DEPT. OF ELECTRICAL & ELECTRONICS ENGINEERING

R-18 REGULATION - COURSE OUTCOMES

S. No	CLASS	REGULATION	Subject	Course Code	CO's	Course Oucomes
1	II/I	R-18	Engineering Mechanics	EE301ES	CO-1	Determine resultant of forces acting on a body and analyse equilibrium of a body subjected to a system of forces.
					CO-2	Solve problem of bodies subjected to friction.
					CO-3	Find the location of centroid and calculate moment of inertia of a given section
					CO-4	Understand the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion.
					CO-5	Solve problems using work energy equations for translation, fixed axis rotation and plane motion and solve problems of vibration
2	II/I	R-18	Electrical Circuit Analysis	EE302PC	CO-1	Apply network theorems for the analysis of electrical circuits.
					CO-2	Obtain the transient and steady-state response of electrical circuits.
					CO-3	Analyze circuits in the sinusoidal steady-state (single-phase and three-phase).
					CO-4	Analyze circuits by using Laplace transforms
					CO-5	Analyze two port circuit behavior.
3	II/I	R-18	Analog Electronic Circuits	EE303PC	CO-1	Know the characteristics, utilization of various components
					CO-2	Understand the biasing techniques
					CO-3	Design and analyze various rectifiers, small signal amplifier circuits
					CO-4	Design sinusoidal and non-sinusoidal oscillators
					CO-5	A thorough understanding, functioning of OP-AMP, design OP-AMP based circuits with linear integrated circuits
4	II/I	R-18	ELECTRICAL MACHINES - I	EE304PC	CO-1	Identify different parts of a DC machine & understand its operation
					CO-2	Carry out different testing methods to predetermine the efficiency of DC machines
					CO-3	Understand different excitation and starting methods of DC machines
					CO-4	Control the voltage and speed of a DC machines
					CO-5	Analyze single phase and three phase transformers circuits
5	II/I	R-18	ELECTROMAGNETIC FIELDS	EE305PC	CO-1	To understand the basic laws of electromagnetism
					CO-2	To obtain the electric and magnetic fields for simple configurations under static conditions
					CO-3	To analyze time varying electric and magnetic fields
					CO-4	To understand Maxwell's equation in different forms and different media
					CO-5	To understand the propagation of EM waves
6	II/I	R-18	ELECTRICAL MACHINES LAB – I	EE306PC	CO-1	Start and control the Different DC Machines
					CO-2	Assess the performance of different machines using different testing methods
					CO-3	Identify different conditions required to be satisfied for self - excitation of DC Generators
					CO-4	Control the voltage and speed of a DC machines
					CO-5	Separate iron losses of DC machines into different components
7	II/I	R-18	GENDER SENSITIZATION LAB	*MC309	CO-1	Students will have developed a better understanding of important issues related to gender in contemporary India.
					CO-2	Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.
					CO-3	Students will attain a finer grasp of how gender discrimination works in our society and how to counter it
					CO-4	Students will acquire insight into the gendered division of labour and its relation to politics and economics
					CO-5	Men and women students and professionals will be better equipped to work and live together as equals
					CO-6	Students will develop a sense of appreciation of women in all walks of life
					CO-7	Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence
			Analog Electronic		CO-1	Know the characteristics, utilization of various components.
					CO-2	Understand the biasing techniques

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8	II/I	R-18	Analog Electronic Circuits Laboratory	EE307PC	CO-3	Design and analyze various rectifiers, small signal amplifier circuits.
					CO-4	Design sinusoidal and non-sinusoidal oscillators.
					CO-5	Design OP-AMP based circuits with linearintegrated circuits.
9	II/I	R-18	Electrical Circuits Lab	EE308PC	CO-1	Analyze complex DC and AC linear circuits
					CO-2	Apply concepts of electrical circuits across engineering
					CO-3	Evaluate response in a given network by using theorems
					CO-4	Analyze the Active Power for Star and Delta connected balanced loads
					CO-5	Analyze the Reactive Power for Star and Delta connected balanced loads

