

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING
Course outcomes

SEMESTER - 1 & 2

Course code	Course Name	Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
MAT 101	LINEAR ALGEBRA AND CALCULUS	CO 1	solve systems of linear equations, diagonalize matrices and characterise quadratic forms	3	3	3	3	2	1			1	2	2
		CO 2	compute the partial and total derivatives and maxima and minima of multivariable functions	3	3	3	3	2	1			1	2	2
		CO 3	compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminas	3	3	3	3	2	1			1	2	2
		CO 4	perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent	3	2	3	2	1	1			1	2	2
		CO 5	determine the Taylor and Fourier series expansion of functions and learn their applications.	3	3	3	3	2	1			1	2	2
PHT 110	ENGINEERING PHYSICS A (FOR CIRCUIT BRANCHES)	CO 1	Compute the quantitative aspects of waves and oscillations in engineering systems.	3	2						1	2		1
		CO 2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.	3	2						1	2		1
		CO 3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.	3	2						1	2		1
		CO 4	Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems	3	2						1	2		1
		CO 5	Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system	3	1						1	2		1

		CO 10	Explain the working of power transmission elements	3	1												
		CO 11	Describe the basic manufacturing, metal joining and machining processes	3													
EST 130	BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	CO 1	Apply fundamental concepts and circuit laws to solve simple DC electric circuits	3	1											2	
		CO 2	Develop and solve models of magnetic circuits	3	1												2
		CO 3	Apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state	3	1												2
		CO 4	Describe working of a voltage amplifier	2													
		CO 5	Outline the principle of an electronic instrumentation system	2													2
		CO 6	Explain the principle of radio and cellular communication	2													2
HUN 101	LIFE SKILLS	CO 1	Define and Identify different life skills required in personal and professional life						2		1	2	2	1	3		
		CO 2	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.									3				2	
		CO 3	Explain the basic mechanics of effective communication and demonstrate these through presentations.						1			1	3				
		CO 4	Take part in group discussions										3			1	
		CO 5	Use appropriate thinking and problem solving techniques to solve new problems		3		2	1									
		CO 6	Understand the basics of teamwork and leadership						1				3				

ESL 120	CIVIL & MECHANICAL WORKSHOP	CO 1	Name different devices and tools used for civil engineering measurements	1				1	1			2	2		
		CO 2	Explain the use of various tools and devices for various field measurements	1				1	1			2	2		
		CO 3	Demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work	1				1	1		2	2	2	1	
		CO 4	Choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing.	1				1	1		2	2	2	1	1
		CO 5	Compare different techniques and devices used in civil engineering measurements	1				1	1			2	2		1
		CO 6	Identify Basic Mechanical workshop operations in accordance with the material and objects	1											
		CO 7	Apply appropriate Tools and Instruments with respect to the mechanical workshop trades	2											
		CO 8	Apply appropriate safety measures with respect to the mechanical workshop trades	2											
ESL 130	ELECTRICAL & ELECTRONICS WORKSHOP	CO 1	Demonstrate safety measures against electric shocks						3						1
		CO 2	Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols	2									1		
		CO 3	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings	2			1		1		1	2	2		2
		CO 4	Identify and test various electronic components	3											2
		CO 5	Draw circuit schematics with EDA tools	3					2						2
		CO 6	Assemble and test electronic circuits on boards	3					2						1
		CO 7	Work in a team with good interpersonal skills									3	2		2

EST 200	DESIGN AND ENGINEERING	CO 1	Explain the different concepts and principles involved in design engineering.	2	1					1			1			
		CO 2	Apply design thinking while learning and practicing engineering.		2				1		1					2
		CO 3	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.			2			1	1		2	2			1
MCN201	SUSTAINABLE ENGINEERING	CO 1	Understand the relevance and the concept of sustainability and the global initiatives in this direction						2	3					2	
		CO 2	Explain the different types of environmental pollution problems and their sustainable solutions						2	3						2
		CO 3	Discuss the environmental regulations and standards						2	3						2
		CO 4	Outline the concepts related to conventional and non-conventional energy						2	3						2
		CO 5	Demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles						2	3						2
EEL203	ANALOG ELECTRONICSLAB	CO 1	Use the various electronic instruments and for conducting experiments.	2									2			
		CO 2	Design and develop various electronic circuits using diodes and Zener diodes.	2	2	2							2			
		CO 3	Design and implement amplifier and oscillator circuits using BJT and JFET.	2	2	2							2			
		CO 4	Design and implement basic circuits using IC (OPAMP and 555 timers).	2	2	2							2			

