

## Department of Electrical & Electronics Engineering

### Semester 3

Sl.No.	Name of the Subject	CO Code	Course Outcomes
1	CIRCUITS AND NETWORKS	EE201.01	Analyze basic electrical circuits using network theorems
		EE201.02	Analyze electrical circuits using graph theory and formulating network equations based on KVL and KCL in topological form.
		EE201.03	Analyze the steady state and transient response of electric circuits
		EE201.04	Apply Laplace transform in the transient response of electric circuits and the mesh and nodal analysis of coupled circuits
		EE201.05	Evaluate the parameters of two port network and the inter relationship between them
		EE201.06	Analyze network functions of one port network with two kinds of elements
2	ANALOG ELECTRONIC CIRCUITS	EE203.01	Determine the fundamentals of analog integrated circuits and about semiconductor devices.
		EE203.02	Analyze equivalent circuits of amplifiers under different frequencies
		EE203.03	Design multistage amplifiers and power amplifiers
		EE203.04	Create analytical capability to analyse feedback in amplifiers
		EE203.05	Differentiate 555 timer, Opamps & their applications
		EE203.06	Evaluate the necessary criteria for an oscillator and analyze performance
3	DC MACHINES AND TRANSFORMERS	EE205.01	Differentiate dc generator types according to their applications
		EE205.02	Determine the working principle of dc motor
		EE205.03	Analyze the performance of Single phase transformer
		EE205.04	analyze the performance of different motors
		EE205.05	Detect the principle of operation and performance of three phase transformers
		EE205.06	Differentiate machines according to various applications
4	COMPUTER PROGRAMMING	EE207.01	Develop algorithms and structure of C program.
		EE207.02	create C program by using if, while,, for and break
		EE207.03	Apply the concepts of array and strings in C
		EE207.04	Analyze the problems and implemet them as functions.
		EE207.05	Develop programs by using structure, union, and pointers
		EE207.06	Develop simple programs using python.
5	BUSINESS ECONOMICS	HS200.01	Generate critical thinking skills in business situations
		HS200.02	Analyze supply and demand analysis to relevant economic issues.
		HS200.03	Organize investment decisions based on capital budgeting methods in alignment with microeconomic and macroeconomic theories.
		HS200.04	analyse the profitability of the firm, economy of operation, determination of price under market situations.
		HS200.05	Excute business tools , cost benefit analysis and rate of returns at an elementary level
	LINEAR ALGEBRA AND	MA201.01	Differentiate analytic functions and Harmonic functions.
		MA201.02	Test conformal mapping and find regions that are mapped under certain transformations.
		MA201.03	Check real life definite integrals as application of residue theorem.
		MA201.04	Solve any given system of linear equations.
		MA201.05	Compute the Eigen values of a matrix and how to diagonalize a matrix.