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1	III/I	R 18	POWER ELECTRONICS	EE501PE	CO-1	Understand the differences between signal level and power level devices.
					CO-2	Analyze controlled rectifier circuits.
					CO-3	Analyze the operation of DC-DC choppers.
					CO-4	Understand the working of various power electronic circuits and components used in industrial applications
					CO-5	Analyze the operation of voltage source inverters
2	III/I	R 18	POWER SYSTEM – II	EE502PE	CO-1	Analyze transmission line performance.
					CO-2	Apply load compensation techniques to control reactive power
					CO-3	Understand the application of per unit quantities.
					CO-4	Design over voltage protection and insulation coordination
					CO-5	Determine the fault currents for symmetrical and unbalanced faults
3	III/I	R 18	MEASUREMENTS AND INSTRUMENTATION	EE503PE	CO-1	Understand different types of measuring instruments, their construction, operation and characteristics
					CO-2	Identify the instruments suitable for typical measurements
					CO-3	Apply the knowledge about transducers and instrument transformers to use them effectively.
					CO-4	Examine AC bridges for the measurement of inductance, capacitance and frequency.
					CO-5	Apply the knowledge of smart and digital metering for industrial applications
4	III/I	R 18	HIGH VOLTAGE ENGINEERING (Professional Elective-I)	EE512PE	CO-1	Recall importance of high voltage technology.
					CO-2	Discuss breakdown phenomena in different dielectrics.
					CO-3	Demonstrate generation and measurement of high voltages.
					CO-4	Examine testing methods used for different HV apparatus.
					CO-5	Evaluate insulation coordination among different HV apparatus.
5	III/I	R-18	BUSINESS ECONOMICS AND FINANCIAL ANALYSIS	SM504MS	CO-1	Understand the various forms of Business
					CO-2	To understand the concept of Demand, Supply
					CO-3	To Study About Production, Cost& Marketing Structures
					CO-4	Learn About Financial Accounting Concepts
					CO-5	To Analyze The Financial Statements
6	III/I	R-18	POWER SYSTEM SIMULATION LAB	EE505PC	CO-1	Perform various transmission line calculations
					CO-2	Understand Different circuits time constants
					CO-3	Analyze the experimental data and draw the conclusions
					CO-4	Demonstrate load flow studies using static load flow methods using MATLAB.
					CO-5	Analyze transient state stability in power systems
7	III/I	R-18	POWER ELECTRONICS LAB	EE506PC	CO-1	Understand the operation of power electronic devices & its applications
					CO-2	Analyze the Characteristics of power electronic devices
					CO-3	Understand the operating principles of various power electronic converters.
					CO-4	Use power electronic simulation packages& hardware to develop the power converters.
					CO-5	Analyze and choose the appropriate converters for various applications
8	III/I	R 18	MEASUREMENTS AND INSTRUMENTATION	EE507PC	CO-1	Understand different types of measuring instruments, their construction, operation and characteristics
					CO-2	Identify the instruments suitable for typical measurements
					CO-3	Apply the knowledge about transducers and instrument transformers to use them effectively.

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			INSTRUMENTATION LAB		CO-4	Apply the knowledge of smart and digital metering for industrial applications
					CO-5	Analyze and interpret experimental data for informed instrument selection and calibration, as well as assessing measurement accuracy.
9	III/I	R 18	ADVANCED COMMUNICATION SKILLS LAB	EN508HS	CO-1	Develop their LSRW skills
					CO-2	Overcome their Mother tongue influence
					CO-3	Express/interpret their views without hesitation
					CO-4	Lose their stage fear and develop self-confidence
					CO-5	Be able to reach corporate expectations
10	III/I	R-18	INTELLECTUAL PROPERTY RIGHTS	*MC510	CO-1	Distinguish and Explain various forms of IPRs.
					CO-2	Identify criteria to fit one's own intellectual work in particular form of IPRs.
					CO-3	Apply statutory provisions to protect particular form of IPRs.
					CO-4	Appraise new developments in IPR laws at national and international level
					CO-5	Evaluate with the Trade Secret Law, protection for submission, Unfair Competition

