PRIST
DEEMED TO BE
UNIVERSITY
NAAC ACCREDITED
THANJAVUR – 613 403 - TAMILNADU

School: ENGINEERINGAND TECHNOLOGY

Dept: ECE- BTech (FT)

Mapping of COs and Pos

Regulation-2021

Sem	Subject code	Subject name	COS	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
I-SEM	21147S11	Professional English - I	CO1:To use appropriate words in a professional context	1	1	1	1	1	3	3	3	1	3	-	3	-	-	-
			CO2:To gain understanding of basic grammatic structures and use them in right context.	1	1	1	1	1	3	3	3	1	3	-	3	-	-	-
			CO3:To read and infer the denotative and connotative meanings of technical texts	2	3	2	3	2	3	3	3	2	3	3	3	-	-	-
			CO4:To write definitions, descriptions, narrations and essays on various topics	2	3	2	3	2	3	3	3	2	3	3	3	-	-	-
			AVG	1.6	2.2	1.8	2.2	1.5	3	3	3	1.6	3	3	3	-	-	-
	21148S12	Matrices and Calculus	CO1:Use the matrix algebra methods for solving practical problems.	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
			CO2:Apply differential calculus tools in solving various application problems.	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
			CO3:Able to use differential calculus ideas on several variable functions.	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
			CO4:Apply different methods of integration in solving practical problems.	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
			CO5:Apply multiple integral ideas in solving areas, volumes and other practical problems.	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
			AVG	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
	21149S13	Engineering Physics	CO1:Understand the importance of mechanics.	3	3	2	1	1	1	-	-	-	-	-	-	-	-	-
			CO2:Express their knowledge in electromagnetic waves.	3	3	2	1	2	1	-	-	-	-	-	-	-	-	-
			CO3:Demonstrate a strong foundational knowledge in oscillations, optics and lasers.	3	3	2	2	2	1	-	-	-	-	-	1	-	-	-
			CO4:Understand the importance of quantum physics.	3	3	1	1	2	1	-	-	-	-	-	-	-	-	
			CO5:Comprehend and apply quantum mechanical principles towards the formation of energy bands.	3	3	1	1	2	1	-	-	-	-	-	-	-	-	-
			AVG	3	3	1.6	1.2	1.8	1	-	-	-	-	-	1	-	-	-
	21149S14	Engineering Chemistry	CO1:To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.	3	2	2	1	-	1	1	-	-	-	-	1	-	-	-
			CO2:To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.	2	-	-	1	-	2	2	-	-	-	-	-	-	-	-
			CO3:To apply the knowledge of phase rule and composites for material selection requirements.	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4:To recommend suitable fuels for engineering processes and applications.	3	1	1	-	-	1	2	-	-	-	-	-	-	-	-
			CO5:To recognize different forms of energy resources and apply them for suitable applications in energy sectors	3	1	2	1	-	2	2	-	-	-	-	2	-	-	-
			AVG	2.8	1.3	1.6	1	-	1.5	1.8	-		-	-	1.5	-	-	-
	21150S15	Problem Solving and Python Programming	CO1: Develop algorithmic solutions to simple computational problems.	3	3	3	3	2	-	-	-	-	-	2	2	3	3	
			CO2: Develop and execute simple Python programs.	3	3	3	3	2	-	-	-	-	-	2	2	3	-	
			CO3: Write simple Python programs using conditionals and loops for solving problems.	3	3	3	3	2	-	-	-	-	-	2	-	3	-	
			CO4: Decompose a Python program into functions.	2	2	-	2	2	-	-	-	-	-	1	-	3	-	
			CO5: Represent compound data using Python lists, tuples, dictionaries etc.	1	2	-	-	1	-	-	-	-	-	1	-	2	-	
			CO6: Read and write data from/to files in Python programs	2	2	-	-	2	-	-	-	-	-	1	-	2	-	
			AVG	2	3	3	3	2	-	-	-	-	-	2	2	3	3	
	21150L16	Problem Solving and Python Programming Laboratory	CO1: Develop algorithmic solutions to simple computational problems	3	3	3	3	3	-	-	-	-	-	3	2	3	3	
			CO2: Develop and execute simple Python programs.	3	3	3	3	3	-	-	-	-	-	3	2	3	-	
			CO3: Implement programs in Python using conditionals and loops for solving problems.	3	3	3	3	2	-	-	-	-	-	2	-	3	-	
			CO4: Deploy functions to decompose a Python program.	3	2	-	2	2	-	-	-	-	-	1	-	3	-	
			CO5: Process compound data using Python data structures.	1	2	-	-	1	-	-	-	-	-	1	-	2	-	
			CO6: Utilize Python packages in developing software applications.	2	-	-	-	2	-	-	-	-	-	1	-	2	-	
			AVG	2	3	3	3	2	-	-	-	-	-	2	2	3	3	

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	21149L17	Physics and Chemistry Laboratory	CO1:Understand the functioning of various physics laboratory equipment.	3	2	3	1	1	-	-	-	-	-	-	-	-	-	-
			CO2:Use graphical models to analyze laboratory data.	3	3	2	1	1	-	-	-	-	-	-	-	-	-	-
			CO3:Use mathematical models as a medium for quantitative reasoning and describing physical reality.	3	2	3	1	1	-	-	-	-	-	-	-	-	-	-
			CO4:Access, process and analyze scientific information.	3	3	2	1	1	-	-	-	-	-	-	-	-	-	-
			CO5:Solve problems individually and collaboratively.	3	2	3	1	1	-	-	-	-	-	-	-	-	-	-
			AVG	3	2.4	2.6	1	1										
	21147L18	Communication Lab – I	CO1:To listen to and comprehend general as well as complex academic information	3	3	3	3	1	3	3	3	3	3	3	3	-	-	-
			CO2:To listen to and understand different points of view in a discussion	3	3	3	3	1	3	3	3	3	3	3	3	-	-	-
			CO3:To speak fluently and accurately in formal and informal communicative contexts	3	3	3	3	1	3	3	3	3	3	3	3	-	-	-
			CO4:To describe products and processes and explain their uses and purposes clearly and accurately	3	3	3	3	1	3	3	3	3	3	3	3	-	-	-
			CO5:To express their opinions effectively in both formal and informal discussions	3	3	3	3	1	3	3	3	3	3	3	3	-	-	-
			AVG	3	3	3	3	1	3	3	3	3	3	3	3	-	-	-
	21147S21	Professional English – II	CO1:To compare and contrast products and ideas in technical texts.	3	3	3	3	3	3	3	3	2	3	3	3	-	-	-
			CO2:To identify and report cause and effects in events, industrial processes through technical texts	3	3	3	3	3	3	3	3	2	3	3	3	-	-	-
			CO3:To analyse problems in order to arrive at feasible solutions and communicate them in the written format	3	3	3	3	3	3	3	3	2	3	3	3	-	-	-
			CO4:To present their ideas and opinions in a planned and logical manner	3	3	3	3	2	3	3	3	2	3	3	3	-	-	-
			CO5:To draft effective resumes in the context of job search.	-	-	-	-	-	-	-	-	3	3	3	3	-	-	-
			AVG	3	3	3	3	2.75	3	3	3	2.2	3	3	3	-	-	-
	21148S22	Statistics and Numerical Methods	CO1:Apply the concept of testing of hypothesis for small and large samples in real life problems.	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
			CO2:Apply the basic concepts of classifications of design of experiments in the field of agriculture.	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
			CO3:Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
			CO4:Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
			CO5:Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
			AVG	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
	21149S23B	Physics for Electronics Engineering	CO1:know basics of crystallography and its importance for varied materials properties	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-
			CO2:gain knowledge on the electrical and magnetic properties of materials and their applications	3	2	1	2	-	2	-	-	-	-	-	-	-	-	-
			CO3:understand clearly of semiconductor physics and functioning of semiconductor devices	3	2	2	-	2	-	-	-	-	-	-	-	-	-	-
			CO4:understand the optical properties of materials and working principles of various optical devices	3	-	1	-	3	2	3	-	-	-	-	1	-	-	-
			CO5:appreciate the importance of nanotechnology and nanodevices	3	-	2	1	-	2	-	-	-	-	-	1	-	-	-
			AVG	3	2	1.4	1.5	2.5	2	3					1			
	21154S24	Engineering Graphics	CO1:Use BIS conventions and specifications for engineering drawing.	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
			CO2:Construct the conic curves, involutes and cycloid.	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
			CO3:Solve practical problems involving projection of lines.	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
			CO4:Draw the orthographic, isometric and perspective projections of simple solids.	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
			CO5:Draw the development of simple solids	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
			AVG	3	1	2	-	2	-	-	-	-	3	-	2	2	2	-
II - Sem	21153S25B	Electrical and Instrumentation Engineering	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															
			AVG															
	21153S26A	Circuit Analysis	CO1: Apply the basic concepts of circuit analysis such as Kirchoff's laws, mesh current and node voltage method for analysis of DC and AC circuits.	3	2	1	1	-	-	-	1		1	-	-	-	-	-
			CO2: Apply suitable network theorems and analyze AC and DC circuits	3	3	2	2	-	-	-	1		1	-	-	-	-	-
			CO3: Analyze steady state response of any R, L and C circuits	3	3	3	3	-	-	-	1		1	-	-	-	-	-

