



BVRIT HYDERABAD
College of Engineering for Women
 Rajiv Gandhi Nagar, Bachupally, Hyderabad -90
Department of Electrical and Electronics Engineering

Course Outcomes for R18 Regulation I-Semester			
I Year I Sem			
Course Code	Course Name	CO. No.	Course Outcomes
C111	Mathematics-1 (MA101BS)	C111.1	Solve the system of linear equations using various methods
		C111.2	Analyze the nature of quadratic form using eigen values and eigen vectors
		C111.3	Test the convergence or divergence of a given series
		C111.4	Derive infinite series expansions from mean value theorems
		C111.5	Evaluate multiple and improper integrals with some application
		C111.6	Optimize a given function with respect to given constrains
C112	APPLIED PHYSICS (AP102BS)	C112.1	Apply the knowledge of quantum mechanics to realize the dual nature of matter.
		C112.2	Discuss types of semiconducting materials and their characteristics.
		C112.3	Describe the importance of optoelectronic devices in Engineering.
		C112.4	Discuss types of lasers and their applications
		C112.5	Explain optical fibers and their significance in communication.
		C112.6	Make use of principles of magnetism and Dielectrics in modern technology.
C113	PROGRAMMING FOR PROBLEM SOLVING (CS103ES)	C113.1	Explore the basic concepts of computer hardware, software and C language
		C113.2	Design algorithms and flowcharts for solving problems
		C113.3	Apply the knowledge of derived data types in C language to solve the real time problems
		C113.4	Utilize dynamic memory allocation and file handling functions in C
		C113.5	Analyze the usefulness of modular programming and to develop modular reusable code.
		C113.6	Discuss various searching and sorting techniques along with their time complexities
C114	ENGINEERING GRAPHICS (ME104ES)	C114.1	Construct different types of non-circular curves and scales used in various engineering applications.
		C114.2	Analyze the projections of points and lines.
		C114.3	Analyze the projections of planes and solids.
		C114.4	Apply different types of sectional planes to get the interior features of the objects by means of sectional views.
		C114.5	Improve their visualization skills.
		C114.6	Interpret various types of projections and fundamentals of CAD.
C115		C115.1	Draw the characteristics of optoelectronic devices.

	APPLIED PHYSICS LAB (AP105BS)	C115.2	Assess the performance of electrical circuits.
		C115.3	Estimate the Electrical properties of materials.
		C115.4	Demonstrate working of lasers and optical fibers.
C116	PROGRAMMING FOR PROBLEM SOLVING LAB (CS106ES)	C116.1	Build programs using control structures to solve simple mathematical problems
		C116.2	Apply the concepts of user defined, pre-defined and file handling functions
		C116.3	Develop modular, reusable and readable C Programs using the concepts like functions, arrays etc.
		C116.4	Develop searching and sorting algorithms using C programs
C117	ENVIRONMENTAL SCIENCE (MC109ES)	C117.1	Discover knowledge regarding environment and its components.
		C117.2	Understand the classification, importance and conservation of natural resources.
		C117.3	Perceive the knowledge regarding different Bio -Geo classification of India.
		C117.4	Examine impacts of pollution on the environment and their control measures.
		C117.5	Analyze Environmental laws and Environmental Impact Assessments.
		C117.6	Determine sustainable development that aims to meet raising human needs.
II Year I Sem			
Course Code	Course Name	CO. No.	Course Outcomes
C211	ENGINEERING MECHANICS (EE301ES)	C211.1	Solve the resultant of a system of forces.
		C211.2	Distinguish the equilibrium of concurrent and non-concurrent system of forces.
		C211.3	Analyze the effect of friction on plane of motion.
		C211.4	Identify the centroid and center of gravity of the objects.
		C211.5	Analyze the area moment of inertia and mass moment of inertia.
		C211.6	Interpret the principles of kinetics.
C212	ELECTRICAL CIRCUIT ANALYSIS (EE302PC)	C212.1	Deduce the responses of complex electric networks using circuit theorems.
		C212.2	Analyze the transient response of electric circuits using classical and Laplace transform methods.
		C212.3	Analyze single phase and 3-phase AC electric circuits.
		C212.4	Analyze a coupled circuit using the concepts of Magnetic circuits.
		C212.5	Calculate two-port network parameters and their inter-relationships for electrical networks.
		C212.6	Compute parameters of electrical resonance for composite electric circuits
C213	ANALOG ELECTRONICS (EE303PC)	C213.1	Analyze the characteristics of PN junction diode and its Applications
		C213.2	Evaluate the characteristics of MOSFET Amplifiers.