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1	IV/I	R-18	DIGITAL CONTROL SYSTEMS (PE – III)	EE711PE	CO-1	Obtain discrete representation of LTI systems.
					CO-2	Analyze stability of open loop and closed loop discrete-time systems.
					CO-3	Design and analyze digital controllers.
					CO-4	Describe the various control blocks and components of digital control systems
					CO-5	Design state feedback and output feedback controllers.
2	IV/I	R-18	DIGITAL SIGNAL PROCESSING (PE – III)	EE712PE	CO-1	Students will be able to understand LTI system characteristics and Multi rate signal processing.
					CO-2	Students will be able to represent inter-relationship between DFT and various transforms.
					CO-3	Students will be able to design a digital IIR filter for a given specification.
					CO-4	Students will be able to design a digital FIR filter for a given specification.
					CO-5	Students will be able to acknowledge the significance of various filter structures and effects of round off errors.
3	IV/I	R-18	ELECTRICAL AND HYBRID VEHICLES (PE – III)	EE713PE	CO-1	Understand the models to describe hybrid vehicles and their performance.
					CO-2	Understand the different possible ways of energy storage.
					CO-3	Understand the architecture and vehicle dynamics of electric and hybrid vehicles
					CO-4	Analyze and model the power management systems for electric and hybrid vehicles
					CO-5	Understand the different strategies related to energy storage systems.
4	IV/I	R-18	HVDC TRANSMISSION (PE – IV)	EE721PE	CO-1	Distinguish between EHV AC and HVDC systems and various types of DC links.
					CO-2	Design the Graetz circuit with different mode of operations
					CO-3	Generalize the importance of HVDC converters, AC/DC Power flow and its reactive power control techniques
					CO-4	Compute various converter's faults and its protections
					CO-5	Design the harmonics reduction filters for HVDC transmission
5	IV/I	R-18	POWER SYSTEM RELIABILITY (PE – IV)	EE722PE	CO-1	Estimate loss of load and energy indices for generation systems model
					CO-2	Describe merging generation and load models
					CO-3	Apply various indices for distribution systems
					CO-4	student shall be able to model and analyse electric power systems with respect to reliability of supply.
					CO-5	Evaluate reliability of interconnected systems
6	IV/I	R-18	INDUSTRIAL ELECTRICAL SYSTEMS (PE – IV)	EE723PE	CO-1	Understand the electrical wiring systems for residential, commercial and industrial consumers, representing the systems with standard symbols and drawings, SLD.
					CO-2	Analyzing and evaluating different types of power systems, including distribution, transmission, and generation.
					CO-3	Understanding the principles of power factor correction and its applications in industrial settings.
					CO-4	Understand various components of industrial electrical systems.
					CO-5	Analyze and select the proper size of various electrical system components.
7	IV/I	R-18	FUNDAMENTALS OF MANAGEMENT FOR ENGINEERS	SM701MS	CO-1	The students understand the significance of Management in their Profession
					CO-2	The various Management Functions like Planning, Organizing, Staffing, Leading, Motivation and
					CO-3	The students can explore the Management Practices in their domain area.
					CO-4	To provide the knowledge of various measurement methods of physical and electrical parameters

S.No.	CLASS	REGULATION	Subject	Course Code	CO's	Course Outcomes
					CO-5	The students can explore the Management Practices in their domain area.
8	IV/I	R-18	ELECTRICAL & ELECTRONICS DESIGN LAB	EE701PC	CO-1	Get practical knowledge related to electrical
					CO-2	Fabricate basic electrical circuit elements/networks
					CO-3	Trouble shoot the electrical circuits
					CO-4	Design filter circuit for application
					CO-5	Get hardware skills such as soldering, winding etc.
					CO-6	Get debugging skills.