6	COMPLEX ANALYSIS	MA201.06	Test power series as a Taylor series.
<b>Semester 4</b>			
Sl.No.	Name of the Subject	CO Code	Course Outcomes
1	SYNCHRONOUS AND INDUCTION MACHINES	EE202.01	Determine alternator types for various industrial applications
		EE202.02	Detect the principle of operation of alternators, its voltage regulation and analyze the performance of alternators for different applications.
		EE202.03	analyze the performance of synchronous motors and applications
		EE202.04	Determine the principle of operation and performance of 3 phase Induction Motors
		EE202.05	Differentiate the performance of 3 phase Induction Motors
		EE202.06	Determine the principle and operation of 1-phase Induction Motors and Induction Generators
2	DIGITAL ELECTRONICS & LOGIC DESIGN	EE204.01	Differentiate and number systems, weighted & un-weighted codes, Boolean algebraic calculations
		EE204.02	Create combinational & sequential circuits.
		EE204.03	Design Synchronous counters
		EE204.04	Determine programmable devices
		EE204.05	Implement of various logic circuits using VHDL with knowledge of the same
		EE204.06	Implement Multiplexers and Demultiplexers in telecommunication field
3	Material Science	EE 206 .01	: Differentiate the properties and characteristics an behavior of conductors, semiconductors and dielectrics and insulators.
		EE 206 .02	Analysis of bearkdowns in solids, liquids and gas
		EE 206 .03	Differentiate solar energy materials and superconducting materials and magnetic materials used in electrical machines and instruments
		EE 206 .04	Apply optical microscopy , electron spectroscopy photoelectron microscopy ,atomic absorption spectroscopy for material studies.
4	MEASURMENTS AND INSTRUMENTATION	EE204.01	Determine the fundamental operating principles of measurements of physical variables to electrical engineering
		EE204.02	Differentiate type of measuring instruments their characteristics and functions.
		EE204.03	Identify different measurement methods applied to physical variables
		EE204.04	Analyse the bridge methods applied ac and dc measurements, select suitable methods for specific applications
		EE204.05	Apply oscilloscope for test and measurement applications.
		EE204.06	Identify and classify transducers for physical variables and describe their operating principles
5	LIFE SKILLS	HS210.01	Detect interactions and connections between people place and environment.
		HS210.02	Check perspective of people and organization on a range of geographical issues.
		HS210.03	Determine management of laces and environment.
		HS210.04	Detect difference in human welbeings
		HS210.05	Check changes of ethics .
		HS210.06	Determine human values
	PROBABILITY DISTRIBUTIONS, TRANSFORMS AND	MA 202.01	Differentiate discrete and continuous probability density functions and special probability distributions
		MA 202.02	Excute Laplace transforms
		MA 202.03	Excute Fourier transforms and their applications in engineering branch.
		MA 202.04	Excute Numerical methods
		MA 202.05	Explain Numerical methods applications in solving engineering problems.

6	NUMERICAL METHODS	MA 202.06	Explain Laplace transforms applications in engineering branch.
<b>Semester 5</b>			
Sl.No.	Name of the Subject	CO Code	Course Outcomes
1	POWER GENERATION, TRANSMISSION & PROTECTION	EE301.01	Describe the general layout of power generation and transmission network
		EE301.02	Model individual power system components like transmission lines and generators
		EE301.03	Analyze economics of power generation systems and economic dispatch
		EE301.04	Design electrical and mechanical parameters of power system
		EE301.05	Analyze different types of distribution systems, power quality issues and power conservation measures
		EE301.06	Discuss and design various protection schemes
2	LINEAR CONTROL SYSTEMS	EE303.01	To explain the various practices of modelling physical systems.
		EE303.02	To differentiate between various control system components and will be able to explain the time domain specifications.
		EE303.03	To develop basic knowledge in error and stability analysis
		EE303.04	Compare and analyse the stability of the systems - thereby having a more realistic approach towards the design of Control systems
		EE303.05	To classify and understand the various frequency domain analysis technique in control systems.
		EE303.06	Analyze linear systems for steady state errors, absolute stability and relative stability.
3	POWER ELECTRONICS	EE305.01	Study about different types of power semiconductor devices and their switching characteristics and to Choose the appropriate power semiconductor switches for a power electronic circuit.
		EE305.02	Analyze and design the protection circuit of various power semiconductor switches.
		EE305.03	Analyze and design different types of power electronic converters
		EE305.04	Design and choose Dual Converter and Inverters suitable for an application
		EE305.05	Illustrate and explain the Choppers and Switching Regulators.
		EE305.06	Select proper power electronic converter for an application.
4	SIGNALS AND SYSTEMS	EE307.01	Perform design verification/validation of simple first order and second order continuous-time linear systems in various domains by analytical as well as experimental methods
		EE307.02	Carry out performance evaluation of multi-order LTI System designs by Impulse Response Test
		EE307.03	Evaluate stability and stability margins of a proposed CT-LTI Design by transfer function approach.
		EE307.04	Design simple first-order and second-order systems for basic signal/energy processing applications from given transfer function/ impulse response/ steady-state requirements in electrical and thermal domains.
		EE307.05	Evaluate the signal distortion characteristics of a given transmission channel.
		EE307.06	Perform design verification/validation of simple first order and second order discrete-time linear systems by analytical methods
5	Microprocessor and Embedded Systems	EE309.01	Use the knowledge about the basics of digital realm in designing a Digital Systems.
		EE309.02	Evaluate microprocessor/controllers from its architecture and assess its suitability in a particular engineering application.
		EE309.03	To make the student capable of programming a processor using assembly language.
		EE309.04	Acquire the competence on configuring and using different peripherals in a digital system.
		EE309.05	Develop the skill to compile, debug as well as generate an executable file from a program and burn in the system memory to execute it.
		EE309.06	Design, assemble and test a digital system hardware using microcontroller / processor to solve engineering problems.

