them individually andcollaborate as a team
CO4	Make effective presentation, documentation and enhance verbal and writing skills

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IV YEAR II SEMESTER

Course name: UTILIZATION OF ELECTRICAL ENERGY

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand illumination methods &solutions for illumination.
CO2	Apply principles of electrical heating &welding and acquire skills to solve problems.
CO3	Categorize electrical drives, their characteristics& applications.
CO4	Analyze features of electric traction movement.
CO5	Investigate the effects of varying acceleration and braking retardation, adhesive weight and coefficient of adhesion.

Course name: FUNDAMENTALS OF HVDC AND FACTS DEVICES

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Identify the anatomy of E-Commerce applications.
CO2	Categorize different Electronic payment systems.
CO3	Examine Supply chain Management.
CO4	Analyze the various marketing strategies for an online business.
CO5	Design strategies for E-Commerce Catalogues.

Course name: EHVAC TRANSMISSION

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Understand the necessity, merits and demerits of EHVAC transmission lines and mechanical design
CO2	Use the concepts of voltage gradient and effects of corona
CO3	Apply the measurement of electrostatic fields and their effects on human and animals
CO4	Analyze the lightning stroke mechanism and lightning protection techniques
CO5	Make use of voltage control techniques for VAR compensation

Course name: Technical Seminar

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Choose suitable up to date topic of his choice by doing survey of literature
CO2	Make an in depth study of the topic and analyse the subject
CO3	Scrutinize the subject creating newness in its application with scope for future work.
CO4	Prepare the seminar report and present it in a befitting manner.

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Course name: Comprehensive Viva Voce

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Assess the technical knowledge of the students in core courses of Electrical and Electronics engineering program.
CO2	Assess the knowledge of students in prescribed electives of Electrical and Electronics engineering program.
CO3	A Practice for the students to face real interviews in their career.
CO4	Apply the knowledge from courses learnt in the curriculum to the relevant industry.

Course name: Major Project

After completing this course the student must demonstrate the knowledge and ability to	
CO1	Examine , Discuss and make links across different core areas of Knowledge
CO2	Investigate and identify required areas, ideate, plan, design and develop models/prototype for the benefit of the society
CO3	Categorize the domains / disciplines involved and work on them individually and collaborate as a team
CO4	Make effective presentation, documentation and enhance verbal and writing skills

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Aziz Nagar Gate, C.B. Post, Hyderabad-500 075

Department of Electrical and Electronics Engineering

CO - PO PSO

MAPPINGs

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Aziz Nagar Gate, C.B. Post, Hyderabad-500 075

Department of Electrical and Electronics Engineering

II Year I Semester

Course name: Complex Analysis and Fourier Transforms

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	-	-	-	-	-	-	-	2	1	1
CO2	3	3	3	3	-	-	-	-	-	-	-	2	1	2
CO3	3	3	2	3	-	-	-	-	-	-	-	3	2	2
CO4	3	3	3	3	-	-	-	-	-	-	-	-	2	3
CO5	3	3	3	2	-	-	-	-	-	-	-	-	3	3
Avg	**3**	**3**	**2.8**	**2.8**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.33**	**1.8**	**2.2**

Course name: Professional Communication

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	-	-	-	-	-	-	3	-	-	3	-
CO2	3	3	2	-	-	-	-	-	-	3	-	-	3	-
CO3	3	3	3	-	-	-	-	-	3	3	-	-	3	-
CO4	3	3	3	-	-	-	-	-	-	3	-	-	3	-
CO5	3	3	3	-	-	-	-	-	-	3	-	-	3	-
Avg	**3**	**3**	**2.8**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**-**	**-**	**3**	**-**

Course name: Power Systems-I

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	-	-	2	2	-	-	-	-	-	3	-
CO2	3	3	3	-	-	2	-	-	-	-	-	-	3	-
CO3	3	3	3	3	-	-	-	-	-	-	-	-	3	-
CO4	3	3	3	3	-	2	2	2	-	2	-	3	3	-
CO5	3	3	3	3	3	2	-	-	-	-	-	-	3	-
Avg	**3**	**3**	**3**	**3**	**3**	**2**	**2**	**2**	**-**	**2**	**-**	**3**	**3**	**-**

