

Course Outcome for B.E. Electrical Engineering

Class	Semester	Program	Name of the Subject	CO	Course Outcome
FE	I	B.E. Electrical	Physics	816101.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
				816101.2	Various terms related to properties of materials such as, permeability, polarization, etc.
				816101.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
				816101.4	properties of materials
				816101.5	Simple quantum mechanics calculations
				816101.6	Nanotechnology and their industrial applications.
FE	I	B.E. Electrical	Mathematics - I	816102.1	Apply differential and integral calculus. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
				816102.2	The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
				816102.3	The tool of Fourier series for learning advanced Engineering Mathematics.
				816102.4	To deal with functions of several variables that are essential in most branches of Engineering. The essential tool of matrices and linear algebra in a comprehensive manner.
FE	I	B.E. Electrical	Basic Electrical & Electronics Engineering	816103.1	Students will be able to demonstrate knowledge of circuit analysis using various basic laws and theorems of electrical circuits
				816103.2	Students will be able to demonstrate and understand definition and relationship of various AC circuits.
				816103.3	Understand working principle of PN junction diode, Zener diode and their applications.
				816103.4	Describe different configuration of Bipolar Junction Transistor.
				816103.5	Describe different configurations of FET

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				816103.6	Understand operating principle Power Electronics Devices
				816103.7	Describe use of the Basic gate and Universal gate
FE	I	B.E. Electrical	Programming for Problem Solving	816104.1	To formulate simple algorithms for arithmetic and logical problems
				816104.2	Understand the fundamentals of C programming.
				816104.3	To test and execute the programs and correct syntax and logical errors
				816104.4	Choose the loops and decision making statements to solve the problem.
				816104.5	To decompose a problem into functions and synthesize a complete program using divide and conquer approach
				816104.6	To use arrays, pointers and structures to formulate algorithms and programs
FE	I	B.E. Electrical	Physics Lab	816105.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
				816105.2	Various terms related to properties of materials such as, permeability, polarization, etc.
				816105.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
				816105.4	properties of materials
				816105.5	Simple quantum mechanics calculations
				816105.6	Nanotechnology and their industrial applications.
FE	I	B.E. Electrical	Basic Electrical and Electronics Engineering Lab.	816106.1	Identify electrical and electronics components/equipments.
				816106.2	Simplify D.C. network using Superposition Theorem.
				816106.3	Simplify D.C. network using Thevenin's Theorem.
				816106.4	Learn diode V-I Characteristic
				816106.5	Understand BJJ as a switch

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				816106.6	Understand LED, JFET, SCR V-I characteristics
FE	I	B.E. Electrical	Programming for Problem Solving Lab	816107.1	Understand the fundamentals of C programming.
				816107.2	Choose the loops and decision making statements to solve the problem.
				816107.3	Use functions to solve the given problem.
				816107.4	Implement different Operations on arrays.
				816107.5	Understand strings and structures.
				816107.6	Understand the usage of pointers.
FE	II	B.E. Electrical	Chemistry	816201.1	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
				816201.2	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
				816201.3	Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
				816201.4	Rationalise bulk properties & processes using thermodynamic considerations
				816201.5	List major chemical reactions that are used in the synthesis of molecules.
FE	II	B.E. Electrical	Engineering Graphics	816203.1	Introduction to engineering design and its place in society
				816203.2	Exposure to the visual aspects of engineering design
				816203.3	Exposure to engineering graphics standards
				816203.4	Exposure to solid modeling.
FE	II	B.E. Electrical	English	816204.1	To acquire basic proficiency in English including reading and listening
				816204.2	To demonstrate proficiency in the use of written English, including proper spelling, Grammar and punctuation.

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				816204.3	To enhance their ability to use spoken words in interpersonal communication, small group interactions and public speaking Comprehension, writing and speaking skills.
				816204.4	Become accomplished technical communicators.
FE	II	B.E. Electrical	Mathematics-II	816202.1	Use mathematical tools needed in evaluating multiple integrals and their usage.
				816202.2	Apply effective mathematical tools for the solutions of differential equations that model physical processes.
				816202.3	Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
FE	II	B.E. Electrical	Chemistry Lab	816206.1	Upon successful completion of lab Course, student will be able to: The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering. The students will learn to:
				816206.2	Estimate rate constants of reactions from concentration of reactants/products as a function of time
				816206.3	Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
				816206.4	Synthesize a small drug molecule and analyse a salt sample .
FE	II	B.E. Electrical	Engineering Graphics Lab	816207.1	Introduction to engineering design and its place in society
				816207.2	Exposure to the visual aspects of engineering design
				816207.3	Exposure to engineering graphics standards
				816207.4	Exposure to solid modeling.
FE	II	B.E. Electrical	English Lab	816208.1	Students will be sensitized towards recognition of English sound pattern.
				816208.2	The fluency in speech will be enhanced.

