

JP COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
COURSE OUTCOME

Regulation : 2021

S. No	Semester	Course Code	Course Name	Course Outcome
1	I SEM	HS3152	Professional English - I	To use appropriate words in a professional context
				To gain understanding of basic grammatic structures and use them in right context
				To read and infer the denotative and connotative meanings of technical texts
				To write definitions, descriptions, narrations and essays on various topics
2		MA3151	Matrices and Calculus	To communicate effectively and appropriately in real life
				Use the matrix algebra methods for solving practical problems.
				Apply differential calculus tools in solving various application problems
	Able to use differential calculus ideas on several variable functions			
3	PH3151	Engineering Physics	Apply different methods of integration in solving practical problems	
			Apply multiple integral ideas in solving areas, volumes and other practical problems	
			Understand the importance of mechanics	
			Express their knowledge in electromagnetic waves.	
4	CY3151	Engineering Chemistry	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.	
			Understand the importance of quantum physics.	
			Comprehend and apply quantum mechanical principles towards the formation of energy bands.	
			To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water	
5	GE3151	Problem Solving and Python Programming	To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications	
			To apply the knowledge of phase rule and composites for material selection requirements.	
			To recommend suitable fuels for engineering processes and applications	
			To recognize different forms of energy resources and apply them for suitable applications in energy sectors.	
6	GE3152	Heritage of Tamils	Develop algorithmic solutions to simple computational problems	
			Develop and execute simple Python programs.	
			Write simple Python programs using conditionals and loops for solving problems.	
			Decompose a Python program into functions.	
7	HS3252	Professional English-II	Represent compound data using Python lists, tuples, dictionaries etc.	
			To compare and contrast products and ideas in technical texts.	
			To identify and report cause and effects in events, industrial processes through technical texts	
			To analyse problems in order to arrive at feasible solutions and communicate them in the written format.	
				To present their ideas and opinions in a planned and logical manner

			To draft effective resumes in the context of job search.
8	MA3251	Statistics and Numerical Methods	<p>Apply the concept of testing of hypothesis for small and large samples in real life problems.</p> <p>Apply the basic concepts of classifications of design of experiments in the field of agriculture.</p> <p>Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.</p> <p>Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.</p> <p>Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications</p>
9	GE3251	Engineering Graphics	<p>Use BIS conventions and specifications for engineering drawing.</p> <p>Construct the conic curves, involutes and cycloid.</p> <p>Solve practical problems involving projection of lines.</p> <p>Draw the orthographic, isometric and perspective projections of simple solids.</p> <p>Draw the development of simple solids.</p>
10	PH3202	Physics for Electrical Engineering	<p>Know basics of dielectric materials and insulation.</p> <p>Gain knowledge on the electrical and magnetic properties of materials and their applications</p> <p>Understand clearly of semiconductor physics and functioning of semiconductor devices</p> <p>Understand the optical properties of materials and working principles of various optical devices</p> <p>Appreciate the importance of nanotechnology and nanodevices.</p>
11	BE3255	Basic Civil and Mechanical Engineering	<p>Understanding profession of Civil and Mechanical engineering.</p> <p>Summarise the planning of building, infrastructure and working of Machineries.</p> <p>Apply the knowledge gained in respective discipline</p> <p>Illustrate the ideas of Civil and Mechanical Engineering applications.</p> <p>Appraise the material, Structures, machines and energy.</p>
12	EE3251	Electric Circuit Analysis	<p>Explain circuit's behavior using circuit laws.</p> <p>Apply mesh analysis/ nodal analysis / network theorems to determine behavior of the given DC and AC circuit</p> <p>Compute the transient response of first order and second order systems to step and sinusoidal input</p> <p>Compute power, line/ phase voltage and currents of the given three phase circuit</p> <p>Explain the frequency response of series and parallel RLC circuits</p>
13	GE3252	தமிழரும் தொழில்நுட்பமும் / Tamils and Technology	NIL
14	MA3303	Probability and Complex Functions	<p>Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.</p> <p>Understand the basic concepts of one and two dimensional random variables and apply</p> <p>To develop an understanding of the standard techniques of complex variable theory in particular analytic function and its mapping property</p> <p>To familiarize the students with complex integration techniques and contour integration techniques which can be used in real integrals</p> <p>To acquaint the students with Differential Equations which are significantly used in engineering problems.</p>
15	EE3301	Electromagnetic Fields	<p>Visualize and explain Gradient, Divergence, and Curl operations on electromagnetic vector fields and identify the electromagnetic sources and their effects.</p> <p>Compute and analyse electrostatic fields, electric potential, energy density along with their applications.</p>