			CO4: Analyze the transient response for any RC, RL and RLC circuits and frequency response of parallel and series resonance circuits.	3	3	3	3	-	-	-	1		1	-	-	-	-	-
			CO5: Analyze the coupled circuits and network topologies	3	3	3	2	-	-	-	1		1	-	-	-	-	-
			AVG	3	3	3	2	-	-	-	1		1	-	-	-	-	-
	21154L27	Engineering Practices Laboratory	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.	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
			CO2:Wire various electrical joints in common household electrical wire work.	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
			CO3:Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
			CO4:Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.	3	2	-	-	1	1	1	-	-	-	-	2	2	1	1
			AVG															
	21153L28A	Circuits Analysis Laboratory	Design RL and RC circuits.	3	2	1	1	-	-	-	1	-	1	-	-	-	-	-
			Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems	3	3	2	2	-	-	-	1	-	1	-	-	-	-	-
			To gain hands- on experience in Thevenin & Norton theorem, KVL & KCL, and Superposition Theorems.	3	3	3	3	-	-	-	1	-	1	-	-	-	-	-
			To understand the working of RL,RC and RLC circuits	3	3	3	3	-	-	-	1	-	1	-	-	-	-	-
			AVG	3	3	3	2	-	-	-	1	-	1	-	-	-	-	-
	21147L29	Communication Lab – II	CO1:Speak effectively in group discussions held in formal/semi formal contexts.	2	3	3	3	1	3	3	3	3	3	3	3	-	-	-
			CO2:Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions	2	3	3	3	1	3	3	3	3	3	3	3	-	-	-
			CO3:Write emails, letters and effective job applications.	2	2	3	3	1	3	3	3	3	3	3	3	-	-	-
			CO4:Write critical reports to convey data and information with clarity and precision	3	3	3	3	3	3	3	3	3	3	3	3	-	-	-
			CO5:Give appropriate instructions and recommendations for safe execution of tasks	3	3	3	3	3	3	3	3	3	3	3	3	-	-	-
			AVG	2.4	2.8	3	3	1.8	3	3	3	3	3	3	3	-	-	-
	21148S31B	Random Processes and Linear Algebra	CO1:Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
			CO2:Demonstrate accurate and efficient use of advanced algebraic techniques.	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
			CO3:Apply the concept of random processes in engineering disciplines.	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
			CO4:Understand the fundamental concepts of probability with a thorough knowledge of standard distributions that can describe certain real-life phenomenon.	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
			CO5: Understand the basic concepts of one and two dimensional random variables and	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
			AVG	3	3	0	0	0	0	0	0	3	0	0	2	-	-	-
	21152S32	Control Systems	CO1: Compute the transfer function of different physical systems.	3	3	3	2	2	2	-	-	-	-	2	3	3	3	3
			CO2: Analyse the time domain specification and calculate the steady state error.	3	3	3	3	2	3	-	-	-	-	2	2	3	3	3
			CO3: Illustrate the frequency response characteristics of open loop and closed loop system response.	3	2	3	3	2	2	-	-	-	-	2	3	3	2	3
			CO4: Analyse the stability using Routh and root locus techniques.	3	3	3	2	2	2	-	-	-	-	2	2	3	3	3
			CO5: Illustrate the state space model of a physical system and discuss the concepts of sampled data control system	2	2	3	3	2	3	-	-	-	-	2	3	2	2	3
			AVG	3	3	3	3	2	2	-	-	-	-	2	3	3	3	3
	21152S33	C Programming and Data Structures	CO1:Develop C programs for any real world/technical application.	2	3	1	2	2	1	1	-	1	2	1	3	2	1	3
			CO2:Apply advanced features of C in solving problems.	1	2	1	2	2	-	-	-	1	1	1	2	2	2	2
			CO3:Write functions to implement linear and non–linear data structure operations.	2	3	1	2	3	-	-	-	1	1	1	2	2	1	2
			CO4:Suggest and use appropriate linear/non–linear data structure operations for solving a given problem.	1	2	1	2	2	1	1	-	1	2	1	3	2	2	3
			CO5:Appropriately use sort and search algorithms for a given application.	2	2	1	2	2	1	1	-	1	1	1	2	2	2	2
			CO6:Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.	2	2	1	2	2	1	1	-	1	1	1	2	2	2	2
			AVG	2	2	1	2	2	1	1	-	1	1	1	2	2	2	2
	21152C34	*Digital Systems Design*	CO1: Use Boolean algebra and simplification procedures relevant to digital logic.	3	2	2	2	-	2	-	-	-	-	3	3	3	3	2
			CO2:Design various combinational digital circuits using logic gates.	-	-	-	-	-	-	-	-	-	-	2	1	2	3	2
			CO3:Analyse and design synchronous sequential circuits.	-	3	3	2	-	2	-	-	-	-	2	2	3	3	2

			CO4: Analyse and design asynchronous sequential circuits. .	-	-	-	-	-	-	-	-	-	-	3	2	2	3	1
			CO5: Build logic gates and use programmable devices	-	-	3	3	3	-	-	-	-	-	-	2	2	3	3	2
			AVG	3	2.6	2.6	2.3	-	2	-	-	-	-	-	2	2	3	3	2
III - Sem	21152C35	Signals and Systems	CO1:determine if a given system is linear/causal/stable	3	-	3	-	3	2	-	-	-	-	-	3	-	-	-	1
			CO2: determine the frequency components present in a deterministic signal .	3	-	3	-	-	2	-	-	-	-	-	3	-	3	-	
			CO3:characterize continuous LTI systems in the time domain and frequency domain	3	3	-	-	3	2	-	-	-	-	-	3	2	-	-	
			CO4:characterize discrete LTI systems in the time domain and frequency domain	3	3	-	-	3	2	-	-	-	-	-	3	-	3	1	
			CO5:compute the output of an LTI system in the time and frequency domains	3	3	-	3	3	2	-	-	-	-	-	3	-	3	1	
			AVG	3	3	3	3	3	2	-	-	-	-	-	3	2	3	1	
	21152C36	Electronic Devices and Circuits	CO1: Explain the structure and working operation of basic electronic devices.	3	3	3	3	2	1	-	-	-	-	-	1	2	1	1	
			CO2: Design and analyze amplifiers.	3	2	2	3	2	2	-	-	-	-	-	1	2	1	1	
			CO3: Analyze frequency response of BJT and MOSFET amplifiers	3	3	3	2	1	2	-	-	-	-	-	1	2	1	1	
			CO4: Design and analyze feedback amplifiers and oscillator principles.	3	3	2	3	2	2	-	-	-	-	-	1	2	1	1	
			CO5: Design and analyze power amplifiers and supply circuits	3	2	3	2	2	1	-	-	-	-	-	1	2	1	1	
			AVG	3	3	3	3	2	2	-	-	-	-	-	1	2	1	1	
	21152L37	C Programming and Data Structures Lab	CO1:Use different constructs of C and develop applications	2	3	1	2	2	1	1	-	1	2	1	3	2	1	3	
			CO2:Write functions to implement linear and non-linear data structure operations	1	2	1	2	2	-	-	-	1	1	1	2	2	2	2	
			CO3:Suggest and use the appropriate linear / non-linear data structure operations for a given problem	2	3	1	2	3	-	-	-	1	1	1	2	2	1	2	
			CO4:Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval	2	1	-	1	1	-	-	-	2	1	1	2	2	3	1	
			CO5:Implement Sorting and searching algorithms for a given application	1	2	1	2	2	1	1	-	1	2	1	3	2	2	3	
			AVG	2	2	1	2	2	1	1	-	1	1	1	2	2	2	2	
	21152L38	Electronic Devices and Circuits Lab	CO1:Characteristics of PN Junction Diode and Zener diode.	2	2	3	3	2	1	-	-	-	-	-	1	2	1	1	
			CO2:Design and Testing of BJT and MOSFET amplifiers.	2	2	3	3	2	1	-	-	-	-	-	1	2	1	1	
			CO3:Operation of power amplifiers.	2		2		1	1	-	-	-	-	-	1	2	1	1	
			CO4: Design and analyze feedback amplifiers and oscillator principles.	-	-	-	-	3	1	-	-	-	-	-	1	2	1	1	
			CO5: Design and analyze power amplifiers and supply circuits	-	-	-	-	2	1	-	-	-	-	-	1	2	1	1	
			AVG	2	2	2.6	3	2	1	-	-	-	-	-	1	2	1	1	
	21152L39	Professional Development	CO1:Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			CO2:Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			CO3:Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	21152C41	Electromagnetic Fields	CO1: Relate the fundamentals of vector, coordinate system to electromagnetic concepts	2	1	1	1	-	2	1	-	-	1	-	2	-	-	-	
			CO2: Analyze the characteristics of Electrostatic field	2	2	3	3	2	2	2	-	-	1	1	2	-	-	-	
			CO3: Interpret the concepts of Electric field in material space and solve the boundary conditions	2	2	3	2	2	2	1	-	-	1	1	2	-	-	-	
			CO4: Explain the concepts and characteristics of Magneto Static field in material space and solve boundary conditions	2	2	3	2	2	2	1	-	-	1	1	2	-	-	-	
			CO5: Determine the significance of time varying fields	2	2	2	2	2	2	1	-	-	2	2	1	-	-	-	
			AVG	2	2	2	2	2	2	1	-	-	1	1	2	-	-	-	
	21152C42	Linear Integrated Circuits	CO1 : Design linear and nonlinear applications of OP – AMPS	2	-	-	-	-	-	-	-	-	-	1	-	2	1	1	
			CO2 : Design applications using analog multiplier and PLL	2	3	3	2	-	-	-	-	-	-	-	-	2	1	1	
			CO3 : Design ADC and DAC using OP – AMPS	1	-	-	2	-		-	-	-	-	-	-	2	1	1	
			CO4 : Generate waveforms using OP – AMP Circuits	1	-	-	2	-	-	-	-	-	-	-	-	2	1	1	
			CO5 : Analyze special function ICs	1	2	3	3	-	-	-	-	-	-	-	3	2		1	
			AVG	1.4	2.5	3	2.2	-	-	-	-	-	-	1	3	2	1	1	
	21152C43	Communication Systems	CO1: Gain knowledge in amplitude modulation techniques	3	3	3	3	2	1	1	-	-	-	1	1	-	-	-	
			CO2: Understand the concepts of Random Process to the design of communication systems	3	3	3	3	2	1	1	-	-	-	1	1	-	-	-	
			CO3: Gain knowledge in digital techniques	3	3	3	3	3	1	1	-	-	-	1	1	-	-	-	
			CO4: Gain knowledge in sampling and quantization	3	3	3	3	3	1	1	-	-	-	1	1	-	-	-	
			CO5: Understand the importance of demodulation techniques	3	3	3	3	2	1	1	-	-	-	1	1	-	-	-	
			AVG	3	3	3	3	2.5	1	1	-	-	-	1	1	-	-	-	
		Digital Signal Processing	CO1:Apply DFT for the analysis of digital signals and systems	3	3	3	3	2	2	-	-	-	-	1	1	3	3	2	
			CO2:Design IIR and FIR filters	3	3	3	3	2	2	-	-	-	-	1	1	2	2	2	