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1	II/II	R-18	LAPLACE TRANSFORMS, NUMERICAL METHODS AND COMPLEX VARIABLES	MA401BS	CO-1	Use the Laplace transforms techniques for solving ODE's
					CO-2	Find the root of a given equation.
					CO-3	Estimate the value for the given data using interpolation
					CO-4	Find the numerical solutions for a given ODE's
					CO-5	Analyze the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems
					CO-6	Taylor's and Laurent's series expansions of complex function
2	II/II	R-18	ELECTRICAL MACHINES – II	EE402PC	CO-1	Understand the concepts of rotating magnetic fields.
					CO-2	Understand the operation of ac machines.
					CO-3	Analyze performance characteristics of ac machines.
					CO-4	Understand the regulation of three-phase alternator by Z.P.F. and A.S.A methods
					CO-5	Analyze performance of Scott Connection of transformer
3	II/II	R-18	DIGITAL ELECTRONICS	EE403PC	CO-1	Understand the numerical information in different forms and Boolean Algebra theorems
					CO-2	Postulates of Boolean algebra and to minimize combinational functions
					CO-3	Design and analyze combinational circuits
					CO-4	Design and analyze sequential circuits
					CO-5	Known about the logic families and realization of logic gates.
4	II/II	R-18	CONTROL SYSTEMS	EE404PC	CO-1	Classify control systems and represent in various models
					CO-2	Apply standard test signals to a system to determine their characteristics
					CO-3	Make use of stability concepts to obtain the desired characteristics
					CO-4	Determine the characteristics of a linear control system using various time and frequency domain tools
					CO-5	Examine the system behavior using various stability analysis techniques
5	II/II	R-18	POWER SYSTEM - I	EE405PC	CO-1	Understand the concepts of power systems.
					CO-2	Understand the operation of conventional generating stations and renewable sources of electrical power.
					CO-3	Evaluate the power tariff methods.
					CO-4	Determine the electrical circuit parameters of transmission lines
					CO-5	Understand the layout of substation and underground cables and corona.
6	II/II	R-18	DIGITAL ELECTRONICS LAB	EE406PC	CO-1	Understand the pin description of digital IC's
					CO-2	Implement Arithmetic logic circuits using digital IC's.
					CO-3	Implement combinational circuits using digital IC's.
					CO-4	Apply concept of universal logic gates for digital circuit designing.
					CO-5	Examine the behavior of sequential circuits using digital IC's.
7	II/II	R-18	ELECTRICAL MACHINES LAB – II	EE407PC	CO-1	Assess the performance of different machines using different testing methods
					CO-2	To convert the Phase from three phase to two phase and vice versa
					CO-3	Compensate the changes in terminal voltages of synchronous generator after estimating the change by different methods
					CO-4	Control the active and reactive power flows in synchronous machines
					CO-5	Start different machines and control the speed and power factor
8	II/II	R-18	CONTROL SYSTEMS LAB	EE408PC	CO-1	How to improve the system performance by selecting a suitable controller and/or a compensator for a specific application
					CO-2	Apply various time domain and frequency domain techniques to assess the system performance
					CO-3	Apply various frequency domain techniques to assess the system performance
					CO-4	Apply various control strategies to different applications (example: Power systems, electrical drives etc.)

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					CO-5	Test system controllability and observability using state space representation and applications of state space representation to various systems
9	II/II	R-22	Constitution of India	*MC409	CO-1	Discuss the growth of the demand for civil rights in India for the bulk of Indians before the arrival of Gandhi in Indian politics.
					CO-2	Discuss the intellectual origins of the framework of argument that informed the conceptualization of social reforms leading to revolution in India.
					CO-3	Discuss the circumstances surrounding the foundation of the Congress Socialist Party [CSP] under the leadership of Jawaharlal Nehru and the eventual failure of the proposal of direct elections through adult suffrage in the Indian Constitution
					CO-4	Discuss the passage of the Hindu Code Bill of 1956.
					CO-5	Understand and Evaluate the Indian Political scenario amidst the emerging challenges.

