



Meenakshi Sundararajan Engineering College
(Managed by I.I.E.T Society)
Approved by AICTE and Affiliated to Anna University
Accredited by NAAC with 'A' Grade
Accredited by NBA for programs applied
363, Arcot Road, Kodambakkam, Chennai – 24

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE OUTCOMES:2021 REGULATION

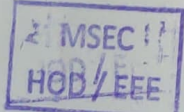
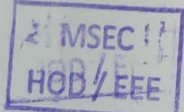
MA3303 PROBABILITY AND COMPLEX FUNCTION

C201.1	Understand the fundamental knowledge of the concepts of probability and standard distributions
C201.2	Understand the basic concepts of one and two dimensional random variables
C201.3	To develop an understanding of the complex variable in analytic function and its mapping property
C201.4	To familiarise the students with complex integration and contour integration techniques used in integrals
C201.5	To acquaint the students with differential equations which are significantly used in engineering problems

EE3301 ELECTROMAGNETIC FIELDS

C202.1	Visualize and explain Gradient, Divergence, and Curl operations on electromagnetic vector fields and identify the electromagnetic sources and their effects.
C202.2	Compute and analyse electrostatic fields, electric potential, energy density along with their applications.
C202.3	Compute and analyse magneto static fields, magnetic flux density, vector potential along with their applications.
C202.4	Explain different methods of emf generation and Maxwell's equations
C202.5	Explain the concept of electromagnetic waves and characterizing parameters


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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

EE3302 DIGITAL LOGIC CIRCUIT

C203.1	Students will be able to explain various number systems, apply K-maps and Quine McCluskey methods to simplify the given Boolean expressions and ascertain the characteristics of digital logic families
C203.2	Students will be able to explain the implementation of combinational circuit such as multiplexers and de-multiplexers - code converters, adders, subtractors, Encoders and Decoder.
C203.3	Students will be able to understand analyze various synchronous circuits using Flip Flops .
C203.4	Students will be able to explain asynchronous sequential circuits and programmable logic devices
C203.5	Students will be able to use VHDL for simulating and testing RTL, combinatorial and sequential circuits

EC3301 ELECTRON DEVICES AND CIRCUITS

C204.1	Explain the structure and characteristics of various types of Diodes, design clipper and clamper circuits ,half and full wave Rectifiers.
C204.2	Understand the different configurations of BJT, MOSFET,UJT and draw its characteristics.
C204.3	Analyse the characteristics of BJT and FET amplifier and its gain and frequency response.
C204.4	Analyse the concepts of different modes of differential amplifier,tuned amplifier and power amplifier
C204.5	Analyse and develop the parameters of feedback amplifier circuit, describe different types of oscillators

EE3303 ELECTRICAL MACHINES – I

C205.1	Able to understand and Apply the laws governing the electromechanical energy conversion for single and multiple excited systems.
C205.2	Able to understand the construction and working principle of DC machines. Interpret various characteristics of DC machines.
C205.3	Able to compute various performance parameters of the DC machines, by conducting suitable tests and interpret their characteristics.
C205.4	Able to understand the working principle operation of single phase transformer including its equivalent circuit and how to determine the efficiency and regulation of transformer.
C205.5	Able to describe the working principle of auto transformer and three phase transformer with different types of connections.


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CS3353 C PROGRAMMING AND DATA STRUCTURES

C206.1	Develop C programs for any real world/technical application
C206.2	Apply advanced features of C in solving problems
C206.3	Write functions to implement linear and non-linear data structure operations.
C206.4	Suggest and use appropriate linear/non-linear data structure operations for solving a given problem
C206.5	Appropriately use sort and search algorithms for a given application.