		C213.3	Build different types of multistage amplifiers based on specifications
		C213.4	Design various types of Power Amplifiers.
		C213.5	Categorize different feedback amplifier circuits
		C213.6	Design various analog circuits using IC 741 Op-Amp
C214	ELECTRICAL MACHINES-I (EE304PC)	C214.1	Assess the characteristics for different types of DC machines.
		C214.2	Compute losses and efficiency of DC machines.
		C214.3	Evaluate the types of starters and speed control techniques of DC motors.
		C214.4	Illustrate the equivalent circuit parameters for single phase transformer.
		C214.5	Evaluate the performance of Transformers under different loading conditions.
		C214.6	Distinguish poly phase transformers based on connections.
C215	ELECTROMAGNETIC FIELDS (EE305PC)	C215.1	Illustrate the concepts of electromagnetic field theory using fundamental laws
		C215.2	Examine the influence of electric fields on conductors, insulators and dielectrics.
		C215.3	Compute the Magneto static parameters using Biot Savart's and Ampere's circuital laws for different conductor configuration.
		C215.4	Calculate Force, Torque and inductance in magnetic fields for electrical engineering applications.
		C215.5	Interpret the concepts of Maxwell's equations from electromagnetic fields.
		C215.6	Understand the propagation of EM waves in different medium
C216	ELECTRICAL MACHINES LAB -I (EE306PC)	C216.1	Examine the performance characteristics of DC generators
		C216.2	Compute the losses and efficiency of DC machines.
		C216.3	Outline the performance curves of DC motors.
		C216.4	Estimate the moment of inertia of a DC motor.
C217	ANALOG ELECTRONICS LAB (EE307PC)	C217.1	Analyze the characteristics of different practical diodes and also different Transistor configurations
		C217.2	Design analog circuits for practical applications using Op Amp IC-741
		C217.3	Analyze the gain and bandwidth of different practical amplifier circuits.
		C217.4	Measure the frequency of different oscillator circuits.
C218	ELECTRICAL CIRCUITS LAB (EE308PC)	C218.1	Examine the response of electric networks using circuit theorems.
		C218.2	Assess the inductance and power of a given electrical network.
		C218.3	Calculate two port network parameters for a given electrical network.
		C218.4	Analyze harmonics in a given waveform.
C219	GENDER SENSITIZATION LAB (MC309)	C219.1	Develop a better understanding of important issues related to gender in contemporary india.
		C219.2	Analyze basic dimensions of the biological, sociological, psychological and legal aspects of gender

		C219.3	Develop a sense of appreciation of women in all walks of life and will be equipped to work and live together as equals.
		C219.4	Examine the new laws for women protection & relief, and empower students to understand and respond to gender violence.
III Year I Sem			
C311	POWER ELECTRONICS (EE502PE)	C311.1	Analyze the characteristics and working of power semiconductor devices.
		C311.2	Assess the power electronic converters for AC/DC conversion
		C311.3	Evaluate control techniques and protection schemes for power electronic devices
		C311.4	Assess the power electronic converters for AC/AC conversion
		C311.5	Determine performance parameters of dc-dc converters by applying control strategies.
		C311.6	Illustrate various control techniques for thyristor and transistor based inverters
C312	POWER SYSTEMS-II (EE502PE)	C312.1	Examine performance of transmission lines using equivalent circuit models.
		C312.2	Elucidate various voltage control and compensation techniques for power system network
		C312.3	Determine per unit quantities for power system networks.
		C312.4	Categorize over voltage protection schemes.
		C312.5	Illustrate insulation coordination for power system protection.
		C312.6	Assess the effects of symmetrical and unsymmetrical faults on the power system networks.
C313	MEASUREMENTS & INSTRUMENTATION (EE503PE)	C313.1	Categorize measuring instruments based on their construction and their operating principle
		C313.2	Analyze the various types of potentiometers
		C313.3	Assess the errors in instrument transformer with relevant solution
		C313.4	Measure Resistance, Capacitance, Inductance, Power and energy
		C313.5	Analyze the different types of transducers
		C313.6	Measure various quantities using Digital meters
C314	COMPUTER ARCHITECTURE (EE511PE)	C314.1	Understand the basics of organizational and architectural issues of a digital computer and classify and compute the performance of machines, Machine Instructions.
		C314.2	Learn about various data transfer techniques in digital computer and the I/O interfaces
		C314.3	Estimate the performance of various classes of Microprocessors, build large memories using small memories for better performance and relate to arithmetic for ALU implementation with 8086
		C314.4	Understand the basics of hardwired and micro-programmed control of the CPU, pipelined architectures, Hazards and Superscalar Operations.
		C314.5	Identify the various architectures deals with processors
		C314.6	Organize modern Computer system with real time examples