IV - Sem	21152C44		CO3: Characterize the effects of finite precision representation on digital filters	3	3	2	2	2	2	-	-	-	-	1	1	1	2	2
			CO4:Design multirate filters	3	3	2	2	3	1	-	-	-	-	1	1	2	2	3
			CO5:Apply adaptive filters appropriately in communication systems	3	2	2	2	3	2	-	-	-	-	1	1	2	2	1
			AVG	3	3	2	2	2	2	-	-	-	-	1	1	2	2	2
	21152C45	*Networks and Security+	CO1: Explain the Network Models, layers and functions.	3	3	3	3	2	2	-	-	-	-	1	1	3	3	2
			CO2: Categorize and classify the routing protocols.	3	3	3	3	2	2	-	-	-	-	1	1	2	2	2
			CO3: List the functions of the transport and application layer.	3	3	2	2	2	2	-	-	-	-	1	1	1	2	2
			CO4: Evaluate and choose the network security mechanisms.	3	3	2	2	3	1	-	-	-	-	1	1	2	2	3
			CO5: Discuss the hardware security attacks and countermeasures.	3	2	2	2	3	2	-	-	-	-	1	1	2	2	1
			AVG	3	3	2	2	2	2	-	-	-	-	1	1	2	2	2
	21149S46	Environmental Sciences and Sustainability	CO1:To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.	2	1	-	-	-	2	3	-	-	-	-	2	-	-	-
			CO2:To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.	3	2	-	-	-	3	3	-	-	-	-	2	-	-	-
			CO3:To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.	3	-	1	-	-	2	2	-	-	-	-	2	-	-	-
			CO4:To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.	3	2	1	1	-	2	2	-	-	-	-	2	-	-	-
			CO5:To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.	3	2	1	-	-	2	2	-	-	-	-	1	-	-	-
			AVG	2.8	1.8	1	1	-	2.2	2.4	-	-	-	-	1.8	-	-	-
	21152L47	Linear Integrated Circuits Laboratory	CO1 : Design linear and nonlinear applications of OP – AMPS	2	-	-	-	-	-	-	-	-	-	1	-	2	1	1
			CO2 : Design applications using analog multiplier and PLL	2	3	3	2	-	-	-	-	-	-	-	-	2	1	1
			CO3 : Design ADC and DAC using OP – AMPS	1	-	-	2	-		-	-	-	-	-	-	2	1	1
			CO4 : Generate waveforms using OP – AMP Circuits	1	-	-	2	-	-	-	-	-	-	-	-	2	1	1
			CO5 : Analyze special function ICs	1	2	3	3	-	-	-	-	-	-	-	3	2	1	1
			AVG	1.4	2.5	3	2.2	-	-	-	-	-	-	1	3	2	1	1
	21152L48	Communication Systems Laboratory	CO1: Gain knowledge in amplitude modulation techniques	3	3	3	3	3	3	-	-	-	1	1	1	-	-	-
			CO2: Understand the concepts of Random Process to the design of communication systems	3	3	3	3	3	2	-	-	-	1	1	1	-	-	-
			CO3: Gain knowledge in digital techniques	3	3	3	3	3	2	-	-	-	1	1	1	-	-	-
			CO4: Gain knowledge in sampling and quantization	3	3	3	3	3	3	-	-	-	1	1	1	-	-	-
			CO5: Understand the importance of demodulation techniques	3	3	3	3	3	2	-	-	-	1	1	1	-	-	-
			AVG	3	3	3	3	3	2.5	-	-	-	1	1	1	-	-	-
V - sem	21152C51	*Wireless Communication *	CO1:Understand The Concept And Design Of A Cellular System.	3	2	2	3	3	1	-	-	-	-	-	1	3	1	1
			CO2:Understand Mobile Radio Propagation And Various Digital Modulation Techniques.	3	3	2	1	3	2	-	-	-	-	-	-	3	1	2
			CO3:Understand The Concepts Of Multiple Access Techniques And Wireless Networks .	3	3	3	3	2	2	-	-	-	-	-	1	3	1	2
			CO4:Characterize a wireless channel and evolve the system design specifications	2	3	2	2	2	2	-	-	-	-	-	1	2	1	1
			CO5:Design a cellular system based on resource availability and traffic demands.	2	-	3	3	2	1	-	-	-	-	-	1	2	2	2
			AVG	3	3	2	2	2	2	-	-	-	-	-	1	3	1	2
	21152C52	VLSI and Chip Design	CO1: In depth knowledge of MOS technology	1	1	-	-	-	-	-	-	-	-	-	-	3	3	3
			CO2: Understand Combinational Logic Circuits and Design Principles .	3	2	3	2	-	-	-	-	-	-	-	1	3	3	3
			CO3: Understand Sequential Logic Circuits and Clocking Strategies	2	3	2	3	1	1	-	-	-	-	-	2	3	2	3
			CO4: Understand Memory architecture and building blocks	-	-	1	1	-	-	-	-	-	-	-	3	3	3	2
			CO5: Understand the ASIC Design Process and Testing.	-	-	-	-	-	2	-	-	-	-	1	-	3	2	2
			AVG	2	2	2	2	1	1.5	-	-	-	-	1	2	3	3	3
	21152C53	Transmission Lines and RF Systems	CO1: Explain the characteristics of transmission lines and its losses.	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1
			CO2: Calculate the standing wave ratio and input impedance in high frequency transmission lines.	3	2	2	3	2	1	-	-	-	1	-	1	2	1	1
			CO3: Analyze impedance matching by stubs using Smith Charts.	3	3	3	2	1	2	-	-	-	1	-	1	2	1	1
			CO4: Comprehend the characteristics of TE and TM waves.	3	3	2	3	2	1	-	-	-	1	-	1	2	1	1
			CO5: Design a RF transceiver system for wireless communication	3	2	3	2	2	1	-	-	-	1	-	1	2	1	1
			AVG	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1
	21152L58	VLSI Laboratory	CO1: Write HDL code for basic as well as advanced digital integrated circuit	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO2: Import the logic modules into FPGA Boards	3	3	1	1	-	-	-	-	-	-	-	-	2	2	2
			CO3: Synthesize Place and Route the digital Ips	1	2	2	2	-	-	-	-	-	-	1	1	2	2	2
			CO4: Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA tools	-	1	3	3	1	-	-	-	-	-	1	1	2	2	2
			CO5: Test and Verification of IC design	3	3	3	3	1	-	-	-	-	-	1	1	2	2	2
			AVG	2.2	2.2	2.2	2.2	1	-	-	-	-	-	1	1	2	2	2
		*Embedded Systems	CO1: Explain the architecture and features of 8051.	3	3	3	2	2	-	-	-	-	-	1	-	3	2	1

VI - sem	21152S61	and IOT Design*	CO2: Develop a model of an embedded system.	3	3	3	2	2	-	-	-	-	-	-	-	3	2	1
			CO3: List the concepts of real time operating systems.	3	3	2	2	2	-	-	-	-	-	-	-	2	1	1
			CO4: Learn the architecture and protocols of IoT.	3	3	2	2	2	-	-	-	-	-	-	-	3	3	2
			CO5: Design an IoT based system for any application.	3	3	3	3	3	-	-	-	-	-	-	-	3	3	2
			AVG	3	3	2.6	2.2	2.2	-	-	-	-	-	-	-	2.8	2.2	1.4
	21152S62	*Artificial Intelligence and Machine Learning*	CO1: Use appropriate search algorithms for problem solving	3	2	2	3	1	3	2	-	-	-	-	1	3	3	3
			CO2: Apply reasoning under uncertainty	3	2	2	3	1	3	2	-	-	-	-	1	3	3	3
			CO3: Build supervised learning models	1	2	1	3	2	3	2	-	-	-	-	1	3	3	3
			CO4: Build ensembling and unsupervised models	1	2	3	1	3	3	2	-	-	-	-	1	3	3	3
			CO5: Build deep learning neural network models	2	2	2	-	3	3	2	-	-	-	-	1	3	3	3
			AVG	2	2	2	2	2	3	2	-	-	-	-	1	3	3	3
VII - sem	211_S71	Human Values and Ethics	CO1 : Identify the importance of democratic, secular and scientific values in harmonious functioning of social life	3	2	2	3	2	1	-	-	-	1	-	1	2	1	1
			CO2 : Practice democratic and scientific values in both their personal and professional life.	3	3	3	2	1	2	-	-	-	1	-	1	2	1	1
			CO3 : Find rational solutions to social problems.	3	3	2	3	2	1	-	-	-	1	-	1	2	1	1
			CO4 : Behave in an ethical manner in society	3	2	3	2	2	1	-	-	-	1	-	1	2	1	1
			CO5 : Practice critical thinking and the pursuit of truth.	3	3	3	3	2	1	-	-	-	1	-	1	2	1	1
			AVG	2	-	-	-	-	-	-	-	-	-	-	-	2	3	2
	21152INT76	Summer Internship	CO1:System-level design processes, verification and validation techniques, manufacturing and production processes in the firm or research facilities in the laboratory/research institute	1	1	-	-	-	-	-	-	-	-	-	-	3	3	3
			CO2: Analysis of industrial / research problems and their solutions	3	2	3	2	-	-	-	-	-	-	-	1	3	3	3
			CO3: Documentation of system specifications, design methodologies, process parameters, testing parameters and results	2	3	2	3	1	1	-	-	-	-	-	2	3	2	3
				-	-	1	1	-	-	-	-	-	-	-	3	3	3	2
			CO4: Preparing of technical report and presentation	-	-	-	-	-	2	-	-	-	-	1	-	3	2	2
			AVG	2	2	2	2	1	1.5	-	-	-	-	1	2	3	3	3
VIII- Se,	21152P81	Project Work	CO1: Formulate and analyze problem / create a new product/ process.	3	2	2	3	1	3	2	-	-	-	-	1	3	3	3
			CO2: Design and conduct experiments to find solution	3	2	2	3	1	3	2	-	-	-	-	1	3	3	3
			CO3: Analyze the results and provide solution for the identified problem, prepare project report and make presentation.	1	2	1	3	2	3	2	-	-	-	-	1	3	3	3
			AVG	2	-	-	-	-	-	-	-	-	-	-	-	2	3	2
	21152E54A	Optical Communication Networks	CO1:Realize Basic Elements In Optical Fibers, Different Modes And Configurations.	3	3	2	3	3	1	-	-	-	-	-	1	2	1	2
			CO2:Analyze The Transmission Characteristics Associated With Dispersion And Polarization Techniques.	3	3	2	1	3	2	-	-	-	-	-	2	2	2	2
			CO3:Design Optical Sources And Detectors With Their Use In Optical Communication System.	3	3	3	3	2	1	-	-	-	-	-	1	2	2	2
			CO4:Construct Fiber Optic Receiver Systems, Measurements And Techniques.	3	3	2	2	2	1	-	-	-	-	-	1	2	1	2
			CO5:Design Optical Communication Systems And Its Networks.	3	3	3	3	2	1	-	-	-	-	-	1	2	2	2
			AVG	3	3	2	3	3	1	-	-	-	-	-	1	2	1	2
	21152E54B	4G /5G Communication Networks	CO1:To understand the evolution of wireless networks.	3	3	2	3	2	-	-	-	-	-	-	-	1	1	3
			CO2:To learn the concepts of 5G networks.	3	3	3	2	2	-	-	-	-	-	-	-	1	1	2
			CO3:To comprehend the 5G architecture and protocols.	3	3	2	2	2	-	-	-	-	-	-	-	2	2	2
			CO4:To understand the dynamic spectrum management.	3	3	3	3	2	-	-	-	-	-	-	-	3	2	2
			CO5:To learn the security aspects in 5G networks	3	2	3	3	2	-	-	-	-	-	-	-	2	2	2
			AVG	3	2.8	2.6	2.6	2	-	-	-	-	-	-	-	1.8	1.6	2.2
	21152E55A	Software Defined Networks	CO1: Describe the motivation behind SDN and its data plane (K2)	3	3	3	3	3	2	-	-	-	-	-	3	3	3	2
			CO2: Identify the functions of control plane (K3)	3	3	3	2	2	2	-	-	-	-	-	3	3	2	2
			CO3: Apply SDN to networking applications (K3)	3	3	3	3	1	2	-	-	-	-	-	3	2	3	2
			CO4: Apply various operations of network function virtualization	2	3	3	2	2	1	-	-	-	-	-	2	2	1	2
			CO5: Explain various use cases of SDN	3	3	2	2	2	1	-	-	-	-	-	2	2	2	2
			AVG	3	3	3	2	2	2	-	-	-	-	-	2	2	2	2
	21152E64C	Massive MIMO Networks	CO1: Understand and explain massive MIMO networks.	3	2	1	1	2	2	-	-	-	-	-	2	3	1	2
			CO2: Analyze massive MIMO propagation channels and their capacity bounds	3	3	2	2	2	2	-	-	-	-	-	1	2	2	1
			CO3: Examine channel estimation techniques for single cell system.	3	2	2	2	2	2	-	-	-	-	-	1	3	3	2
			CO4: Analyze channel estimation techniques for multi cell system.	3	3	2	2	2	2	-	-	-	-	-	1	3	1	3
			CO5: Explain the concepts underlining the deployment of single and multicell massive MIMO systems.	3	2	2	2	2	2	-	-	-	-	-	2	3	3	2
			AVG	3	2.4	1.8	1.8	2	2	-	-	-	-	-	1.4	3	2	2
		Advanced Wireless Communication Techniques	CO1: The student would be able to appreciate the necessity and the design aspects of cooperative communication	3	3	3	2	1	1	-	-	-	-	-	2	3	3	3
			CO2: The student would be able to appreciate the necessity and the design aspects of green wireless communication.	3	3	3	2	2	1	-	-	-	-	-	2	3	2	3