Course name: Network Analysis

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	-	-	-	-	-	-	-	2	3	-
CO2	3	3	3	3	-	-	-	-	-	-	-	2	3	-
CO3	3	3	2	3	-	-	-	-	-	-	-	3	3	-
CO4	3	3	3	3	-	-	-	-	-	-	-	-	3	-
CO5	3	3	3	2	-	-	-	-	-	-	-	-	3	-
Avg	**3**	**3**	**2.8**	**2.8**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.33**	**3**	**-**

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Department of Electrical and Electronics Engineering

Course name: Electro Magnetic Fields

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	-	-	-	-	-	-	-	2	3	-
CO2	3	3	3	3	-	-	-	-	-	-	-	2	3	-
CO3	3	3	3	3	-	2	-	-	-	-	-	2	3	-
CO4	3	3	3	3	-	-	-	-	-	-	-	2	3	-
CO5	3	3	3	3	-	-	-	-	-	-	-	2	3	-
Avg	**3**	**3**	**3**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	-

Course name: Electrical Machines-I

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	-	2	2	-	-	-	-	2	3	-
CO2	3	3	3	3	-	2	2	-	-	-	-	2	3	-
CO3	3	3	3	3	-	2	2	-	-	-	-	2	3	-
CO4	3	3	3	3	-	2	2	-	-	-	-	2	3	-
CO5	3	3	3	3	-	2	2	-	-	-	-	2	3	-
Avg	**3**	**3**	**3**	**3**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**2**	**3**	-

Course name: Basic Simulation Tools Lab

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	3	3	-	-	-	3	-	-	-	3	3
CO2	3	3	2	3	3	-	-	-	3	-	-	3	3	3
CO3	3	3	3	2	3	-	-	-	3	-	-	2	3	3
CO4	3	3	3	2	3	-	-	-	3	-	-	3	3	3
CO5	3	3	3	3	3	-	-	-	3	-	-	3	3	3
Avg	**3**	**3**	**2.8**	**2.6**	**3**	**-**	**-**	**-**	**3**	**-**	**-**	**2.75**	**3**	**3**

Course name: Electrical Circuits Lab

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	-	-	-	-	3	-	-	2	3	-
CO2	3	3	3	3	-	-	-	-	3	-	-	2	3	-
CO3	3	3	3	3	-	-	-	-	3	-	-	3	3	-
CO4	3	3	3	2	-	-	-	-	3	-	-	3	3	-
CO5	3	3	3	3	-	-	-	-	3	-	-	3	3	-
Avg	**3**	**3**	**2.8**	**2.6**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**2.6**	**3**	**-**

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Department of Electrical and Electronics Engineering

II Year II Semester

Course name: Numerical Methods and Partial Differential Equations

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

Course name: Fluid Mechanics and Hydraulic Machines

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

Course name: Electronic Devices & Circuits

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	1	3	-	-	2	-	-	-	3	-
CO2	3	3	2	3	1	3	-	-	2	-	-	-	3	-
CO3	2	2	2	2	1	3	-	-	2	-	-	-	3	-
CO4	2	2	2	2	1	2	-	-	2	-	-	-	3	-
CO5	2	2	2	2	1	2	-	-	2	-	-	-	3	-
Avg	**2.4**	**2.4**	**2.2**	**2.4**	**1**	**2.6**	**-**	**-**	**2**	**-**	**-**	**-**	**3**	-

Course name: Electrical Machines-II

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	-	2	-	-	-	-	-	3	3	-
CO2	3	2	3	2	-	2	-	-	-	-	-	3	3	-
CO3	3	3	2	2	-	2	-	-	-	-	-	3	3	-
CO4	3	3	3	3	-	2	-	-	-	-	-	3	3	-
CO5	3	2	2	-	-	2	-	-	-	-	-	3	3	-
Avg	**3**	**2.6**	**2.4**	**2.25**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**-**

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Department of Electrical and Electronics Engineering