C315	HIGH VOLTAGE ENGINEERING (EE512PE)	C315.1	Examine breakdown mechanisms in different states of matter.
		C315.2	Analyze the circuits used to generate high voltages
		C315.3	Analyze the circuits used to measure high voltages and currents.
		C315.4	Understand the protection mechanism using various devices
		C315.5	Understand IS,IEC standards required for testing of high voltage apparatus
		C315.6	Illustrate the procedures for testing of apparatus at high voltages
C316	ELECTRICAL MACHINE DESIGN (EE513PE)	C316.1	Analyze the Major considerations of Electrical Machine Design
		C316.2	Apply considerations of Electrical Machine Design in Designing Transformers
		C316.3	Apply considerations of Electrical Machine Design in Designing Induction Motor
		C316.4	Apply considerations of Electrical Machine Design in Designing Synchronous Machines
		C316.5	Optimize traditional Electrical Machine design using CAD
		C316.6	Design Modern Electrical Machines using CAD
C317	BUSINESS ECONOMICS AND FINANCIAL ANALYSIS (SM504MS)	C317.1	Understand the Economic Concepts in Business Decision making process
		C317.2	Familiarize with the cost concepts, market structures.
		C317.3	Make use of breakeven analysis, CVP Analysis, pricing strategies.
		C317.4	Examine Financial accounting and analyze various financial statements.
		C317.5	Examine Ratios and to interpret various financial statements by applying different types of ratios.
		C317.6	Examine the usefulness of funds flow statement and cash flow statement for better managerial decisions.
C318	POWER SYSTEM SIMULATION LAB (EE505PC)	C318.1	Compute transmission line parameters of three phase transmission line
		C318.2	Analyze the importance of time constants in various circuits
		C318.3	Predict tariff based on load curve
		C318.4	Compute string efficiency of an insulator
C319	POWER ELECTRONICS LAB (EE506PC)	C319.1	Examine the characteristics of SCR, MOSFET and IGBT
		C319.2	Analyze different techniques to Turn-on and Turn-off an SCR
		C319.3	Analyze power electronic converters by varying gate pulses.
		C319.4	Design Power Electronic converters using simulation tools
C31A	MEASUREMENTS AND INSTRUMENTATION LAB (EE507PC)	C31A.1	Determine unknown electrical parameters using bridges
		C31A.2	Measure active and reactive power using various methods
		C31A.3	Calibrate various measuring instruments.
		C31A.4	Examine electrical parameters and characteristics of electrical instruments.
C31B	ADVANCED COMMUNICATION SKILLS LAB (EN508HS)	C31B.1	Build sound vocabulary and use functional English effectively
		C31B.2	Analyze the moral issues in Profession by understand basic theories of Ethics.
		C31B.3	Make use of moral values and enhance professional conduct in Engineering profession

		C31B.4	Make use of Rights & Responsibilities of Engineers at Workplace.
C31C	INTELLECTUAL PROPERTY RIGHTS (*MC510)	C31C.1	Understand the fundamental aspects of Intellectual property Rights who are going to play a major role in development and management of innovative projects in industries.
		C31C.2	Examine Trademarks, Acquisition of Trade Mark Rights and its registration processes.
		C31C.3	Evaluate various aspects relating to copyrights and its procedure for registration processes.
		C31C.4	Evaluate with the Trade Secret Law, protection for submission, Unfair Competition.
		C31C.5	Evaluate on the International Developments in Intellectual Property Rights.
		C31C.6	Interpret about current trends in IPR and the steps taken by the Government of India in fostering IPR.
C31D	ARTIFICIAL INTELLEGANCE ()	C31D.1	Possess the ability to formulate an efficient problem space for a problem expressed in English
		C31D.2	Possess the ability to select a search algorithm for a problem and characterize its time and space complexities
		C31D.3	Possess the skill for representing knowledge using the appropriate technique for a given problem
		C31D.4	Apply and evaluate AI techniques to solve problems of Machine learning and Natural Language Processing
		C31D.5	Choose and implement appropriate learning algorithms for a given problem.
		C31D.6	Create an expert system to simulate behavior of a person
Course Outcomes for R16 Regulation I-Semester			
IV Year I Sem			
C411	POWER SEMICONDUCTOR DRIVES (EE701PC)	C411.1	Analyze the performance of DC drive fed by controlled rectifiers.
		C411.2	Assess different braking modes of DC drives for specific control requirements
		C411.3	Explain closed loop control of converter fed DC drives
		C411.4	Assess the static and dynamic performance characteristics of AC drives
		C411.5	Examine performance of AC drives fed by variable voltage and frequency supplies
		C411.6	Illustrate various power electronic converters to control the speed of synchronous motor
C412	POWER SYSTEM OPERATION AND CONTROL (EE702PC)	C412.1	Model the blocks for speed governor, turbine, Synchronous generator and Excitation system using mathematical Approach
		C412.2	Analyze the steady state performance of Frequency and Voltage for single and two area systems
		C412.3	Determine the reactive power to be compensated in transmission system using various Voltage Control methods
		C412.4	Determine the economical scheduling of thermal generating units by considering constraints
		C412.5	Solve for scheduling different Power Generating stations using Unit Commitment Methods.
		C412.6	Understand the concepts of Power System Automation

