

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
Course outcomes- 2019 scheme

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 lamina	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 1000	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
CYT 100	ENGINEERING CHEMISTRY	CO 1	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.	1	2	1									
		CO 2	Understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.	1	1		1	2							
		CO 3	Apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.	1	1		1	2							

		CO 4	Learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.	2	1															
		CO 5	Study various types of water treatment methods to develop skills for treating wastewater.	1			1			3										
EST 100	ENGINEERING MECHANICS	CO 1	Recall principles and theorems related to rigid body mechanics	2	2															
		CO 2	Identify and describe the components of system of forces acting on the rigid body	3	3															
		CO 3	Apply the conditions of equilibrium to various practical problems involving different force system	3	3															
		CO 4	Choose appropriate theorems, principles or formulae to solve problems of mechanics	3	3															
		CO 5	Solve problems involving rigid bodies, applying the properties of distributed areas and masses	3	3															
EST 110	ENGINEERING GRAPHICS	CO 1	Draw the projection of points and lines located in different quadrants	3																
		CO 2	Prepare multiview orthographic projections of objects by visualizing them in different positions	3																
		CO 3	Draw sectional views and develop surfaces of a given object	3	1															
		CO 4	Prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions.	3														1		
		CO 5	Convert 3D views to orthographic views	3															2	
		CO 6	Obtain multiview projections and solid models of objects using CAD tools	3				3											3	
		CO 1	Recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering.	3					3	2	2									
		CO 2	Explain different types of buildings, building components, building materials and building construction	3	2							3								
		CO 3	Describe the importance, objectives and principles of surveying.	3	2				2	3			2							

EST 120	BASICS OF CIVIL & MECHANICAL ENGINEERING	CO 4	Summarise the basic infrastructure services MEP, HVAC, elevators, escalators and ramps	3	2		1	3				2				
		CO 5	Discuss the Materials, energy systems, water management and environment for green buildings.	3	2			3				2				
		CO 6	Analyse thermodynamic cycles and calculate its efficiency	3	2			3								
		CO 7	Illustrate the working and features of IC Engines	3	1			3								
		CO 8	Explain the basic principles of Refrigeration and Air Conditioning	3	1											
		CO 9	Describe the working of hydraulic machines	3	2											
		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
		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

HUN 101	LIFE SKILLS	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				
MAT 102	VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	CO 1	Compute the derivatives and line integrals of vector functions and learn their applications	3	3	3	3	2	1				1	2		2		
		CO 2	Evaluate surface and volume integrals and learn their inter-relations and applications	3	3	3	3	2	1				1	2		2		
		CO 3	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients	3	3	3	3	2	1				1	2		2		
		CO 4	Compute Laplace transform and apply them to solve ODEs arising in engineering	3	3	3	3	2	1				1	2		2		
		CO 5	Determine the Fourier transforms of functions and apply them to solve problems arising in engineering	3	3	3	3	2	1				1	2		2		
HUN 102	PROFESSIONAL COMMUNICATION	CO 1	Develop vocabulary and language skills relevant to engineering as a profession											3		2		
		CO 2	Analyze, interpret and effectively summarize a variety of textual content											1		3		
		CO 3	Create effective technical presentations							1			1	3				
		CO 4	Discuss a given technical/non-technical topic in a group setting and arrive at generalizations/consensus											3		1		
		CO 5	Identify drawbacks in listening patterns and apply listening techniques for specific needs		1								2	3				
		CO 6	Create professional and technical documents that are clear and adhering to all the necessary conventions	1						1			1	3				
		CO 1	Analyze a computational problem and develop an algorithm/flowchart to find its solution	3	2	3	2		2				1	1	1			

EST 102	PROGRAMING IN C	CO 2	Develop readable* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.	3	2	3	2	2					1		1	
		CO 3	Write readable C programs with arrays, structure or union for storing the data to be processed	3	2	3	2	2						1		1
		CO 4	Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem	3	2	3	2	2						1	1	1
		CO 5	Write readable C programs which use pointers for array processing and parameter passing	3	2			2						1	1	1
		CO 6	Develop readable C programs with files for reading input and storing output	3	2			2						1	1	1
PHL 120	ENGINEERING PHYSICS LAB	CO 1	Develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories	3				3				1	2		1	
		CO 2	Understand the need for precise measurement practices for data recording	3				3				1	2		1	
		CO 3	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations	3				3				1	2		1	
		CO 4	Analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics	3				3				1	2		1	
		CO 5	Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results	3				3				1	2		1	
CYL 120	ENGINEERING CHEMISTRY LAB	CO 1	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses	3				2							3	
		CO 2	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs	3				3							3	
		CO 3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds	3				3							3	
		CO 4	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis	3				3							3	
		CO 5	Learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments	3				1							3	
		CO 6	Function as a member of a team, communicate effectively and engage in further learning. Also understand how chemistry addresses social, economical and environmental problems and why it is an integral part of curriculum	3				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	