Course name: Power Systems–II

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	-	-	-	-	-	-	-	2	3	-
CO2	3	3	3	2	-	-	-	-	-	-	-	2	3	-
CO3	3	3	3	2	-	2	2	-	-	-	-	2	3	-
CO4	3	3	3	2	-	2	-	-	-	-	-	2	3	-
CO5	3	3	3	2	-	2	2	-	-	-	-	2	3	-
Avg	**3**	**3**	**3**	**2**	**-**	**2**	**2**	**-**	**-**	**-**	**-**	**2**	**3**	**-**

Course name: Control Systems

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	-	-	-	-	-	-	-	-	3	-
CO2	3	3	2	2	-	-	-	-	-	-	-	-	3	-
CO3	3	3	3	2	-	-	-	-	-	-	-	-	3	-
CO4	3	3	3	2	-	-	-	-	-	-	-	-	3	-
CO5	3	3	3	2	3	-	-	-	-	-	-	3	3	-
Avg	**3**	**2.8**	**2.6**	**2**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**-**

Course name: Electrical Machines– I Lab

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	-	2	-	-	3	2	-	2	3	-
CO2	3	3	2	2	-	2	-	-	3	2	-	2	3	-
CO3	3	3	2	2	-	2	-	-	3	2	-	2	3	-
CO4	3	2	2	2	-	-	-	-	3	-	-	-	3	-
CO5	3	2	2	2	-	-	-	-	3	-	-	-	3	-
Avg	**3**	**2.6**	**2**	**2**	**-**	**2**	**-**	**-**	**3**	**2**	**-**	**2**	**3**	**-**

Course name: Electronic Devices And Circuits Lab

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	-	3	-	-	3	-	-	3	3	-
CO2	3	3	3	3	-	3	-	-	3	-	-	3	3	-
CO3	3	3	3	3	-	3	-	-	3	-	-	3	3	-
CO4	3	3	3	3	-	3	-	-	3	-	-	3	3	-
CO5	3	3	3	3	-	3	-	-	3	-	-	3	3	-
Avg	**3**	**3**	**3**	**3**	**-**	**3**	**-**	**-**	**3**	**-**	**-**	**3**	**3**	**-**

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Department of Electrical and Electronics Engineering

III Year I Semester

Course name: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

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

Course name: Switching Theory & Logic Design

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	-	2	-	-	2	-	-	2	3	-
CO2	3	3	3	3	-	2	-	-	2	-	-	2	3	-
CO3	3	3	3	3	-	2	-	-	2	-	-	2	3	-
CO4	3	3	3	3	-	2	-	-	2	-	-	2	3	-
CO5	3	3	3	3	-	2	-	-	2	-	-	2	3	-
Avg	3	3	3	3	-	2	-	-	2	-	-	2	3	-

Course name: Electrical Machines-III

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	-	-	-	-	-	-	-	3	3	-
CO2	3	3	3	2	-	-	-	-	-	-	-	3	3	-
CO3	3	3	2	2	-	2	-	-	-	-	-	3	3	--
CO4	3	3	2	2	-	-	-	-	-	-	-	3	3	-
CO5	3	3	3	3	-	2	-	-	-	-	-	3	3	--
Avg	**3**	**3**	**2.6**	**2..2**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**-**

Course name: POWER ELECTRONICS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	-	-	-	-	-	-	-	2	3	-
CO2	3	3	2	2	-	-	-	-	-	-	-	2	3	-
CO3	3	3	3	2	-	-	-	-	-	-	-	3	3	-
CO4	3	3	3	2	-	-	-	-	-	-	-	3	3	-
CO5	3	3	3	2	-	-	-	-	-	-	-	3	3	-
Avg	**2.8**	**2.8**	**2.6**	**2**	**-**	-	-	-	-	-	**-**	**2.6**	**3**	**-**

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Department of Electrical and Electronics Engineering

Course name: Electrical Energy Conservation and Auditing

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

Course name: ELECTRICAL ESTIMATION AND COSTING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	1	-	2	1	-	-	-	-	2	3	-
CO2	3	2	3	1	-	2	2	-	-	-	-	2	3	-
CO3	3	2	2	2	-	2	1	-	-	-	-	2	3	-
CO4	3	2	3	2	-	2	2	-	-	-	-	2	3	-
CO5	3	2	2	2	-	1	3	-	-	-	-	2	3	-
Avg	**3**	**2**	**2.4**	**1.6**	**-**	**1.8**	**1.8**	**-**	**-**	**-**	**-**	**2**	**3**	**-**