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FE	II	B.E. Electrical	Workshop Practices	816205.1	Students will be able to fabricate components with their own hands.
				816205.2	Get practical knowledge of the dimensional accuracies and dimensional tolerances possible
				816205.3	with different manufacturing processes.
				816205.4	Assemble different components, they will be able to produce small devices of their interest.
SE	III	B.E. Electrical	Engineering Mathematics- III	816301.1	Solve linear differential equations using Laplace Transform
				816301.2	Evolution of Fourier and Z Transforms
				816301.3	Estimate coefficient of variation between data's
				816301.4	Estimate chance of occurrences of events by various distributions
				816301.5	Testing the hypothesis for large and small samples
SE	III	B.E. Electrical	Engineering Mechanics	816302.1	Understand the use of basic concepts of Resolution and composition of forces
				816302.2	Analyze beams, truss or any engineering component by applying conditions of equilibrium
				816302.3	List advantages and disadvantages of various geometric sections used in engineering design
				816302.4	Understand the different stresses and strains occurring in components of structure
				816302.5	Calculate the deformations such as axial, normal deflections under different loading conditions.
SE	III	B.E. Electrical	Electrical Circuit Analysis	816303.1	Study of magnetic coupling and resonance.

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				816303.2	Apply network theorems for the analysis of electrical circuits.
				816303.3	Obtain the transient and steady-state response of electrical circuits
				816303.4	Analyze circuits using Laplace transform.
				816303.5	Analyze two port circuit behaviors
SE	III	B.E. Electrical	Electrical Machine I	816304.1	Apply the basic knowledge of science, mathematics and engineering for understanding the concept of magnetic circuit, electromechanical energy conversion and construction of electrical machines with complex engineering problems.
				816304.2	Understand and identify the characteristic, analysis of problems and investigation of armature reaction and commutation of DC machine .
				816304.3	Identify characteristic and investigating performance by conducting test on DC Motors for its application in electrical drives to meet the specified needs at different utilization sectors
				816304.4	Evaluate constant of transformer, efficiency and regulation including design of experiments, analysis and interpretation of data and also able to solve complex engineering problems
				816304.5	Understand service utility of three phase transformer and its all-day efficiency , parallel operation and recognizing the course as long life learning in professional duties.
SE	III	B.E. Electrical	Industrial Organization and Management	816305.1	Interpret various concepts of Management.
				816305.2	Understand terms related to Economics of Industrial Management
				816305.3	Illustrate different plant layouts and terms related to Operational Management
				816305.4	Describe concepts of Human Resource Management and laws related to industries.
				816305.5	Understand basic concepts of Marketing and Financial Management.

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SE	III	B.E. Electrical	Electrical Circuit analysis LAB	816306.1	Apply network theorems for the analysis of electrical circuits.
				816306.2	Obtain the transient and steady-state response of electrical circuits.
				816306.3	Analyze two port circuit behaviors
				816306.4	Analyze filter circuits.
				816306.5	Analyze the frequency response of parallel circuit
SE	III	B.E. Electrical	Electrical Machine-I LAB	816307.1	Apply the basic knowledge of engineering for conducting practical to understand magnetic behaviour and emf generation in DC generator.
				816307.2	Design of experiments for DC Generators to understand and identify the characteristic, analysis of armature reaction and voltage drop.
				816307.3	Conduct speed control of DC motor and identify its application in technical subject like electrical drives as life long learning .
				816307.4	Design of experiments for testing of DC motor to understand performance characteristics and investigation of practical and theoretical data for its specific and general applications with greater sense of safety precautions.
				816307.5	Evaluate constant of transformer, efficiency and regulation analysis and interpretation of practical data and also able to solve complex engineering problems as professional responsibility.
SE	III	B.E. Electrical	Electrical Workshop LAB	816308.1	Understand various electrical symbols in electrical drawing, standard size, current rating and type of wire.
				816308.2	Select correct size of wire, cables and measuring instruments for different applications.
				816308.3	Prepare specification , estimation, execution testing and commissioning of electrical installation.
				816308.4	Select and identify the application of substation equipments, protecting equipment and starters and control equipments