15	III SEM	EE3301	Electromagnetic Fields	<p>Compute and analyse magneto static fields, magnetic flux density, vector potential along with their applications.</p> <p>Explain different methods of emf generation and Maxwell's equations</p> <p>Explain the concept of electromagnetic waves and characterizing parameters</p>
16		EE3302	Digital Logic Circuits	<p>Explain various number systems and characteristics of digital logic families</p> <p>Apply K-maps and Quine McCluskey methods to simplify the given Boolean expressions</p> <p>Explain the implementation of combinational circuit such as multiplexers and de multiplexers - code converters, adders, subtractors, Encoders and Decoders</p> <p>Design various synchronous and asynchronous circuits using Flip Flops</p> <p>Explain asynchronous sequential circuits and programmable logic devices</p> <p>Use VHDL for simulating and testing RTL, combinatorial and sequential circuits</p>
17		EC3301	Electron Devices and Circuits	<p>Explain the structure and operation of PN junction devices (diode, Zener diode, LED and Laser diode)</p> <p>Design clipper, clamper, half wave and full wave rectifier, regulator circuits using PN junction diodes</p> <p>Analyze the structure and characteristics BJT, FET, MOSFET, UJT, Thyristor and IGBT</p> <p>Analyze the performance of various configurations of BJT and MOSFET based amplifier</p> <p>Explain the characteristics of MOS based cascade and differential amplifier</p> <p>Explain the operation of various feedback amplifiers and oscillators</p>
18		EE3303	Electrical Machines - I	<p>Apply the laws governing the electromechanical energy conversion for singly and multiple excited systems</p> <p>Explain the construction and working principle of DC machines</p> <p>Interpret various characteristics of DC machines.</p> <p>Compute various performance parameters of the machine, by conducting suitable tests.</p> <p>Draw the equivalent circuit of transformer and predetermine the efficiency and regulation.</p> <p>Describe the working principle of auto transformer, three phase transformer with different types of connections.</p>
19		CS3353	C Programming and Data Structures	<p>Develop C programs for any real world/technical application.</p> <p>Apply advanced features of C in solving problems</p> <p>Write functions to implement linear and non-linear data structure operations.</p> <p>Suggest and use appropriate linear/non-linear data structure operations for solving a given problem.</p> <p>Appropriately use sort and search algorithms for a given application</p> <p>Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.</p>
20		GE3451	Environmental Sciences and Sustainability	<p>To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation</p> <p>To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society</p> <p>To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations</p> <p>To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.</p> <p>To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.</p>
21		EE3401	Transmission and Distribution	<p>Understand the structure of power system, computation of transmission line parameters for different configurations</p> <p>Model the transmission lines to determine the line performance and to understand the impact of Ferranti effect and corona on line performance</p> <p>Do Mechanical design of transmission lines, grounding and to understand about the insulators in transmission system.</p> <p>Design the underground cables and understand the performance analysis of underground cable</p> <p>Understand the modelling, performance analysis and modern trends in distribution system.</p>
				Explain monolithic IC fabrication process

22	IV SEM	EE3402	Linear Integrated Circuits	Explain the fabrication of diodes, capacitance, resistance, FETs and PV Cell.
				Analyze the characteristics and basic applications (inverting/non-inverting amplifier, summer, differentiator, integrator, V/I and I/V converter) of Op-Amp
				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
				Explain Functional blocks, characteristics and applications of Timer, PLL, analog multiplier ICs.
				Explain the applications of ICs in Instrumentation amplifier, fixed and variable voltage regulator, SMPS and function generator
23		EE3403	Measurements and Instrumentation	Ability to understand the fundamental art of measurement in engineering.
				Ability to understand the structural elements of various instruments.
				Ability to understand the importance of bridge circuits
				Ability to understand about various transducers and their characteristics by experiments.
24		EE3404	Microprocessor and Microcontroller	Ability to understand the concept of digital instrumentation and virtual instrumentation by experiments.
				Ability to write assembly language program for microprocessor and microcontroller
				Ability to design and implement interfacing of peripheral with microprocessor and microcontroller
				Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring.
25		EE3405	Electrical Machines - II	Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring.
				Ability to understand and appreciate advanced architecture evolving microprocessor field
				Ability to understand the construction and working principle of Synchronous generator
				Ability to understand the construction and working principle of Synchronous Motor
				Ability to understand the construction and working principle of Three Phase Induction Motor
26		EE3501	Power System Analysis	Acquire knowledge about the starting and speed control of induction motors
				To gain knowledge about the basic principles and working of Single phase induction motors and Special Electrical Machines
				Ability to model the power system under steady state operating condition.
				Ability to carry out power flow analysis using
				Ability to infer the significance of short circuit studies in designing circuit breakers.
27		EE3591	Power Electronics	Ability to analyze the state of the power system for various unsymmetrical faults
				Ability to analyze the stability of power system using different methods.
				Understand the operation of semiconductor devices and dynamic characteristics and to design & analyze the low power SMPS
				Analyze the various uncontrolled rectifiers and design suitable filter circuits
				Analyze the operation of the n-pulse converters and evaluate the performance parameters
28		EE3503	Control Systems	Understand various PWM techniques and apply voltage control and harmonic elimination methods to inverter circuits.
				Understand the operation of AC voltage controllers and its applications.
				Represent simple systems in transfer function and state variable forms.
				Analyze simple systems in time domain.
				Analyze simple systems in frequency domain.
	V SEM		Utilization and Conservation	Infer the stability of systems in time and frequency domain.
				Interpret characteristics of the system and find out solution for simple control problems.
				Ability to choose suitable electric drives for different applications
				Ability to design the illumination systems for energy saving
				Ability to demonstrate the utilization of electrical energy for heating and welding purposes

