Electrical Engineering Department

Course Outcomes (COs)

S.E. Electrical Engineering (2019 Course)

Course Code: 203141	
Name of Course: Power Generation Technologies	
C201.1	Demonstrate the operations of thermal power plant with all accessories and thermodynamic cycles, and working principle of thermal power plants.
C201.2	Identify main components and working of nuclear, diesel and gas power plant.
C201.3	Discuss general arrangements and operation of hydro power plant.
C201.4	Analyze the wind turbine energy, Economics and its impact on the environment.
C201.5	Apply solar energy in thermal and electrical power generation considering the energy crisis, environmental and social benefits.
C201.6	Understand the operation of electrical energy generation using biomass, tidal, geothermal, hydel plants, fuel cell and interconnection with grid.

Course Code: 207006	
Name of Course: Engineering Mathematics - III	
C202.1	Solve higher order linear differential equation and apply the knowledge of higher order linear differential equation to model and analyze electrical circuits.
C202.2	Apply Laplace Transform to solve problems related to signal processing and control systems.
C202.3	Apply Fourier transform and Z-Transform to solve problems related to signal processing and control systems.
C202.4	Apply statistical tools and the concepts of probability to analyse and interprete the data related to energy management and electrical systems
C202.5	Apply the knowledge of vector calculus to analyze the vector fields
C202.6	Analyze Complex functions, conformal mappings, and perform contour integration in the study of electrostatics, signal and image processing.

Course Code: 203142	
Name of Course: Material Science	
C203.1	Study classification, properties and characteristics of dielectric materials and polarization mechanism.
C203.2	Execute breakdown tests on dielectric & insulating materials as per IS to assess the quality of the materials.
C203.3	List classification, properties, characteristics and applications of insulating materials.
C203.4	Classify types of magnetic materials in terms of its properties and applications.
C203.5	Recognise classification, properties, characteristics and applications of conducting

	materials.
C203.6	Describe Special Topics in Nano Technology like Single Electron Transistor, Molecular Machines, BN Nanotubes, Nano wires.

Course Code: 203143	
Name of Course: Analog and Digital Electronics	
C204.1	Design combinational circuits using Boolean expression and K-map.
C204.2	Test and implement sequential circuits using flip flops.
C204.3	Describe SRAM, DRAM, ROM, EPROM digital memories and PAL, PLA, CPLD, FPGA digital logic families.
C204.4	Analyze applications of OPAMP in open and closed loop condition.
C204.5	Design first order low pass and high pass filters using OPAMP and construct applications of IC 555 like a stable and monostable multi vibrators, Sequence generator.
C204.6	Develop uncontrolled rectifier with given specifications.

Course Code: 203144	
Name of Course: Electrical Measurements and Instrumentation	
C205.1	Understand the characteristics of measuring instruments, their classification, and range extension techniques.
C205.2	Classify and apply measurement techniques for the measurement of resistance, inductance and capacitance.
C205.3	Analyze active and reactive power management in three phase systems for balanced and unbalanced load using three wattmeter, two wattmeter, and one wattmeter method.
C205.4	Test and analyze electrical energy measurement using electromechanical and static energy meter for single phase and three phase.
C205.5	Measure electrical quantities, circuit elements and pressure using CRO and transducers respectively.
C205.6	Classify transducers and apply for the measurement of physical parameters in real time for level measurement and displacement measurement.

Course Code: 203150	
Name of Course: Application of Mathematics in Electrical Engineering	
C206.1	Apply fundamentals of mathematics in solving electrical engineering problem
C206.2	Analyze complex electrical engineering problem using mathematical techniques
C206.3	Implement program and simulation for problems in electrical engineering
C206.4	Demonstrate self-lifelong learning skills with applications of mathematics in electrical engineering through software.

Course Code: 203151	
Name of Course: Soft Skill	
C207.1	Do SWOC analysis.
C207.2	Develop presentation and take part in-group discussion.
C207.3	Understand and implement etiquette in workplace and in society.

