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Raja Reddy Layout, Chikkabanavara, Bengaluru – 560 090

Electrical & Electronics Engineering

Course Outcomes 2022 Scheme

III SEMESTER

Course Name: CEE201(BMATE 301) Mathematics-III for EE Engineering	
CEE201.1	Understand that physical systems can be described by differential equations and solve such equations
CEE201.2	Make use of correlation and regression analysis to fit a suitable mathematical model for statistical data
CEE201.3	Demonstrate the Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing, and field theory.
CEE201.4	To use Fourier transforms to analyze problems involving continuous-time signals and to apply Z-Transform techniques to solve difference equations models arising in the engineering field. Demonstrate the validity of testing the hypothesis.
CEE201.5	Apply discrete and continuous probability distributions in analyzing the probability
Course Name: CEE202(BEE302) Electric Circuit Analysis	
CEE202.1	Understand the basic concepts, basic laws and methods of analysis of DC and AC networks and reduce the complexity of network using source shifting, source transformation and n e t w o r k reduction u s i n g transformations.
CEE202.2	Solve complex electric circuits using network theorems conditions and their evaluation.
CEE202.3	Discuss resonance in series and parallel circuits and also the importance of initial
CEE202.4	Synthesize typical waveforms using Laplace transformation.
CEE202.5	Solve unbalanced three phase systems and also evaluate the performance of two port networks.
Course Name: CEE203(BEE303) Analog Electronic Circuits	
CEE203.1	Utilize the characteristics of transistor for different applications.
CEE203.2	Design and analyze biasing circuits for transistor.
CEE203.3	Design, analyze and test transistor circuitry as amplifiers and oscillators
Course Name: CEE204(BEE304) Transformers and Generators	
CEE204.1	Explain the construction, working and various tests of single phase Transformer.
CEE204.2	Explain the construction, working and parallel operation of three phase Transformer.
CEE204.3	Explain the construction, working and analysis of Synchronous Generator.
CEE204.4	Explain the construction, working of solar and wind power generators.

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Course Name: CEE205(BEEL305) Transformers and Generators Lab

CEE205.1	Conduct various tests on transformers and synchronous machines and evaluate their performance.
CEE205.2	Perform the parallel operation on two single phase transformers.
CEE205.3	Verify the performance of synchronous generator.
CEE205.4	Calculate the voltage regulation of an alternator using different methods for comparison.

Course Name: CEE206(BEE 306A) DIGITAL LOGIC CIRCUITS

CEE206.1	Explain the concept of combinational and sequential logic circuits
CEE206.2	Analyse and design combinational circuits
CEE206.3	Describe and characterize flip flops and its applications
CEE206.4	Design the sequential circuits using SR, JK, D and T flip-flops and Melay and Moore applications
CEE206.5	Design applications of combinational and sequential circuits
CEE206.6	Employ the digital circuits for different applications

Course Name: CEE207(BEE306B) Electrical Measurements and Instrumentation

CEE207.1	Explain the significance and methods of Measurements, elements of generalised measurement system and errors in measurements.
CEE207.2	Measure resistance, inductance and capacitance by different methods.
CEE207.3	Explain the construction, working and characteristics of various instrument transformers.
CEE207.4	Explain the working of different electronic instruments and display devices.

Course Name: CEE208(BEE 306C) ELECTROMAGNETIC FIELD THEORY

CEE208.1	Explain Scalars, Vectors, Cartesian co-ordinate system, relation between different coordinate systems,Coulomb's law, Electric field intensity and its evaluation for different charge conditions.
CEE208.2	Explain the potential field of a point charge, Potential gradient, Energy density in the electrostatic field and conductor's properties and boundary conditions.
CEE208.3	Explain the Poisson's and Laplace Equations, Biot - Savart's law, Ampere's circuital law and Stokes theorem.
CEE208.4	Explain the Magnetic force, Force between differential current elements. Force and torque on a closed circuit, Nature of magnetic materials and Magnetic boundary conditions.
CEE208.5	Explain the Faraday's law, Displacement current. Maxwell's equations, Wave propagation in free space and in dielectrics.

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IV SEMESTER

Course Name: CEE211(BEE401)ELECTRIC MOTORS	
CEE211.1	Understand the construction and operation, characteristics, Testing of DC Motors and determine losses and efficiency.
CEE211.2	Understand the construction and operation, classification and types of Three phase Induction motors.
CEE211.3	Describe the performance characteristics and applications of three phase Induction motors.
CEE211.4	Demonstrate and explain Speed Control methods of three phase induction motor and typesof single phase induction motors.
CEE211.5	Understand the construction and operation, V and inverted V curves of synchronous motors.
CEE211.6	Construction and operation of Universal motor, AC servomotor, Linear induction motor,PMSM, SRM and BLDC motors.
Course Name: CEE212(BEE402)Transmission and Distribution	
CEE212.1	Explain the structure of electrical power system, its components, advantages of high voltage AC and DC transmission, various conductors used for transmission, sag and its calculation.
CEE212.2	Explain various types of insulators and methods to improve string efficiency.
CEE212.3	Explain the various transmission line parameters, their effects on transmission of electricity.
CEE212.4	Evaluate the parameters that influence the performance of transmission line and tocalculate performance parameters of various transmission lines.
CEE212.5	Explain carona and its effects, underground cable and its construction, classification, limitations and specifications.
CEE212.6	Evaluate different types of distribution systems.
Course Name: CEE213(BEE402)Microcontrollers	
CEE213.1	Outline the 8051 architecture, registers, internal memory organization, addressing modes.
CEE213.2	Discuss 8051 addressing modes, instruction set of 8051, accessing data and I/O port programming.
CEE213.3	Develop 8051C programs for time delay, I/O operations, I/O bit manipulation, logic and arithmeticoperations, data conversion and timer/counter programming.
CEE213.4	Summarize the basics of serial communication and interrupts, also develop 8051 programs for serial datacommunication and interrupt programming.
CEE213.5	Program 8051to work with external devices for ADC, DAC, Stepper motor control, DC motor control.
CEE213.6	Develop various 8051 based projects.