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MAT201	PARTIAL DIFFERENTIAL EQUATIONS AND COMPLEX ANALYSIS	CO 1	Understand the concept and the solution of partial differential equation.	3	3	3	3	2	1			2		2		
		CO 2	Analyse and solve one dimensional wave equation and heat equation.	3	3	3	3	2	1				2		2	
		CO 3	Understand complex functions, its continuity differentiability with the use of CauchyRiemann equations.	3	3	3	3	2	1					2		2
		CO 4	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula, understand the series expansion of analytic function	3	3	3	3	2	1					2		2
		CO 5	Understand the series expansion of complex function about a singularity and Apply residue theorem to compute several kinds of real integrals.	3	3	3	3	2	1					2		2
ECT201	SOLID STATE DEVICES	CO 1	Apply Fermi-Dirac Distribution function and Compute carrier concentration at equilibrium and the parameters associated with generation, recombination and transport mechanism	3	3											
		CO 2	Explain drift and diffusion currents in extrinsic semiconductors and Compute current density due to these effects.	3	3											
		CO 3	Define the current components and derive the current equation in a pn junction diode and bipolar junction transistor.	3	3											
		CO 4	Explain the basic MOS physics and derive the expressions for drain current in linear and saturation regions.	3	3											
		CO 5	Discuss scaling of MOSFETs and short channel effects	3												
ECT 203	LOGIC CIRCUIT DESIGN	CO 1	Explain the elements of digital system abstractions such as digital representations of information, digital logic and Boolean algebra	3	3											
		CO 2	Create an implementation of a combinational logic function described by a truth table using and/or/inv gates/ muxes	3	3	3										
		CO 3	Compare different types of logic families with respect to performance and efficiency	3	3											
		CO 4	Design a sequential logic circuit using the basic building blocks like flip-flops	3	3	3										
		CO 5	Design and analyze combinational and sequential logic circuits through gate level Verilog models.	3	3	3		3								
ECT205	NETWORK THEORY	CO 1	Apply Mesh / Node analysis to obtain steady state response of the linear time invariant networks.	3	3	2		1							2	
		CO 2	Apply Network Theorems to obtain steady state response of the linear time invariant networks.	3	3	2		1								2
		CO 3	Apply Laplace Transforms to determine the transient behaviour of RLC networks.	3	3	2		1								2
		CO 4	Apply Network functions and Network Parameters to analyse the single port networks.	3	3	2		1								2
		CO 5	Apply Network functions and Network Parameters to analyse the two port networks.	3	3	2		1								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

ECT 204	SIGNALS AND SYSTEMS	CO 1	Apply properties of signals and systems to classify them	3	2																	
		CO 2	Represent signals with the help of series and transforms	3	2																	
		CO 3	Describe orthogonality of signals and convolution integral.	3	2																	
		CO 4	Apply transfer function to compute the LTI response to input signals.	3	3	2																
		CO 5	Apply sampling theorem to discretize continuous time signals	3	2	2																
ECT 206	COMPUTER ARCHITECTURE AND MICROCONTROLLERS	CO 1	Explain the functional units, I/O and memory management w.r.t a typical computer architecture.	3															3			
		CO 2	Distinguish between microprocessor and microcontroller	3																3		
		CO 3	Develop simple programs using assembly language programming.	3		3		3													3	
		CO 4	Interface 8051 microcontroller with peripheral devices using ALP/Embedded C	3	3	3		3													3	
		CO 5	Familiarize system software and Advanced RISC Machine Architecture.	3				3													3	
HUT 200	Professional Ethics	CO 1	Understand the core values that shape the ethical behaviour of a professional.										3	2						2		
		CO 2	Adopt a good character and follow an ethical life.							2				3							2	
		CO 3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics.									3	2			2						2
		CO 4	Solve moral and ethical problems through exploration and assessment by established experiments.													2	3					2
		CO 5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.											3	2	2	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	
ECL 202	ANALOG CIRCUITS AND SIMULATION LAB	CO 1	Design and demonstrate the functioning of basic analog circuits using discrete components.	3	3	3												2			2	
		CO 2	Design and simulate the functioning of basic analog circuits using simulation tools.	3	3	3		3											2			2
		CO 3	Function effectively as an individual and in a team to accomplish the given task.	3	3	3													3			3
ECL 204	MICROCONTROLLER LAB	CO 1	Write an Assembly language program/Embedded C program for performing data manipulation.	3		3		3										3			3	
		CO 2	Develop ALP/Embedded C Programs to interface microcontroller with peripherals	3		3	2	3											3			3
		CO 3	Perform programming/interfacing experiments with IDE for modern	3		3	2	3	3										3		3	3