C207.4	Develop and strengthen interpersonal relationship through teamwork and group discussion.
C207.5	Work in team with team spirit.
C207.6	Utilize the techniques for time management and stress management.

Course Code: 203145
Name of Course: Power System-I

C208.1	Recognize different patterns of load curve and calculate associated different factors with it and tariff.
C208.2	Draft specifications of electrical equipment in power station.
C208.3	Design electrical and mechanical aspects in overhead transmission and underground cables.
C208.4	Compute the resistance and inductance of different transmission line configurations.
C208.5	Compute the capacitance of different transmission line configurations.
C208.6	Analyse the performance of short and medium transmission lines

Course Code: 203146
Name of Course: Electrical Machines-I

C209.1	Compute performance parameters of the transformer by conducting Open Circuit and Short Circuit Test and draw the approximate equivalent circuit diagram.
C209.2	Distinguish between Star-Delta, Delta-Star, Star-Star and Delta-Delta transformer connections as per phasor groups with applications and to perform parallel operation of single/three phase transformers.
C209.3	Explain working principle & construction of DC machines.
C209.4	Analyze the performance parameters, characteristics of DC shunt motor by conducting Brake Test and Speed Control.
C209.5	Draw the approximate equivalent circuit of Induction Motors and determine its parameters by conducting No Load and Blocked Rotor Test.
C209.6	Test and evaluate performance of Induction motors as per IS standard.

Course Code: 203147
Name of Course: Network Analysis

C210.1	Compute the circuit parameters in electrical circuits using simplification techniques, Mesh, and Nodal analysis.
C210.2	Apply superposition theorem, Norton's theorem, Thevenin's theorem, Maximum power transfer theorem, Reciprocity and Millmann's theorem to evaluate circuit parameters with all types of sources.
C210.3	Analyse the response of RLC circuit with electrical supply in transient and stead state using differential equation method.
C210.4	Apply Laplace transform to analyse behaviour of R-L, R-C and RLC circuit in transient and stead state.
C210.5	Analyze two port network and design filters.

C210.6	Apply knowledge of network theory to find transfer function, poles and zeroes location to perform stability analysis and parallel resonance.

Course Code: 203148	
Name of Course: Numerical Methods and Computer Programming	
C211.1	Calculate numerical computation errors, roots of polynomials equation using Birge-Vieta Method.
C211.2	Solve Transcendental and polynomial equation using Bisection, Regula Falsi and Newton-Raphson methods and apply curve fitting techniques for graphical representation of known values of x and y tabulated data.
C211.3	Apply interpolation techniques for finding unknown values of y from known values of x from tabulated data.
C211.4	Evaluate Numerical Integration by using Trapezoidal and Simpson's rules and numerical differentiation by using Newton's forward and backward interpolation formula
C211.5	Solve simultaneous equations using Gauss Elimination, Gauss Jordan, Gauss Seidel and Gauss Jacobi methods and Matrix Inversion using Jordon method.
C211.6	Implement Taylor's series method, Euler's, Modified Euler's methods, Runge-Kutta for solution of ODE.

Course Code: 203149	
Name of Course: Fundamental of Microcontroller and Applications	
C212.1	Understand the architecture and features of 8051microcontroller.
C212.2	Illustrate addressing modes and execute programs in assembly language for 8051 microcontroller.
C212.3	Develop the programs in C language for microcontroller 8051.
C212.4	Elaborate interrupt structure of 8051 and program to handle interrupt and ADC809.
C212.5	Define the protocol for serial communication and understand GSM module protocol to send & read SMS
C212.6	Interface input output devices and measure voltage & current with 8051 in real time.

Course Code: 203152	
Name of Course: Project Based Learning	
C213.1	Identify, formulate, and analyze the simple project problem.
C213.2	Apply knowledge of mathematics, basic sciences, and electrical engineering fundamentals to develop solutions for the project.
C213.3	Learn to work in teams, and to plan and carry out different tasks that are required during a project.
C213.4	Understand the strength & skill of their own and colleagues.
C213.5	Collect the information from research literature, summarise it & come to certain conclusion.
C213.6	Communicate to different audiences in oral, visual, and written forms.