PRIYADARSHINI COLLEGE OF ENGINEERING

Department of Electrical Engineering

Course Outcomes (CO)

Semester - 3rd

Course Name: Applied Mathematics-III	**Code: BEELE301**
At the end of course Students will	
CO1	Understand Laplace Transform and should be able to solve differential equations.
CO2	Expand the function in periodic form using Fourier series and understand the relationship between z transform and the Fourier transform for discrete time signals.
CO3	Use the functions of several variables in engineering problems.
CO4	Understand the fundamental concepts of complex analysis and also be able to evaluate some standard integrals using contour integrals.
CO5	Student will be able to formulate and solve linear partial differential equations in the field of Industrial Organization and Engineering.
CO6	Set up and solve linear systems/linear inequalities graphically/geometrically and algebraically using matrices.

Course Name: Non-Conventional Energy Sources	**Code: BEELE302**
At the end of course Students will	
CO1	A student will be able to learn fundamentals of solar radiation geometry
CO2	A student will be able to learn about Solar Energy Collectors & Solar Energy Storage
CO3	A student will be able to learn application of solar energy
CO4	A student will be able to learn about selection of sites for wind farm, different types of wind generators.
CO5	A student will be able to understand the basics of ocean, tidal & wave energy
CO6	A student will be able to understand the basics of small hydro and other Non-Conventional Energy Sources

Course Name: Electrical Measurement and Instrumentation	CodeBEELE303
At the end of course Students will	
CO1	Students has understood the details of different methods (Bridges) used for measurement of R,L,C
CO2	Student has understood the details of different electrical instrument used for electrical measurement And Instrumentation.
CO3	Students have understood the details of different types of potentiometers and CT and PT and measurement of Power and Energy.
CO4	The basic idea about transducer and instrumentaion System
CO5	The basic idea about measurement of acceleration, velocity, angular velocity, Torque and Power measurement, Torque meter
CO6	The basic idea about measurement of temperature using thermistor, RTD and thermocouple and Two color pyrometers, Optical pyrometer; pressure and flow

Course Name: Network Analysis	Code: BEELE304
At the end of course Students will	
CO1	Apply Source transformation and loop (mesh) analysis
CO2	Apply node analysis and duality
CO3	Use various network theorems for analysis and design of electric circuits
CO4	Analyze periodic inputs to electric circuits using Fourier series and their response. Compute initial and final conditions for current and voltage in first and second order circuits.
CO5	Determine the response of a circuit excited by a waveform composed of various step and ramp components.
CO6	Characterize two-port networks by Z, Y, T, h parameters.

Course Name: Electronic Devices and Circuits	Code: BEELE305
At the end of course Students will	
CO1	Know basic fundamentals of Semiconductor Devices.
CO2	Know basic fundamentals, Principles and working of Transistors
CO3	To know concept of Amplifiers
CO4	To know the basics of Oscillators, FETs and MOSFETs
CO5	To know the Principle of Differential Amplifier Circuits
CO6	To know the Logic Gates and Truth Table.

Semester - 4th

Course Name: Applied Mathematics -IV	**Code:BEELE401**
At the end of course Students will	
CO1	To acquaint students with mathematical formulation and use of Laplace Transform to control system.
CO2	To apply concept of transform for solving difference equations.
CO3	To deal with vague data using fuzzy sets and fuzzy logic
CO4	To grasp the concept of numerical methods and apply them to solve various algebraic, transcendental and simultaneous equations.
CO5	To grasp the concept of numerical methods and apply them to solve linear and non-linear differential equations.
CO6	Students will become familiar with random variables and probability. To determine probabilities of events, determine probabilities and find means and standard deviations of both discrete and continuous probability distributions.