C413	DIGITAL SIGNAL PROCESSING (EE721PE)	C413.1	Determine the behavior of LTI systems by solving difference equations.
		C413.2	Construct various digital filter structures.
		C413.3	Analyze digital signals in frequency domain using DFS and DFT
		C413.4	Apply different FFT algorithms for DFT computations.
		C413.5	Design IIR and FIR filters for given specifications.
		C413.6	Interpret the concepts of finite word length and multi-rate sampling in digital systems.
C414	HVDC TRANSMISSION (EE722PE)	C414.1	Compare HVDC and AC Transmission systems in all aspects.
		C414.2	Analyze HVDC system with Grates circuit.
		C414.3	Evaluate Converter control characteristics for different control schemes.
		C414.4	Discuss Reactive power control and Power Flow analysis in HVDC system.
		C414.5	Elucidate converter faults and their protection schemes.
		C414.6	Analyze AC and DC filters for different types of harmonics.
C415	SWITCH MODE POWER SUPPLIES (ET721PE)	C415.1	Analyze isolated and non-isolated topologies for switch mode power conversion.
		C415.2	Analyze the design concepts of fly back converter
		C415.3	Design power converters for high frequency applications using high voltage transistor
		C415.4	Differentiate SMPS and linear power supplies
		C415.5	Elucidate various stages of rectification
		C415.6	Explain variable SMPS techniques and resonant power supplies
C416	RELIABILITY ENGINEERING (EE724PE)	C416.1	Analyze reliability of various systems
		C416.2	Model various systems applying reliability networks
		C416.3	Evaluate the reliability of simple and complex systems
		C416.4	Estimate the limiting state probabilities of repairable systems
		C416.5	Apply various mathematical models for evaluating reliability of irreparable systems
		C416.6	Interpret frequency and duration techniques for evaluation of systems
C417	DIGITAL CONTROL SYSTEMS (EE722PE)	C417.1	Analyze Z-transform & map the Z-plane to S-plane
		C417.2	Analyze the stability of digital control systems through time & frequency domain methods and Lyapunove methods
		C417.3	Design the discrete time controllers using time domain methods
		C417.4	Analyze the state space representation of digital control system
		C417.5	Design the state feedback controllers through various methods
		C417.6	Design the full order and reduced order observers
C418	POWER QUALITY (EE732PE)	C418.1	Elucidate the power quality issues and the related terms
		C418.2	Analyze the causes and effects of interruptions in power systems
		C418.3	Analyze the characteristics of voltage sag for single phase and three phase systems

		C418.4	Evaluate power quality issues in industrial drives
		C418.5	Suggest various converter topologies to mitigate power quality issues
		C418.6	Understand the EMC standards in mitigation of power quality issues.
C419	MODERN POWER ELECTRONICS (EE733PE)	C419.1	Analyze the characteristics and working of various power semiconductor devices
		C419.2	Apply different PWM techniques for various Multi Level inverters
		C419.3	Analyze various topologies of Multi level Inverters
		C419.4	Explain the working of various DC - DC switch mode converters
		C419.5	Evaluate design parameters of Switch mode power supplies
		C419.6	Illustrate the concepts of resonant converters, power conditioners and UPS.
C41A	OPTIMIZATION TECHNIQUES (EE734PE)	C41A.1	Optimize given engineering problem by using suitable techniques
		C41A.2	Formulate and solve linear programming problem
		C41A.3	Obtain optimal solutions of transportation Problem
		C41A.4	Optimize Un Constrained non - linear programming problems
		C41A.5	Optimize Constrained non - linear programming problems
		C41A.6	Solve the dynamic Programming problems
C41B	PROGRAMMABLE LOGIC CONTROLLERS (EE741PE)	C41B.1	Identify the basic components and know the functionality of PLC
		C41B.2	Understand the importance and operations of a PLC
		C41B.3	Analyze different types PLC functions using registers
		C41B.4	Draw ladder diagrams from process control descriptions
		C41B.5	Understand Data handling functions for robotic applications
		C41B.6	Apply PLC timers and counters for the control of industrial processes
C41C	EHV AC TRANSMISSION SYSTEM (EE742PE)	C41C.1	Know the necessity, merits, demerits and mechanical aspects to be considered for EHVAC transmission
		C41C.2	Compute the Inductance and capacitance of two conductor and multi conductor lines
		C41C.3	Analyze the effect of corona, electrostatic field of EHVAC lines
		C41C.4	Analyze the surface gradient on two conductors and bundle with more than 3 sub conductors
		C41C.5	Design Compensation Schemes for Voltage Control
		C41C.6	Compute various parameters of EHV line for modeling (Simulation)
C41D	FLEXIBLE A.C. TRANSMISSION SYSTEMS (EE743PE)	C41D.1	Understand the importance of controllable parameters and benefits of FACTS controllers.
		C41D.2	Choose proper controller for the specific application based on system requirements
		C41D.3	Know the significance of shunt, series compensation and role of FACTS devices on system control.
		C41D.4	Know the significance of series compensation and role of FACTS devices on system control.

		C41D.5	Analyze the functional operation and control of GCSC, TSSC and TCSC.
		C41D.6	Understand the difference between SVC and STATCOM
C41E	SPECIAL MACHINES (EE744PE)	C41E.1	Classify and understand the basic principles of special D.C. machines
		C41E.2	Understand the working principle and control mechanisms for various types of stepper motors
		C41E.3	Compute the design aspects of variable reluctance and switched reluctance stepper motors
		C41E.4	Understand the basic principles and operation of permanent magnet D.C. motor
		C41E.5	Analyze the behavior of brushless D.C. motor at transient & steady state conditions
		C41E.6	Analyze the principle of operation of linear induction motor for electric traction
C41F	ELECTRICAL SYSTEMS SIMULATION LAB (EE703PC)	C41F.1	Simulate & analyze various electrical & electronic systems
		C41F.2	Analyze the various faults and performance of power system
		C41F.3	Model, Simulate & Analyze the performance of DC Machines & Induction Motors
		C41F.4	Analyze the performance of feedback & load frequency control of the power system
C41G	ELECTRICAL WORKSHOP (EE704PC)	C41G.1	Fabricate basic electrical circuit elements/networks
		C41G.2	Excel in hardware to do soldering & winding works
		C41G.3	Trouble shoot the electrical circuits
		C41G.4	Identify the device to be suited for protection of appliances
C41H	INDUSTRY ORIENTED MINI PROJECT (EE705PC)	C41H.1	Acquire practical knowledge within the chosen area of technology for project development
		C41H.2	identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach
		C41H.3	contribute as an individual or in a team in development of technical projects
		C41H.4	Develop effective communication skills for presentation of project related activities
		C41H.5	Understand need of project management and project management life cycle.
C41I	SEMINAR (EE706PC)	C41I.1	Identify emerging topic specific to the Programme.
		C41I.2	Extract the information relevant to the chosen topic.
		C41I.3	Deliver the knowledge using multimedia.
		C41I.4	Answer the queries with appropriate explanation and elaboration
		C41I.5	Compile an effective technical report, providing conclusions and proposing an appropriate future scope.
Course Outcomes for R18 Regulation II-Semester			
I Year II Sem			