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				816308.5	Familiar with the safety precautions and practices while working in industrial and domestic premises.
SE	IV	B.E. Electrical	Biology	816401.1	Use current techniques and analysis methods in molecular biology and genetics.
				816401.2	Understand the current concepts in Cell Biology, Stem Cell Biology and Development.
				816401.3	Know the structure/function of the basic components of prokaryotic and eukaryotic cells including macromolecules and organelles.
				816401.4	Demonstrate proficiency with at least one instrument commonly used in biological research (microscope, etc).
				816401.5	To have knowledge on biomolecules, their importance and classifications.
SE	IV	B.E. Electrical	Electrical Engineering Materials	816402.1	Classify different electrical engineering materials and testing of various electrical engineering materials.
				816402.2	Understand the electrical and thermal characteristics of conducting, semiconducting, insulating and magnetic materials for the manufacturing of electrical machines and electronic components.
				816402.3	Understand dielectric properties of insulating materials in static and alternating fields.
				816402.4	Understand and plot the B-H curve of different magnetic materials, their suitability in manufacturing of energy efficient electrical machines
				816402.5	Recognize the materials used for solar photovoltaic systems and nanotechnology.
SE	IV	B.E. Electrical	Analog and Digital Electronics	816403.1	Apply basic knowledge of science and engineering to understand electronic devices and circuits such as rectifier, amplifiers etc.

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				816403.2	Analyze the circuit for determination of circuit parameters and response of op-amp IC741 and its applications.
				816403.3	Describe the use of different integrated circuits timers, PLL and voltage regulators.
				816403.4	Illustrate the basic logic gates and various reduction techniques of digital logic circuit in detail and gain the basic concept of combinational circuits.
				816403.5	Able to design sequential circuits using excitation and state table.
SE	IV	B.E. Electrical	Electrical Machine-II	816404.1	Apply the basic knowledge of science, mathematics and engineering for understanding the concept of AC electrical machines, construction , winding arrangements and its complex engineering problems.
				816404.2	Explain the operation, voltage regulation analysis of armature reaction and parallel operation of synchronous alternator including design of experiments, analysis and interpretation of data.
				816404.3	Explain the working operation , analyse of performance characteristic of three phase induction motor and solve complex engineering problems identify its application in electrical drives to meet the specified needs at different utilization sectors as a long life learning
				816404.4	Identify salient feature and characteristic of synchronous motor as reactive power compensator in power system and complex engineering problem
				816404.5	Understand principle of operation, compare and evaluate torque speed characterise and specific need and application of single phase motor .
SE	IV	B.E. Electrical	Entrepreneurship Development	816405.1	Understand concept of entrepreneurship and learn the procedure of setting up an enterprise.
				816405.2	Understand the concepts of human resource management, marketing management,financial management, production and operation management in a new enterprise.

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				816405.3	Function on multidisciplinary teams and understand the impact of engineering solutions in a global, economic, environmental, and societal context.
				816405.4	Understand the role of small scale enterprises in economic development of a country and understand the linkage between small and large scale enterprises.
				816405.5	understand the linkage between small and large scale enterprises. understand the linkage between small and large scale enterprises.understand the linkage between small and large scale enterprises.
SE	IV	B.E. Electrical	Electrical Engineering Materials LAB	816406.1	Do testing of transformer oil as per IS.
				816406.2	Understand break down mechanisms for insulating materials
				816406.3	Apply basic knowledge of science and understand the characteristic of conducting material and their applications
				816406.4	Analyze the practical; data for determination of properties of materials
				816406.5	Understand the testing of power capacitor
SE	IV	B.E. Electrical	Analog and Digital Electronics LAB	816407.1	Apply basic knowledge of science and engineering to understand electronic devices by experimenting rectifier circuits.
				816407.2	Analyze the circuit for determination of circuit parameters and response of op-amp IC741 and its applications.
				816407.3	Describe the use of timers in different modes and determine the practical times and also design the voltage regulators.
				816407.4	Illustrate the basic concept of combinational circuits through the experiments.
				816407.5	Able to design sequential circuits using excitation and state table.
SE	IV	B.E. Electrical	Electrical Machine-II LAB	816408.1	Apply the basic knowledge engineering for understanding practical concept of direct load test on alternators and its advantages and limitations.