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Course Name: CEE214(BEEL404)Microcontrollers	
CEE214.1	Perform tests on DC Machines to determine their characteristics.
CEE214.2	Control the DC Motors using different methods.
CEE214.3	Pre-determination the performance characteristics of DC Machines.
CEE214.4	Conduct load test on single-phase and three-phase Induction Motor and draw performance characteristics.
CEE214.5	Conduct test on Induction Motor to determine performance characteristics.
CEE214.6	Conduct test on synchronous motor to draw performance curves.
Course Name: CEE215(BEE405A)Electrical Power Generation and Economics	
CEE215.1	Explain the basics of hydro electric power plant, merits and demerits of hydroelectric power plants, site selection, arrangement and elements of hydro electric plant.
CEE215.2	Explain the working, site selection and arrangement of Steam, Diesel and Gas Power Plants.
CEE215.3	Explain the working, site selection and arrangement of Nuclear Power Plants.
CEE215.4	Explain the importance of different equipments in substation, Interconnection of power stations and different types of grounding.
CEE215.5	Explain the economics of power generation.
Course Name: CEE216(BEEL456B)Scilab / MATLAB for Electrical and Electronic Measurements	
CEE215.1	Analyse in a systematic way, think better, and perform better.

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V SEMESTER

Course Name: CEE301(BEE 502)SIGNALS AND DSP	
CEE301.1	Discuss classification and basic operations that can be performed on both continuous and discretetime signals and to understand sampling theorem.
CEE301.2	Evaluate Discrete Fourier Transform of a sequence , to understand the various properties of DFT andsignal segmentation using overlap and overlap add method.
CEE301.3	Evaluate Discrete Fourier Transform of a sequence using decimation in time and decimation infrequency methods.
CEE301.4	To design Butterworth and Chebyshev IIR digital filters and to represent the filters using differentmethods and to represent IIR filter using different methods.
CEE301.5	To design FIR filters using windows method and frequency sampling method and to represent FIRfilters using direct method and lattice method.
Course Name: CEE301(BEE503)Power Electronics	
CEE302.1	To give an overview of applications power electronics, different types of power semiconductor devices, their switching characteristics, power diode characteristics, types, their operation and the effects of power diodes on RL circuits.
CEE302.2	To explain the techniques for design and analysis of single phase diode rectifier circuits
CEE302.3	To explain different power transistors, their steady state and switching characteristics and limitations.
CEE302.4	To explain different types of Thyristors, their gate characteristics and gate control requirements.
CEE302.5	To explain the design, analysis techniques, performance parameters and characteristics of controlled rectifiers, DC- DC, DC -AC converters and Voltage controllers.
Course Name: CEE303(BEE503)Power Electronics	
CEE303.1	To give an overview of applications power electronics, different types of power semiconductor devices, their switching characteristics, power diode characteristics, types, their operation and the effects of power diodes on RL circuits.
CEE303.2	To explain the techniques for design and analysis of single phase diode rectifier circuits.
CEE303.3	To explain different power transistors, their steady state and switching characteristics and limitations.
CEE303.4	To explain different types of Thyristors, their gate characteristics and gate control requirements.
CEE303.5	To explain the design, analysis techniques, performance parameters and characteristics of controlled rectifiers, DC- DC, DC -AC converters and Voltage controllers.
Course Name: CEE304(BEEL504)Power Electronics Laboratory	
CEE304.1	Obtain static characteristics of semiconductor devices to discuss their performance.
CEE304.2	Trigger the SCR by different methods

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CEE304.3	Verify the performance of single phase controlled full wave rectifier and AC voltage controller with R and RL loads.
CEE304.4	Control the speed of a DC motor, universal motor and stepper motors.
CEE304.5	Verify the performance of single phase full bridge inverter connected to resistive load.
Course Name: CEE305(BEE515A)High Voltage Engineering	
CEE305.1	Have detailed knowledge of conduction and breakdown phenomenon in gases, liquidsand solid dielectrics.
CEE305.2	Ability to design and simulate the generation of high voltages and currents
CEE305.3	Ability to design and analyze the measurement techniques for high voltages and currents
CEE305.4	Summarize overvoltage phenomenon and protection of electric power systems.
CEE305.5	Explain non-destructive testing of materials and high-voltage testing of electric apparatus