Course Name:Elements of Electromagnetics	**Code:BEELE402**
At the end of course Students will	
CO1	Acquire knowledgeable in static electric and magnetic fields.
CO2	Analyse various laws of electromagnetic systems.
CO3	Understand the physical basis for the functining of circuit elements.
CO4	Apply electromagnetic boundary conditions.
CO5	Familiar with the four Maxwell's equations used to study time varying electromagnetic or dynamics fields.
CO6	Understand the concept of uniform plane-wave propogation and electromagnetic power density flow in lossless medium

Course Name: Digital and Linear Electronic Circuits.	Code:BEELE403
At the end of course Students will	
CO1	Know basic fundamentals of combinational logic concepts.
CO2	Know basic fundamentals of flip flops and memories.
CO3	To know concepts of sequential circuits
CO4	Basics of Operation Amplifiers and its Application
CO5	Simple Linear Circuit
CO6	Study of Linear ICs

Course Name: Electrical Machines-I	Code:BEELE404
At the end of course Students will	
CO1	The student will be able to understand Principle, construction, connections, vector grouping, operation and testing of 3-phase transformer
CO2	The student will be able to understand conversion of 3-phasse supply to 2-phase supply, parallel operation of3-ph. Transformers.
CO3	The student will be able to understand Principle, armature and field construction, types, operation characteristics, armature reaction, commutation, methods to improve commutation in dc generators, Principle, types, voltage build up, performance characteristics, torque evaluation in dc motors
CO4	The student will be able to understand Principle, construction, types, torque development, performance characteristics, tests to determine performance indices & parameters of equivalent circuit of 3-phase and double cage induction motors
CO5	The student will be able to understand methods of starting, speed control and braking of induction motors.
CO6	The student will be able to understand Revolving and cross field theories, operation, characteristics, types, equivalent circuit & tests.

Course Name: Computer Programming	Code:BEELE405
At the end of course Students will	
CO1	Understands the basics and syntax of programming and able to apply the knowledge of operators, loops, conditional and iterative statements in programs
CO2	Apply the knowledge of programming in arrays, for searching an element using linear and binary search, matrix addition
CO3	Able to construct the structure using different data elements, nesting of structure, printing two different data of more than one company, file opening, closing, reading and writing.
CO4	Understand object Oriented programming and able to apply the knowledge of object oriented programming for real world application
CO5	Able to construct the matrix, different operations on matrix using Matlab
CO6	Able to plot and analyze the graphs of different waveform, plot of different equations in one graph using Matlab.

Semester 5 th

Course Name: Electrical Power System-I	**Code:BEELE501**
At the end of course Students will	
CO1	Students will develop the ability to understand Structure of electrical power system, concept of Substation and elementary consideration of power system.
CO2	Students will develop the ability for Representation of power system elements and per unit sy stem representation
CO3	Students will be able to understand elementary distribution scheme and insulator
CO4	Students will develop the ability to represent and understand the transmission line parameters
CO5	Students will be able to understand the interconnection of two bus systems and concept of lo ad flow analysis.
CO6	Students will develop the ability to understand Elementary concepts of real and react ive power control

Course Name: Utilisation of Electrical Energy	**Code:BEELE501**
At the end of course Students will	
CO1	To understand various types of Electric Heating and its application.
CO2	To apply Electric Welding for various applications.
CO3	To design Illumination schemes for Indoor / Outdoor lightings.
CO4	To understand Construction, working and applications of Refrigeration & Air conditioning.
CO5	To understand Various types of Fans & Pumps, its working and applications.
CO6	To understand basic idea and energy saving opportunities in Compressors and DG Sets .

Course Name: Electrical Machines Design	**Code:BEELE502**
At the end of course Students will	
CO1	Students should be able to Select proper material for design of a machine.
CO2	Students should be able to Design a overall transformer.
CO3	Students should be able to Design cooling circuit of transformer.
CO4	Students should be able to Design stator core of Induction Motor.
CO5	Students should be able to Design rotor core of Induction Motor.
CO6	Students should be able to Design overall dimensions of synchronous machines.

Course Name: Electrical Machines Design	Code:BEELE503
At the end of course Students will	
CO1	Students should be able to Select proper material for design of a machine.
CO2	Students should be able to Design a overall transformer.
CO3	Students should be able to Design cooling circuit of transformer.
CO4	Students should be able to Design stator core of Induction Motor.
CO5	Students should be able to Design rotor core of Induction Motor.
CO6	Students should be able to Design overall dimensions of synchronous machines.

Course Name: Microprocessor and Interfacing	Code:BEELE504
At the end of course Students will	
CO1	Students should be able to understand VLSI circuit concept and system bus concept of microprocessor based system.
CO2	Students should be able to understand 8085 architecture and its working.
CO3	Students should be able to understand Programming concept and stack operation
CO4	Students should be able to understand software and hardware interrupts
CO5	Students should be able to understand method of data transfer of different Peripherals chips.
CO6	Students should be able to understand hardware considerations and interfacing of devices.