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				816408.2	Conduct tests on synchronous alternator to identify the appropriate method for determination of voltage regulation.
				816408.3	Demonstrate the behaviour of synchronous machine in parallel and on infinite bus to draw information to provide valid conclusions.
				816408.4	Direct load and indirect test on three phase induction motor for determination of performance characteristic, analysis and interpretation of practical data for specific and general applications.
				816408.5	Conduct test on single and three phase motors determination of characteristics and life long learning for technical subject like electrical drive, maintenance to discharge professional responsibility with sense of safety precautions.
SE	IV	B.E. Electrical	Mesurement and Instrumentation LAB	816409.1	conduct practical and able to analyze the practical data for various purposes.
				816409.2	measure various electrical quantities and circuit parameters
				816409.3	able to select the measuring instrument with proper range and type for practical uses.
				816409.4	understand methods of measurement of power and energy & calibrate various types of instruments as per IS .
				816409.5	do professional duties in technical field and able to use advance measuring instruments.
TE	V	B.E. Electrical	Power Electronics	816501.1	Understand the behavior and fundamentals of semiconductor devices operated as power switches, protection and reliability of the switches.
				816501.2	Analysis of the triggering and commutation techniques for devices and how to overcome on difficult issues of devices using special devices.

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				816501.3	Able to design of single-phase and three-phase thyristor converters and Describe the role of power electronics as an enabling technology in various applications.
				816501.4	Learn the basic concepts of operation of dc-to-dc converters and dc-to-ac inverters and be able to analyze basic converter topologies for various applications such as energy conservation, renewable energy, transportation etc.
				816501.5	Illustrate the basic concepts of operation of ac voltage controllers and cycloconverters.
TE	V	B.E. Electrical	Power System -I	516502.1	Understand the concepts of power transmission, power plant terminology and importance of transmission line
				516502.2	Estimate the parameters of transmission lines in power systems.
				516502.3	Analyze the performance of short transmission line
				516502.4	Analyze the performance of medium transmission line
				516502.5	Analyze the performance of long transmission line
TE	V	B.E. Electrical	Electromagnetic Field	516503.1	To apply the basic concept of mathematics and laws of electromagnetism to solve the complex engineering problem.
				516503.2	To obtain the electric and magnetic fields for simple configurations under static conditions
				516503.3	To analyze the different conditions of conductors, dielectrics and capacitance
				516503.4	To analyze static magnetic fields
				516503.5	To analyze time varying electric and magnetic fields and apply maxwell's equation in different form
TE	V	B.E. Electrical	Signals and Systems	516541.1	The objective of this course is to introduce the students to the various signals.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				516541.2	Study and understanding of representation of signals and systems.
				516541.3	To learn and understand different Transforms for Digital Signal Processing
				516541.4	Analysis of Discrete Time signals and systems
				516541.5	Understand and illustrate working and Construction of digital instruments like digital voltmeter, digital frequency meter and power factor meter.
TE	V	B.E. Electrical	Electronics Measurement	516552.1	Analyze the performance characteristics of each instrument, know about various error and remedies to minimize these error
				516552.2	Understand and illustrate working and Construction of digital instruments like digital voltmeter, digital frequency meter and power factor meter.
				516552.3	Understand the operation of various signals generators and their application in electronics measurement.
				516552.4	Understand signal analyzers and its different types for signal analysis.
				516552.5	Understand the construction and working operation of Cathode ray oscilloscope with different types & application in Industries
TE	V	B.E. Electrical	Power Electronics Lab	816506.1	Understand the behavior of semiconductor devices operated as power switches and ability to design, set up, and test power electronic circuits in the laboratory
				816506.2	Describe the role of power electronics as an enabling technology in various applications such as flexible production systems, energy conservation, renewable energy, transportation etc.
				816506.3	Able to design of single-phase and three-phase thyristor converters.
				816506.4	Learn the basic concepts of operation of dc-to-dc converters and dc-to-ac inverters and be able to analyze basic converter topologies.
				816506.5	Illustrate the basic concepts of operation of ac voltage controllers and cycloconverters.