EC3311 ELECTRON DEVICES AND CIRCUITS LABORATORY

C207.1	To observe the characteristics of electronic devices such as diodes, transistors etc
C207.2	Measure voltage, frequency and phase of any waveform using CRO. Generate sine, square and triangular waveforms with required frequency and amplitude using function generator
C207.3	To analyse the characteristics of common emitter amplifier and RC phase shift oscillator

EE3311 ELECTRICAL MACHINES LABORATORY – I

C208.1	Construct the circuit with appropriate connections and experimentally determine the characteristics of different types of DC machines and Transformers.
C208.2	Demonstrate the speed control techniques for a DC motor for industrial applications.
C208.3	Identify suitable methods for testing and predetermine the performance parameters of transformer and DC machines.
C208.4	Understand DC motor starters and 3-phase transformer connections.

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CS3362 C PROGRAMMING AND DATA STRUCTURES LABORATORY

C209.1	Use different constructs of C and develop applications
C209.2	Write functions to implement linear and non-linear data structure operations
C209.3	Suggest and use the appropriate linear / non-linear data structure operations for a given problem
C209.4	Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval
C209.5	Implement Sorting and searching algorithms for a given application

GE3451 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY

C211.1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
C211.2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.
C211.3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
C211.4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.
C211.5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.

EE3401 TRANSMISSION AND DISTRIBUTION

C212.1	Understand the structure of power system, computation of transmission line parameters for different configurations.
C212.2	Model the transmission lines to determine the line performance and to understand the impact of Ferranti effect and corona on line performance.
C212.3	Do Mechanical design of transmission lines, grounding and to understand about the insulators in transmission system.
C212.4	Design the underground cables and understand the performance analysis of underground cable.
C212.5	Understand the modelling, performance analysis and modern trends in distribution system.

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EE3402 LINEAR INTEGRATED CIRCUITS

C213.1	Explain monolithic IC fabrication process. Explain the fabrication of diodes, capacitance, resistance, FETs and PV Cell.
C213.2	Analyze the characteristics and basic applications (inverting/non-inverting amplifier, summer, differentiator, integrator, V/I and I/V converter) of Op-Amp
C213.3	Explain circuit and applications of op-amp based instrumentation amplifier, log/antilog amplifier, analog multiplier /divider, active filters, comparators, waveform generators, A/D and D/A converters
C213.4	Explain Functional blocks, characteristics and applications of Timer, PLL, analog multiplier ICs.
C213.5	Explain the applications of ICs in Instrumentation amplifier, fixed and variable voltage regulator, SMPS and function generator

EE3403 MEASUREMENTS AND INSTRUMENTATION

C214.1	Ability to understand the fundamental art of measurement in engineering.
C214.2	Ability to understand the structural elements of various instruments.
C214.3	Ability to understand the importance of bridge circuits.
C214.4	Ability to understand about various transducers and their characteristics by experiments.
C214.5	Ability to understand the concept of digital instrumentation and virtual instrumentation by experiments.

EE3404 MICROPROCESSOR AND MICROCONTROLLER


C215.1	Ability to write assembly language program for microprocessor and microcontroller
C215.2	Ability to design and implement interfacing of peripheral with microprocessor and microcontroller
C215.3	Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring.
C215.4	Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring.
C215.5	Ability to understand and appreciate advanced architecture evolving microprocessor field

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EE3405 ELECTRICAL MACHINES – II

C216.1	Able to understand the construction and working principle of Synchronous generator
C216.2	Able to understand the construction and working principle of Synchronous Motor
C216.3	Able to understand the construction and working principle of Three Phase Induction Motor.
C216.4	Able to Acquire knowledge about the starting and speed control of induction motors.
C216.5	Able to gain knowledge about the basic principles and working of Single phase induction motors and Special Electrical Machines.

