



MACET
MARTHANDAM COLLEGE OF
ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE OUTCOMES



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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

ANNA UNIVERSITY REGULATION 2021(EEE) LIST OF COURSE NAMES

S.No	Sem	Course Code	Course Name
1.	I	HS3152	Professional English I
2	I	MA3151	Matrices and Calculus
3	I	PH3151	Engineering Physics
4	I	CY3151	Engineering Chemistry
5	I	GE3151	Problem Solving and Python Programming
6	I	GE3171	Problem Solving and Python Programming Laboratory
7	I	BS3171	Physics and Chemistry Laboratory (Physics)
8	I	BS3171	Physics and Chemistry Laboratory (Chemistry)
9	I	GE3172	English Laboratory
10	II	HS3252	Professional English II
11	II	MA3251	Statistics and Numerical Methods
12	II	PH3202	Physics for Electrical Engineering
13	II	BE3255	Basic Civil and Mechanical Engineering
14	II	GE3251	Engineering Graphics
15	II	EE3251	Electric Circuit Analysis
16	II	GE3271	Engineering Practices Laboratory
17	II	EE3271	Electric Circuit Laboratory
18	II	GE3272	Communication Laboratory
19	III	MA3303	Probability and Complex Functions
20	III	EE3301	Electromagnetic Theory
21	III	EE3302	Digital Logic Circuits
22	III	EC3301	Electron Devices and Circuits
23	III	EE 3303	Electrical Machines-I
24	III	CS3353	C Programming And Data Structures
25	III	EC3311	Electronic Devices And Circuits Laboratory



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26	III	EE3311	Electrical Machines Laboratory-I
27	III	CS3362	C Programming And Data Structures Laboratory
28	IV	GE3451	Environmental Sciences And Sustainability
29	IV	EE3401	Transmission And Distribution
30	IV	EE3402	Linear Integrated Circuits
31	IV	EE3403	Measurements And Instrumentation
32	IV	EE3404	Microprocessor And Microcontroller
33	IV	EE3405	Electrical Machines - II
34	IV	EE3411	Electrical Machines – II Laboratory
35	IV	EE3412	Linear And Digital Circuits Laboratory
36	IV	EE3413	Microprocessor And Microcontroller Laboratory
37	V	EE3501	Power System Analysis
38	V	EE3591	Power Electronics
39	V	EE3503	Control Systems
40	V	Mx3084	Disaster Risk Reduction And Management
41	V	Ee3009	Special Electrical Machines
42	V	EE3019	Embedded Control For Electric Drives
43	V	EE3024	Digital Signal Processing System Design
44	V	EE3511	Power Electronics Laboratory
45	V	EE3512	Control And Instrumentation Laboratory
46	VI	EE3601	Protection And Switchgear
47	VI	EE3602	Power System Operation And Control
48	VI	EE3036	Sustainable And Environmental Friendly by Insulation System
49	VI	EE3014	Power Electronics For Renewable Energy Systems
50	VI	EE3033	Hybrid Energy Technology
51	VI	MX3089	Industrial Safety
52	VI	EE3611	Power System Laboratory



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I SEMESTER



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Course Code & Course Name: HS3152 Professional English I

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To use appropriate words in a professional context
CO2	To gain understanding of basic grammatic structures and use them in right context.
CO3	To read and infer the denotative and connotative meanings of technical texts
CO4	To write definitions, descriptions, narrations and essays on various topics
CO5	To interpret non verbal texts

Course Code & Course Name: MA3151- Matrices and Calculus

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use the matrix algebra methods for solving practical problems.
CO2	Apply differential calculus tools in solving various application problems.
CO3	Able to use differential calculus ideas on several variable functions.
CO4	Apply different methods of integration in solving practical problems.
CO5	Apply multiple integral ideas in solving areas, volumes and other practical problems.

Course Code & Course Name: PH3151-ENGINEERING PHYSICS

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the importance of mechanics.
CO2	Express their knowledge in electromagnetic waves.
CO3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.
CO4	Understand the importance of quantum physics.
CO5	Comprehend and apply quantum mechanical principles towards the formation of energy bands.