SEMESTER - 5

Course code	Course Name	Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ECE201	ANALOG INTEGRATED CIRCUITS	CO 1	Understand Op Amp fundamentals and differential amplifier configurations	3	3	1	2							1
		CO 2	Design operational amplifier circuits for various applications	3	3	2	2	2						

ECT308	COMPREHENSIVE COURSE WORK	CO 2	Design a logic circuit for a specific application	3	3	1													2	
		CO 3	Design linear IC circuits for linear and non-linear circuit applications.	3	3	1														2
		CO 4	Explain basic signal processing operations and Filter designs	3	2															2
		CO 5	Explain existent analog and digital communication systems	3	2	1														2
ECT342	EMBEDDED SYSTEMS	CO 1	Understand and gain the basic idea about the embedded system.	3	3	2		1				2							2	
		CO 2	Able to gain architectural level knowledge about the system and hence to program an embedded system.	3	3	2		1				2								2
		CO 3	Understand ARM architecture and pipeline processor organisation	3	3	3		3				2								2
		CO 4	Able to write ARM assembly language programming	3	3	3		3				2								2
		CO 5	Apply the knowledge for solving the real life problems with the help of an embedded system.	3	3	3		3				2	3							2
HUT 310	MANAGEMENT FOR ENGINEERS	CO 1	Explain the characteristics of management in the contemporary context	2				1	2	2	2			2	1	1				
		CO 2	Describe the function of management	2				1	1		2	1	2	1	1					
		CO 3	Demonstrate ability in decision making process and productivity analysis	2	2	2	2	1												
		CO4	Illustrate project management technique and develop a project schedule	2	2	2	2	1								2	1			
		CO 5	Summerize the functional areas of management	2				1	1	1		1	2	1						
		CO 6	Comprehend the concept of entrepreneurship and create business plan		2	2	2	1	1	1	1	1	1	1	1	1	1	1		
ECL332	COMMUNICATION LAB	CO 1	Setup simple prototype circuits for waveform coding and digial modulation techniques working in a team.	3	3	3	2	3					3	2				1		
		CO 2	Simulate the error performance of a digital communication system using standard binary and M-ary modulation schemes.	3	3	3	2	3											1	
		CO 3	Develop hands-on skills to emulate a communication system with software-designed-radio working in a team.	3	3	3	3	3					3	2					3	
ECD334	MINIPROJECT	CO 1	Be able to practice acquired knowledge within the selected area of technology for project development.	3	3	3	2		3										2	
		CO 2	Identify, discuss and justify the technical aspects and design aspects of the project with a systematic approach.	3	3	3	2		3							3	2			
		CO 3	Reproduce, improve and refine technical aspects for engineering projects.	3	3	3	2		3							3	2			
		CO 4	Work as a team in development of technical projects.									3			3	3	2			
		CO 5	Communicate and report effectively project related activities and findings.									3	3	3						2

SEMESTER - 7

Course code	Course Name	Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		CO 1	Understand the basic concept of antennas and its parameters.	3	3		1							2
		CO 2	Analyze the far filed pattern of Short dipole and Half wave dipole antenna.	3	3	3	1	2						2