Elective course	21152E65A		CO3: The student would be able to evolve new techniques in wireless communication	3	2	2	1	2	1	-	-	-	-	-	2	2	1	1
			CO4: The students would be able to demonstrate the feasibility of using mathematical models using simulation tools.	3	3	3	3	2	1	-	-	-	-	-	2	3	1	2
			CO5: The student would be able to demonstrate the impact of the green engineering solutions in a global, economic, environmental and societal context.	3	3	3	2	1	2	-	-	-	-	-	2	2	3	1
			AVG	3	2.8	2.8	2	1.6	1.2	-	-	-	-	-	2	3	2	2
	21160S72A	Principles of Management	CO1: Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling.	3		-	-	-	1	-	-	-	-	-	-	2	1	1
			CO2: Have same basic knowledge on international aspect of management.	-	1	1	-	-	-	-	-	-	-	-	-	2	1	-
			CO3: Ability to understand management concept of organizing.	1		-	2	-	- -	1	-	2	-	1	1	-	-	2
			CO5: Ability to understand management concept of CONTROLLING	-	1	1	1	2	-	-	1	2	-	-	-	1	1	1
			CO4: Ability to understand management concept of directing.	1		-	-	1	1	-	-	-	3	-	1	1	-	1
			AVG	1.66	1	1	1.5	1.5	1	1	1	2	3	1	1	1.5	1	1.25
	21160S72B	Total Quality Management	CO1: Ability to apply TQM concepts in a selected enterprise.		3										3	2		3
			CO2: Ability to apply TQM principles in a selected enterprise.						3						3		2	
			CO3: Ability to understand Taguchi's Quality Loss Function, Performance Measures and applyQFD, TPM, COQ and BPR.		2			3	2	3	2				3	3	2	
			CO4: Ability to apply QMS and EMS in any organization.			3			3	3	2							
			AVG		2.5	3		3	2.6	3	2	3			3	2.5	2	3
	21160S72C	Human Resource Management	CO1: Students would have gained knowledge on the various aspects of HRM	2	2	1	2	2	2	1	1	2	1	1	1	1	1	1
			CO2: Students will gain knowledge needed for success as a human resources professional.	3	3	2	3	2	2	2	2	3	1	2	1	1	2	1
			CO3: Students will develop the skills needed for a successful HR manager.	3	3	3	3	3	3	2	2	3	1	2	1	1	2	1
			CO4: Students would be prepared to implement the concepts learned in the workplace.	3	3	2	3	3	2	2	2	2	1	1	1	1	1	1
			CO5: Students would be aware of the emerging concepts in the field of HRM	3	3	1	2	2	2	2	2	2	1	1	1	1	1	1
			AVG	2.8	2.8	1.8	2.6	2.6	2.2	1.8	1.8	2.4	1	1.4	1	1	1.4	1
	21147MC51B	Disaster Management	CO1: To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)	3	3	2	3	-	-	2	2	-	-	2	-	2	-	1
			CO2: To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction	3	3	3	3	-	-	2	1	-	-	2	-	2	-	1
			CO3: To develop disaster response skills by adopting relevant tools and technology	3	3	3	3	-	-	2	2	-	-	-	-	2	-	1
			CO4: Enhance awareness of institutional processes for Disaster response in the country and	3	3	2	3	-	-	2	1	-	-	2	-	2	-	1
			CO5: Develop rudimentary ability to respond to their surroundings with potential	3	3	2	3	-	-	2	2	-	-	2	-	3	-	1
			avg	3	3	3	3	-	-	2	2	-	-	2	-	2	-	1
		Well Being with Traditional Practices (Yoga, Ayurveda and	CO1:Learn the importance of different components of health	3	3	3	3	-	-	2	1	-	-	2	-	2	-	1
			CO2:Gain confidence to lead a healthy life	3	3	3	3	-	-	2	2	-	-	-	-	2	-	1
			CO3:Learn new techniques to prevent lifestyle health disorders	3	3	2	3	-	-	2	1	-	-	2	-	2	-	1
			CO4:Understand the importance of diet and workouts in maintaining health	3	3	2	3	-	-	2	2	-	-	2	-	3	-	1
	21147MC61E	Safety in Engineering industry	CO1:Understand the basic concept of safety.	3	3	3	3	-	-	2	2	-	-	2	-	2	-	1
			CO2:Obtain knowledge of Statutory Regulations and standards.	3	3	3	3	-	-	2	1	-	-	2	-	2	-	1
			CO3:Know about the safety Activities of the Working Place.	3	3	3	3	-	-	2	2	-	-	-	-	2	-	1
			CO4:Analyze on the impact of Occupational Exposures and their Remedies	3	3	2	3	-	-	2	1	-	-	2	-	2	-	1
			CO5:Obtain knowledge of Risk Assessment Techniques	3	3	2	3	-	-	2	2	-	-	2	-	3	-	1
			avg	3	3	3	3	-	-	2	2	-	-	2	-	2	-	1
	21152E64B	Satellite Communication	CO1:Identify the satellite orbits	3	3	3	3	2	3	1	1	-	1	-	1	3	3	3
			CO2:Analyze the satellite subsystems	3	2	2	3	2	3	-	-	-	-	-	1	3	3	3
			CO3:Evaluate the satellite link power budget	3	3	3	2	1	3	-	-	-	-	-	1	3	3	3
			CO4:Identify access technology for satellite	3	3	2	3	2	3	-	-	-	-	-	1	3	3	3
			CO5:Design various satellite applications	3	2	3	2	2	1	-	-	-	-	-	1	3	3	3
			avg	3	3	3	3	2	3	1	1	-	1	-	1	3	3	3
	21152E66A	Remote Sensing	CO1: To understand the principles of electromagnetic radiation.	3	2	2	3	1	3	2	-	-	-	-	1	3	3	3
			CO2: To learn the atmospheric radiation interactions.	3	2	2	3	1	3	2	-	-	-	-	1	3	3	3
			CO3: To study the laws of planetary motion.	1	2	1	3	2	3	2	-	-	-	-	1	3	3	3
			CO4: To classify the different types of resolution.	1	2	3	1	3	3	2	-	-	-	-	1	3	3	3
			CO5: To know the concepts of digital interpretation.	2	2	2	-	3	3	2	-	-	-	-	1	3	3	3
			avg	2	2	2	2	2	3	2	-	-	-	-	1	3	3	3
		Software Defined Radio	CO1: Describe the motivation behind SDN and its data plane (K2)	3	3	3	3	3	2	-	-	-	-	-	1	3	3	2
			CO2: Identify the functions of control plane (K3)	3	3	3	2	2	2	-	-	-	-	-	1	3	2	2