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Course Code & Course Name: CY3151 Engineering Chemistry

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.
CO2	To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.
CO3	To apply the knowledge of phase rule and composites for material selection requirements.
CO4	To recommend suitable fuels for engineering processes and applications.
CO5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors.

Course Code & Course Name: GE3151 Problem Solving and Python Programming

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	CO1: Develop algorithmic solutions to simple computational problems.
CO2	CO2: Develop and execute simple Python programs.
CO3	CO3: Write simple Python programs using conditionals and loops for solving problems.
CO4	CO4: Decompose a Python program into functions.
CO5	CO5: Represent compound data using Python lists, tuples, dictionaries etc.

Course Code & Course Name: GE3171 Problem Solving and Python Programming Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Develop algorithmic solutions to simple computational problems
CO2	Develop and execute simple Python programs.
CO3	Implement programs in Python using conditionals and loops for solving problems.
CO4	Deploy functions to decompose a Python program.



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CO5	Process compound data using Python data structures.
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Course Code & Course Name: BS3171&Physics and Chemistry Laboratory (Physics)

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the functioning of various physics laboratory equipment.
CO2	Use graphical models to analyze laboratory data.
CO3	Use mathematical models as a medium for quantitative reasoning and describing physical reality.
CO4	Access, process and analyze scientific information.
CO5	Solve problems individually and collaboratively.

Course Code & Course Name: BS3171&Physics and Chemistry Laboratory (Chemistry)

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO
CO2	To determine the amount of metal ions through volumetric and spectroscopic techniques
CO3	To analyse and determine the composition of alloys.
CO4	To learn simple method of synthesis of nanoparticles
CO5	To quantitatively analyse the impurities in solution by electroanalytical techniques

Course Code & Course Name: GE3172- English Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To listen to and comprehend general as well as complex academic information
CO2	To listen to and understand different points of view in a discussion
CO3	To speak fluently and accurately in formal and informal communicative contexts
CO4	To describe products and processes and explain their uses and purposes clearly and accurately.



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CO5	To express their opinions effectively in both formal and informal discussions
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II SEMESTER



Course Code & Course Name: HS3252 – Professional English II

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To compare and contrast products and ideas in technical texts.
CO2	To identify and report cause and effects in events, industrial processes through technical texts
CO3	To analyse problems in order to arrive at feasible solutions and communicate them in the written format.
CO4	To present their ideas and opinions in a planned and logical manner
CO5	To draft effective resumes in the context of job search.

Course Code & Course Name: MA3251-Statistics and Numerical Methods

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.
CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

Course Code & Course Name: PH3202 – Physics for Electrical Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	know basics of dielectric materials and insulation.
CO2	gain knowledge on the electrical and magnetic properties of materials and their applications
CO3	understand clearly of semiconductor physics and functioning of semiconductor devices
CO4	understand the optical properties of materials and working principles of various optical



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	devices
CO5	appreciate the importance of nanotechnology and nanodevices.

Course Code & Course Name: BE3255– Basic Civil and Mechanical Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understanding profession of Civil and Mechanical engineering.
CO2	Summarise the planning of building, infrastructure and working of Machineries.
CO3	CO3Apply the knowledge gained in respective discipline
CO4	Illustrate the ideas of Civil and Mechanical Engineering applications.
CO5	Appraise the material, Structures, machines and energy.

Course Code & Course Name:GE3251 Engineering Graphics

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use BIS conventions and specifications for engineering drawing.
CO2	Construct the conic curves, involutes and cycloid.
CO3	Solve practical problems involving projection of lines.
CO4	Draw the orthographic, isometric and perspective projections of simple solids.
CO5	Draw the development of simple solids.