		CO 5	Simulate electronic circuits using any circuit simulation software.	1	1			3				3				
		CO 6	Use PCB layout software for circuit design	1				3				3				
EEL201	CIRCUITS AND MEASUREMENTS LAB	CO 1	Analyse voltage current relations of RLC circuits	3	3	2						2			3	
		CO 2	Verify DC network theorems by setting up various electric circuits	3	3								2			3
		CO 3	Measure power in a single and three phase circuits by various methods	3	3								2			3
		CO 4	Calibrate various meters used in electrical systems	3	3	2							2			3
		CO 5	Determine magnetic characteristics of different electrical devices	3	3								2			3
		CO 6	Analyse the characteristics of various types of transducer systems	3	3	2							2			3
		CO 7	Determine electrical parameters using various bridges	3	3								2			3
		CO 8	Analyse the performance of various electronic devices for an instrumentation systems and, to develop the team management and documentation capabilities.	3	3	3	3	2					2	3	3	3

SEMESTER - 4

Course code	Course Name	Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		
MAT 202	PROBABILITY, STATISTICS AND NUMERICAL METHODS	CO 1	Understand the concept, properties and important models of discrete random variables and, using them, analyse suitable random phenomena.	3	2	2	2	2				2		1		
		CO 2	Understand the concept, properties and important models of continuous random variables and, using them, analyse suitable random phenomena	3	2	2	2	2					2		1	
		CO 3	Perform statistical inferences concerning characteristics of a population based on attributes of samples drawn from the population	3	2	2	2	2					2		1	
		CO 4	Compute roots of equations, evaluate definite integrals and perform interpolation on given numerical data using standard numerical techniques	3	2	2	2	2					2		1	
		CO 5	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations.	3	2	2	2	2					2		1	
EET202	DC MACHINES AND TRANSFORMERS	CO 1	Acquire knowledge about constructional details of DC machines	3	2			2						3		
		CO 2	Describe the performance characteristics of DC generators	3	2	2			2						3	
		CO 3	Describe the principle of operation of DC motors and select appropriate motor types for different applications	3	2					2						3
		CO 4	Acquire knowledge in testing of DC machines to assess its performance Describe the constructional details and modes of operation of single phase and three phase transformers	3	3					2						3
		CO 5	Describe the constructional details and modes of operation of single phase and three phase transformers	3						2						3
		CO 6	Analyse the performance of transformers under various conditions	3						2						3

EET 204	ELECTROMAGNETIC THEORY	CO 1	Apply vector analysis and coordinate systems to solve static electric and magnetic field problems.	2	3														
		CO 2	Apply Gauss Law, Coulomb's law and Poisson's equation to determine electrostatic field parameters	2	3														
		CO 3	Determine magnetic fields from current distributions by applying Biot-Savart's law and Amperes Circuital law.	2	3														
		CO 4	Apply Maxwell Equations for the solution of timevarying fields	2	3														
		CO 5	Analyse electromagnetic wave propagation in different media.	2	3														
EET 206	DIGITAL ELECTRONICS	CO 1	Identify various number systems, binary codes and formulate digital functions using Boolean algebra.	3	1														
		CO 2	Design and implement combinational logic circuits.	3	3	2													
		CO 3	Design and implement sequential logic circuits.	3	3	2													
		CO 4	Compare the operation of various analog to digital and digital to analog conversion circuits.	3	2	1													
		CO 5	Explain the basic concepts of programmable logic devices and VHDL.	3	2	2		2											
HUT 200	Professional Ethics	CO 1	Understand the core values that shape the ethical behaviour of a professional.									2				2			
		CO 2	Adopt a good character and follow an ethical life.									2				2			
		CO 3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics.										3				2		
		CO 4	Solve moral and ethical problems through exploration and assessment by established experiments.										3				2		
		CO 5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.										3				2		