21152E64A		CO3: Apply SDN to networking applications (K3)	3	3	3	3	1	2	-	-	-	-	-	3	2	3	2
		CO4: Apply various operations of network function virtualization	2	3	3	2	2	1	-	-	-	-	-	2	2	1	2
		CO5: Explain various use cases of SDN	3	3	2	2	2	1	-	-	-	-	-	2	2	2	2
		avg	3	3	3	2	2	2	-	-	-	-	-	2	2	2	2
21152E65B	Wearable Devices	CO1: Describe the concepts of wearable system.	3	2	1	1	2	-	-	1	-	-	-	-	1	-	1
		CO2: Explain the energy harvestings in wearable device.	3	2	1	1	2	-	-	1	-	-	-	-	1	-	1
		CO3: Use the concepts of BAN in health care.	3	2	1	1	2	-	-	1	-	-	-	-	1	-	1
		CO4: Illustrate the concept of smart textile	3	2	1	1	2	-	-	1	-	-	-	-	1	-	1
		CO5: Compare the various wearable devices in healthcare system	3	2	1	1	2	-	-	1	-	-	-	-	1	-	1
		avg	3	2	1	1	2	-	-	1	-	-	-	-	1	-	1
21152E66B	Human Assist Devices	CO1:Explain the principles and construction of artificial heart	3	3	3	3	3	2	-	-	-	-	-	3	3	1	2
		CO2:Understand various mechanical techniques that improve therapeutic technology	3	3	3	2	2	3	-	-	-	-	-	2	2	2	2
		CO3:Explain the functioning of the membrane or filter that cleanses the blood.	3	3	3	3	3	2	-	-	-	-	-	3	3	3	2
		CO4:Describe the tests to assess the hearing loss and development of wearable devices for the same.	3	3	1	1	3	2	-	-	-	-	-	2	3	1	3
		CO5:Analyze and research on electrical stimulation and biofeedback techniques in rehabilitation and physiotherapy	3	3	3	3	3	3	-	-	-	-	-	2	3	3	2
		avg	3	3	2.6	2.4	2.8	2.4	-	-	-	-	-	2.4	2.8	2	2.2
21152E66C	MEMS Design	CO1: Understand the basics of MEMS design aspects.	3	3	2	2	2	2	-	-	-	-	-	1	3	2	2
		CO2: Apply the knowledge in the development of electro static sensors and actuators.	3	3	3	2	2	2	-	-	-	-	-	2	3	2	2
		CO3: Apply the knowledge in the development of thermal sensors and actuators.	3	3	3	2	2	2	-	-	-	-	-	2	3	2	2
		CO4: Apply the knowledge in the development of piezoelectric sensors and actuators.	3	3	3	2	2	2	-	-	-	-	-	2	3	2	2
		CO5: Apply the knowledge in the development of magnetic sensors and actuators.	3	3	3	2	2	2	-	-	-	-	-	2	3	2	2
		avg	3	3	2.8	2	2	2	-	-	-	-	-	1.8	3	2	2
21152E65C	Fundamentals of Nanoelectronics	CO1: Understand the basics of nano electronics including quantum wires, dots and wells	3	3	2	2	2	1	-	-	-	-	-	2	2	1	1
		CO2: Use the mechanism behind quantum electronic devices	3	3	3	2	2	2	-	-	-	-	-	2	3	1	1
		CO3 : Analyze the key performance aspects of tunneling and superconducting nano electronic devices	3	3	3	2	2	2	-	-	-	-	-	2	3	1	1
		CO4: Apply the knowledge in the development of nanotubes and nanostructure devices	3	3	3	3	3	3	-	-	-	-	-	2	3	1	2
		avg	3	3	2.6	2.2	2.2	2	-	-	-	-	-	2	2.8	1	1.2
21152E54C	Avionics Systems	CO1:Explain the principles and construction of artificial heart	3	3	3	3	3	2	-	-	-	-	-	3	3	1	2
		CO2:Understand various mechanical techniques that improve therapeutic technology	3	3	3	2	2	3	-	-	-	-	-	2	2	2	2
		CO3:Explain the functioning of the membrane or filter that cleanses the blood.	3	3	3	3	3	2	-	-	-	-	-	3	3	3	2
		CO4:Describe the tests to assess the hearing loss and development of wearable devices for the same.	3	3	1	1	3	2	-	-	-	-	-	2	3	1	3
		CO5:Analyze and research on electrical stimulation and biofeedback techniques in rehabilitation and physiotherapy	3	3	3	3	3	3	-	-	-	-	-	2	3	3	2
		avg	3	3	2.6	2.4	2.8	2.4	-	-	-	-	-	2.4	2.8	2	2.2

1 - low, 2 - medium, 3 - high, '-' - no correlation

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THANJAVUR – 613 403 - TAMILNADU

School: ENGINEERINGAND TECHNOLOGY

Dept: ECE- BTech (FT)

Mapping of COs and Pos

2022 regulation- UG (PT)

Sem	Course Code	Title of the Course	COs	POS											
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
I	22148S11BP	Transforms and Partial Differential Equations	• Be capable of mathematically formulating certain practical problems in terms of partial differential equations, solve them and physically interpret the results. • Have gained a well founded knowledge of Fourier series, their different possible forms and	✓	✓	✓	✓	✓						✓	✓
	22152H12P	Electromagnetic Theory	• analyze fields a potentials due to static changes • evaluate static magnetic fields • understand how materials affect electric and	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			magnetic fields • understand the relation between the fields under time varying situations • understand principles of prop											
	22152H13P	Digital Electronics	• introduce number systems and codes • introduce basic postulates of Boolean algebra and shows the correlation between Boolean expressions • introduce the methods for simplifying Boolean expressions • outline the formal procedures for the analysis and des	✓	✓	✓	✓	✓	✓					✓	✓
	22152H14P	Electronic Circuits - I	• The methods of biasing transistors • Design of simple	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			amplifier circuits • Mid – band analysis of amplifier circuits using small - signal equivalent circuits to determine gain input impedance and output impedance • Method of calculating cutoff fre											
	22152H15P	Signals and Systems	• To study the properties and representation of discrete and continuous signals. • To study the sampling process and analysis of discrete systems using z-transforms. • To study the analysis and synthesis of discrete time	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			systems.• To study the properties											
II	22148S21P	Numerical Methods	• The roots of nonlinear (algebraic or transcendental) equations, solutions of large system of linear equations and eigenvalue problem of a matrix can be obtained numerically where analytical methods fail to give solution. • When huge amounts of experimen	✓	✓	✓	✓	✓					✓	✓
	22152S22P	Electrical Engineering and Control Systems	• To understand the operation of Electrical machines and transformers • To understand the open loop and closed loop	✓	✓	✓	✓	✓	✓				✓	✓

Mapping of COs and Pos

			(feedback) systems • To understand time domain and frequency domain analysis of control systems required for stability analysis. • To unde											
	22152H23P	Linear Integrated Circuits	• To introduce the basic building blocks of linear integrated circuits. • To teach the linear and non-linear applications of operational amplifiers. • To introduce the theory and applications of analog multipliers and PLL. • To teach the theory of ADC and	✓	✓	✓	✓	✓	✓					✓	✓
	22152H24P	Electronic Circuits - II	• The advantages and method of analysis of feed	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			back amplifiers • Analysis and design of RC and LC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, blocking oscillators and time based generators. • The advantages and method of analysi											
	22152H25P	Transmission Lines and Waveguides	• To become familiar with propagation of signals through lines • Understand signal propagation at Radio frequencies• Understand radio propagation in guided systems• To become familiar with resonators • To become	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			familiar with propagation of sig											
III	22148S31BP	Probability and Random Processes	• Have a fundamental knowledge of the basic probability concepts. • Have a well – founded knowledge of standard distributions which can describe real life phenomena. • Acquire skills in handling situations involving more than one random variable and funct	✓	✓	✓	✓	✓						✓	✓
	22152H32P	Microprocessor Interfacing and Applications	• To introduce the architecture and programming of 8085 microprocessor. • To introduce the interfacing of peripheral devices with 8085	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			microprocessor. • To introduce the architecture and programming of 8086 microprocessor. • To introduce the applications,											
	22152H33P	Digital Signal Processing	• To study DFT and its computation • To study the design techniques for digital filters • To study the finite word length effects in signal processing • To study the non-parametric methods of power spectrum estimations • To study the fundamentals of digit	✓	✓	✓	✓	✓	✓					✓	✓
	22152H34P	Communication Theory	• To provide various Amplitude modulation and demodulation	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			systems. • To provide various Angle modulation and demodulation systems. • To provide some depth analysis in noise performance of various receiver. • To study some basic information theory with so										
	22152L35P	Digital Signal Processing and Microprocessor Lab	• Carryout basic signal processing operations • Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals • Interface different I/Os with processor • Generate waveforms using	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			Microprocessors •											
IV	22152H41P	Digital Communication	• To study pulse modulation and discuss the process of sampling, quantization and coding that are fundamental to the digital transmission of analog signals. • To learn baseband pulse transmission, which deals with the transmission of pulse-amplitude, modu	✓	✓	✓	✓	✓	✓					✓	✓
	22152H42P	Antenna and Wave Propagation	• To study radiation from a current element. • To study antenna arrays • To study aperture antennas • To learn special antennas such as frequency	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			independent and broad band antennas. • To study radio wave propagation. • To study radiation from a current e											
	22152H43P	Computer Networks	• To introduce the students the functions of different layers. • To introduce IEEE standard employed in computer networking. • To make students to get familiarized with different protocols and network components.• To introduce the students the functions o	✓	✓	✓	✓	✓	✓					✓	✓
	221__E44_P	**Elective-I**													

Mapping of COs and Pos

	22152E44AP	High Speed Networks	• Students will get an introduction about ATM and Frame relay. • Students will be provided with an up-to-date survey of developments in High Speed Networks. • Enable the students to know techniques involved to support real-time traffic and congestion cont	✓	✓	✓	✓	✓	✓					✓	✓
	22152E44BP	Advanced Digital Signal Processing	• To study the parametric methods for power spectrum estimation. • To study adaptive filtering techniques using LMS algorithm and to study the applications of adaptive filtering. • To study	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			multirate signal processing fundamentals. • To study the analysis											
	22152E44CP	Speech Processing	• To introduce the models for speech production • To develop time and frequency domain techniques for estimating speech parameters • To introduce a predictive technique for speech compression • To understand speech recognition, synthesis and speaker ident	✓	✓	✓	✓	✓	✓					✓
	22152E44DP	Fuzzy Logic and Neural Networks	• To introduce the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience • To become	✓	✓	✓	✓	✓	✓					✓

Mapping of COs and Pos

			familiar with neural networks that can learn from available examples and generalize to form appropriate rules for inferencing systems • To prov												
	22152E44FP	Digital Audio Engineering	• Analyze the type of dither. • Analyze the recording and transmission principles in digital audio. • Analyze the various compression techniques. • Design and analyze the digital audio editing. • Analyze the various application of digital audio. • Analyze	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