C121	MATHEMATICS-II (MA201BS)	C121.1	Solve geometrical and physical problems using first order and first degree differential equation.
		C121.2	Solve higher order linear differential equations with constant coefficients
		C121.3	Evaluate double and triple integrals
		C121.4	Estimate area, volume, center of mass and gravity using multiple integration
		C121.5	Analyze the properties of Differential Operators
		C121.6	Evaluate the line, surface, and volume integrals using their inter-relationships
C122	CHEMISTRY (CH202BS)	C122.1	Understand the basic electronic modifications that reflect on properties of materials for advance design of materials.
		C122.2	Analyze the basic properties of water and its usage in domestic and industrial purposes.
		C122.3	Inspect the working principles of electrochemical systems for the production of various energy storage devices.
		C122.4	Analyze engineering problems related corrosion, metal finishing and use of appropriate design criteria in achieving a practical solution.
		C122.5	Design the materials that impact the natural and technological environments with the knowledge of stereochemistry.
		C122.6	Evaluate the materials behavior at microscale by spectroscopy which determines the development of materials for many real-world applications.
C123	BASIC ELECTRICAL ENGINEERING (EE203ES)	C123.1	Analyze DC electric circuits with basic electrical components.
		C123.2	Analyze single phase and three phase AC circuits.
		C123.3	Illustrate the equivalent circuit parameters of different transformers.
		C123.4	Assess the performance of a poly phase induction motor.
		C123.5	Assess the characteristics of DC machines.
		C123.6	Classify Fuses, Circuit Breakers, Wires, Cables, Earthing and Batteries for electrical installations.
C124	ENGINEERING WORKSHOP (ME205ES)	C124.1	Discuss on manufacturing of components using various trades like fitting, carpentry, welding and Black-smithy.
		C124.2	Develop house hold and engineering goods from metallic sheets in tin smithy.
		C124.3	Apply basic electrical engineering knowledge for house wiring practice.
		C124.4	Prepare a sand mould for a given pattern using foundry tools.
C125	ENGLISH (EN205HS)	C125.1	Apply English language effectively in spoken and written forms
		C125.2	Analyze the given texts and respond appropriately
		C125.3	Apply various grammatical structures in personal and academic fronts.
		C125.4	Develop appropriate vocabulary for professional communication
		C125.5	Improve competency in various forms of academic and professional writing.

		C125.6	Perceive the importance of language skill for the enhancement of employability opportunities.
C126	ENGINEERING CHEMISTRY LAB (CH206BS)	C126.1	Estimate the compound of samples using titration methods
		C126.2	Apply the theoretical concepts for result analysis and interpret data obtained from experimentation
		C126.3	Develop experimental skills in performing quantitative and qualitative analysis of known standards as well as unknown samples
		C126.4	Interpret new applications by the analysis of physical properties of materials
C127	ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB (EN207HS)	C127.1	Develops better understanding of nuances of English language through audio-visual experience
		C127.2	Improves writing skills for employability
		C127.3	Develops Neutralization of accent for intelligibility
		C127.4	Improves collaborative skills and maximizes speaking skills
C128	BASIC ELECTRICAL ENGINEERING LAB (EE208ES)	C128.1	Illustrate and verify DC electrical circuits.
		C128.2	Illustrate and verify AC electrical circuits.
		C128.3	Plot the performance characteristics of DC Machines
		C128.4	Plot the performance characteristics of AC Machines
II Year II Sem			
C221	LAPLACE TRANSFORMS, NUMERICAL METHODS & COMPLEX VARIABLES (MA401BS)	C221.1	Apply Laplace Transforms to solve ordinary differential equations
		C221.2	Estimate unknown values for a given data using Interpolation and method of least squares.
		C221.3	Apply numerical methods to solve algebraic and transcendental equations.
		C221.4	Apply numerical methods to evaluate definite integrals and solve initial value problems.
		C221.5	Analyze the complex functions with reference to their analyticity
		C221.6	Apply the knowledge of complex functions to evaluate various integrals.
C222	ELECTRICAL MACHINES-II (EE402PC)	C222.1	Illustrate the construction and working principle of Induction & Synchronous Machines
		C222.2	Assess the performance and speed control of a poly phase induction motor.
		C222.3	Illustrate different starting methods of Induction & Synchronous motors.
		C222.4	Evaluate the voltage regulation of Alternators using different methods
		C222.5	Evaluate the performance of synchronous generators for parallel operation and load sharing.
		C222.6	Assess the single phase motors for different applications
C223	DIGITAL ELECTRONICS (EE403PC)	C223.1	Apply the concepts of number systems, codes and Boolean algebra to simplify logic expressions
		C223.2	Understand working of logic families and logic gates.
		C223.3	Design combinational logic circuits and apply minimization techniques for optimizing combinational logic.

