SIR C. R. REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Andhra University -B.Tech. (ELECTRICAL AND ELECTRONICS ENGINEERING),
(Under Choice Based Credit System with effect from 2015-2016 onwards)

Course Outcomes

II- Year Semester – I:

Subject Code	Subject Title	Course Outcomes
EEE 2101	Mathematics-IV	Apply the concept of vector differentiation and find scalar potential.
		Apply the concept of vector integration theorems to find scalar potential.
		Analyze and Apply the partial differentiation in physical problems
		Apply the concept of Fourier transform to evaluate the given integral
EEE 2102	Network Theory	Develop an understanding of the basic fundamental electrical laws, elements of electric Networks.
		Apply the basic theorems to solve DC Circuits
		Analyze the basic concepts of DC Transients
		Analyze the concepts of sinusoidal steady state analysis and resonance
		Apply the Laplace transform techniques to solve electrical network problems
		Determine various network parameters for the given two port networks
EEE 2103	Electro Magnetic Fields	Demonstrate the concept of electrostatic field intensity and electric potential
		Illustrate polarization of dielectrics and the behavior of conductors and dielectrics in an electric field.
		Able to learn the concept of field intensity and flux density in magnetic fields
		Discuss forces in magnetic fields and laws of electromagnetic induction
		Summarize the concept of time varying field and analyze propagation of electro-magnetic waves.
EEE 2104	Electronic Devices & Circuits	Able to describe the basic concept of diodes and transistors.
		Able to summarize the operation of rectifiers with and without filters
		Ability to analyze various characteristics of different configurations of transistor
		Able to analyze oscillators and amplifiers
		Able to express the concepts of MOSFET, IGBT, FET.
EEE 2105	Fluid Mechanics and Hydraulic Machines	Familiarize the concepts of continuum, properties of fluid, pressure variation and measurement, pressure on submerged bodies, Hydraulic machines.

		Explain various flow lines, types of flows, fluid kinematics, equations of functions.
		Apply conservation laws to fluid flow problems in engineering applications.
		Calculate and solve flow problems.
		Design the working proportions of hydraulic machines.
EEE 2106	Thermal Prime Movers	To apply basic laws and concepts of Thermodynamics
		To understand the constructional features operational details of various components of thermal prime movers
		To analyze steam properties by standard steam data tables and charts
		To determine the performances of various thermal prime movers based on the thermodynamic properties of its working substance
EEE 2107	Networks Lab	Apply Kirchhoff's current and voltage law to simple circuits and Solve complex circuits using Mesh & Nodal Methods
		Apply Network theorems to solve simple and complex linear circuits
		Solve the Series and Parallel resonance circuit; analyze the performance of single & double tuned circuits
		Develop the Transient response of RLC circuits using Laplace Transform; Explain the characteristics of Two port networks
EEE 2108	Electronic Devices & Circuits Lab	Analyse the operation of devices like diodes, transistors and FETs practically
		Design electronic circuits using basic devices
		Design rectifier circuits with and without filters
EEE 2109	FM&HM Lab	Able to apply fluid properties and principles to various flow measuring devices
		Able to calibrate flow measuring devices
		Analyze the performance of hydraulic turbine and pumps under different working conditions

II- Year Semester – II:

Subject Code	Subject Title	Course Outcomes
EEE 2201	Electrical Machines-I	summarize the basics and principle of operation of DC machines and Transformer
		Distinguishing the fundamental parts of DC machines and Transformer
		Assessing the Performance of DC machines and Transformer
		identify possible applications of different DC machines and Transformers for a given requirement
EEE 2202	Electrical	Ability to illustrate about Electrical Measurements and classify