Course name: Non-Conventional Energy Sources

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	-	3	3	-	-	-	2	2	-	-
CO2	3	3	2	2	-	3	3	-	-	-	2	2	-	-
CO3	3	3	2	2	-	3	3	-	-	-	2	2	-	-
CO4	3	3	2	2	-	3	3	-	-	-	2	2	-	-
CO5	3	3	2	2	-	3	3	-	-	-	2	2	-	-
Avg	3	3	2	2	-	3	3	-	-	-	2	2	-	-

Course name: Fundamentals of Electrical Power Generation and Protection

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	-	-	-	-	-	-	-	2	-	-
CO2	3	3	2	2	-	-	-	-	-	-	-	2	-	-
CO3	3	3	2	2	-	-	-	-	-	-	-	2	-	-
CO4	3	3	2	2	-	-	-	-	-	-	-	2	-	-
CO5	3	3	2	2	-	-	-	-	-	-	-	2	-	-
Avg	3	3	2	2	-	-	-	-	-	-	-	2	-	-

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Department of Electrical and Electronics Engineering

Course name: Electrical Machines II Lab

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	3	-	2	-	-	3	-	-	2	3	-
CO2	3	2	2	2	-	2	-	-	3	-	-	2	3	-
CO3	3	3	3	2	-	2	-	-	3	-	-	2	3	-
CO4	3	3	3	2	-	2	-	-	3	-	-	2	3	-
CO5	3	3	3	2	-	2	-	-	3	-	-	2	3	-
Avg	**3**	**2.8**	**2.6**	**2.2**	**-**	**2**	**-**	**-**	**3**	**-**	**-**	**2**	**3**	**-**

Course name: Advanced Communication Skills Lab

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2	-	1	1	1	1	2	2	-	-
CO2	3	1	2	2	2	-	1	1	1	1	2	2	-	-
CO3	2	3	2	2	2	-	1	1	1	1	2	2	-	-
CO4	2	2	2	2	1	-	1	1	1	1	2	2	-	-
CO5	2	1	2	2	1	-	1	1	1	1	2	2	-	-
Avg	**2.6**	**2**	**2**	**1.5**	**1.75**	**-**	**1**	**1**	**1**	**1**	**2**	**2**	**-**	**-**

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Department of Electrical and Electronics Engineering

III Year II Semester

Course name: Electrical Measurements and Instrumentation

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	-	-	-	-	-	-	-	2	2	2
CO2	3	3	3	2	-	-	-	-	-	-	-	2	2	2
CO3	3	3	3	2	-	2	2	2	-	-	-	2	2	2
CO4	3	3	3	2	-	-	-	-	-	-	-	2	2	2
CO5	3	3	3	2	-	-	1	-	-	-	-	2	2	2
Avg	**3**	**3**	**3**	**2**	**-**	**2**	**1.5**	**2**	**-**	**-**	**-**	**2**	**2**	**2**

Course name: COMPUTER METHODS IN POWER SYSTEMS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	3	-	-	-	-	-	-	3	2	-
CO2	3	3	3	3	3	-	-	-	-	-	-	3	2	-
CO3	3	3	3	3	3	-	-	-	-	-	-	3	3	-
CO4	3	3	3	3	3	-	-	-	-	-	-	3	3	-
CO5	3	3	3	3	3	-	-	-	-	-	-	3	3	-
Avg	3	3	3	3	3	-	-	-	-	-	-	3	2.6	-

Course name: Power Semiconductor Drives

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	-	-	-	-	-	-	-	3	3	-
CO2	3	3	3	2	-	-	-	-	-	-	-	3	3	-
CO3	3	3	3	2	-	-	-	-	-	-	-	3	3	-
CO4	3	3	3	2	2	2	-	-	-	-	-	3	3	-
CO5	2	3	3	2	2	-	-	-	-	-	-	3	3	-
Avg	**3**	**3**	**2.8**	**2.8**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**3**	**3**	**-**