Course Name: Electrical Machines-II	Code:BEELE505
At the end of course Students will	
CO1	The student has understood principle , construction, laying of armature and field windings, types, generation of emf,
CO2	The student has understood steady state operation of synchronous machine
CO3	The student has understood synchronization and parallel operation of synchronous generators
CO4	The student has understood principle, construction, methods of starting of synchronous motor, its operation with variable load, operation with variable excitation, performance evaluation.
CO5	The student has understood Transient and sub- transient reactance's and their measurement
CO6	The student has understood special motors, like Repulsion, Hysteresis, Reluctance and Universal motors

Semester - 6th

Course Name:Power Station Practice	**Code:BEELE601**
At the end of course Students will	
CO1	To understand different source of Energy and factors (load survey) associated with energy generation
CO2	To understand the requirement for installation , estimation of thermal power plant (economics of generation) and to work in power plant
CO3	To understand the various types of hydro power plant ,their major components , to work in power plant
CO4	To understand the principal of nuclear energy, its components and to work in power plant
CO5	To understand voltage control of AC generators and calculation tariff
CO6	To understand technology of co-generation captive power generation and overcome energy problem

Course Name: Economics and Industrial Management	**Code:BEELE602**
At the end of course Students will	
CO1	Students will be able to understand business structure and business economics and will apply this knowledge in a complex business environment.
CO2	Students will be able identify and understand market structure, eonomic reforms and its social impact by applying the knowledge of economics.
CO3	Students will be able to comprehend the process of entrepreneurial development for setting up engineering / business unit.
CO4	Students will be able to apply knowledge of economics and entrepreneurship with professional and ethical responsibilities.
CO5	Students will understand application of economics and entrepreneurial know-how in multidisciplinary domains of industry.
CO6	Students will able to understand business & economics on a large scale.

Course Name:Electrical Drives and their Controls	Code:BEELE603
At the end of course Students will	
CO1	To understand the fundamentals of starting, speed control/braking of Electric motors
CO2	To understand the heating and cooling characteristics of electric and to learn the use of flywheel
CO3	To learn the basics Concept of PLC and its programming
CO4	To understand different methods of starting & braking of DC and three phase Induction motor using AC & DC contractors & relay
CO5	To Study the motors used in Electric Traction.
CO6	To understand the idea about drives commonly used in industries and digital control of electric drives.

Course Name: Power Electronics	Code:BEELE604
At the end of course Students will	
CO1	Acquire knowledge about fundamental concepts and techniques used in power electronics.
CO2	Ability to analyze various single phase and three phase power converter circuits and understand their applications.
CO3	Foster ability to identify basic requirement for power electronics based design application.
CO4	To develop skills to build and troubleshoot power electronics circuits.
CO5	Foster ability to understand the use of power converters in commercial and industrial applications.
CO6	To understand the applications of power electronics circuits for conserving electrical energy to save environment.

Course Name: Control System-I	Code:BEELE605
At the end of course Students will	
CO1	Model the linear system and study the control system component specification through classical approach
CO2	Understand the time response specification and its control
CO3	Analyze the absolute stability
CO4	Analyze the relative stability
CO5	Frequency response tools like bode plot and nyquist plot
CO6	Understand the introductory concept of state variable approach.

Course Name:Functional English	Code:BEELE606
At the end of course Students will	
CO1	To apply English language proficiency seamlessly in professional careers.
CO2	To identify the communication gaps and barriers to communication in professions and rectify them professionally.
CO3	To Write contents, prepare technical documents, legal documents, Board documents, Minutes of the Meetings, internal and external communication in a proficient English language.
CO4	To build and develop the team of corporate communicators.
CO5	To exploit the social digital media for effective corporate communication.
CO6	To unleash public speaking/ presentation skills.

Semester - 7th

Course Name: Control System-II	Code:BEELE701
At the end of course Students will	
CO1	Analyze the transfer function of different classical Compensators for the system.
CO2	Analyze the practical system for the desired specifications through state variable approach.
CO3	Analyze the controllability and observability and design of state variable feedback.
CO4	Design the optimal control with and without constraints.
CO5	Analyze non-linear system with describing and phase plane method
CO6	Analyze the digital system from stability point of view.