Course Code & Course Name: EE3251 Electric Circuit Analysis

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Explain circuit's behavior using circuit laws.
CO2	Apply mesh analysis/ nodal analysis / network theorems to determine behavior of the given DC and AC circuit
CO3	Compute the transient response of first order and second order systems to step and sinusoidal input
CO4	Compute power, line/ phase voltage and currents of the given three phase circuit



CO5	Explain the frequency response of series and parallel RLC circuits
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Course Code & Course Name: GE3271 Engineering Practices Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.
CO2	Wire various electrical joints in common household electrical wire work.
CO3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts;
CO4	Assemble simple mechanical assembly of common household equipment, Make a tray out of metal sheet using sheet metal work.
CO5	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

Course Code & Course Name: EE3271 Electric Circuit Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use simulation and experimental methods to verify the fundamental electrical laws for the given DC/AC circuit (Ex 1)
CO2	Use simulation and experimental methods to verify the various electrical theorems (Superposition, Thevenin, Norton and maximum power transfer) for the given DC/AC circuit (Ex 2-5)
CO3	Analyze transient behavior of the given RL/RC/RLC circuit using simulation and experimental methods (Ex 6)
CO4	Analyze frequency response of the given series and parallel RLC circuit using simulation and experimentation methods (Ex 7-8)
CO5	Analyze the performance of the given three-phase circuit using simulation and experimental methods (Ex 9)



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Course Code & Course Name: GE3272- Communication Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Speak effectively in group discussions held in a formal/semi formal contexts.
CO2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions
CO3	Write emails, letters and effective job applications.
CO4	Write critical reports to convey data and information with clarity and precision
CO5	Give appropriate instructions and recommendations for safe execution of tasks



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III SEMESTER



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Course Code & Course Name:MA3303 Probability and Complex Functions

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
CO2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
CO3	To develop an understanding of the standard techniques of complex variable theory in particular analytic function and its mapping property.
CO4	To familiarize the students with complex integration techniques and contour integration techniques which can be used in real integrals..
CO5	To acquaint the students with Differential Equations which are significantly used in engineering problems..

Course Code & Course Name:EE3301 Electromagnetic Theory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Visualize and explain Gradient, Divergence, and Curl operations on electromagnetic vector fields and identify the electromagnetic sources and their effects.
CO2	Compute and analyse electrostatic fields, electric potential, energy density along with their applications.
CO3	Compute and analyse magneto static fields, magnetic flux density, vector potential along with their applications.
CO4	Explain different methods of emf generation and Maxwell's equations
CO5	Explain the concept of electromagnetic waves and characterizing parameters

Course Code & Course Name:EE3302 DIGITAL LOGIC CIRCUITS

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Explain various number systems and characteristics of digital logic families
CO2	Apply K-maps and Quine McCluskey methods to simplify the given Boolean expressions
CO3	Explain the implementation of combinational circuit such as multiplexers and demultiplexers - code converters, adders, subtractors, Encoders and Decoders



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CO4	Design various synchronous and asynchronous circuits using Flip Flops
CO5	Explain asynchronous sequential circuits and programmable logic devices And Use VHDL for simulating and testing RTL, combinatorial and sequential circuits.

Course Code & Course Name:EC3301 Electron Devices and Circuits

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Explain the structure and operation of PN junction devices (diode, Zener diode, LED and Laser diode)
CO2	- Design clipper, clamper, half wave and full wave rectifier, regulator circuits using PN junction diodes
CO3	Analyze the structure and characteristics BJT, FET, MOSFET, UJT, Thyristor and IGBT
CO4	Analyze the performance of various configurations of BJT and MOSFET based amplifier
CO5	Explain the characteristics of MOS based cascade and differential amplifier
CO6	Explain the operation of various feedback amplifiers and oscillators.

Course Code & Course Name:EE 3303- ELECTRICAL MACHINES - I

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Apply the laws governing the electromechanical energy conversion for singly and multiple excited systems.
CO2	Explain the construction and working principle of DC machines.
CO3	Interpret various characteristics of DC machines
CO4	Compute various performance parameters of the machine, by conducting suitable tests
CO5	Draw the equivalent circuit of transformer and predetermine the efficiency and regulation
CO6	Describe the working principle of auto transformer, three phase transformer with different types of connections



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Course Code & Course Name: CS3353 C PROGRAMMING AND DATA STRUCTURES
COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Develop C programs for any real world/technical application
CO2	Apply advanced features of C in solving problems
CO3	Write functions to implement linear and non-linear data structure operations.
CO4	Suggest and use appropriate linear/non-linear data structure operations for solving a given problem.
CO5	Appropriately use sort and search algorithms for a given application.
CO6	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.