EE3411 ELECTRICAL MACHINES LABORATORY -II

C217.1	Ability to understand and analyze EMF and MMF methods
C217.2	Ability to analyze the characteristics of V and Inverted V curves
C217.3	Able to Acquire hands on experience of conducting various tests on alternators and obtaining their performance indices using standard analytical as well as graphical methods. to understand the importance of Synchronous machines
C217.4	Acquire hands on experience of conducting various tests on alternators and obtaining their performance indices using standard analytical as well as graphical methods. to understand the importance of Synchronous machines and Induction Motors.
C217.5	Ability to acquire knowledge on separation of losses

EE3412 LINEAR AND DIGITAL CIRCUITS LABORATORY

C218.1	Ability to understand and implement Boolean Functions.
C218.2	Ability to understand the importance of code conversion
C218.3	Ability to Design and implement circuits with digital ICs like decoders, multiplexers, register.
C218.4	Ability to acquire knowledge on Application of Op-Amp
C218.5	Ability to Design and implement counters using analog ICs like timers, VCOs and digital ICs like Flip-flops and counters.


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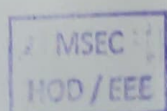
EE3413 MICROPROCESSOR AND MICROCONTROLLER LABORATORY

C219.1	Ability to write assembly language program for microprocessor.
C219.2	Ability to write assembly language program for microcontroller
C219.3	Ability to design and implement interfacing of peripheral with microprocessor and microcontroller
C219.4	Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring..
C219.5	Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring.

EE3501 POWER SYSTEM ANALYSIS

C301.1	Ability to model the power system under steady state operating condition.
C301.2	Ability to carry out power flow analysis using.
C301.3	Ability to infer the significance of short circuit studies in designing circuit breakers.
C301.4	Ability to analyze the state of the power system for various unsymmetrical faults.
C301.5	Ability to analyze the stability of power system using different methods.


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EE3591 POWER ELECTRONICS

C302.1	Understand the operation of semiconductor devices and dynamic characteristics and to design & analyze the low power SMPS
C302.2	Analyze the various uncontrolled rectifiers and design suitable filter circuits
C302.3	Analyze the operation of the n-pulse converters and evaluate the performance parameters
C302.4	Understand various PWM techniques and apply voltage control and harmonic elimination methods to inverter circuits.
C302.5	Understand the operation of AC voltage controllers and its applications.

EE3503 CONTROL SYSTEMS

C303.1	Represent simple systems in transfer function and state variable forms.
C303.2	Analyze simple systems in time domain.
C303.3	Analyze simple systems in frequency domain.
C303.4	Infer the stability of systems in time and frequency domain.
C303.5	Interpret characteristics of the system and find out solution for simple control problems.

EE3007 SMART GRIDS

C304.1	To be able to understand the importance and objectives of Power System Grid.
C304.2	To be able to know and understand the concept of a smart grid
C304.3	To identify and discuss smart metering devices and associated technologies.
C304.4	To be able to get an overview of Microgrid and Electric Vehicle Technology.
C304.5	To be able to have an up to date knowledge on the various computing technologies; to understand the role of Big Data and IoT for effective and efficient operation of Smart Grid.

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EE3012 ELECTRICAL DRIVES

C305.1	Understand the basic requirements of motor selection for different load profiles.
C305.2	Analyse the steady state behavior and stability aspects of drive systems.
C305.3	Analyse the dynamic performance of the DC drive using converter and chopper control.
C305.4	Simulate the AC drive.
C305.5	Design the controller for electrical drives

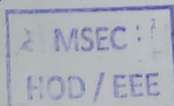
EE3016 EMBEDDED SYSTEM DESIGN

C306.1	The hardware functionals and software strategies required to develop various Embedded systems
C306.2	The basic differences between various Bus communication standards
C306.3	The incorporation of the interface as Interrupt services
C306.4	The various scheduling algorithms through a Real-time operating system.
C306.5	The various embedded concepts for developing automation applications.