MCN202	CONSTITUTION OF INDIA	CO 1	Explain the background of the present constitution of India and features							2	2	2		2			
		CO 2	Utilize the fundamental rights and duties.							3	3	3		3			
		CO 3	Understand the working of the union executive, parliament and judiciary.							3	2	3		3			
		CO 4	Understand the working of the state executive, legislature and judiciary.							3	2	3		3			
		CO 5	Utilize the special provisions and statutory institutions.							3	2	3		3			
		CO 6	Show national and patriotic spirit as responsible citizens of the country							3	3	3		2			
EEL202	ELECTRICAL MACHINES LAB I	CO 1	Analyse the performance of DC motors and DC generators by performing load test.	3	3	2	2						3	2		3	
		CO 2	Sketch the Open Circuit Characteristics of a self excited DC shunt generator and check conditions of voltage build up by performing suitable experiment.	3	3	2	2							3	2		3
		CO 3	Develop equivalent circuit and predetermine their regulation and efficiency by performing OC & SC tests on transformer.	3	3	2	2							3	2		3
		CO 4	Analyse the efficiency and regulation of the transformer by performing load test	3	3	2	2							3	2		3
		CO 5	Analyse the efficiency of a DC machine when working as motor and generator by conducting suitable test.	3	3	2	2							3	2		3
		CO 6	Examine the efficiency by performing Sumpner's test on two similar transformers.	3	3	2	2							3	2		3

EET305	SIGNALS AND SYSTEMS	CO 1	Explain the basic operations on signals and systems.	3	3			2						1	
		CO 2	Apply Fourier Series and Fourier Transform concepts for continuous time signals.	3	3	3									1
		CO 3	Analyse the continuous time systems with Laplace Transform.	3	3	3		2							2
		CO 4	Analyse the discrete time system using Z Transform.	3	3	3		2							2
		CO 5	Apply Fourier Series and Fourier Transform concepts for Discrete time domain.	3	3	3									2
		CO 6	Describe the concept of stability of continuous time systems and sampled data systems.	3	3			2							1
EET 307	SYNCHRONOUS AND INDUCTION MACHINES	CO 1	Analyse the performance of different types of alternators.	2	2			2						2	
		CO 2	Analyse the performance of a synchronous motor.	3	3	2		2						2	
		CO 3	Analyse the performance of different types of induction motors.	3	3	2		2						2	
		CO 4	Describe operating principle of induction machine as generator.	3	3	2		2						2	
		CO 5	Explain the types of single phase induction motors and their working principle.	2	2			2							2
		CO 1	Define and use various terminologies in use in disaster management parlance and organise each of these terms in relation to the disaster management cycle		2			2							
		CO 2	Distinguish between different hazard types and vulnerability types and do vulnerability assessment	2	3	2		2	2	3			2	2	

MCN 301	DISASTER MANAGEMENT	CO 3	Identify the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk	2	3	2	2	2	2	3			3		2	
		CO 4	Explain the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sector and community	3	3	3		2	2	3				3		2
		CO 5	Identify factors that determine the nature of disaster response and discuss the various disaster response actions	3	3			2	2	3						2
		CO 6	Explain the various legislations and best practices for disaster management and risk reduction at national and international level	3					2	3	3					2
EEL331	MICROPROCESSORS AND MICROCONTROLLERS LAB	CO 1	Develop and execute assembly language programs for solving arithmetic and logical problems using microprocessor/microcontroller.	3	3	2	2	3				2	2	3	2	
		CO 2	Design and Implement systems with interfacing circuits for various applications.	3	3	2	2	3				2	2	3		2
		CO 3	Execute projects as a team using microprocessor/microcontroller for real life applications.	3	3	3	3	3	3	3	3	3	3	3	2	2
EEL333	ELECTRICAL MACHINES LAB II	CO 1	Analyse the performance of single phase and three phase induction motors by conducting suitable tests.	3	3	2	2						3	2	3	
		CO 2	Analyse the performance of three phase synchronous machine from V and inverted V curves.	3	3	2	2							3	2	3
		CO 3	Analyse the performance of a three phase alternator by conducting suitable tests.	3	3	2	2							3	2	3