		C223.4	Design a sequential logic circuit and analyze its timing properties.
		C223.5	Differentiate between various data converters.
		C223.6	Understand memory organization and Implement the given logical problem using PLDs
C224	CONTROL SYSTEMS (EE404PC)	C224.1	Evaluate the types of control systems for real time applications.
		C224.2	Compute transfer function of a system by different techniques.
		C224.3	Evaluate the time response of systems for standard input signals.
		C224.4	Probe the stability of a system using time and frequency domain approach
		C224.5	Examine the performance of systems with compensators and controllers
		C224.6	Construct state models for continuous time systems and Comment on controllability and observability of the system
C225	POWER SYSTEMS-I (EE405PC)	C225.1	Categorize the sources of power generation with merits and demerits.
		C225.2	Outline the economic aspects for electrical power generation and loads.
		C225.3	Evaluate the insulators of over head lines based on performance.
		C225.4	Compute transmission line parameters for different configurations.
		C225.5	Compute cost of electric power generation using various tariff structures
		C225.6	Compute voltage drop in distribution systems based on various requirements & design features.
C226	DIGITAL ELECTRONICS LAB (EE306PC)	C226.1	Implement Boolean Expressions using universal logic gates.
		C226.2	Design and verify Combinational logic circuits using various logic gates.
		C226.3	Design and verify Sequential logic circuits using flip flops.
		C226.4	Realization of logic gates using different logic families.
C227	ELECTRICAL MACHINES LAB-II (EE407PC)	C227.1	Analyze the performance of a single phase transformer.
		C227.2	Analyze the scott connection and Load sharing of transformers.
		C227.3	Examine the performance of Induction motor at different loading conditions.
		C227.4	Appraise the performance of synchronous machines by using different methods.
C228	CONTROL SYSTEMS LAB (EE408PC)	C228.1	Design the state space model of a linear system using simulation.
		C228.2	Analyze the response of systems in frequency & time domain.
		C228.3	Calculate the transfer function and observe the effect of feedback on the systems
		C228.4	Examine the effect of controllers & Compensators on the system.
C229	CONSTITUTION OF INDIA (MC409)	C229.1	Examine salient features of Indian Constitution and live accordingly in society

		C229.2	Interpret the meaning of Fundamental Rights and Directive Principles of State Policy and, develop an attitude which paves the way for better living conditions.
		C229.3	Discover various aspects of Union Government legislation and live up to the expectations of the rules.
		C229.4	Critically examine State Government legislation and improve your living standards by following the rules strictly
		C229.5	Examine powers and functions of local bodies such as Municipalities and Panchayats and, take advantage of available resources for better living
		C229.6	Analyze the powers and functions of Election Commission and The Union Public Service Commission and decide upon it for safe and secured life.
III Year II Sem			
C321	RELIABILITY ENGINEERING (EE600OE)	C321.1	Analyze reliability of various systems
		C321.2	Model various systems applying reliability networks
		C321.3	Evaluate the reliability of simple and complex systems
		C321.4	Estimate the limiting state probabilities of repairable systems
		C321.5	Apply various mathematical models for evaluating reliability of irreparable systems
		C321.6	Interpret frequency and duration techniques for evaluation of systems
C322	RENEWABLE ENERGY SOURCES (EE601OE)	C322.1	Assess the energy economics for conventional and renewable energy sources
		C322.2	Understand the principles of wind and solar photovoltaic power generation , fuel cells
		C322.3	Illustrate working principle and characteristics of Induction Generator
		C322.4	Analyze various energy storage systems
		C322.5	Understand the integration and interconnection of alternative energy sources with the grid
		C322.6	Analyze the issues involved in the integration of non-renewable energy sources to the grid
C323	OPTIMIZATION TECHNIQUES (EE611PE)	C323.1	Optimize given engineering problem by using suitable techniques
		C323.2	Formulate and solve linear programming problem
		C323.3	Obtain optimal solutions of transportation Problem
		C323.4	Optimize Un Constrained non - linear programming problems
		C323.5	Optimize Constrained non - linear programming problems
		C323.6	Solve the dynamic Programming problems
C324	POWER SEMICONDUCTOR DRIVES (EE612PE)	C324.1	Analyze the performance of DC drive fed by controlled rectifiers.
		C324.2	Assess different braking modes of DC drives for specific control requirements
		C324.3	Elucidate closed loop control of converter fed DC drives
		C324.4	Assess the static and dynamic performance characteristics of AC drives