6	NEW AND RENEWABLE SOURCES OF ENERGY	EE367.01	Describe the concepts of different renewable energy sources
		EE367.02	Explain the concepts of solar energy conversion systems
		EE367.03	Explain the concepts of wind energy based electricity generation systems
		EE367.04	Describe the utilization of different storage technologies
		EE367.05	Describe the concepts of renewable energy sources like biomass, ocean energy and hydro power generation system
		EE367.06	Undersstanding biomass energy, biogas generation, emerging technologies
Semester 6			
Sl.No.	Name of the Subject	CO Code	Course Outcomes
1	ELECTROMAGNETICS	EE302.01	Implement vector calculus to state electric magnetic fields in different engineering situations.
		EE302.02	Determine maxwell's equation in different Electric feild.
		EE302.03	Determine maxwell's equation in different Magnetic feild.
		EE302.04	Define boundry conditions in mediums.
		EE302.05	Explain the phenomenon of wave propagation in different media and its interface and in applications.
		EE302.06	Diffrentiate the nature of EM wave propagation in guided medium.
2	ADVANCED CONTROL THEORY	EE304.01	Design compensators and controllers using classical techniques.
		EE304.02	Diffrentiate linear and nonlinear system using state space methods.
		EE304.03	Analyses the stability of discrete system.
		EE304.04	Detect describing function analysis of non linearities and stability of non linear system.
		EE304.05	Analyze the graphical approach of non-linear system stability by phase plane trajectories
		EE304.06	Detect Lyapunov stability criterion.
3	POWER SYSTEM ANALYSIS	EE306.01	Check structure of power .
		EE306.02	Diffrentiate load analysis methods (Gauss-Siedel Method, Newton Raphson method and Decoupled load flow method)
		EE306.03	Monitor practical perspective of economic load despatch
		EE306.04	Determine the need of Automatic Generation control
		EE306.05	Analyse power system stability
		EE306.6	Solve transient stability problem
4	ELECTRIC DRIVES	EE308.01	Determine the fundamental concepts of various machine drives.
		EE308.02	Detect a drive for a particular application.
		EE308.03	Differentiate control techniques for various drives.
		EE308.04	Determine operation of ac drives
		EE308.05	Determine operation dc drives
		EE308.06	Differentiate applications of ac and dc drives
5	BIOMEDICAL INSTRUMENTATION	EE372.01	Determine the concept of generation of various bioelectric signals like ECG,EEG.
		EE372.02	Explain the electro conduction system of heart and nervous system
		EE372.03	Explain the working of various diagnostic equipment
		EE372.04	Explain patient safety issues related to biomedical instrumentation.
		EE372.05	Understand measurement principles for blood flow, pressure and volume as well as respiratory variables
		EE372.06	Describe methods and implementation of electrical and nonelectrical medical parameters