Course name: Switchgear & Protection

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	-	-	-	-	-	-	-	-	2	3	-
CO2	3	3	3	2	-	-	-	-	-	-	-	2	3	-
CO3	3	3	3	3	-	-	-	-	-	-	-	3	3	-
CO4	3	3	3	3	-	-	-	-	-	-	-	3	3	-
CO5	3	3	3	3	-	-	-	-	-	-	-	3	3	-
Avg	**3**	**2.8**	**2.8**	**2.75**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2.6**	**3**	**-**

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Department of Electrical and Electronics Engineering

Course name: Integrated Circuit and Applications

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	3		-	3	3	-	-	2	-	2	2	-
CO2	3	3	3	3	-	3	3	-	-	2	-	2	2	-
CO3	3	3	3	3	-	3	3	-	-	2	-	2	2	-
CO4	3	3	3	2	-	3	-	-	-	2	-	2	2	-
CO5	3	3	3	2	-	3	-	-	-	2	-	2	2	-
Avg	**3**	**2.8**	**3**	**2.5**	**-**	**3**	**3**	**-**	**-**	**2**	**-**	**2**	**2**	**-**

Course name: Control Systems & Simulation Lab

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	3	2	-	-	-	3	-	-	2	3	3
CO2	3	2	2	2	2	-	-	-	3	-	-	2	3	3
CO3	3	3	2	-	-	-	-	-	3	-	-	2	3	3
CO4	3	3	2	3	3	-	-	-	3	-	-	2	3	3
CO5	3	3	2	3	3	-	-	-	3	-	-	3	3	3
Avg	3	2.6	2	2.75	2.5	-	-	-	3	-	-	2.2	**3**	**3**

Course name: Power Electronics and Simulation Lab

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	-	-	-	-	3	-	-	3	3	3
CO2	3	3	3	2	-	-	-	-	3	-	-	3	3	3
CO3	3	3	3	2	-	-	-	-	3	-	-	3	3	3
CO4	3	3	3	2	-	-	-	-	3	-	-	3	3	3
CO5	3	3	3	2	-	-	-	-	3	-	-	3	3	3
Avg	**3**	**2.8**	**2.8**	**2**	**-**	**-**	**-**	**-**	**3**	**-**	**-**	**3**	**3**	**3**

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Department of Electrical and Electronics Engineering

IV EEE I SEMESTER

Course name: MICROPROCESSORS AND INTERFACING DEVICES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	2	1	-	-	1	1	-	2	2	2
CO2	3	3	3	3	2	1	-	-	1	1	-	2	2	2
CO3	3	3	3	3	2	1	-	-	2	1	-	2	2	2
CO4	3	3	3	3	2	1	-	-	2	1	-	2	2	2
CO5	3	3	3	3	2	1	-	-	2	1	-	2	2	2
Avg	**3**	**3**	**3**	**3**	**2**	**1**	**-**	**-**	**1.5**	**1**	**-**	**2**	**2**	**2**

Course name: POWER SYSTEM OPERATION & CONTROL

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	-	-	-	-	-	-	-	-	2	3	-
CO2	3	3	3	-	-	-	-	-	-	-	-	2	3	-
CO3	3	3	3	-	-	-	-	-	-	-	-	2	3	-
CO4	3	3	3	2	-	-	-	-	-	-	-	2	3	-
CO5	3	3	3	3	-	-	-	-	-	-	-	2	3	-
Avg	**3**	**3**	**2.8**	**2.5**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**

Course name: COMPUTER METHODS IN POWER SYSTEMS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	2	2	-	-	-	-	-	-	2	2	-
CO2	3	3	3	3	2	-	-	-	-	-	-	2	2	-
CO3	3	3	3	3	2	-	-	-	-	-	-	2	3	-
CO4	3	3	3	3	2	-	-	-	-	-	-	2	3	-
CO5	3	3	3	3	2	-	-	-	-	-	-	2	3	-
Avg	3	3	2.8	2.8	2	-	-	-	-	-	-	2	2.6	-

