MALLAREDDY ENGINEERING COLLEGE AND MANAGEMENT SCIENCES
(Approved by AICTE New Delhi & Affiliated to JNTU Hyderabad)
Kistapur Village, Medchal, Medchal District-501401

DEPT. OF ELECTRICAL & ELECTRONICS ENGINEERING

R-22 REGULATION - COURSE OUTCOMES

S. No	CLASS	REGULATION	Subject	Course Code	CO's	Course Oucomes
1	II/I	R-22	Numerical Methods and Complex variables	MA301BS	CO-1	Express any periodic function in terms of sine and cosine
					CO-2	Find the root of a given polynomial and transcendental equations.
					CO-3	Estimate the value for the given data using interpolation
					CO-4	Find the numerical solutions for a given first order ODE's
					CO-5	Analyze the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems
2	II/I	R-22	Power System-I	EE303PC	CO-1	Understand the operation of conventional and renewable electrical power generating stations.
					CO-2	Evaluate the power tariff methods and Economics associated with power generation.
					CO-3	Analyze the operations of AIS & GIS, Insulators and Distribution systems.
					CO-4	Able to develop the understanding of contingency Analysis.
					CO-5	Able to develop programs for power system studies.
3	II/I	R-22	Analog Electronic Circuits	EE304PC	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-22	ELECTRICAL MACHINES - I	EE302PC	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-22	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-22	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-22	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
8	II/I	R-22	Analog Electronic Circuits Laboratory	EE307PC	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	Design OP-AMP based circuits with linearintegrated circuits.
9	II/I	R-22	Electrical Simulation tools Laboratory	EE308PC	CO-1	Develop knowledge of software packages to model and program electrical and electronics systems.
					CO-2	Model different electrical and electronic systems and analyze the results.
					CO-3	Articulate importance of software packages used for simulation in laboratory experimentation by analyzing the simulation results.
					CO-4	Students will gain knowledge regarding electrical machines and apply them for practical problems.
					CO-5	Students will gain knowledge regarding the various laws and principles associated with electrical systems.

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1	II/II	R-22	Solid Mechanics & Hydraulic Machines	EE401PC	CO-1	Solve problems dealing with forces, beam and cable problems and understand distributed force systems.
					CO-2	Solve friction problems and determine moments of Inertia and centroid of practical shapes.
					CO-3	Apply knowledge of mechanics in addressing problems in hydraulic machinery and its principles that will be utilized in Hydropower development and for other practical usages.
					CO-4	DEFINE various types of stresses and strain developed on determinate and indeterminate members.
					CO-5	DRAW Shear force and bending moment diagram for various types of transverse loading and support.
2	II/II	R-22	ELECTRICAL MACHINES – II	EE403PC	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-22	DIGITAL ELECTRONICS	EE404PC	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-22	Measurements and Instrumentation	EE402PC	CO-1	Classify various errors present in measuring instruments.
					CO-2	Understand construction, working principle and types of oscilloscopes.
					CO-3	Comprehend different types of signal generators and analyzers, their construction and operation.
					CO-4	Understand application of electronics and computer technology to instrumentation and industrial automation, and process control systems.
					CO-5	Understand the process control systems.
5	II/II	R-22	POWER SYSTEM - II	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-22	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-22	ELECTRICAL MACHINES LAB – II	EE408PC	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-22	Measurements and Instrumentation Laboratory	EE407PC	CO-1	Choose and test any measuring instruments.
					CO-2	Find the accuracy of any instrument by performing experiments.
					CO-3	Calculate the various parameters using different types of measuring instruments.
					CO-4	Understand application of electronics and computer technology to instrumentation and industrial automation, and process control systems.
					CO-5	Understand the process control systems.
9	II/II	R-22	Real-time Research Project/ Field Based Project	EE409PC	CO-1	Demonstrate a sound technical knowledge of their selected project topic.
					CO-2	Design engineering solutions to complex problems utilizing a systems approach
					CO-3	Conduct an experiment in the engineering project and analysis the data results
					CO-4	Communicate with engineers and the community at large in written an oral form.
					CO-5	Demonstrate the knowledge, skills and attitudes of a professional engineer
10	II/II	R-22	Constitution of India	*MC410	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	I/I	R-22	MATRICES AND CALCULUS	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-22	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
					CO-5	Explain concepts on basic spectroscopy and application to medical and other fields
3	I/I	R-22	C Programming and Data Structures	EE103ES	CO-1	Understand the various steps in Program development.
					CO-2	Explore the basic concepts in C Programming Language.
					CO-3	Develop modular and readable C Programs
					CO-4	Understand the basic concepts such as Abstract Data Types, Linear and Non-Linear Data structures.