29	V SEM	EE3001	Utilization and Conservation of Electrical Energy	Ability to demonstrate the utilization of electrical energy for heating and welding purposes
				Ability to do electric connection for any domestic appliance like refrigerator, battery charging circuit for a specific household application.
				To illustrate the need for energy conservation and to simulate three phase power control.
30		EE3018	Embedded Processors	Interpret the basics and functionality of processor functional blocks.
				Observe the specialty of RISC processor Architecture.
				Incorporate the I/O hardware interface of processor with peripherals.
				Emphasis the communication features of the processor.
				Improved Employability and entrepreneurship capacity due to knowledge up gradation on recent trends in commercial embedded processors.
31		EE3012	Electrical Drives	Understand the basic requirements of motor selection for different load profiles.
				Analyse the steady state behavior and stability aspects of drive systems.
			Analyse the dynamic performance of the DC drive using converter and chopper control.	
			Simulate the AC drive.	
			Design the controller for electrical drives.	
32	MX3084	MANDATORY COURSE - 1* (DISASTER RISK REDUCTION AND MANAGEMENT)	To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)	
			To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction	
			To develop disaster response skills by adopting relevant tools and technology	
			Enhance awareness of institutional processes for Disaster response in the country	
			Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity	
33	EE3601	Protection and Switchgear	Understand and select proper protective scheme and type of earthing.	
			Explain the operating principles of various relays	
			Suggest suitable protective scheme for the protection of various power system apparatus.	
			Analyze the importance of static relays and numerical relays in power system protection.	
			Summarize the merits and demerits and application areas of various circuit breakers.	
34	EE3602	Power system Operation and Control	Understand the day – to – day operation of power system.	
			Model and analyse the control actions that are implemented to meet the minute-to minute variation of system real power demand.	
			Model and analyze the compensators for reactive power control and various devices used for voltage control.	
			Prepare day ahead and real time economic generation scheduling.	
			Understand the necessity of computer control of power systems	
35	EE3014	Power Electronics for Renewable Energy Systems	Examine the available renewable energy sources.	
			Demonstrate the working principles of electrical machines and power converters used for wind energy conversion system	
			Demonstrate the principles of power converters used for solar PV systems	
			Examine the available hybrid renewable energy systems	
			Simulate AC-DC converters, buck/boost converters, AC-AC converters and PWM inverters.	
36	OCS353	Data Science Fundamentals	Gain knowledge on data science process.	
			Perform data manipulation functions using Numpy and Pandas.	
			Understand different types of machine learning approaches.	
			Perform data visualization using tools.	
			Handle large volumes of data in practical scenarios.	
37	EE3022	VLSI Design	Develop CMOS design techniques	
			Learn and build IC fabrication	
			Explain the need of reconfigurable computing with PLDs.	

			Design and development of reprogrammable FPGA.
			Illustrate and develop HDL computational processes with improved design strategies.
38	MX3089	MANDATORY COURSE - 2* (Industrial Safety)	Understand the basic concept of safety.
			Obtain knowledge of Statutory Regulations and standards.
			Know about the safety Activities of the Working Place.
			Analyze on the impact of Occupational Exposures and their Remedies
			Obtain knowledge of Risk Assessment Techniques.