ELECTRICAL & ELECTRONICS ENGINEERING DEPARTMENT

COURSE CODE	17ELE15/25 BASIC ELECTRICAL ENGINEERING
CO1	To predict the behaviour of electrical and magnetic circuits.
CO2	Select the type of generator / motor required for a particular application.
CO3	Realize the requirement of transformers in transmission and distribution of electric power and other
CO4	Practice Electrical Safety Rules & standards.
CO5	To function on multi-disciplinary teams.
COURSE CODE	**17MAT31 ENGINEERING MATHEMATICS –III (Core Subject)**
CO1	Know the use of periodic signals and Fourier series to analyze circuits and system communications.
CO2	Explain the general linear system theory for continuous-time signals and digital signal processing using the Fourier Transform and z-transform
CO3	Employ appropriate numerical methods to solve algebraic and transcendental equations.
CO4	Apply Green's Theorem, Divergence Theorem and Stokes' theorem in various applications in the field of electro-magnetic and gravitational fields and fluid flow problems
CO5	Determine the extremals of functional and solve the simple problems of the calculus of variations.
COURSE CODE	**17EE32 ELECTRIC CIRCUIT ANALYSIS (Core Subject)**
CO1	Understand the basic concepts, basic laws and methods of analysis of DC and AC networks.
CO2	Reduce the complexity of network using source shifting, source transformation and network reduction using transformations.
CO3	Solve complex electric circuits using network theorems.
CO4	Discuss resonance in series and parallel circuits.
CO5	Discus the importance of initial conditions and their evaluation.
CO6	Synthesize typical waveforms using Laplace transformation.
CO7	Solve unbalanced three phase systems.
CO8	Evaluate the performance of two port networks
COURSE CODE	**17EE33 TRANSFORMERS AND GENERATORS (Core Course)**
CO1	Explain the construction and operation and performance of single phase and three phasetransformers.
CO2	Explain the use of auto transformer, tap changing and tertiary winding transformer and need of operating transformers in parallel.
CO3	Explain the armature reaction and commutation and their effects in a DC generators.
CO4	Explain the construction, operation and performance of Synchronous machines.
COURSE CODE	**17EE34 ANALOG ELECTRONIC CIRCUITS (Core Course)**

CO1	Predict the output response of clipper and clamper circuits.
CO2	Design and compare biasing circuits for transistor amplifiers
CO3	Explain the transistor switching.
CO4	Explain the concept of feedback, its types and design of feedback circuits
CO5	Design and analyze the power amplifier circuits and oscillators for different frequencies.
CO6	Perform design and analysis of FET and MOSFET amplifiers in the common source mode with fixed bias.
COURSE CODE	**17EE35 DIGITAL SYSTEM DESIGN(Core Course)**
CO1	Simplify switching equations generated from truth tables.
CO2	Design combinational logic circuits; adders, Subtractors and comparators.
CO3	Design synchronous sequential circuits; latches, flip-flops, binary counters and Mod – 6 counters.
CO4	Design Mealy and Moore synchronous sequential circuit models.
CO5	Construct state diagrams for sequential circuits.
CO6	Describe the structure of HDL module, operators,data types.
CO7	Give Comparison between VHDL and Verilog.
CO8	Understand the concept of data-flow description.
COURSE CODE	**17EE36 ELECTRICAL AND ELECTRONIC MEASUREMENTS (Foundation Course)**
CO1	Measure resistance, inductance and capacitance using bridges and determine earth resistance.
CO2	Explain the working of various meters used for measurement of Power & Energy.
CO3	Understand the adjustments, calibration & errors in energy meters & also methods of extending the range of instruments & instrument transformers.
CO4	Explain the working of different electronic instruments, display devices and recording mechanisms.
COURSE CODE	**17EEL37 ELECTRICAL MACHINES LABORATORY - 1**
CO1	Evaluate the performance of transformers from the test data obtained.
CO2	Connect and operate two single phase transformers of different KVA rating in parallel.
CO3	Connect single phase transformers for three phase operation and phase conversion.
CO4	Compute the voltage regulation of synchronous generator using the test data obtained in thelaboratory
COURSE CODE	**17EEL38 ELECTRONICS LABORATORY**
CO1	Design and test rectifier circuits with and without capacitor filters.
CO2	Determine h-parameter models of transistor for all modes.
CO3	Design and test BJT and FET amplifier and oscillator circuits.
CO4	Realize Boolean expressions, adders and subtractors using gates.