					CO-5	Apply data structures such as stacks, queues in problem solving and To understand and analyze various searching and sorting algorithms.
4	I/I	R-22	Electrical Circuit Analysis -1	EE105ES	CO-1	Understand network analysis, techniques using mesh and node analysis.
					CO-2	Evaluate steady state and transient behavior of circuits for DC and AC excitations.
					CO-3	Analyze electric circuits using network theorems and concepts of coupled circuits.
					CO-4	Analyze balanced and unbalanced 3-phase circuits and connections
					CO-5	Analyze electrical Coupled circuits
5	I/I	R-22	Computer Aided Engineering Graphics	ME105ES	CO-1	Apply computer aided drafting tools to create 2D and 3D objects
					CO-2	Sketch conics and different types of solids.
					CO-3	Appreciate the need of Sectional views of solids and Development of surfaces of solids
					CO-4	Read and interpret engineering drawing.
					CO-5	Conversion of orthographic projection into isometric view and vice versa manually and by using computer aided drafting.
6	I/I	R-22	Elements of Electrical and Electronics Engineering	EE106ES	CO-1	Verify the basic Electrical circuits through different experiments.
					CO-2	Evaluate the performance calculations of Electrical Machines and Transformers through various testing methods.
					CO-3	Analyze the transient responses of R, L and C circuits for different input conditions.
					CO-4	Analyze Measurement of Voltage, Current and Real Power in primary and Secondary Circuits
					CO-5	Analyze Characteristics of a DC Shunt Motor
7	I/I	R-22	Engineering Chemistry Laboratory	CH107BS	CO-1	Students are able to determination of parameters like hardness and chloride content in water
					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 estimation of rate constant of a reaction from concentration – time relationships.
					CO-4	Students are able to determination of physical properties like adsorption and viscosity
					CO-5	Students are able to calculation of Rf values of some organic molecules by TLC technique
8	I/I	R-22	C Programming and Data Structures Laboratory	EE108ES	CO-1	Develop modular and readable C Programs
					CO-2	Solve problems using strings, functions
					CO-3	Implement / Design suitable data structures (abstract data types) as required in C++ programs.
					CO-4	Implement stacks, queues using arrays, linked lists.
					CO-5	To understand and analyze various searching and sorting algorithms.

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1	I/II	R-22	Ordinary Differential Equations and Vector Calculus	MA201BS	CO-1	Identify whether the given differential equation of first order is exact or not.
					CO-2	Solve higher differential equation with constant coefficients
					CO-3	Apply the concept to find ordinary differential equations using Laplace transforms techniques
					CO-4	Explain gradients, potential functions, directional derivatives of functions of several variables.
					CO-5	Evaluate the line, surface and volume integrals and converting them from one to another.
2	I/II	R-22	APPLIED PHYSICS	PH202BS	CO-1	Understand physical world from fundamental point of view by the concepts of Quantum mechanics and visualize the difference between conductor, semiconductor, and an insulator by classification of solids.
					CO-2	Identify the role of semiconductor devices in science and engineering Applications.
					CO-3	Explore the fundamental properties of dielectric, magnetic materials and energy for their applications
					CO-4	Appreciate the features and applications of Nano materials.
					CO-5	Understand various aspects of Lasers and Optical fiber and their applications in diverse fields.
					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.

3	I/II	R-22	Engineering Workshop	ME203ES	CO-3	Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.
					CO-4	Apply basic electrical engineering knowledge for house wiring practice.
					CO-5	Practice on Block smithy of components using workshops
4	I/II	R-22	English for Skill Enhancement	EN204HS	CO-1	Understand the importance of vocabulary and sentence structures.
					CO-2	Choose appropriate vocabulary and sentence structures for their oral and written communication.
					CO-3	Demonstrate their understanding of the rules of functional grammar.
					CO-4	Develop comprehension skills from the known and unknown passages.
					CO-5	Find, evaluate, and use appropriate bibliographic materials in their texts.
5	I/II	R-22	ELECTRICAL CIRCUIT ANALYSIS - II	EE205ES	CO-1	Observe the response of various R, L and C circuits for different excitations.
					CO-2	Examine the behavior of circuits using Fourier, Laplace transforms and transfer function of single port network.
					CO-3	Obtain two port network parameters and applications and design of various filters.
					CO-4	Identify the Application to simple networks
					CO-5	Identify the Classification of filters
6	I/II	R-22	Applied Python Programming Laboratory	EE206ES	CO-1	Build basic programs using fundamental programming constructs
					CO-2	execute python codes for different applications
					CO-3	Capable to implement on hardware boards
					CO-4	Understand Strings, Lists, Tuples and Dictionaries in Python
					CO-5	Verify programs using modular approach, file I/O, Python standard library
7	I/II	R-22	Applied Physics Laboratory	PH207BS	CO-1	Know the determination of the Planck's constant using Photo electric effect and identify the material whether it is n-type or p-type by Hall experiment.
					CO-2	Appreciate quantum physics in semiconductor devices and opto electronics.
					CO-3	Gain the knowledge of applications of dielectric constant.
					CO-4	Understand the variation of magnetic field and behavior of hysteresis curve.
					CO-5	Carried out data analysis.