Course Code & Course Name: EC3311-ELECTRONIC DEVICES AND CIRCUITS
LABORATORY
COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Analyze the characteristics of PN, Zener diode and BJT in CE,CC,CB configurations experimentally
CO2	Analyze the characteristics of JFET and UJT experimentally
CO3	Analyze frequency response characteristics of a Common Emitter amplifier experimentally
CO4	Analyze the characteristics of RC phase shift and LC oscillators experimentally
CO5	Analyze the characteristics of half-wave and full-wave rectifier with and without filters experimentally
CO6	Analyze the characteristics of FET based differential amplifier experimentally
CO7	Calculate the frequency and phase angle using CRO experimentally
CO8	Analyze the frequency response characteristics of passive filters experimentally



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Course Code & Course Name:EE3311ELECTRICAL MACHINES LABORATORY - I
COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	At the end of the course students will be able to: Construct the circuit with appropriate connections for the given DC machine/transformer.
CO2	Experimentally determine the characteristics of different types of DC machines.
CO3	Demonstrate the speed control techniques for a DC motor for industrial applications.
CO4	Identify suitable methods for testing of transformer and DC machines.
CO5	Predetermine the performance parameters of transformers and DC motor..
CO6	Understand DC motor starters and 3-phase transformer connections.

Course Code & Course Name:CS3362C PROGRAMMING AND DATA STRUCTURES
LABORATORY
COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use different constructs of C and develop applications
CO2	Write functions to implement linear and non-linear data structure operations
CO3	Suggest and use the appropriate linear / non-linear data structure operations for a given problem
CO4	Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval
CO5	Implement Sorting and searching algorithms for a given application



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IV SEMESTER



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Course Code & Course Name : **GE3451 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY**

COURSE OUTCOMES (COs)

List of Course Outcomes

C O1	To recognize and understand the functions of environment
C O2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.
C O3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
C O4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.
C O5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.

Course Code & Course Name : **EE3401 TRANSMISSION AND DISTRIBUTION**

COURSE OUTCOMES (COs)

List of Course Outcomes

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



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Course Code & Course Name : **EE3402 LINEAR INTEGRATED CIRCUITS**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Explain monolithic IC fabrication process
CO2	Explain the fabrication of diodes, capacitance, resistance, FETs and PV Cell.
CO3	Analyze the characteristics and basic applications (inverting/non-inverting amplifier, summer, differentiator, integrator, V/I and I/V converter) of Op-Amp
CO4	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
CO5	Explain Functional blocks, characteristics and applications of Timer, PLL, analog multiplier ICs.
CO6	Explain the applications of ICs in Instrumentation amplifier, fixed and variable voltage regulator, SMPS and function generator

Course Code & Course Name : **EE3403 MEASUREMENTS AND INSTRUMENTATION**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Ability to understand the fundamental art of measurement in engineering
CO2	Ability to understand the structural elements of various instruments.
CO3	Ability to understand the importance of bridge circuits
CO4	Ability to understand about various transducers and their characteristics by experiments
CO5	Ability to understand the concept of digital instrumentation and virtual instrumentation by experiments.

Course Code & Course Name : **EE3404 MICROPROCESSOR AND MICROCONTROLLER**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Ability to write assembly language program for microprocessor and microcontroller
CO2	Ability to design and implement interfacing of peripheral with



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	microprocessor and microcontroller.
CO3	Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring.
CO4	Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring.
CO5	Ability to understand and appreciate advanced architecture evolving microprocessor field

Course Code & Course Name : **EE3405 ELECTRICAL MACHINES -II**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Ability to understand the construction and working principle of Synchronous generator
CO2	Ability to understand the construction and working principle of Synchronous Motor
CO3	Ability to understand the construction and working principle of Three Phase Induction Motor
CO4	Ability to Acquire knowledge about the starting and speed control of induction motors.
CO5	To gain knowledge about the basic principles and working of Single phase induction motors and Special Electrical Machines.