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1	III/II	R-18	POWER SEMICONDUCTOR DRIVES (Professional Elective - II)	EE612PE	CO-1	Identify the drawbacks of speed control of motor by conventional methods.
					CO-2	Differentiate Phase controlled and chopper-controlled DC drives speed-torque characteristics merits and demerits
					CO-3	Understand Ac motor drive speed–torque characteristics using different control strategies its merits and demerits
					CO-4	Describe Slip power recovery schemes
					CO-5	Describe the operation and speed –torque characteristics of Separate control & self-control of synchronous motors using VSI, CSI and Cyclo
2	III/II	R-18	SIGNALS AND SYSTEMS	EE601PC	CO-1	Formulate a given arbitrary signal in terms of complete set of orthogonal functions.
					CO-2	Express periodic signals in terms of Fourier series.
					CO-3	Extrapolate the filter characteristics of a system.
					CO-4	Evaluate a system response using Laplace transform properties.
					CO-5	Establish the relation between Fourier and Laplace transforms.
3	III/II	R-18	MICROPROCESSORS & MICROCONTROLLERS	EE602PC	CO-1	Understand the principle of operation of Intel 8086 microprocessor
					CO-2	Execute assembly language programs on Intel 8086 including ascending order and descending order of data, string operations
					CO-3	Integrate Intel 8086 processor with 8255, DMA controller, Intel 8259, USART to develop the microprocessor based system
					CO-4	Develop and run program of Intel 8051 microcontroller
					CO-5	Analyze architecture and interrupt structure of RISC microcontrollers
4	III/II	R-18	POWER SYSTEM PROTECTION	EE603PC	CO-1	Understand the operation and control of power systems.
					CO-2	Analyze various functions of Energy Management System (EMS) functions.
					CO-3	Analyze whether the machine is in stable or unstable position.
					CO-4	Understand power system deregulation and restructuring
					CO-5	Understand the concept of computer control of power systems and data acquisition.
5	III/II	R-18	POWER SYSTEM OPERATION AND CONTROL	EE604PC	CO-1	Compare and contrast electromagnetic, static and microprocessor-based relays
					CO-2	Apply technology to protect power system components.
					CO-3	Select relay settings of over current and distance relays.
					CO-4	Summarize the protection schemes for power system components.
					CO-5	Analyze quenching mechanisms used in air, oil and vacuum circuit breakers
6	III/II	R-18	ENTREPRENEURSHIP (Open Elective – I)	CS600OE	CO-1	To learn the basics of Entrepreneurship
					CO-2	To learn the basics of entrepreneurial development
					CO-3	It provides vision for students own Start-up.
					CO-4	Students are able to know new venture creation
					CO-5	Students learn strategic perspectives of entrepreneurship
7	III/II	R-18	POWER SYSTEM LAB	EE605PC	CO-1	Perform various load flow techniques
					CO-2	Understand Different protection methods
					CO-3	Analyze the experimental data and draw the conclusions.
					CO-4	Apply knowledge of load flow techniques in practical scenarios.

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					CO-5	Demonstrate proficiency in different protection methods for electrical systems.
8	III/II	R-18	SIGNALS AND SYSTEMS LAB	EE607PC	CO-1	Understand the basic operation on Matrices.
					CO-2	Analyze the generation of various signals and sequences such as unit impulse, unit step, square, saw tooth, Triangular, sinusoidal, Ramp, Sinc.
					CO-3	Understand convolution between signals and sequences.
					CO-4	Calculate the Even and Odd parts of signal/sequences and Real and Imaginary parts of signal
					CO-5	Understand autocorrelation and cross correlation between signals and sequences.
9	III/II	R-18	MICROPROCESSORS & MICROCONTROLLERS LAB	EE606PC	CO-1	Demonstrate MASM assembler programming.
					CO-2	Develop an ALP in 8086 and its interfacing circuits.
					CO-3	Develop an ALP in 8051 for parallel ports and timers
					CO-4	Develop an ability in designing a microprocessor and microcontroller systems
					CO-5	Apply standard test and measurement equipment to evaluate digital interfaces.