Mapping of COs and Pos

	22152L45P	Networks and Communication Lab	• Communicate between two desktop computers• Implement the different protocols• Implement and compare the various routing algorithms• Use the simulation tool.• Simulate & validate the various functional modules of a communication system• Apply variou	✓	✓	✓	✓	✓	✓					✓	✓
V	22152H51P	Optical Communication and Networks	• To learn the basic elements of optical fiber transmission link, fiber modes configurations and structures. • To understand the different kind of losses, signal distortion in	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			optical wave guides and other signal degradation factors. Design optimization o											
	22152H52P	Microwave Engineering	• To study passive microwave components and their S-Parameters. • To study Microwave semiconductor devices & applications. • To study Microwave sources and amplifiers. • To study passive microwave components and their S-Parameters. • T	✓	✓	✓	✓	✓	✓					✓	✓
	22152H53P	VLSI Design	• To learn the basic CMOS circuits. • To learn the CMOS process	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			technology. • To learn techniques of chip design using programmable devices. • To learn the concepts of designing VLSI subsystems. • To learn the concepts of modeling a digital system using H											
	221__E54_P	**Elective II**												
	22149E54AP	Environmental Science and Engineering	• Public awareness of environmental is at infant stage. • Ignorance and incomplete knowledge has lead to misconceptions • Development and improvement in standard of living has lead to serious	✓	✓		✓		✓	✓	✓			✓	✓

Mapping of COs and Pos

			environmental disasters• Public awareness of environmental is a											
	22152E54BP	Optoelectronic Devices	• To know the basics of solid state physics and understand the nature and characteristics of light. • To understand different methods of luminescence, display devices and laser types and their applications. • To learn the principle of optical detection me	✓	✓	✓	✓	✓	✓					✓	✓
	22152E54DP	Digital Image Processing	• To study the image fundamentals and mathematical transforms necessary for image processing. • To study the image enhancement	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

Mapping of COs and Pos

			techniques • To study image restoration procedures. • To study the image compression procedures. • To study the image segmentati											
	22152E54EP	Engineering Acoustics	• To provide mathematical basis for acoustics waves • To introduce the concept of radiation reception absorption and attenuation of acoustic waves. • To present the characteristic behaviour of sound in pipes, resonators and filters. • To introduce the pro	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

	22152E54FP	Software Engineering	• Identify the key activities in managing a software project. • Compare different process models. • Concepts of requirements engineering and Analysis Modeling. • Apply systematic procedure for software design and deployment. • Compare and contrast the	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
	22152L55P	Optical Communication and Microwave Lab	• Analyze the performance of simple optical link. • Test microwave and optical components. • Analyse the mode characteristics of fiber • Analyse the	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			radiation of pattern of antenna.• Analyze the performance of simple optical link. • Test microwave and op											
VI	22152H61P	Mobile and Wireless Communication	• It deals with the fundamental cellular radio concepts such as frequency reuse and handoff. This also demonstrates the principle of trunking efficiency and how trunking and interference issues between mobile and base stations combine to affect the overal	✓	✓	✓	✓	✓	✓					✓	✓
	22152H62P	Medical Electronics	• To study the methods of recording various biopotentials • To study how to measure biochemical and	✓	✓	✓	✓	✓						✓	✓

Mapping of COs and Pos

			various physiological information • To understand the working of units which will help to restore normal functioning • To understand the use of radiation f											
	22152H63P	Micro Controller and Embedded systems	• To study 8051 architecture • To write assembly language programming • To study the embedded architecture and real time applications. • To study 8051 architecture • To write assembly language programming • To study the embedded architecture and	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			real time											
	221__E64_P	**Elective III**												
	22160E64AP	Principles Of Management	• Upon completion of the course, students will be able to have clear understanding• Managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management• Upon completion of t						✓	✓	✓		✓	✓	✓
	22152E64BP	Satellite Communication	• Overview of satellite systems in relation to other terrestrial systems. • Study of satellite orbits and	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

Mapping of COs and Pos

			launching. • Study of earth segment and space segment components • Study of satellite access by various users. • Study of DTH and compression standar											
	22152E64CP	Robotics	• The course has been so designed to give the students an overall view of the mechanical components and mathematics associated with the same. • Actuators and sensors necessary for the functioning of the robot. • The course has been so designed to give the	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓

Mapping of COs and Pos

	22152E64DP	Remote sensing	• Principles of Remote Sensing and GIS • Analysis of RS and GIS data and interpreting the data for modeling applications • Principles of Remote Sensing and GIS • Analysis of RS and GIS data and interpreting the data for modeling applications	✓	✓	✓	✓	✓	✓					✓	✓
	22150E64FP	Transducer Engineering	• to model and analyze transducers	✓	✓	✓	✓	✓	✓					✓	✓
	22152L65P	VLSI and Embedded systems Lab	• Write HDL code for basic as well as advanced digital integrated circuit • Import the logic modules into FPGA Boards • Synthesize Place and Route the digital IPs • Write programs	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			in ARM for a specific Application • Interface memory, A/D and D/A convertor											
VII	22160S71P	Total Quality Management	• The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.					✓	✓	✓		✓	✓	✓
	22152H72P	Wireless Networks	• To understand physical as wireless MAC layer alternatives techniques. • To learn planning and operation of wireless networks. • To study various wireless LAN and WAN concepts. • To understand WPAN and geo-location systems.	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

	22152H73P	Telecommunication Switching and Networks	• To introduce the concepts of Frequency and Time division multiplexing. • To introduce digital multiplexing and digital hierarchy namely SONET / SDH • To introduce the concepts of space switching, time switching and combination switching, example of a sw	✓	✓	✓	✓	✓						✓	✓
	221__E74_P	**Elective IV**													
	22152E74AP	Power Electronics	• To study about power electronic circuits for voltage and current control and protection. • To learn the switching characteristics of transistors and	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			SCRs. Series and parallel functions of SCRs, Programmable triggering methods of SCR. • To learn controll											
	22152E74BP	Advanced Microprocessors	• To introduce the concepts in internal programming model of Intel family of microprocessors. • To introduce the programming techniques using MASM, DOS and BIOS function calls. • To introduce the basic architecture of Pentium family of processors. • To in	✓	✓	✓	✓	✓	✓					✓	✓
	22152E74CP	Electromagnetic Interference and Compatibility	• To understand EMI Sources, EMI problems and their solution methods in PCB level /	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

			Subsystem and system level design. • To measure the emission. immunity level from different systems to couple with the prescribed EMC standards											
	22152E74DP	Solid State Electronic Drives	• To learn crystal structures of elements used for fabrication of semiconductor devices. • To study energy band structure of semiconductor devices. • To understand fermi levels, movement of charge carriers, Diffusion current and Drift current. • To study	✓	✓	✓	✓	✓	✓					✓	✓

Mapping of COs and Pos

	22152E74FP	Space TimeWireless Communication	• Design and analyze the channel characterization. • Analyze the capacity of random MIMO channel. • Design and analyze the order diversity and channel variability. • Analyze the multiple antenna coding and receivers. • Analyze the MIMO multi user detectio	✓	✓	✓	✓	✓	✓					✓	✓
	22152P75P	Project Work & Viva Voce	• apply fundamental and disciplinary concepts and methods in ways appropriate to their principal area of study.•	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓

Mapping of COs and Pos

			demonstrate skill and knowledge of current information and technological tools and techniques specific to the professional field of study.•												

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Dept: ECE

Mapping of COs and Pos-PSO

2022 regulation- PG (FT)

Sem	Course Code	Title of the Course	COs	POS											
				PO 1	PO 2	PO 3	PO 4	PO5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO12
I	22248S11B	Applied Mathematics for Electronics Engineering	• The primary aim of this course is to demonstrate various analytical skills in applied mathematics and extensive experience with the tactics of problem solving and logical thinking applicable in communication engineering.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	22271C12	Advanced Digital Signal Processing	The student is conversant with important theorems and algorithms. • The student learns relevant figures of merit such as power, energy, bias and consistency. The student is familiar with	✓	✓	✓	✓	✓		✓					✓

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Mapping of COs and Pos-PSO

			prediction and filtering concepts and techniques. • Apply various techniques in solving differential equations.													
	22271C13	Advanced Digital Communication Techniques	• The students will gain knowledge on the basics of properties of matter and its applications, • The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics, • The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers, • The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, and	✓	✓	✓	✓		✓		✓		✓			

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Mapping of COs and Pos-PSO

			• The students will understand the basics of crystals, their structures and different crystal growth techniques.													
	22271C14	Optical Networks	• The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.	✓	✓	✓	✓			✓					✓	
	22271C15	Advanced Radiation Systems	• Familiarize with the fundamentals and standards of Engineering graphics • Perform freehand sketching of basic geometrical constructions and multiple views of objects. • Project orthographic projections of lines and plane surfaces	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		

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Mapping of COs and Pos-PSO

			• Draw projections and solids and development of surfaces. • Visualize and to project isometric and perspective sections of simple solids.													
	22271E16_	**Elective-I**														
	22271L17	Communication Systems Lab – I	• Develop algorithmic solutions to simple computational problems • Read, write, execute by hand simple Python programs. • Structure simple Python programs for solving problems. • Decompose a Python program into functions. • Represent compound data using Python lists, tuples, dictionaries. • Read and write data from/to files in Python Programs.	✓	✓	✓	✓	✓		✓						✓
	22271E16A	Internetworking and	• Write, test, and debug simple Python	✓	✓	✓	✓		✓		✓		✓			

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Mapping of COs and Pos-PSO

		Multimedia	programs. • Implement Python programs with conditionals and loops. • Develop Python programs step-wise by defining functions and calling them. • Use Python lists, tuples, dictionaries for representing compound data. • Read and write data from/to files in Python.												
	22271E16B	Digital Image Processing	Upon completion of the course, the students will be able to apply principles of elasticity, optics and thermal properties for engineering applications. • To make the student to acquire practical skills in the determination of water quality parameters through volumetric and instrumental analysis.	✓	✓	✓	✓			✓					✓

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Mapping of COs and Pos-PSO

			• To acquaint the students with the determination of molecular weight of a polymer by viscometery.													
	22271E16C	LASER Communication	• To learn about philosophy of Life and Individual qualities • To learn and practice social values and responsibilities • To learn and practice mind culture, forces acting on the body • To learn more of Responsibilities and Rights as Professional and facing Global Challenges • Emerge as responsible citizen with clear conviction to be a role-model in the society.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
II	22271C21	Mobile Communication Networks	• Read technical texts and write area- specific texts effortlessly. • Listen and comprehend lectures	?	?	?	?	✓	✓	✓	✓	✓	✓	✓		✓