	Measurements	various analog meters.
		Ability to illustrate about Magnetic Measurements
		Able to identify, design & decide various Bridge Methods to measure R, L, M, C & F parameters
		Ability to detect Potentiometers for particular measurement and applications.
		Ability to explain Instrument Transformers and their errors
EEE 2203	Digital Logic Design	Acquiring knowledge on different numbering systems, binary addition and subtraction, 2's complement representation and operations with this representation and understand the different binary codes.
		Explain switching algebra theorems and apply them for logic functions
		Identify the importance of SOP and POS canonical forms in the minimization or other optimization of Boolean formulas in general and digital circuits. .
		Evaluate functions using various types of minimizing algorithms like Boolean algebra, Karnaugh map or tabulation method.
		Analyze the design procedures of Combinational & sequential logic circuits.
EEE 2204	Signals, Systems and Synthesis	Students will be able to identify the different types of signals and systems.
		Students will be able to evaluate the Fourier Series of periodic signals.
		Students will be able to apply Fourier Transforms of signals by making use of properties and also able to apply sampling theorem for converting a continuous time signal to the discrete time domain.
		Students will be able to use z-transform for analyzing discrete time signals and systems.
		Students will be able to analyze a discrete time LTI system using discrete linear convolution and also able to Synthesize a given network.
EEE 2205	Analog Electronic circuits	Analyze the various multistage and feedback amplifier circuits.
		Calculate the frequency of oscillation for various Oscillator circuits
		Differentiate various types of power amplifiers and tuned amplifiers
		Describe the parameters and applications of operational amplifiers.
EEE 2206	Environmental Science	Ability to acquire knowledge about the importance of environment & availability of resources
		Describe different environmental challenges induced due to anthropogenic activities as well as nature.
		Able to identify the solutions to the environmental problems for the

		sake of healthy life by protecting our natural resources.
		Create awareness on the social issues, environmental protection acts
		Able to understand the environmental impact of developmental activities.
EEE 2207	Electrical Machines-I Lab	Examining the characteristics of different DC machines, transformers and predict specific applications of those machines accordingly.
		compare the speed control method of different types of DC motors
		estimating the parameters of the equivalent circuit transformers
		Measuring various losses in dc machines and transformers by conducting suitable tests.
EEE 2208	Thermal Prime movers Lab	Perform experimental investigation on a 4 cylinder 4 Stroke diesel engine to determine FP, IP and BP.
		Conduct load tests on single and twin cylinder diesel engines to calculate Power and efficiencies.
		Conduct a test on a single cylinder diesel engine to draw heat balance sheet.
		Determine the economical speed by conducting experiments on a 4S 4 cylinder diesel engine.
		Draw valve timing diagram of 4S diesel engine..
		Describe Boilers, IC Engines, Steam engines and Gas Turbines.
EEE 2209	Analog Electronic Circuits Lab	Analyze various amplifier circuits and observe the frequency response.
		Compute the frequency for various Oscillator circuits
		Design the various applications and compute different parameters of Op-amp.

III- Year Semester – I:

Subject Code	Subject Title	Course Outcomes
EEE 3101	Power System-I	Ability to understand choice of site , merits and demerits of various power generating stations
		Ability to identify understand the operational aspects of various power generating stations
		Able to understanding the renewable energy technologies
		Ability to evaluate various economical and operational aspects of power generation
EEE 3102	Pulse & Digital Circuits	Recognize the need of linear and non-linear wave shaping circuits
		Describe the operation of time base generators and logic families
		Apply the concept of synchronization and frequency division in pulse circuits and implement logic gates using diodes and transistors.
		Distinguish different multi-vibrators with respect to biasing and

		triggering schemes
EEE 3103	Electrical Machines-II	Annotating the construction and principle of operation of different kinds of rotating AC machines
		Ability to experimenting on Ac **Machines** to find the performance characteristics.
		Appraise the purpose for parallel operation of generators and learn the conditions to be satisfied for this.
		Memorizing the construction, operation and characteristics of commonly used special purpose machines.
EEE 3104	Control Systems	Able to describe the concepts of Control systems and mathematical modeling of the system.
		Able to analyze feedback characteristics of linear control system to reduce the disturbance.
		Able to differentiate the basics of linear time-invariant control system.
		Able to analyze time response of first and second order control systems for different standard test signals.
		Able to perform frequency domain analysis of linear control system using bode plot and nyquist stability criterion
EEE 3105	Elective-I Linear Integrated Circuits Communication Systems Database Management Systems	Derive the characteristics of operational amplifiers
		Analyze linear and nonlinear applications using operational amplifiers
		Analyze and design Butterworth filters using operational amplifiers
		Analyze various functional Ics and DACs, ADCs
EEE 3106	Elective-II Computer Architecture and Organization Digital Signal Processing Information Technology	Analyse different continuous and discrete time signals
		Evaluate concept of Fourier transform,Z-transform to analyze the operations on signals and acquire knowledge about systems.
		Select proper tools for analog to digital and digital to analog conversion .also select proper tools for time domain and frequency domain implementations.
		Formulate fast Fourier transform(FFT) algorithms for faster realization of signals and systems
		Design,implementation and analysis of digital filters for processing of discrete time by use FIR and IIR techniques.
EEE 3108	Electrical Machines Lab-II	Choosing methods for testing of different electrical machines to identify their performance
		Estimating equivalent circuit parameters of three phase Induction motor