		C324.5	Examine performance of AC drives fed by variable voltage and frequency supplies
		C324.6	Illustrate various power electronic converters to control the speed of synchronous motor
C325	WIND AND SOLAR ENERGY SYSTEMS (EE613PE)	C325.1	Distinguish between the sustainable energy sources and fossil energy sources with emphasis on Wind and Solar power generation systems
		C325.2	Understand the basic physics of Wind and Solar power generation
		C325.3	Analyze the Wind generator topology
		C325.4	Differentiate the types of PV Panels and their characteristics
		C325.5	Compute solar power generation by various technologies
		C325.6	Analyze the power quality issues related to the grid integration of Solar and Wind energy systems
C326	SIGNALS AND SYSTEMS (EE601PC)	C326.1	Apply the principle of orthogonality in signal analysis
		C326.2	Analyze the Spectral characteristics of Periodic and aperiodic continuous signals
		C326.3	Explore the signal transmission through linear systems
		C326.4	Employ Laplace and Z transforms in system analysis
		C326.5	Describe the significance of sampling theorem
		C326.6	Apply the concepts of convolution and correlation in signal and system analysis
C327	MICROPROCESSORS & MICROCONTROLLERS (EE602PC)	C327.1	Differentiate architectural features and modes of operation of 8086 microprocessor and 8051 microcontroller.
		C327.2	Summarize the addressing modes, instruction set and assembler directives of 8086 Microprocessor and 8051 Micro controller.
		C327.3	Write assembly language programs for 8086 Microprocessor and 8051 Microcontroller.
		C327.4	Interface various peripheral devices and memory with 8051 microcontroller.
		C327.5	Analyze the architectural features and instruction set of ARM processor
		C327.6	Explain the architectural feature of CORTEX and OMAP processors
C328	POWER SYSTEM PROTECTION (EE603PC)	C328.1	Distinguish the relays based on their operating principle along with their usage.
		C328.2	Differentiate various over current and Distance protection schemes.
		C328.3	Probe the protection schemes for generation and transmission systems during faults.
		C328.4	Understand the basics of static and microprocessor based relays.
		C328.5	Evaluate the construction and working of circuit breakers for real time applications.
		C328.6	Discriminate the types of fuses and their characteristics
C329	POWER SYSTEM OPERATION AND CONTROL (EE604PC)	C329.1	Evaluate load flow parameters using Numerical Methods.
		C329.2	Compute parameters for economical operation of power systems

		C329.3	Model the blocks for speed governor, turbine, Synchronous generator and Excitation system using mathematical Approach
		C329.4	Analyze the steady state performance of Frequency and Voltage for single and two area systems
		C329.5	Analyze dynamic, transient and steady state behavior of power system networks.
		C329.6	Understand the features of SCADA and EMS of power systems
C32A	POWER SYSTEMS LAB (EE605PC)	C32A.1	Evaluate load flow parameters using Numerical Methods.
		C32A.2	Analyze the performance of Transmission lines and Relays
		C32A.3	Analyze the stability and the sequence impedances of AC Machines.
		C32A.4	Asses the parameters and impact of faults on a power system network.
C32B	MICROPROCESSORS LAB (EE606PC)	C32B.1	Debug 8086 assembly language programs using macro assembler.
		C32B.2	Write 8051 assembly language programs for simple arithmetic and logical operations and verify using Keil IDE.
		C32B.3	Write 8051 assembly language programs to configure various peripheral devices and verify using Keil IDE.
		C32B.4	Interface various input/output devices to 8051 microcontroller using development kit.
C32C	SIGNALS AND SYSTEMS LAB (EE607PC)	C32C.1	Analyze signals and systems in time and complex frequency domain using MATLAB
		C32C.2	Perform convolution operation between various signals using MATLAB
		C32C.3	Write MATLAB programs to find the Fourier series coefficients of periodic signals and plot the complex Fourier spectrum
		C32C.4	Verify Sampling Theorem in MATLAB
C32D	ENVIRONMENTAL SCIENCE (*MC609)	C32D.1	Discover knowledge regarding environment and its components.
		C32D.2	Understand the classification, importance and conservation of natural resources.
		C32D.3	Perceive the knowledge regarding different Bio -Geo classification of India.
		C32D.4	Examine impacts of pollution on the environment and their control measures.
		C32D.5	Analyze Environmental laws and Environmental Impact Assessments.
		C32D.6	Determine sustainable development that aims to meet raising human needs.
Course Outcomes for R16 Regulation II-Semester			
IV Year II Sem			
C421	ENTERPRENEUR RESOURCE PLANNING (EE831OE)	C421.1	Make use of evolutionary development of Enterprise Resource Planning.
		C421.2	Apply ERP System options and selection methods for different projects.
		C421.3	Develop Risk Identification Analysis in Managing Projects.