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1	IV/II	R-18	POWER QUALITY AND FACTS (PE - V)	EE811PE	CO-1	Know the severity of power quality problems in distribution system
					CO-2	Understand the concept of voltage sag transformation from up-stream (higher voltages) to down-stream (lower voltage)
					CO-3	Concept of improving the power quality to sensitive load by various mitigating custom power devices
					CO-4	Choose proper controller for the specific application based on system requirements
					CO-5	Understand various systems thoroughly and their requirements
					CO-6	Understand the control circuits of Shunt Controllers SVC & STATCOM for various functions viz. Transient stability Enhancement, voltage instability prevention and power oscillation damping
					CO-7	Understand the Power and control circuits of Series Controllers GCSC, TSSC and TCSC
2	IV/II	R-18	ELECTRICAL DISTRIBUTION SYSTEMS (PE - VI)	EE822PE	CO-1	Distinguish between transmission and distribution network and design the feeders
					CO-2	Compute power loss and voltage drop of the feeders
					CO-3	Design protection of distribution systems
					CO-4	Understand the importance of voltage control and power factor improvement
					CO-5	Understand the need for controlling the PF, Voltage and Power and the equipment used for mitigating them.
3	IV/II	R-18	NON-CONVENTIONAL SOURCES OF ENERGY (Open Elective – III)	ME800OE	CO-1	Identify renewable energy sources and their utilization. Understand the basic concepts of solar radiation and analyze the working of solar and thermal systems.
					CO-2	Understand principles of energy conversion from alternate sources including wind, geothermal, ocean biomass, biogas and hydrogen.
					CO-3	Understand the concepts and applications of fuel c thermoelectric convertor and MHD generator.
					CO-4	Identify the methods of energy storage and available sources improvement
					CO-5	Apply the renewable energy systems in real time applications.

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1	I/I	R-18	MATHEMATICS -I	MA101BS	CO-1	Apply the matrix representation of a set of linear equations and to analyse the solution of the system of equations
					CO-2	Able to use the Eigen values and Eigen vectors. Reduce the quadratic form to canonical form using orthogonal transformations
					CO-3	Analyze the nature of sequence and series.
					CO-4	Solve the applications on the mean value theorems. Evaluate the improper integrals using Beta and Gamma functions
					CO-5	Estimate the extreme values of functions of two variables with/ without constraints.
2	I/I	R-18	CHEMISTRY	CH102BS	CO-1	Describe The knowledge of atomic, molecular and electronic changes, band theory related to conductivity
					CO-2	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost
					CO-3	Apply The required principles and concepts of electrochemistry, corrosion and inunderstanding the problem of water and its treatments. electron chemistry
					CO-4	Analyse The knowledge of confrontational and confirmation analysis of molecules and reaction mechanisms

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					CO-5	Explain concepts on basic spectroscopy and application to medical and other fields
3	I/I	R-18	BASIC ELECTRICAL ENGINEERING	EE103ES	CO-1	Analyze and solve electrical circuits using network laws and theorems.
					CO-2	Understand and analyze basic Electric and Magnetic circuits. Representation of AC Quantities
					CO-3	Understand working principle, operation of transformers and its types.
					CO-4	Study the working principles of Electrical Machines.
					CO-5	Investigate the knowledge on batteries and Protective Equipment's.
4	I/I	R-18	ENGINEERING WORKSHOP	ME105ES	CO-1	Study and practice on machine tools and their operations
					CO-2	Practice on manufacturing of components using workshop trades including pluming, fitting, carpentry, foundry, house wiring and welding
					CO-3	Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiselling
					CO-4	Apply basic electrical engineering knowledge for house wiring practice.
					CO-5	Practice on Block smithy of components using workshops
5	I/I	R-18	ENGLISH	EN105HS	CO-1	Use English Language effectively in spoken and written forms.
					CO-2	Comprehend the given texts and respond appropriately.
					CO-3	Communicate confidently in various contexts and different cultures.
					CO-4	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
					CO-5	Apply new oral vocabulary words in context to reinforce meaning.
6	I/I	R-18	ENGINEERING CHEMISTRY LAB	CH106BS	CO-1	Students are able to determination of parameters like hardness of water and rate of corrosion of mild steel in various conditions.
					CO-2	Students are analyzing the various water samples with different methods and various water treatment methods for industrial usages.
					CO-3	Students are able to able to perform methods such as conductometry, potentiometry and pH metry in order to find out the concentrations or equivalence points of acids and bases
					CO-4	Students are able to prepare polymers like Bakelite and nylon-6.
					CO-5	Students are able to estimations saponification value, surface tension and viscosity of lubricant oils
7	I/I	R-18	ENGLISH LANGUAGE AND COMMUNICATION SKILLS LAB	EN107HS	CO-1	Better understanding of nuances of English language through audio- visual experience and group activities
					CO-2	Speak clearly with the right accent and intonation
					CO-3	Speaking skills with clarity and confidence which in turn enhances their employability skills
					CO-4	Neutralization of accent for intelligibility
					CO-5	Understand and apply knowledge of human communication and language process.
8	I/I	R-18	BASIC ELECTRICAL ENGINEERING LAB	EE108ES	CO-1	Get an exposure to basic electrical laws.
					CO-2	Distend the response of different types of electrical circuits to different excitations
					CO-3	Understand the measurement, calculations and relation between the basic electrical parameters
					CO-4	Understand the basic characteristics of transformers and connections
					CO-5	Explain the working principles of transformers and electrical machines