MX3084 DISASTER RISK REDUCTION AND MANAGEMENT

C307.1	To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)
C307.2	To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction
C307.3	To develop disaster response skills by adopting relevant tools and technology
C307.4	Enhance awareness of institutional processes for Disaster response in the country and
C307.5	Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity

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EE3511 POWER ELECTRONICS LABORATORY

C308.1	Determine the characteristics of SCR, IGBT, TRIAC, MOSFET and IGBT
C308.2	Find the transfer characteristics of full converter, semi converter, step up and step down choppers by simulation experimentation.
C308.3	Analyze the voltage waveforms for PWM inverter using various modulation techniques.
C308.4	Design and experimentally verify the performance of basic DC/DC converter topologies used for SMPS.
C308.5	Understand the performance of AC voltage controllers by simulation and experimentation

EE3512 CONTROL AND INSTRUMENTATION LABORATORY

C309.1	To model and analyze simple physical systems and simulate the performance in analog and digital platform.
C309.2	To design and implement simple controllers in standard forms.
C309.3	To design compensators based on time and frequency domain specifications.
C309.4	To design a complete closed control loop and evaluate its performance for simple physical systems.
C309.5	To analyze the stability of a physical system in both continuous and discrete domains.

EE3601 PROTECTION AND SWITCHGEAR

C310.1	Understand and select proper protective scheme and type of earthing.
C310.2	Explain the operating principles of various relays.
C310.3	Suggest suitable protective scheme for the protection of various power system apparatus.
C310.4	Analyze the importance of static relays and numerical relays in power system protection.
C310.5	Summarize the merits and demerits and application areas of various circuit breakers.

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EE3602 POWER SYSTEM OPERATION AND CONTROL

C311.1	Understand the day – to – day operation of power system.
C311.2	Model and analyse the control actions that are implemented to meet the minute-to-minute variation of system real power demand.
C311.3	Model and analyze the compensators for reactive power control and various devices used for voltage control.
C311.4	Prepare day ahead and real time economic generation scheduling.
C311.5	Understand the necessity of computer control of power systems.

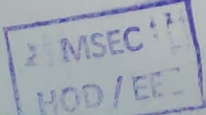
MX3089 INDUSTRIAL SAFETY

C312.1	Understand the basic concept of safety.
C312.2	Obtain knowledge of Statutory Regulations and standards.
C312.3	Know about the safety Activities of the Working Place.
C312.4	Analyze on the impact of Occupational Exposures and their Remedies
C312.5	Obtain knowledge of Risk Assessment Techniques.

EE3009 SPECIAL ELECTRICAL MACHINES

C313.1	Ability to model and analyze power electronic systems and equipment using computational software.
C313.2	Ability to optimally design magnetics required in special machines based drive systems using FEM based software tools.
C313.3	Ability to analyse the dynamic performance of special electrical machines
C313.4	Ability to understand the operation and characteristics of other special electrical machines.
C313.5	Ability to design and conduct experiments towards research.

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EE3014 POWER ELECTRONICS FOR RENEWABLE ENERGY SYSTEMS

C314.1	Examine the available renewable energy sources.
C314.2	Demonstrate the working principles of electrical machines and power converters used for wind energy conversion system
C314.3	Demonstrate the principles of power converters used for solar PV systems
C314.4	Examine the available hybrid renewable energy systems.
C314.5	Simulate AC-DC converters, buck/boost converters, AC-AC converters and PWM inverters.

EE3020 SMART SYSTEM AUTOMATION

C315.1	Understand the concepts of smart system design and its present developments.
C315.2	Illustrate different embedded open-source and cost-effective techniques for developing solution for real time applications.
C315.3	Acquire knowledge on different platforms and Infrastructure for Smart system design.
C315.4	Infer about smart appliances and energy management concepts.
C315.5	Improve Employability and entrepreneurship capacity due to knowledge upgradation on embedded system technologies.

EE3611 POWER SYSTEM LABORATORY

C317.1	Model and analyze the performance of the transmission lines.
C317.2	Perform power flow, short circuit, and stability analysis for any power system network.
C317.3	Understand, design, and analyze the load frequency control mechanism.
C317.4	Perform optimal scheduling of generators and compute the state of the power system.
C317.5	Understand, analyze, and apply the relays for power system protection.

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