Course Code & Course Name : **EE3411 ELECTRICAL MACHINES –II laboratory**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Ability to understand and analyze EMF and MMF methods
CO2	Ability to analyze the characteristics of V and Inverted V curve
CO3	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
CO4	Acquire hands on experience of conducting various tests on induction motors and obtaining



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	their performance indices using standard analytical as well as graphical methods to understand the importance of single and three phase Induction motors
CO5	Ability to acquire knowledge on separation of losses

Course Code & Course Name : **EE3412 LINEAR AND DIGITAL CIRCUITS LABORATORY**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Ability to understand and implement Boolean Functions.
CO2	Ability to understand the importance of code conversion
CO3	Ability to Design and implement circuits with digital ICs like decoders, multiplexers, register.
CO4	Ability to acquire knowledge on Application of Op-Amp
CO5	Ability to Design and implement counters using analog ICs like timers, VCOs and digital ICs like Flip-flops and counters

Course Code & Course Name : **EE3413
MICROPROCESSOR AND MICROCONTROLLER LABORATORY**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Ability to write assembly language program for microprocessor
CO2	Ability to write assembly language program for microcontroller.
CO3	Ability to design and implement interfacing of peripheral with microprocessor and microcontroller
CO4	Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring
CO5	Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring



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V SEMESTER



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Course Code & Course Name : **EE3501 Power System Analysis**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Ability to model the power system under steady state operating condition.
CO2	Ability to carry out power flow analysis using.
CO3	Ability to infer the significance of short circuit studies in designing circuit breakers.
CO4	Ability to analyze the state of the power system for various unsymmetrical faults.
CO5	Ability to analyze the stability of power system using different methods

Course Code & Course Name : **EE3591 POWER ELECTRONICS**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the operation of semiconductor devices and dynamic characteristics and to design & analyze the low power SMPS
CO2	Analyze the various uncontrolled rectifiers and design suitable filter circuits
CO3	Analyze the operation of the n-pulse converters and evaluate the performance parameters
CO4	Understand various PWM techniques and apply voltage control and harmonic elimination methods to inverter circuits.
CO5	Understand the operation of AC voltage controllers and its applications.

Course Code & Course Name : **EE3503 CONTROL SYSTEMS**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Represent simple systems in transfer function and state variable forms.
CO2	Analyze simple systems in time domain.
CO3	Analyze simple systems in frequency domain.
CO4	Infer the stability of systems in time and frequency domain.
CO5	Interpret characteristics of the system and find out solution for simple control problems.



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Course Code & Course Name : MX3084Disaster Risk Reduction and Management

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)
CO2	To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction
CO3	To develop disaster response skills by adopting relevant tools and technology
CO4	Enhance awareness of institutional processes for Disaster response in the country and
CO5	Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity

Course Code & Course Name :EE3009 SPECIAL ELECTRICAL MACHINES

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Ability to model and analyze power electronic systems and equipment using computational software.
CO2	Ability to optimally design magnetics required in special machines based drive systems using FEM based software tools
CO3	Ability to analyse the dynamic performance of special electrical machines
CO4	Ability to understand the operation and characteristics of other special electrical machines
CO5	Ability to design and conduct experiments towards research
CO6	Ability to Simulate other special machines

Course Code & Course Name :EE3019 EMBEDDED CONTROL FOR ELECTRIC DRIVES

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Interpret the significance of embedded control of electrical drives
CO2	Deliver insight into various control strategies for electrical drives.
CO3	Developing knowledge of Machine learning and optimization techniques for motor control
CO4	Develop embedded system solutions for real-time application such as Electric vehicles and UAVs.
CO5	Improved Employability and entrepreneurship capacity due to knowledge up gradation on recent trends in embedded system skills required for motor control strategy.