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TE	V	B.E. Electrical	Power System-I LAB	816507.1	Evaluate parameters of medium and long transmission line in power systems
				816507.2	Estimation of surge impedance loading of transmission Line
				816507.3	Analysis of reactive power compensation of transmission Line
				816507.4	Analyze performance of short and medium transmission Lines
				816507.5	Analyze performance of long transmission Line
TE	V	B.E. Electrical	Electronic Design Lab	816508.1	Develop the skill to build, and troubleshoot analog circuits
				816508.2	Construct and test complex electronic circuits in the laboratory
				816508.3	Design and build analog circuits using analog and digital ICs.
				816508.4	Analyze the applications of analog ICs
				816508.5	Illustrate different applications of digital ICs
TE	V	B.E. Electrical	MP-I	816509.1	Apply knowledge of mathematics, science, and engineering to solve engineering problem by demonstration of prototype project.
				801659.2	Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, ethical, health and safety, manufacturability, and sustainability.
				786809.3	Function on multidisciplinary teams, communicate effectively and Knowledge of contemporary issues with greater sense of management.
				771959.4	Use resources ,techniques, skills, modern engineering tools and software necessary for engineering practice.
				757109.5	Recognition of the need for, and an ability to engage in life-long and self learning.
TE	VI	B.E. Electrical	Control System	616601.1	Analyse open loop and closed-loop control systems for stability and steady-state performance

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				616601.2	Design a closed-loop control system to satisfy dynamic performance specifications using frequency response, root-locus, and state-space techniques, as well as steady state error specifications
				616601.3	Compute stability of linear systems using the Routh array test and use this to generate control design constraints
				616601.4	Compute gain and phase margins from Bode diagrams and Nyquist plots and understand their implications in terms of robust stability
				616601.5	Design Lead-Lag compensators based on frequency data for an open-loop linear system
TE	VI	B.E. Electrical	Microprocessor and Microcontroller	616602.1	Apply basic electronic subject and software algorithm application for understanding Architectures assemble language of microcontroller and microprocessor
				616602.2	Develop assemble language programming and interfacing peripherals for wide application in electrical engineering
				616602.3	Develop assembly language source code for applications that use I/O ports, timer and single/multiple interrupts
				616602.4	Apply the knowledge of microprocessor and microcontroller in measurement of electrical quantities, microprocessor and microcontroller based electrical protection system
				616602.5	Do higher study in the field of automation, operation and control of power system by microprocessor and microcontroller
TE	VI	B.E. Electrical	Power System-II	616603.1	Understand the representation of synchronous machine, transmission line and power transformer to evaluate the performance of power system
				616603.2	Analyze the power system to calculate the effects of symmetrical faults on power system
				616603.3	Analyze the power system in terms of symmetrical components and sequence networks of synchronous machines, transmission line and transformer

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				616603.4	Analyze the power system to calculate the effects of unsymmetrical faults.
				616603.5	Determine the power flow for a given system
TE	VI	B.E. Electrical	Industrial Automation (PROF ELECT 2)	816641.1	Use various sensors for measurement of physical parameters
				816641.2	Analyze various control configurations used in process control
				816641.3	Use controller such as P, PI, PID
				816641.4	Design systems using PLC, SCADA, DDC configuration as control values for application
				816641.5	Modify, design and develop various elements of automation to suit the real time industrial applications and extend to the concepts of advanced manufacturing planning
TE	VI	B.E. Electrical	Power Plant Engineering (OPEN ELECT 2)	816651.1	Understand the characteristics of positive and negative feedback circuits.
				816651.2	Explain the difference between the frequency response of internally compensated and non-compensated op-amps and Analyze and identify linear and nonlinear applications of an Op-Amp.
				816651.3	Draw the frequency response of all active filters.
				816651.4	Understand the operations of basic comparators and converters.
				816651.5	Understand and apply the functionalities of PLL.