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VI SEMESTER

Course Name: CEE311(BEE601)POWER SYSTEM ANALYSIS I	
CEE311.1	Model the power system components &construct per unit impedance diagram of powersystem.
CEE311.2	Analyse three phase symmetrical faults on power system.
CEE311.3	Compute unbalanced phasors in terms of sequence components and vice versa, also develop sequencenetworks.
CEE311.4	Analyse various unsymmetrical faults on power system.
CEE311.5	Examine dynamics of synchronous machine and determine the power system stability..
Course Name: CEE312(BEE602)CONTROLSYSTEMS (PCC)	
CEE312.1	Analyze and model electrical and mechanical system using analogous.
CEE312.2	Formulate transfer functions using block diagram and signal flow graphs.
CEE312.3	Analyze the stability of control system, ability to determine transient and steady state time response.
CEE312.4	Illustrate the performance of a given system in time and frequency domains, stability analysis using Rootlocus and Bode plots.
CEE312.5	Discuss stability analysis using Nyquist plots, Design controller and compensator for a given specification.
Course Name: CEE313(BEE654A)Utilization of Electric Power	
CEE313.1	Discuss different methods of electric heating & welding.
CEE313.2	Discuss the laws of electrolysis, extraction, refining of metals and electro deposition process.
CEE313.3	Discuss the laws of illumination, different types of lamps, lighting schemes and design of lighting systems.
CEE313.4	Analyze systems of electric traction, speed time curves and mechanics of train movement.
CEE313.5	Explain the motors used for electric traction, their control & braking and power supply system used for electric traction.
Course Name: CEE314(BEEL606)CONTROL SYSTEM LABORATORY	
CEE314.1	Utilize software package and discrete components in assessing the time and frequencydomain response of a given second order system.
CEE314.2	Design, analyze and simulate Lead, Lag and Lag – Lead compensators for given specifications.
CEE314.3	Determine the performance characteristics of ac and DC servomotors and synchro-transmitterreceiver pair used in control systems.
CEE314.4	Simulate the DC position and feedback control system to study the effect of P, PI, PD andPID controller and Lead compensator on the step response of the system.
CEE314.5	Develop a script files to plot Root locus, Bode plot and Nyquist plot to study the stability of

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VII SEMESTER

Course Name:CEE401(BEE701)Switchgear and Protection	
CEE401.1	Discuss performance of protective relays, components of protection scheme and relayterminology over current protection.
CEE401.2	Explain the working of distance relays and the effects of arc resistance, power swings,line length and source impedance on performance of distance relays.
CEE401.3	Discuss pilot protection, construction, operating principles and performance of differentialrelays and discuss protection of generators, motors, transformer and Bus Zone Protection.
CEE401.4	Explain the construction and operation of different types of circuit breakers.
CEE401.5	Outline features of fuse, causes of over voltages and its protection, also modern trendsin Power System Protection.
Course Name:CEE402(BEE702)INDUSTRIAL DRIVES AND APPLICATION (PCC)	
CEE402.1	Explain the advantages, choice and control of electric drive
CEE402.2	Explain the dynamics, generating and motoring modes of operation of electric drives
CEE402.3	Analyze the performance & control of DC motor drives and AC motor drives using controlled rectifiers.
CEE402.4	Analyze the solar powered drives.
CEE402.5	Explain the application of drives in industry and in rural areas.
Course Name:CEE403(BEE 703)POWER SYSTEM ANALYSIS II	
CEE403.1	Formulate network matrices and models for solving load flow problems.
CEE403.2	Perform steady state power flow analysis of power systems using numerical iterative techniques. Solve issues of economic load dispatch and unit commitment problems.
CEE403.3	Analyse short circuit faults in power system networks using bus impedance matrix. Apply Point by Point method and Runge Kutta Method to solve Swing Equation.
CEE403.4	Develop programs toformulate bus admittance and bus impedance matrices of inter connected power systems.
CEE403.5	Use suitable package to solve power flow problem for simple power systems.
CEE403.6	Use of suitable package to study optimal generation scheduling problems for thermal power plants.
Course Name:CEE404(BEE714A)Power System Operation and Control	
CEE404.1	Describe various levels of controls in power systems, architecture and configuration of SCADA.

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CEE404.2	Develop and analyse mathematical models of Automatic Load Frequency Control.
CEE404.3	Develop mathematical model of Automatic Generation Control in Interconnected Power system.
CEE404.4	Discuss the Control of Voltage, Reactive Power and Voltage collapse.
CEE404.5	Explainsecurity, contingency analysis, and state estimation of power systems.
Course Name:CEE406(BEE755A)ELECTRIC VEHICLE TECHNOLOGIES	
CEE405.1	Explain the working of Electric Vehicles and recent trends.
CEE405.2	Design Hybrid Electric Drive Train
CEE405.3	Develop a converters for battery charging
CEE405.4	Different power grid used for electric vehicle application.
CEE405.5	Develop the modes of control for electrical vehicles.