Course Name: Electrical Power System-II	Code:BEELE702
At the end of course Students will	
CO1	To represent the circuits using symmetrical component transformation.
CO2	To analyse symmetrical Fault .
CO3	To analyse unsymmetrical Fault.
CO4	To determine stability of power system and undergo stability studies.
CO5	To obtain economic operation of power system.
CO6	To understand basic concept of neutral grounding and compensation.

Course Name: Flexible AC Transmission System (Elective-I)	Code:BEELE703
At the end of course Students will	
CO1	understand the facts concept and general system consideration
CO2	understand the concept of voltage-sourced and current. sourced converters
CO3	analyse the concept of static shunts compensators
CO4	analyse the concept of static series compensators
CO5	ulearn the concept of static voltage and phase angle regulators
CO6	understand the concept of combined compensators and special purpose FACTs controllers

Course Name: Non Conventional Energy Sources (Elective-I)	Code:BEELE70
At the end of course Students will	
CO1	A student will be able to learn fundamentals of solar radiation geometry
CO2	A student will be able to learn about Solar Energy Collectors & Solar Energy Storage
CO3	A student will be able to learn application of solar energy
CO4	A student will be able to learn about selection of sites for wind farm, different types of wind generators.
CO5	A student will be able to understand the basics of ocean, tidal & wave energy
CO6	A student will be able to understand the basics of small hydro and other Non-Conventional Energy Sources

Course Name: High Voltage Engineering	Code:BEELE704
At the end of course Students will	
CO1	Student will be able to understand breakdown strength of various dielectric materials under different conditions
CO2	Student will be able to understand Lighting and switching over voltages,Mechanism of lighting, types of strokes and its protection
CO3	Student will be able to understand Concepts of travelling waves and insulation co-ordination ,attenuation and distortion effects of travelling waves
CO4	Student will be able to understand Different methods for generating high voltages/currents for varoius applications
CO5	Student will be able to understand Different techniques tomeasure high voltage and current
CO6	Student will be able to understand Non destructive and high voltage testing of electrical apparatus

Semester - 8th

Course Name: Extra High Voltage AC and DC Transmission (Elective-II) Code:BEELE801	
At the end of course Students will	
CO1	Student should able to know power handling capacity of transmission systems.
CO2	Student should able to know the effects of electrostatic fields in EHVAC lines .
CO3	Student should able to know the comparison between EHVAC/HVDC systems & kinds of DC link.
CO4	Student should able to know voltage and current control systems in HVDC system.
CO5	Student should understand the knowledge of AC/DC filters and reactive power compensation .
CO6	Student should understand the protection schemes of HVDC system and substation layout.

Course Name: Power Semiconductor Based Drives (Elective-III) Code:BEELE802	
At the end of course Students will	
CO1	To understand the dynamics of electrical drives and their control
CO2	To understand the control of DC motor drives
CO3	To understand the semiconductor based control of Induction motor
CO4	To understand the semiconductor based control of Synchronous motor
CO5	To carry research on the newer Switched reluctance motor & Brushless Induction motor
CO6	To understand the traction drive with AC & DC motors

Course Name: Switchgear and Protection Code:BEELE803	
At the end of course Students will	
CO1	To understand the basic fundamental of protective relaying and theory of main components used in power system protection
CO2	To know the protection systems used for medium voltage transmission line
CO3	To know the protection systems used for high voltage transmission line
CO4	To understand the protection systems used for electric machine, transformer and busbar
CO5	To know the operation of static relays & its application
CO6	To understand the theory, construction & applications of main types of circuit breakers

Course Name: Computer Application in Power System	**Code:BEELE804**
At the end of course Students will	
CO1	Determine network matrix of a power system using graphical representation
CO2	Determine network matrix of a power system using algorithm
CO3	Analysis of balance and unbalance condition by algorithm formation of 3-ph impedance matrix
CO4	Load flow study of power system by iterative methods
CO5	Perform short circuit study for 3-ph network under balance and unbalance faults
CO6	Determine transient stability of power system networks.