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TE	VI	B.E. Electrical	Control System LAB	816606.1	Apply the basic knowledge of science, mathematics and engineering for understanding the concept of open loop and closed-loop control systems and to find transfer function
				816606.2	Understand and identify the synchros characteristics and synchros as an error detector
				816606.3	Understand and identify the characteristic of two phase ac servomotors and identify its application for control system applications
				816606.4	Evaluate time domain response of second order system for step input by using software
				816606.5	Evaluate stability of system by bode diagram of an open loop transfer function by using software
TE	VI	B.E. Electrical	Microprocessor and microcontroller LAB	816607.1	Know the pin configuration and memory organization of a typical microprocessor and microcontroller
				816607.2	Analyze architecture, pin diagram and instructions of microprocessor and microcontroller
				816607.3	Interpret the program for typical microprocessor in assembly language for given problem
				816607.4	Study of memory and peripheral device interfacing for application development
				816607.5	Study of on chip peripherals for automization in applications
TE	VI	B.E. Electrical	Power System-II LAB	816608.1	Evaluate reactance of synchronous machine on no load and loaded condition
				816608.2	Analyze the effects of symmetrical fault on power system
				816608.3	Analyze the effects of unsymmetrical faults on power system
				816608.4	Compute the Y-bus matrix for a given system

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				816608.5	Determine the power flow for a given system
TE	VI	B.E. Electrical	MINOR PROJECT	816609.1	Apply knowledge of mathematics, science, and engineering to solve engineering problem by demonstration of prototype project.
				816609.2	Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, ethical, health and safety, manufacturability, and sustainability.
				816609.3	Function on multidisciplinary teams, communicate effectively and Knowledge of contemporary issues with greater sense of management.
				816609.4	Use resources ,techniques, skills, modern engineering tools and software necessary for engineering practice.
				816609.5	Recognition of the need for, and an ability to engage in life-long and self learning.
BE	VII	B.E. Electrical	Electrical Drives	716701.1	Apply the knowledge of electrical engineering subjects in different application of industries like manufacturing, maintenance, operation and safety.
				716701.2	Understand different speed control methods in D.C and A.C motors using thyristors-based control schemes.
				716701.3	Understand the characteristic of load and selection of drive in industrial sectors.
				716701.4	Conduct practical and analyze data for proper selection of drive in realistic constrain of load requirement
				716701.5	Understand the impact of electrical characteristic of motor in electric traction system.
BE	VII	B.E. Electrical	Electrical Energy Conservation and Auditing	716721.1	Understand the current energy scenario and importance of energy conservation in view of social and environmental cause.

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				716721.2	Apply basic knowledge of engineering to understand need of energy audit, identify methods , analyze technical and economical feasibility. Also able to summarize all possible suggestion for fruitful results.
				716721.3	Identify methods for energy management by IT tools including prediction and modeling to complex engineering problems, analyze the energy data and electric tariff for implementation of demand side management in every sector of consumer.
				716721.4	Conduct an investigation the consumption in motive , illumination, heating and cooling system for conserving electrical energy by professional and ethical way and able to solve complex engineering problems.
				716721.5	Apply appropriate techniques, resources, for analyzing performance assessment of motors. Cooling system, pumps and lighting system. Students also able to recognized the importance of financial analysis .
BE	VII	B.E. Electrical	Power System Dynamics and Control	716731.1	Know the optimal load scheduling, function & operation of load dispatch centre for economic growth of electric utilities.
				716731.2	Know the concept of automatic voltage control, their mathematical modeling, static and dynamic analysis.
				716731.3	Know the concept of frequency control, mathematical modeling, static and dynamic response of single area system.
				716731.4	Describe steady state stability of a power system
				716731.5	Describe transient stability of a power system.
BE	VII	B.E. Electrical	VLSI Design and Technology	716741.1	Understand the modeling and design concepts of digital systems domains for different combinational and sequential circuits. Also understand the concepts of data-flow description in VHDL. Identify the signal assignment statement. Recognize the levels of modeling using VHDL.

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				716741.2	Understand the concepts sequential statements and how differ from concurrent statement. Also identify the basic statement of behavioral description.
				716741.3	Understand the concepts of structural description, including the binding of modules.
				716741.4	Understand the concept of describing and simulating digital systems using transistors. Also identify the basic statements of switch-level package that matches the switch-level functions.
				716741.5	Understand the function of simulator, synthesizer and PLDs. Also the concepts of states and their implementation.
BE	VII	B.E. Electrical	Electrical Drives LAB	716705.1	Apply the knowledge of electrical engineering subjects in different application of industries like manufacturing, maintenance, operation and safety.
				716705.2	Understand different speed control methods in D.C and A.C motors using thyristors based control schemes.
				716705.3	Understand the characteristic of load and selection of derive in industrial sectors.
				716705.4	Conduct practical and analyze data for proper selection of derive in realistic constrain of load requirement.
				716705.5	Discharge professional duties in industries with innovative ideas of operation and control of drives.
BE	VII	B.E. Electrical	MATLAB Application Lab	716706.1	Implement small and medium programs of varying complexity using the most commonly used features of the language
				716706.2	Employ good programming style, standards and practices during program development.
				716706.3	Solve the different numerical techniques and perform Matrix operations
				716706.4	Understand and use of MATLAB/Simulink for solving simple electrical engineering problems