		Experimenting the process of 'synchronization' of a generator to the live bus bar and method of starting a synchronous motor.
		Distinguish the operational features of synchronous machines and induction machines.
EEE 3109	PDC Lab	Observe the output response of linear and non linear wave shaping circuits.
		Compute the frequency for various Multi-vibrator circuits and sweep circuits
		Design Logic gates with discrete components and observe truth tables.
EEE 3110	Electrical Measurements Lab	Able to identify ac and dc analog meters
		Able to design ac and dc bridges
		Able to test dielectric strength of various insulating oils
		Able to test induction type energy meter and electro dynamo wattmeter
		Able to arrange various types of power measurement circuit by various methods

III- Year Semester – II:

Subject Code	Subject Title	Course Outcomes
EEE 3201	Power System-II	Student is able to differentiate Various transmission systems and power distribution systems.
		Student is able to apply various methods for transmission line modeling and economic aspects
		Student is be able to determine Transmission line parameters, power loss due to corona, of an electrical power system
		Student is able to Evaluate Potential distributions over a string Insulators, Insulation stress present in cables.
		Student is able to design power transmission towers for different voltage levels, insulators & climatic conditions.
EEE 3202	Microprocessor and Micro-Controllers	Ability to draw the basic architecture of 8085, 8086 microprocessors, and 8051 microcontrollers.
		Applying an instruction set of 8085 and 8051 to solve the problems
		Ability to interfacing the data transfer, data conversion, interrupting, timing, display, and other peripheral devices to 8085MP and 8051MC.
		Ability to design and develop 8085 Microprocessor and 8051 microcontroller-based systems for real-time applications using low-level language like ALP
EEE 3203	Power Electronics	Able to explain the characteristics of various power electronic elements and able to build simple power electronic circuits
		Able to analyze theoperation and waveforms for phase controlled

		converters.
		Able to analyze theoperation and waveforms choppers and inverters
		Able to describe AC voltage controllers and cyclo converters operation
		Able to apply knowledge of modulation techniques for inverters in real time projects
EEE 3204	Electric Drives and Traction	Ability to explain basics of Electric drives, operating characteristics, loading conditions and torques.
		Able to illustrate speed control of dc motors by employing power electronic devices.
		Able to illustrate speed control of ac motors by employing power electronic devices.
		Ability to explain concepts of electric traction and control of traction motors.
EEE 3205	Elective-III Energy Management and Auditing **Utilization of Electrical Energy** Power Station Practice	Illustrate different methods of production of heat and heating systems in industries
		Illustrate different methods of welding in industries
		Gaining knowledge of different methods of production of light, lighting systems, illumination levels for various purposes light fittings, flood lighting ,street lighting
		Conveying the knowledge of air conditioning and refrigeration
		Design the house wiring and knowledge of safety precautions
EEE 3206	Elective-IV **Non Conventional Energy Sources** Digital Control Systems Electrical Machine Design	Classify Non-Conventional sources of energy technologies
		Compare various Solar energy technologies and Collectors operations
		Analyze Photovoltaic systems and their Applications
		Emphasize various Wind power sources, bio energy, chemical energy, MHD, geothermal energy, ocean energy systems,
EEE 3208	Control Systems Lab	Illustrate to find time response of given control system model
		Design of Lead, Lag, Lead-Lag systems in control systems
		Plot Root Locus and Bode plots for given control system model
		Examine the basic knowledge on practical control system applications on machines & electronic devices like ac servo motor, synchro and magnetic amplifier
		Design PID controllers for given control system model
EEE 3209	Power Electronics Lab	Able to Elucidate the basic operation of various power semiconductor devices and passive components.
		Able to analyze the performance of different Ac-Dc power electronic circuits for different loads