		C421.4	Analyze ERP functions with respect to Sales and Marketing, Accounting and Finance and Customer Relationship Management.
		C421.5	Apply Production Module in ERP.
		C421.6	Examine the future directions of ERP.
C422	MANAGEMENT INFORMATION SYSTEMS (EE832OE)	C422.1	Explore Various Information systems models and types of Information systems
		C422.2	Identify the importance of Security , control and audit in information systems
		C422.3	Illustrate the role of ERP in information systems
		C422.4	Examine various ERP modules in Information systems perspective
		C422.5	Evaluate the benefits of ERP in quality management
		C422.6	Analyze the techniques for ERP implementation and maintenance
C423	ORGANIZATIONAL BEHAVIOUR (EE833OE)	C423.1	Analyze the behavior of individuals and groups in Organizations
		C423.2	Analyze the factors that influence Organizational behavior
		C423.3	Examine the potential effects of organizational level factors on organizational behavior.
		C423.4	Analyze potential effects of important developments in the external environment on Organizational behavior.
		C423.5	Examine the role of globalization and advances in technology on Organizational behavior.
		C423.6	Analyze organizational behavior theories, models and concepts.
C424	ARTIFICIAL NEURAL NETWORKS AND FUZZY SYSTEMS (EE851PE)	C424.1	Interpret biological neuron to a mathematical model
		C424.2	Categorize types of Neuron Activation Functions and ANN Architectures
		C424.3	Emphasize on single and multi-layer perception models
		C424.4	Apply general concepts of Associate memory and basic algorithms
		C424.5	Elucidate architecture of Hopfield networks and its learning algorithms
		C424.6	Appraise fuzzy logic theory with respect to Classical set theory
C425	ELECTRICAL DISTRIBUTION SYSTEMS (EE852PE)	C425.1	Assess characteristics and various factors for different types of loads
		C425.2	Classify distribution feeders based on design considerations
		C425.3	Compute the rating of substation under specified constraints related to distribution systems
		C425.4	Categorize various protective devices and their coordination
		C425.5	Estimate the line drop and power factor in distribution systems
		C425.6	Assess the type of capacitor and suitable location for voltage control and it's regulation
C426	WIND, SOLAR AND HYBRID ENERGY SYSTEMS (EE853PE)	C426.1	Ability to distinguish between the sustainable energy sources and fossil energy sources with emphasis on wind and solar power generation systems.
		C426.2	Understand the basic physics of wind and solar power generation

		C426.3	Analyze the wind generator topologies
		C426.4	Differentiate the types of PV panels and their characteristics
		C426.5	Compute Solar Power generation by various technologies
		C426.6	Analyze the power quality issues related to the grid-integration of solar and wind energy systems
C427	HIGH VOLTAGE ENGINEERING (EE854PE)	C427.1	Compute electric field stress using numerical methods.
		C427.2	List the applications of insulating materials.
		C427.3	Examine breakdown mechanisms in different states of matter.
		C427.4	Analyze the circuits used to generate and measure high voltages and currents.
		C427.5	Point out the causes and effects of over voltages.
		C427.6	Categorize high voltage testing of materials and apparatus.
C428	VLSI DESIGN (EE861PE)	C428.1	Summarize the various steps in VLSI fabrication process of different MOS Technologies
		C428.2	Analyze the electrical properties and models of CMOS circuits.
		C428.3	Construct layouts using stick diagrams in accordance with the design rules.
		C428.4	Implement complex digital logic circuits using switch logic and PLDs.
		C428.5	Build different VLSI subsystems using CMOS logic.
		C428.6	Analyze the concepts of testing and fault tolerant systems.
C429	SMART ELECTRIC GRID (EE863PE)	C429.1	Classify various aspects of the smart Grid
		C429.2	Analyze the importance of DC distribution and developing technologies in power systems
		C429.3	Illustrate the concepts of Dynamic Energy systems
		C429.4	Differentiate the trade-off between economics and reliability of an electric power system.
		C429.5	Recite the structure of an electricity market in either regulated or deregulated conditions.
		C429.6	Understand the importance of smart systems in improving energy efficiency of electrical systems
C42A	UTILIZATION OF ELECTRIC POWER (EE863PE)	C42A.1	Assess the electric drives based on their characteristics for industrial applications.
		C42A.2	Categorize the electric heating methods based on nature of charge.
		C42A.3	Assess welding methods based on properties of metals.
		C42A.4	Design lighting schemes for given specifications.
		C42A.5	Evaluate speed time curves for different services.
		C42A.6	Determine specific energy consumption of electric locomotives for a given run
C42B	ELECTRIC AND HYBRID VEHICLES (EE864PE)	C42B.1	Understand the performance of conventional vehicles by mathematical models.
		C42B.2	Illustrate the importance of hybrid and electric vehicles to safeguard environment
		C42B.3	Analyze power flow of hybrid electric drive trains by various topologies

		C42B.4	Evaluate the energy storage technology by sizing various sub systems
		C42B.5	Analyze Performance of DC and AC drives
		C42B.6	Understand energy management strategies of hybrid and battery electric vehicles
C42C	MAJOR PROJECT (EE801PC)	C42C.1	Identify problem, conduct relevant literature survey and formalize it.
		C42C.2	Analyze & design efficient, cost-effective and eco-friendly solutions using relevant tools (if necessary) and processes.
		C42C.3	Implement the design and demonstrate the functionality of developed model
		C42C.4	Evaluate the results to derive the conclusion and provide scope for future enhancement.
		C42C.5	Exhibit good interpersonal and leadership skills in meeting project deadlines with individual contribution towards progress of the project.