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Mapping of COs and Pos-PSO

			and talks in their area of specialisation successfully. • Speak appropriately and effectively in varied formal and informal contexts. • Write reports and winning job applications.			-									
	22271C22	Advanced Microwave Systems	• Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices. • Gradient, divergence and curl of a vector point function and related identities. • Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification. • Analytic functions,	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

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Mapping of COs and Pos-PSO

			conformal mapping and complex integration. • Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.												
	22271C23	Electromagnetic Interference and Compatibility	• Gain knowledge on classical and quantum electron theories, and energy band structuues, • Acquire knowledge on basics of semiconductor physics and its applications in various devices, • Get knowledge on magnetic and dielectric properties of materials, • Have the necessary understanding on the functioning of optical materials for optoelectronics,	✓	✓	✓	✓	✓		✓					✓

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Mapping of COs and Pos-PSO

			• Understand the basics of quantum structures and their applications in spintronics and carbon electronics.													
	22271E24_	**Elective-II**														
	22271E25_	**Elective-III**														
	22271L26	Communication Systems Lab – II	• Understand the concept of three phase power circuits and measurement. • Comprehend the concepts in electrical generators, motors and transformers • Choose appropriate measuring instruments for given application	✓	✓	✓	✓		✓		✓		✓			
	222TECWR	Technical Writing /Seminars	• Develop the capacity to analyze electrical circuits, apply the circuit theorems in real time • Design and understand and evaluate the AC and DC circuits.	✓	✓	✓	✓			✓						✓

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	22271E24A	High Speed Switching Architecture	• Explain the V-I characteristic of diode, UJT and SCR • Describe the equivalence circuits of transistors • Operate the basic electronic devices such as PN junction diode, Bipolar and Field effect Transistors, Power control devices, LED, LCD and other Opto-electronic devices	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	22271E24B	DSP Processor Architecture and Programming	• Fabricate carpentry components and pipe connections including plumbing works. • Use welding equipments to join the structures. • Carry out the basic machining operations • Make the models using sheet metal works • Illustrate on centrifugal pump, Air conditioner, operations	✓	✓	✓	✓	✓		✓						✓

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Mapping of COs and Pos-PSO

			of smithy, foundary and fittings • Carry out basic home electrical works and appliances • Measure the electrical quantities • Elaborate on the components, gates, soldering practices.												
	22271E24C	Digital Speech Processing	• Analyze the characteristics of basic electronic devices • Design RL and RC circuits • Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems	✓	✓	✓	✓		✓		✓		✓		
III	22271C31	Wireless Sensor Networks	• Identify the various control system components and their representations. • Analyze the various	✓	✓	✓	✓	✓		✓					✓

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Mapping of COs and Pos-PSO

			time domain parameters. • Analysis the various frequency response plots and its system. • Apply the concepts of various system stability criterions. • Design various transfer functions of digital control system using state variable models.												
	22271E32_	**Elective – IV**													
	22271E33_	**Elective – V**													
	22271E34_	**Elective – VI**													
	22271E25A	Digital Communication Receivers	• Implement linear and non-linear data structure operations using C • Suggest appropriate linear / non-linear data structure for any given data set. • Apply hashing concepts for a given	✓	✓	✓	✓		✓		✓		✓			

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Mapping of COs and Pos-PSO

			problem • Modify or suggest new data structure for an application • Appropriately choose the sorting algorithm for an application													
	22271E25B	Soft Computing Techniques	• Use digital electronics in the present contemporary world • Design various combinational digital circuits using logic gates • Do the analysis and design procedures for synchronous and asynchronous sequential circuits • Use the semiconductor memories and related technology • Use electronic circuits involved in the design of logic gates	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	22271E25C	Communication Network Security	• To be able to determine if a given system is	✓	✓	✓	✓	✓		✓						✓

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Mapping of COs and Pos-PSO

			linear/causal/stable • Capable of determining the frequency components present in a deterministic signal • Capable of characterizing LTI systems in the time domain and frequency domain • To be able to compute the output of an LTI system in the time and frequency domains												
	22271E32A	Software Defined Radio	• Acquire knowledge of o Working principles, characteristics and applications of BJT and FET o Frequency response characteristics of BJT and FET amplifiers • Analyze the performance of small signal BJT and FET amplifiers - single stage and multi stage	✓	✓	✓	✓		✓		✓		✓		

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Mapping of COs and Pos-PSO

			amplifiers • Apply the knowledge gained in the design of Electronic circuits												
	22271E32B	Satellite Communication	• To understand and implement basic data structures using C • To apply linear and non-linear data structures in problem solving. • To learn to implement functions and recursive functions by means of data structures • To implement searching and sorting algorithms	✓	✓	✓	✓			✓					✓
	22271E32C	CDMA Systems	• Design and Test rectifiers, filters and regulated power supplies. • Design and Test BJT/JFET amplifiers. • Differentiate cascode and cascade amplifiers. • Analyze the limitation in bandwidth of single	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

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Mapping of COs and Pos-PSO

			stage and multi stage amplifier • Measure CMRR in differential amplifier • Simulate and analyze amplifier circuits using PSpice. • Design and Test the digital logic circuits.												
	22271E33A	Wavelets and Multi Resolution Processing	• Equip students with the English language skills required for the successful undertaking of academic studies with primary emphasis on academic speaking and listening skills. • Provide guidance and practice in basic general and classroom conversation and to engage in specific academic speaking activities. • improve general and academic listening skills • Make effective presentations.	✓	✓	✓	✓	✓		✓					✓	

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	22271E33B	High Performance Communication Networks	• Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon. • Understand the basic concepts of one and two dimensional random variables and apply in engineering applications. • Apply the concept random processes in engineering disciplines. • Understand and apply the concept of correlation and spectral densities. • The students will have an exposure of various distribution functions and help in acquiring skills in handling situations involving more than one variable. Able to analyze the	✓	✓	✓	✓		✓		✓		✓					

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Mapping of COs and Pos-PSO

			response of random inputs to linear time invariant systems.												
	22271E33C	Advanced Microprocessors and Microcontrollers	• Analyze different types of amplifier, oscillator and multivibrator circuits • Design BJT amplifier and oscillator circuits • Analyze transistorized amplifier and oscillator circuits • Design and analyze feedback amplifiers • Design LC and RC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, power amplifier and DC convertors.	✓	✓	✓	✓			✓						✓
IV	22271P41	Project Phase – II	• Design AM communication systems • Design Angle modulated communication systems • Apply the concepts of Random Process to the design of	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

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Mapping of COs and Pos-PSO

			Communication systems • Analyze the noise performance of AM and FM systems • Gain knowledge in sampling and quantization												
	22271E34A	Space Time Wireless Communication	• Display an understanding of fundamental electromagnetic laws and concepts • Write Maxwell's equations in integral, differential and phasor forms and explain their physical meaning • Explain electromagnetic wave propagation in lossy and in lossless media • Solve simple problems requiring estimation of electric and magnetic field quantities based on these concepts and laws	✓	✓	✓	✓	✓		✓					✓
	22271E34B	Medical Imaging	• Design linear and non linear applications of OP	✓	✓	✓	✓		✓		✓		✓		

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Mapping of COs and Pos-PSO

			– AMPS • Design applications using analog multiplier and PLL • Design ADC and DAC using OP – AMPS • Generate waveforms using OP – AMP Circuits • Analyze special function Ics												
	22271E34C	Mobile ADHOC Networks	One will obtain knowledge on the following after completing the course. • Public awareness of environmental is at infant stage. • Ignorance and incomplete knowledge has lead to misconceptions • Development and improvement in standard of living has lead to serious environmental disasters	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

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	I	22148S11BP	Transforms and Partial Differential Equations	• Be capable of mathematically formulating certain practical problems in terms of partial differential equations, solve them and physically interpret the results. • Have gained a well founded knowledge of Fourier series, their different possible forms and	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152H12P	Electromagnetic Theory	• analyze fields a potentials due to static changes • evaluate static magnetic fields • understand how materials affect electric and magnetic fields • understand the relation between the fields under time varying situations • understand principles of prop	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152H13P	Digital Electronics	• introduce number systems and codes • introduce basic postulates of Boolean algebra and shows the correlation between Boolean expressions • introduce the methods for simplifying Boolean expressions • outline the formal procedures for the analysis and des	✓	✓	✓	✓	✓	✓					✓	✓

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	22152H14P	Electronic Circuits - I	• The methods of biasing transistors • Design of simple amplifier circuits • Mid – band analysis of amplifier circuits using small - signal equivalent circuits to determine gain input impedance and output impedance • Method of calculatin g cutoff fre	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152H15P	Signals and Systems	• To study the properties and representation of discrete and continuous signals. • To study the sampling process and analysis of discrete systems using z-transforms. • To study the analysis and synthesis of discrete time systems.• To study the properties	✓	✓	✓	✓	✓	✓					✓	✓

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II	22148S21P	Numerical Methods	• The roots of nonlinear (algebraic or transcendental) equations, solutions of large system of linear equations and eigenvalue problem of a matrix can be obtained numerically where analytical methods fail to give solution. • When huge amounts of experimen	✓	✓	✓	✓	✓							✓	✓

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Mapping of COs and Pos-PSO

	22152S22P	Electrical Engineering and Control Systems	• To understand the operation of Electrical machines and transformers • To understand the open loop and closed loop (feedback) systems • To understand time domain and frequency domain analysis of control systems required for stability analysis. • To unde	✓	✓	✓	✓	✓	✓						✓	✓

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Mapping of COs and Pos-PSO

	22152H23P	Linear Integrated Circuits	• To introduce the basic building blocks of linear integrated circuits. • To teach the linear and non-linear applications of operational amplifiers. • To introduce the theory and applications of analog multipliers and PLL. • To teach the theory of ADC and	✓	✓	✓	✓	✓	✓				✓	✓

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Mapping of COs and Pos-PSO

	22152H24P	Electronic Circuits - II	• The advantages and method of analysis of feed back amplifiers • Analysis and design of RC and LC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, blocking oscillators and time based generators. • The advantages and method of analysi	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152H25P	Transmission Lines and Waveguides	• To become familiar with propagation of signals through lines • Understand signal propagation at Radio frequencies • Understand radio propagation in guided systems • To become familiar with resonators • To become familiar with propagation of sig	✓	✓	✓	✓	✓	✓					✓	✓