		Able to analyze the performance of different Dc-Dc power electronic circuits for different loads
		Examine the basic knowledge on practical converter applications to Motors
EEE 3210	Micro-processor and micro-controllers Lab	Ability to write assembly language program using 8085 micro processor
		Ability to interface 8085 with I/O and other devices.
		Ability to write assembly language program using 8051 microcontroller
		Ability to write assembly language program using 8085 micro processor

IV- Year Semester – I:

Subject Code	Subject Title	Course Outcomes
EEE 4101	Power System Analysis & Stability	Analyze Per Unit representation of Power System.
		Formulate network Matrix and solve Load flow Studies
		Solve the Symmetrical Components and Unsymmetrical Components of Power system
		Describing the various types of faults on an unloaded alternator
		Enumerate the concepts of Power System Stability swing equation, critical clearing angle calculation elementary real world applications
EEE 4102	Power System Protection	Ability to Define Protection Schemes, Relays and Switch Gear
		Able to Explain Protection Schemes of Alternators, Transmission Lines, Transformers, Relays and Switch Gear
		Able to Differentiate Protection Schemes, Relays Technology and Switch Gear
		Able to Sketch Protection Circuits, AC and DC Relays, Fuses and Circuit Breakers in LV and MV Switch Gear
		Able to Predict which type of Relay, Fuse and Circuit Breaker are suitable for a particular application
EEE 4103	Engineering Economics	Adopt the fundamental Economic concepts for decision making and forward planning. Also know law of demand and its exceptions, to use different forecasting methods for predicting demand for various products and services
		Describe causes and features of different types of market structures and business organizations and should be familiar with steps, methods & sources of raising capital by business undertaking.
		Ability to learn the concepts and functions of management, scientific management and entrepreneurship, in traditional and modern theories.
		Apply the concepts & principles of management in real life industry at different levels like production, marketing, financial etc.

		Outline different types of capital, raising methods and depreciation analysis and determine the break-even point
EEE 4104	Power Systems Operation and Control	Apply optimization techniques for economic operation of thermal and hydro - thermal power plants
		Solve unit commitment problem and optimal power flow problem using optimization techniques
		Design automatic generation controller (AGC) and automatic voltage regulator (AVR) systems for single area power system and two area power system
		Apply security analysis techniques to enhance security level of power systems
		Evaluate power system measurement data through state estimation techniques
EEE 4105	Elective-V HVDC Transmission Advanced Control Systems Electrical Distribution Systems	Describe the Control System Components like Servomotors, Magnetic Amplifier, Synchro's, Metadyne, Amplidyne etc.
		Applications of practical control systems
		Analyze the stability of Multi input and Multi output systems
		Design the Compensators using Root Locus and Bode Plots
EEE 4106	Elective-VI Operations Research Flexible AC Transmission Systems Advanced Power Electronics	Analyse conventional & emerging transmission network controls
		Explain various FACTS Devices for power flow control
		Emphasize various converters employed in FACTS technology
		Analyse different series and shunt compensation techniques
		Extend the knowledge of active & reactive power flow control with UPFC and IPFC
EEE 4107	Power System Simulation Lab	Ability to apply iterative techniques for power flow analysis
		Ability to model and design stability and dynamics of single and two area bus system in power system
		Ability to acquire knowledge on Fault analysis.
		Solve the economic dispatch problems
EEE 4108	Power System Protection Lab	Analyze the performance of transmission lines and relays
		Calculate the steady-state power flow in a power system
		Analyze different types of short-circuit faults which occur in power systems
		Analyze the performance of transmission lines and relays

IV- Year Semester – II:

Subject Code	Subject Title	Course Outcomes
EEE 4201	Internship/ Project Work	Apply the electrical knowledge to solve practical problems
		Designing the circuit to implement the projects
		Simulate the electrical networks to analyze the projects
		Design engineering solutions for real time application