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1	I/II	R-18	MATHEMATICS - II	MA201BS	CO-1	Identify whether the given differential equation of first order is exact or not.Applications of first order differential equations
					CO-2	Solve higher differential equation and apply the concept of differential equation to real world problems.
					CO-3	Evaluate the multiple integrals and apply the concepts to find areas, volumes, center of mass and gravity for cubes, sphere and rectangular parallelopiped.
					CO-4	Evaluate partial derivatives and can implement to estimate maxima andminima of multivariable function.
					CO-5	Evaluate the line, surface and volume integrals and converting them from one to another.
2	I/II	R-18	APPLIED PHYSICS	AP202BS	CO-1	Learn the fundamental concepts on Quantum behaviour of matter in its microstate.
					CO-2	Understand the of fundamentals of Semiconductor Physics, Optoelectronics which enable the students to apply to various systems like communication, solar cell, photocell etc.,
					CO-3	Learn the principle, working of various Laser systems and light propagation through Optical Fibers.
					CO-4	Design, Characterize, and study the properties of materials and to prepare new materials for various engineering applications.
					CO-5	Understand the Laws of Electro magnetism and get an exposure on Magnetic and Dielectric materials.
					CO-1	Understands the components of a computer system, C Programming Language with conditional branching and loops.

					CO-2	Understands the concept of Arrays, Strings, Structures and Pointers.
3	I/II	R-18	PROGRAMMING FOR PROBLEM SOLVING	CS203ES	CO-3	Understands the pre-processor and file handling in C.
					CO-4	Understands about the functions and dynamic memory allocation and de allocation.
					CO-5	Gain knowledge of searching and sorting techniques through algorithm
4	I/II	R-18	ENGINEERING GRAPHICS	ME204ES	CO-1	Make use of the knowledge of geometry and Engineering curves for constructions.
					CO-2	Construct various types of scales
					CO-3	Analyze the objects such as points,lines and regular planes held in different orientations using conventional drawing and CAD tools.
					CO-4	Develop the lateral surface for sheet metal work.
					CO-5	Convert isometric views to orthographic views and vice versa
5	I/II	R-18	APPLIED PHYSICS LAB	AP205BS	CO-1	Understand the characteristics of Photo emitters and Photo detectors
					CO-2	Construct RC & LCR circuit in Series and parallel.
					CO-3	Study the magnetic field variation along the axis of the circular coil carrying current.
					CO-4	Understand the working of Optical fibre and find the values of Numerical Aperture and Bending Losses.
					CO-5	Find the value of Energy gap and Hall coefficient of a given semiconductor material.
6	I/II	R-18	PROGRAMMING FOR PROBLEM SOLVING LAB	CS206ES	CO-1	To design algorithm, flowchart and pseudopodia
					CO-2	Develop c programs using control structures
					CO-3	Develop c programs using functions , arrays and memory management
					CO-4	Develop c programs for file processing
					CO-5	Develop c programs for processing strings .Develop c programs to organize and search for data
7	I/II	R-18	ENVIRONMENTAL SCIENCE	*MC209ES	CO-1	**Define** basic definitions and can explain complex relationship between Predators, Prey and the plant community
					CO-2	**Categorize** resources in natural environment and its relationships with human activities as well as human impacts.
					CO-3	**Demonstrate** an awareness, knowledge and appreciation of the intrinsic values of ecological processes and communities.
					CO-4	**Assess** different scientific research strategies, including collection, management, evaluation and interpretation of environmental data and role of information technology in environment
					CO-5	**Examine** the transnational character of environmental problems, protection acts and ways of addressing them, including interactions across local to global scales.