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				716706.5	Use modern engineering tools in MATLAB/Simulink which are useful for analyzing and designing of electrical power system
BE	VII	B.E. Electrical	PROJECT I	716707.1	Undertake problem identification formulation and solution
				716707.2	Demonstrate a sound literature survey of their selected project topic
				716707.3	Analyze and assemble the basic information to find solution of a complex engineering problem by using suitable methodology/procedure
				716707.4	Demonstrate the knowledge skills and attitudes of a professional engineer
				716707.5	Document and report the project work carried out in an appropriate format
BE	VIII	B.E. Electrical	Power System Protection	816801.1	Apply the basic knowledge of science for understanding arc generation and interruption in medium and high voltage circuit.
				816801.2	Discuss construction operation and specifications of different circuit breakers used in power system.
				816801.3	Define basic relay and their role in protection system.
				816801.4	State relay based on modern techniques and their role in protection scheme.
				816801.5	State different protection scheme used in power system.
BE	VIII	B.E. Electrical	Electric and Hybrid Vehical	816831.1	Apply the concepts of High Voltage Engineering through laboratory experimental work and Connect the circuit to perform experiments, measure, analyze the observed data to come to a conclusion
				816831.2	Evaluate the performance of breakdown testing of various dielectrics
				816831.3	Calibrate the breakdown voltage of air using sphere-gap assembly
				816831.4	Visualize and analyze the corona effect
				816831.5	Know the breakdown condition of insulators, bushing, cables, transformer's as per Standard Specifications.
BE	VIII	B.E. Electrical	Digital Signal Processing	816841.1	Apply basic mathematics to classify and understand the signal

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816841.2	Analyse to understand the hidden information in the signal by using different transformations
				816841.3	Ability to determine the frequency, steady state and transient response of LTI system
				816841.4	To undrestand the mathematical modeling of digital filters
				816841.5	Apply basic algorithm of DSP processing in different electrical controls and applications
BE	VIII	B.E. Electrical	Flexible AC Transmission System & Power Quality	816821.1	Understand basic concept of FACTS
				816821.2	Understand basic knowledge of shunt & series compensator
				816821.3	Understand basic knowledge of combined series and shunt compensators.
				816821.4	understand the basic concept of power qaulity
				816821.5	analyze the need of different types of filters for harmonics mitigation
BE	VIII	B.E. Electrical	Power System Protection LAB	816805.1	Analyze the arc formation and arc extinction phenomenon.
				816805.2	Analyze Over current & earth fault protection scheme for alternator.
				816805.3	Explain Protection of 3 phase transformer using differential relay.
				816805.4	Explain differential protection scheme applied to transformer.
				816805.5	Demonstrate microprocessor based protection.
BE	VIII	B.E. Electrical	High Voltage Lab	816806.1	Apply the concepts of High Voltage Engineering through laboratory experimental work and Connect the circuit to perform experiments, measure, analyze the observed data to come to a conclusion
				816806.2	Evaluate the performance of breakdown testing of various dielectrics.
				816806.3	Calibrate the breakdown voltage of air using sphere-gap assembly.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816806.4	Visualize and analyze the corona effect.
				816806.5	Understand the methods of generation and Measurement of high voltages and currents and testing of various electrical equipments
BE	VIII	B.E. Electrical	PROJECT II	816807.1	Undertake problem identification formulation and solution
				816807.2	Demonstrate a sound literature survey of their selected project topic
				816807.3	Analyze and assemble the basic information to find solution of a complex engineering problem by using suitable methodology/procedure
				816807.4	Demonstrate the knowledge skills and attitudes of a professional engineer
				816807.5	Document and report the project work carried out in an appropriate format