EEQ413	SEMINAR	CO 1	Identify academic documents from the literature which are related to her/his areas of interest	2	2	1	1		2	1				3		
		CO 2	Read and apprehend an academic document from the literature which is related to her/ his areas of interest	3	3	2	3		2	1				3		
		CO 3	Prepare a presentation about an academic document	3	2			3			1		2	3		
		CO 4	Give a presentation about an academic document	3				2			1		3	3		
		CO 5	Prepare a technical report	3	3	3	2	2	2		2		3	3		
EED415	PROJECT PHASE I	CO 1	Model and solve real world problems by applying knowledge across domains	2	2	2	1	2	2	2	1	1	1	1	2	
		CO 2	Develop products, processes or technologies for sustainable and socially relevant applications	2	2	2		1	3	3	1	1		1	1	
		CO 3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks										3	2	2	1
		CO 4	Plan and execute tasks utilizing available resources within timelines, following thical and professional norms					2			3	2	2	3	2	
		CO 5	Identify technology/research gaps and propose innovative/creative solutions	2	3	3	1	2							1	
		CO 6	Organize and communicate technical and scientific findings effectively in written and oral forms					2			2	2	3	1	1	

EEL411	CONTROL SYSTEMS LAB	CO 1	Demonstrate the knowledge of simulation tools for control system design.	3	3	2	3	3			3	3	3		3
		CO 2	Develop the mathematical model of a given physical system by conducting appropriate experiments.	3	3	3	3	3			3	3	3		3
		CO 3	Analyse the performance and stability of physical systems using classical and advanced control approaches.	3	3	3	3	3			3	3	3		3
		CO 4	Design controllers for physical systems to meet the desired specifications.	3	3	3	3	3			3	3	3		3

SEMESTER - 8

Course code	Course Name	Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
EET402	ELECTRICAL SYSTEM DESIGN AND ESTIMATION	CO 1	Explain the rules and regulations in the design of components for medium and high voltage installations.	3	1	2			1		2				
		CO 2	Design lighting schemes for indoor and outdoor applications.	3	2	3			1	1	1				1
		CO 3	Design low/medium voltage domestic and industrial electrical installations.	3	1	3			1		1				1
		CO 4	Design, testing and commissioning of 11 kV transformer substation.	3	1	3			1		1			1	1
		CO 5	Design electrical installations in high rise buildings.	3	1	3			1	1	1				1

		CO 4	Develop the logic for the process control applications using PLC programming	3	1										2
		CO 5	Describe the fundamental concepts of DCS and SCADA systems	3	1										2
EET404	COMPREHENSIVE COURSE VIVA	CO 1	The objective of this Course viva is to ensure the basic knowledge of each student in the most fundamental core courses in the curriculum.												
		CO 2	The viva voce shall be conducted based on the core subjects studied from third to eighth semester												
		CO 3	helps the learner to become competent in placement tests and other competitive examinations.												
EED416	PROJECT PHASE II	CO 1	Model and solve real world problems by applying knowledge across domains	2	2	2	1	2	2	2	1	1	1	1	2
		CO 2	Develop products, processes or technologies for sustainable and socially relevant applications	2	2	2		1	3	3	1	1		1	1
		CO 3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks									3	2	2	1
		CO 4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms					2			3	2	2	3	2
		CO 5	Identify technology/research gaps and propose innovative/creative solutions	2	3	3	1	2							1
		CO 6	Organize and communicate technical and scientific findings effectively in written and oral forms					2			2	2	3	1	1