Course Code & Course Name : **EE3024 DIGITAL SIGNAL PROCESSING SYSTEM DESIGN**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Explain the concepts of digital signal processing
CO2	Illustrate the system representation using transforms
CO3	Learn the transformation techniques for time to frequency conversion
CO4	Design suitable digital FIR, IIR algorithm for the given specification
CO5	Use digital signal processor for application development

Course Code & Course Name : **EE3511 POWER ELECTRONICS LABORATORY**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Determine the characteristics of SCR, IGBT, TRIAC, MOSFET and IGBT
CO2	Find the transfer characteristics of full converter, semi converter, step up and step down choppers by simulation experimentation.
CO3	Analyze the voltage waveforms for PWM inverter using various modulation techniques.
CO4	Design and experimentally verify the performance of basic DC/DC converter topologies used for SMPS
CO5	Understand the performance of AC voltage controllers by simulation and experimentation

Course Code & Course Name : **EE3512 CONTROL AND INSTRUMENTATION**

LABORATORY

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To model and analyze simple physical systems and simulate the performance in analog and digital platform.
CO2	To design and implement simple controllers in standard forms.
CO3	To design compensators based on time and frequency domain specifications
CO4	To design a complete closed control loop and evaluate its performance for simple physical systems.
CO5	To analyze the stability of a physical system in both continuous and discrete domains.



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VI SEMESTER



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Course Code & Course Name : **EE3601 PROTECTION AND SWITCHGEAR**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand and select proper protective scheme and type of earthing.
CO2	Explain the operating principles of various relays.
CO3	Suggest suitable protective scheme for the protection of various power system apparatus.
CO4	Analyze the importance of static relays and numerical relays in power system protection.
CO5	Summarize the merits and demerits and application areas of various circuit breakers

Course Code & Course Name : **EE3602 POWER SYSTEM OPERATION AND CONTROL**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the day – to – day operation of power system.
CO2	Model and analyze the control actions that are implemented to meet the minute-to-minute variation of system real power demand.
CO3	Model and analyze the compensators for reactive power control and various devices used for voltage control.
CO4	Prepare day ahead and real time economic generation scheduling
CO5	Understand the necessity of computer control of power systems

Course Code & Course Name : **EE3036 SUSTAINABLE AND ENVIRONMENTAL FRIENDLY HV INSULATION SYSTEM**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Know about sustainable and environmental energy and products.
CO2	Describe the alternate green gaseous insulators.
CO3	Describe the alternate green liquid insulators
CO4	Describe the alternate green solid insulators
CO5	Elaborate the standards for Green insulation systems



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Course Code & Course Name :**EE3014 POWER ELECTRONICS FOR RENEWABLE ENERGY SYSTEMS**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Examine the available renewable energy sources.
CO2	Demonstrate the working principles of electrical machines and power converters used for wind energy conversion system
CO3	Demonstrate the principles of power converters used for solar PV systems
CO4	Examine the available hybrid renewable energy systems.
CO5	Simulate AC-DC converters, buck/boost converters, AC-AC converters and PWM inverters.

Course Code & Course Name :**EE3033 HYBRID ENERGY TECHNOLOGY**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Analyze the impacts of hybrid energy technologies on the environment and demonstrate them to harness electrical power.
CO2	Select a suitable Electrical machine for Wind Energy Conversion Systems and simulate wind energy conversion system
CO3	Design the power converters such as AC-DC, DC-DC, and AC-AC converters for SPV systems.
CO4	Analyze the power converters such as AC-DC, DC-DC, and AC-AC converters for Hybrid energy systems.
CO5	Interpret the hybrid renewable energy systems

Course Code & Course Name :**MX3089 INDUSTRIAL SAFETY**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the basic concept of safety.
CO2	Obtain knowledge of Statutory Regulations and standards.
CO3	Know about the safety Activities of the Working Place.



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CO4	Analyze on the impact of Occupational Exposures and their Remedies
CO5	Obtain knowledge of Risk Assessment Techniques.

Course Code & Course Name :**EE3611POWER SYSTEM LABORATORY**

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Model and analyze the performance of the transmission lines.
CO2	Perform power flow, short circuit, and stability analysis for any power system network.
CO3	Understand, design, and analyze the load frequency control mechanism.
CO4	Perform optimal scheduling of generators and compute the state of the power system
CO5	Understand, analyze, and apply the relays for power system protection.