Course name: ELECTRICAL DISTRIBUTION SYSTEMS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	-	-	-	-	-	-	-	2	3	-
CO2	3	2	2	2	-	-	-	-	-	-	-	2	3	-
CO3	3	3	2	2	-	-	-	-	-	-	-	2	3	-
CO4	3	3	2	2	-	-	-	-	-	-	-	2	3	-
CO5	3	3	2	2	-	-	-	-	-	-	-	2	3	-
Avg	**2.8**	**2.6**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**

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Course name: ELECTRICAL ESTIMATION AND COSTING

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	1	-	2	1	-	-	-	-	2	3	-
CO2	3	2	3	1	-	2	2	-	-	-	-	2	3	-
CO3	3	2	2	2	-	2	1	-	-	-	-	2	3	-
CO4	3	2	3	2	-	2	2	-	-	-	-	2	3	-
CO5	3	2	2	2	-	1	3	-	-	-	-	2	3	-
Avg	3	2	2.4	1.6	-	1.8	1.8	-	-	-	-	2	**3**	-

Course name: ELECTRICAL MEASUREMENTS LABORATORY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	-	-	-	-	-	3	-	-	3	3	-
CO2	3	3	2	-	-	-	-	-	3	-	-	1	3	-
CO3	3	3	3	2	-	-	-	-	3	-	-	2	3	-
CO4	3	3	3	2	-	-	-	-	3	-	-	2	3	-
CO5	3	3	3	2	-	-	-	-	3	-	-	2	3	-
Avg	**3**	**3**	**2.6**	**2**	-	-	-	-	**3**	-	-	**2**	**3**	-

Course name: MICROPROCESSORS AND MICROCONTROLLERS LABORATORY

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

Course name: INDUSTRY ORIENTED MINI PROJECT

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	-	-	-	-	-	-	-	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	-	-	-	3	3	3	3	3	3	-	-	-
CO4	3	-	-	-	3	-	-	-	-	3	-	3	-	-
Avg	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

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Department of Electrical and Electronics Engineering

IV EEE II SEMESTER

Course name: UTILIZATION OF ELECTRICAL ENERGY

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2							2	3	-
CO2	3	2	2	2	2								3	-
CO3	3	3	2	2	2							2	3	-
CO4	3	2	2	3	3							3	3	-
CO5	3	3	2	3	3								3	-
Avg	**3**	**2.4**	**2**	**2.25**	**2.25**							**2.33**	**3**	**-**

Course name: FUNDAMENTALS OF HVDC AND FACTS DEVICES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	-	-	-	-	-	-	-	-	-	2	3	-
CO2	3	3	3	3	-	-	-	-	-	-	-	2	3	-
CO3	3	3	2	-	-	-	-	-	-	-	-	2	3	-
CO4	3	3	-	-	-	-	-	-	-	-	-	2	3	-
CO5	3	3	-	-	-	-	-	-	-	-	-	2	3	-
Avg	**3**	**3**	**2.5**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**3**	**-**

Course name: EHVAC Transmission

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	1	2	-	-	-	-	-	-	-	2	2	-
CO2	3	2	1	2	-	-	-	-	-	-	-	2	-	-
CO3	3	2	1	3	-	-	-	-	-	-	-	2	2	-
CO4	3	2	1	2	-	-	-	-	-	-	-	2	2	-
CO5	3	2	1	2	-	-	-	-	-	-	-	2	2	2
Avg	3	2.2	1	2.25	-	-	-	-	-	-	-	2	2	2

Course name: TECHNICAL SEMINAR

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

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Department of Electrical and Electronics Engineering

Course name: Comprehensive Viva Voce

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	2	3	3	-	-	-	-	2	3	3
CO2	3	2	2	2	2	3	3	-	-	-	3	2	3	3
CO3	3	2	2	2	2	-	-	-	-	3	-	2	3	3
CO4	3	2	2	2	2	3	3	-	-	3	3	2	3	3
Avg	**3**	**2**	**2**	**2**	**2**	**3**	**3**	**-**	**-**	**3**	**3**	**2**	**3**	**3**

Course name: MAJOR PROJECT

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	3	-	-	-	-	-	-	-	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
CO3	3	3	-	-	-	3	3	3	3	3	3	-	3	3
CO4	3	-	-	-	3	-	-	-	-	3	-	3	3	-
Avg	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**