ECT401	MICROWAVES AND ANTENNAS	CO 3	Design of various broad band antennas, arrays and its radiation patterns.	3	3	3	1	3										2	
		CO 4	Illustrate the principle of operation of cavity resonators and various microwave sources.	3	3	2	1												2
		CO 5	Explain various microwave hybrid circuits and microwave semiconductor devices.	3	3	2	1												2
ECT423	COMPUTER NETWORKS	CO 1	Describe the protocols used in web and email applications.	3		2													
		CO 2	Analyse problems pertaining to reliable data transfer, flow control and congestion over a TCP network.	3		1			1			3							2
		CO 3	Apply Dijkstra's algorithm and distance-vector algorithm in the context of routing over computer networks.	3		2			2			1							
		CO 4	Analyze the performance of collision avoidance algorithms in random access protocols such as ALOHA.	3								1							2
		CO 5	Analyze the delay performance of an ARQ system using standard queueing models.	3					2										2
MCN401	INDUSTRIAL SAFETY ENGINEERING	CO 1	Describe the theories of accident causation and preventive measures of industrial accidents.	2	2				2	2	2							1	
		CO 2	Explain about personal protective equipment, its selection, safety performance & indicators and importance of housekeeping.	2	1	2		1	1	1	1								1
		CO 3	Explain different issues in construction industries.	2	2	2		1	1	1	1	1	1	1	1	1	1	1	1
		CO 4	Describe various hazards associated with different machines and mechanical material handling.	2	2	2		1	1	1	1	1	1	1	1	1	1	1	1
		CO 5	Utilise different hazard identification tools in different industries with the knowledge of different types of chemical hazards.	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
EET435	RENEWABLE ENERGY SYSTEMS	CO 1	Choose the appropriate energy source depending on the available resources.	2					1	2									
		CO 2	Explain the concepts of solar thermal and solar electric systems.	3															
		CO 3	Illustrate the operating principles of wind, and ocean energy conversion systems.	3					1	1									
		CO 4	Outline the features of biomass and small hydro energy resources	3					1	1									
		CO 5	Describe the concepts of fuel cell and hydrogen energy technologies	3															
ECQ413	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	3	2	2		2			3					3
ECD415	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	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		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	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			

ECL411	ELECTROMAGNETICS LAB	CO 1	Familiarize the basic Microwave components and to analyse few microwave measurements and its parameters.	3	3	3							3			3	
		CO 2	Understand the principles of fiber-optic communications and the different kind of losses, signal distortion and other signal degradation factors.	3	3	3								3			3
		CO 3	Design and simulate basic antenna experiments with simulation tools.	3	3	3	2	3						3			3

SEMESTER - 8

Course code	Course Name	Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
ECT402	WIRELESS COMMUNICATION	CO 1	Summarize the basics of cellular system and cellular design fundamentals.	3	3	2		1			2			2	
		CO 2	Describe the wireless channel models and discuss capacity of wireless channels	3	3	3		3							2
		CO 3	Analyze the performance of the modulation techniques for flat-fading channels and multicarrier modulation.	3	3	3		3							
		CO 4	Illustrate how receiver performance can be enhanced by various diversity techniques.	3	3	3		3							
		CO 5	Identify advantages of various equalization techniques and multiple-access techniques in wireless communication.	3	3	3		3							
		CO 6	Calculate system parameters such antenna height, range, maximum usable frequency in different modes of radio wave propagation.	3	3	3									
ECT414	BIOMEDICAL ENGINEERING	CO 1	Understand basic bioelectric potentials and its implications in diagnostics	3	2										
		CO 2	Understand the principles used for diagnosis of abnormalities in the cardiovascular system	3	2										
		CO 3	Explain the techniques used for diagnosis and therapy in the neuromuscular system	3	3										
		CO 4	Understand the principle and working of different types of bio medical equipment/device	3	3										
		CO 5	Classify various diagnostic medical imaging techniques.	3	3										
ECT474	ENTREPRENEURSHIP	CO 1	Discuss the fundamental concepts of entrepreneurship										1	1	
		CO 2	Understand entrepreneurial motivation and motivation theories								2		1		
		CO 3	Analyze types of enterprises and ownership structure										1		
		CO 4	Apply project evaluation methods	2		1		2					1	3	
		CO 5	Evaluate enterprise financial strength	2		1		2					1	3	
ECT426	REAL TIME OPERATING SYSTEMS	CO 1	Summarize the functions and structure of general-purpose operating systems.		3										
		CO 2	Use different scheduling algorithms on processes and threads.	2	3									2	
		CO 3	Interpret a real time operating system along with its synchronization, communication and interrupt handling tools.	2	3					2					2

		CO 4	Illustrate task constraints and analyze the different scheduling algorithms on tasks.	2	3					2					2	
		CO 5	Illustrate the applications of real time operating systems.	2	3	2				3				2	2	
ECT458	INTERNET OF THINGS	CO 1	Understand the IoT fundamentals and architecture modelling	3	3	2		1			2				2	
		CO 2	Understand the smart things in IoT and functional blocks	3	3	3		3			2					2
		CO 3	To understand the communication networks and protocols used in IoT.	3	3	3		3			2	3				2
		CO 4	To understand the cloud resources, data analysis and applications.	3	3	2		2			2					2
		CO 5	To apply the IoT processes in embedded applications.	3	3	2		2			2					2
ECT404	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.	2	2	2	1	2	2	2	1	1	1	1	2	
		CO 2	The viva voce shall be conducted based on the core subjects studied from third to eighth semester	2	2	2		1	3	3	1	1			1	1
		CO 3	helps the learner to become competent in placement tests and other competitive examinations.										3	2	2	1
ECD416	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