6	PRINCIPLES OF MANAGEMENT EXPECTED OUTCOMES	HS300.01	Determine the fundamentals of management and managerial functions
		HS300.02	Organise management theories and practices.
		HS300.03	Organise and make decisions for organizations.
		HS300.04	Detect the functional areas of management
		HS300.05	Do staffing and related HRD functions.
		HS300.06	Test the different leadership styles and the requirements for effective control
Semester 7			
Sl.No.	Name of the Subject	CO Code	Course Outcomes
1	Electronic communication	EE401.01	To introduce the applications of communication technology
		EE401.02	To understand the methods and techniques used in communication field
		EE401.03	Carry out initial evaluation of analog versus digital communication subsystem alternatives in the context of electrical system design.
		EE401.04	Outline preferred communication subsystem structures in an electrical system to the multi-disciplinary design team.
		EE401.05	Evaluate the need for error correction in communication subsystems in the target electrical system design and report effectively to the Design Team.
		EE401.06	Design simple analog/pulse communication systems for non-critical signal transmission and telemetering applications over wire in Electrical Systems.
2	Distributed generation and smart grids	EE403.01	To develop a conceptual introduction to various distributed generation systems, micro grids, smart grids and their control
		EE403.02	Understand the microgrids and their control schemes
		EE403.03	Describe the concepts of different renewable energy sources
		EE403.04	Determine conceptual ideas of Smart Grid with a thorough understanding of various communication technologies and power management issues with smart grid
		EE403.05	Analyze issues related with integration of various distributed energy sources to smart grid
		EE403.06	Analyse the operation and importance of demand side management, power market scenarios in deregulated scenarios
3	Electrical system design	EE405.01	Students will able to understand the rules and regulation in electrical installation
		EE405.02	Students will able to design the electrical installation in domestic buildings
		EE405.03	Students will able to design medium and HV installation
		EE405.04	Students will able to design transformer and generator
		EE405.05	Students will able to design earthing system of HV installation
		EE405.06	Students will able to design Different illumination system
4	Digital Signal Processing	EE407.01	Formulate mathematical description for a given digital filter design and carry out performance evaluation of the design by analytical methods
		EE407.02	Carry out performance evaluation of a digital filter prototype design by impulse response testing.
		EE407.03	Design and validate linear phase FIR systems for various digital signal processing tasks
		EE407.04	Design IIR and FIR Filter structures for common filtering applications.
		EE407.05	Carry out spectral analysis of periodic CT waveforms using Digital Spectrum Analyzer and interpret the results
		EE407.06	Implement Digital Filters by Block Convolution
		EE409.01	To analyse the effect of temperature on different parts of electrical machines and to impart the knowledge on basic magnetic circuit design.
		EE409.02	Acquire knowledge about the design of dc machines with performance estimation

5	Electrical Machine Design	EE409.03	Acquire knowledge about the design of transformers with performance estimation.
		EE409.04	Acquire knowledge about the design of alternators with performance estimation
		EE409.05	Acquire knowledge about the design of induction machines with performance estimation.
		EE409.06	Acquire a basic idea about computer aided design (CAD) and finite element method.
6	Power Quality	EE465.01	Explain different power quality issues, causes and its mitigation techniques
		EE465.02	To study various methods of power quality monitoring.
		EE465.03	Discuss about the harmonic sources and effect of harmonics on power system equipment and loads
		EE465.04	Explain harmonic elimination, isolation techniques and power factor correction methods
		EE465.05	Measure voltage sag, swell and harmonics and analyze the measured data.
		EE465.06	Understand power quality monitoring and classification techniques
Semester 8			
Sl.No.	Name of the Subject	CO Code	Course Outcomes
1	Special Electric Machines	EE402.01	To get an overview of some of the special machines for control and industrial applications
2	Industrial Instrumentation &Automation	EE404.01	To impart knowledge about Industrial instrumentation and automation
3	Computer Networks	EE468.01	To impart the mode of operation of different types of computer networks that are used to interconnect a distributed community of computers and various interfacing standards and protocols
4	ENVIRONMENTAL IMPACT ASSESSMENT	CE482.1	To study the various types of environmental pollution
		CE482.2	To study the impact of various types of pollutants and their assessment techniques