COURSE CODE	17MAT41 ENGINEERING MATHEMATICS
CO1	Use appropriate single step and multi-step numerical methods to solve first and second order ordinary differential equations arising in flow data design problems.
CO2	Explain the idea of analyticity, potential fields residues and poles of complex potentials in field theory and electromagnetic theory.
CO3	Employ Bessel's functions and Legendre's polynomials for tackling problems arising in continuum mechanics, hydrodynamics and heat conduction.
CO4	Describe random variables and probability distributions using rigorous statistical methods to analyze problems associated with optimization of digital circuits, information, coding theory and stability analysis of systems.
CO5	Apply the knowledge of joint probability distributions and Markov chains in attempting engineering problems for feasible random events.
COURSE CODE	17EE42 POWER GENERATION AND ECONOMICS
CO1	Describe the working of hydroelectric, steam, nuclear power plants and state functions of major equipment of the power plants.
CO2	Classify various substations and explain the importance of grounding.
CO3	Understand the economic aspects of power system operation and its effects.
CO4	Explain the importance of power factor improvement
COURSE CODE	17EE43 TRANSMISSION AND DISTRIBUTION
CO1	Explain the concepts of various methods of generation of power.
CO2	Explain the importance of HVAC, EHVAC, UHVAC and HVDC transmission.
CO3	Design and analyze overhead transmission system for a given voltage level.
CO4	Calculate the parameters of the transmission line for different configurations and assess the performance of line.
CO5	Explain the use of underground cables and evaluate different types of distribution systems.
COURSE CODE	17EE44 ELECTRIC MOTORS
CO1	Explain the constructional features of Motors and select a suitable drive for specific application.
CO2	Analyze and assess the performance characteristics of DC motors by conducting suitable tests and control the speed by suitable method.
CO3	Explain the constructional features of Three Phase and Single phase induction Motors and assess their performance.
CO4	Control the speed of induction motor by a suitable method.
CO5	Explain the operation of Synchronous motor and special motors.

COURSE CODE	17EE45 ELECTROMAGNETIC FIELD THEORY
CO1	Use different coordinate systems to explain the concept of gradient, divergence and curl of a vector.
CO2	Use Coulomb's Law and Gauss Law for the evaluation of electric fields produced by different charge configurations.
CO3	Calculate the energy and potential due to a system of charges.
CO4	Explain the behavior of electric field across a boundary between a conductor and dielectric and between two different dielectrics.
CO5	Explain the behavior of magnetic fields and magnetic materials.
CO6	Assess time varying fields and propagation of waves in different media.
COURSE CODE	**17EE46 OPERATIONAL AMPLIFIERS AND LINEAR ICs**
CO1	Describe the characteristics of ideal and practical operational amplifier.
CO2	Design filters and signal generators using linear ICs.
CO3	Demonstrate the application of Linear ICs as comparators and rectifiers.
CO4	Use ICs in the electronic projects
COURSE CODE	**17EEL47 ELECTRICAL MACHINES LABORATORY -2**
CO1	Test dc machines to determine their characteristics.
CO2	Control the speed of dc motor.
CO3	Pre-determine the performance characteristics of dc machines by conducting suitable tests.
CO4	Perform load test on single phase and three phase induction motor to assess its performance.
CO5	Conduct test on induction motor to pre-determine the performance characteristics.
CO6	Conduct test on synchronous motor to draw the performance curves.
COURSE CODE	**17EEL48 OP- AMP AND LINEAR ICS LABORATORY**
CO1	To design test the OP-Amp as oscillators and filters
CO2	Design and study of Linear IC's as multivibrator power supplies.