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III	22148S31BP	Probability and Random Processes	• Have a fundamental knowledge of the basic probability concepts. • Have a well – founded knowledge of standard distributions which can describe real life phenomena. • Acquire skills in handling situations involving more than one random variable and funct	✓	✓	✓	✓	✓						✓	✓

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	22152H32P	Microprocessor Interfacing and Applications	• To introduce the architecture and programming of 8085 microprocessor. • To introduce the interfacing of peripheral devices with 8085 microprocessor. • To introduce the architecture and programming of 8086 microprocessor. • To introduce the applications,	✓	✓	✓	✓	✓	✓					✓	✓

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	22152H33P	Digital Signal Processing	• To study DFT and its computation • To study the design techniques for digital filters • To study the finite word length effects in signal processing • To study the non-parametric methods of power spectrum estimations • To study the fundamentals of digit	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152H34P	Communication Theory	• To provide various Amplitude modulation and demodulation systems. • To provide various Angle modulation and demodulation systems. • To provide some depth analysis in noise performance of various receiver. • To study some basic information theory with so	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152L35P	Digital Signal Processing and Microprocessor Lab	• Carryout basic signal processing operations • Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals • Interface different I/Os with processor • Generate waveforms using Microprocessors •	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

IV	22152H41P	Digital Communication	• To study pulse modulation and discuss the process of sampling, quantization and coding that are fundamental to the digital transmission of analog signals. • To learn baseband pulse transmission, which deals with the transmission of pulse-amplitude, modu	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152H42P	Antenna and Wave Propagation	• To study radiation from a current element. • To study antenna arrays • To study aperture antennas • To learn special antennas such as frequency independent and broad band antennas. • To study radio wave propagation. • To study radiation from a current e	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152H43P	Computer Networks	• To introduce the students the functions of different layers. • To introduce IEEE standard employed in computer networking. • To make students to get familiarized with different protocols and network components.• To introduce the students the functions o	✓	✓	✓	✓	✓	✓						✓	✓

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Mapping of COs and Pos-PSO

	221__E44_P	Elective-I												
	22152E44AP	High Speed Networks	• Students will get an introducti on about ATM and Frame relay. • Students will be provided with an up-to-date survey of developm ents in High Speed Networks. • Enable the students to know techniques involved to support real-time traffic and congestion cont	✓	✓	✓	✓	✓	✓				✓	✓

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	22152E44BP	Advanced Digital Signal Processing	• To study the parametric methods for power spectrum estimation . • To study adaptive filtering techniques using LMS algorithm and to study the applicatio ns of adaptive filtering. • To study multirate signal processing fundament als. • To study the analysis	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152E44CP	Speech Processing	• To introduce the models for speech production • To develop time and frequency domain techniques for estimating speech parameters • To introduce a predictive technique for speech compression • To understand speech recognition, synthesis and speaker ident	✓	✓	✓	✓	✓	✓						✓

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Mapping of COs and Pos-PSO

	22152E44DP	Fuzzy Logic and Neural Networks	• To introduce the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience • To become familiar with neural networks that can learn from available examples and generalize to form appropriate rules for inferencing systems • To prov	✓	✓	✓	✓	✓	✓					✓

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Mapping of COs and Pos-PSO

	22152E44FP	Digital Audio Engineering	• Analyze the type of dither. • Analyze the recording and transmission principles in digital audio. • Analyze the various compression techniques. • Design and analyze the digital audio editing. • Analyze the various application of digital audio. • Analyze	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

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Mapping of COs and Pos-PSO

	22152L45P	Networks and Communication Lab	• Communicate between two desktop computers • Implement the different protocols • Implement and compare the various routing algorithms • Use the simulation tool. • Simulate & validate the various functional modules of a communication system • Apply variou	✓	✓	✓	✓	✓	✓				✓	✓

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Mapping of COs and Pos-PSO

V	22152H51P	Optical Communication and Networks	• To learn the basic elements of optical fiber transmission link, fiber modes configurations and structures. • To understand the different kind of losses, signal distortion in optical wave guides and other signal degradation factors. Design optimization o	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152H52P	Microwave Engineering	• To study passive microwave components and their S-Parameters. • To study Microwave semiconductor devices & applications. • To study Microwave sources and amplifiers. • To study passive microwave components and their S-Parameters. • T	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152H53P	VLSI Design	• To learn the basic CMOS circuits. • To learn the CMOS process technology. • To learn techniques of chip design using programmable devices. • To learn the concepts of designing VLSI subsystems. • To learn the concepts of modeling a digital system using H	✓	✓	✓	✓	✓	✓					✓	✓
	221__E54_P	Elective II														

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Mapping of COs and Pos-PSO

	22149E54AP	Environmental Science and Engineering	• Public awareness of environmental is at infant stage. • Ignorance and incomplete knowledge has lead to misconceptions • Development and improvement in standard of living has lead to serious environmental disasters• Public awareness of environmental is a	✓	✓		✓		✓	✓	✓			✓	✓

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Mapping of COs and Pos-PSO

	22152E54BP	Optoelectronic Devices	• To know the basics of solid state physics and understand the nature and characteristics of light. • To understand different methods of luminescence, display devices and laser types and their applications. • To learn the principle of optical detection me	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152E54DP	Digital Image Processing	• To study the image fundamentals and mathematical transforms necessary for image processing. • To study the image enhancement techniques • To study image restoration procedures. • To study the image compression procedures. • To study the image segmentati	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

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Mapping of COs and Pos-PSO

	22152E54EP	Engineering Acoustics	• To provide mathematical basis for acoustics waves • To introduce the concept of radiation reception absorption and attenuation of acoustic waves. • To present the characteristic behaviour of sound in pipes, resonators and filters. • To introduce the pro	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152E54FP	Software Engineering	• Identify the key activities in managing a software project. • Compare different process models. • Concepts of requirements engineering and Analysis Modeling. • Apply systematic procedure for software design and deployment. • Compare and contrast the	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓

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Mapping of COs and Pos-PSO

	22152L55P	Optical Communication and Microwave Lab	• Analyze the performance of simple optical link. • Test microwave and optical components. • Analyse the mode characteristics of fiber • Analyse the radiation of pattern of antenna.• Analyze the performance of simple optical link. • Test microwave and op	✓	✓	✓	✓	✓	✓					✓		✓

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Mapping of COs and Pos-PSO

VI	22152H61P	Mobile and Wireless Communication	• It deals with the fundamental cellular radio concepts such as frequency reuse and handoff. This also demonstrates the principle of trunking efficiency and how trunking and interference issues between mobile and base stations combine to affect the overal	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152H62P	Medical Electronics	• To study the methods of recording various biopotentials • To study how to measure biochemical and various physiological information • To understand the working of units which will help to restore normal functioning • To understand the use of radiation f	✓	✓	✓	✓	✓						✓	✓

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Mapping of COs and Pos-PSO

	22152H63P	Micro Controller and Embedded systems	• To study 8051 architecture • To write assembly language programming • To study the embedded architecture and real time applications. • To study 8051 architecture • To write assembly language programming • To study the embedded architecture and real time	✓	✓	✓	✓	✓	✓					✓	✓
	221 E64_P	Elective III													

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Mapping of COs and Pos-PSO

	22160E64AP	Principles Of Management	• Upon completion of the course, students will be able to have clear understanding • Managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management • Upon completion of t						✓	✓	✓		✓	✓	✓

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Mapping of COs and Pos-PSO

	22152E64BP	Satellite Communication	• Overview of satellite systems in relation to other terrestrial systems. • Study of satellite orbits and launching. • Study of earth segment and space segment componen ts • Study of satellite access by various users. • Study of DTH and compressi on standar	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓

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Mapping of COs and Pos-PSO

	22152E64CP	Robotics	• The course has been so designed to give the students an overall view of the mechanical components and mathematics associated with the same. • Actuators and sensors necessary for the functioning of the robot. • The course has been so designed to give the	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓

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Mapping of COs and Pos-PSO

	22152E64DP	Remote sensing	• Principles of Remote Sensing and GIS • Analysis of RS and GIS data and interpreting the data for modeling applications	✓	✓	✓	✓	✓	✓					✓	✓
			• Principles of Remote Sensing and GIS • Analysis of RS and GIS data and interpreting the data for modeling applications												

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	22150E64FP	Transducer Engineering	• to model and analyze transducers	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152L65P	VLSI and Embedded systems Lab	• Write HDL code for basic as well as advanced digital integrated circuit • Import the logic modules into FPGA Boards • Synthesize Place and Route the digital IPs • Write programs in ARM for a specific Applicatio n • Interface memory, A/D and D/A convertor	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

VII	22160S71P	Total Quality Management	• The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.						✓	✓	✓		✓	✓	✓

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Head of the Department
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Dept: ECE

Mapping of COs and Pos-PSO

	22152H72P	Wireless Networks	• To understand physical as wireless MAC layer alternatives techniques. • To learn planning and operation of wireless networks. • To study various wireless LAN and WAN concepts. • To understand WPAN and geo-location systems.	✓	✓	✓	✓	✓						✓	✓

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Mapping of COs and Pos-PSO

	22152H73P	Telecommunication Switching and Networks	• To introduce the concepts of Frequency and Time division multiplexing. • To introduce digital multiplexing and digital hierarchy namely SONET / SDH • To introduce the concepts of space switching, time switching and combination switching, example of a sw	✓	✓	✓	✓	✓						✓	✓

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	221__E74_P	**Elective IV**													
	22152E74AP	Power Electronics	• To study about power electronic circuits for voltage and current control and protection. • To learn the switching characteristics of transistors and SCRs. Series and parallel functions of SCRs, Programmable triggering methods of SCR. • To learn controll	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152E74BP	Advanced Microprocessors	• To introduce the concepts in internal programming model of Intel family of microprocessors. • To introduce the programming techniques using MASM, DOS and BIOS function calls. • To introduce the basic architecture of Pentium family of processors. • To in	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152E74CP	Electromagnetic Interference and Compatibility	• To understand d EMI Sources, EMI problems and their solution methods in PCB level / Subsystem and system level design. • To measure the emission. immunity level from different systems to couple with the prescribed EMC standards	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152E74DP	Solid State Electronic Drives	• To learn crystal structures of elements used for fabrication of semiconductor devices. • To study energy band structure of semiconductor devices. • To understand fermi levels, movement of charge carriers, Diffusion current and Drift current. • To study	✓	✓	✓	✓	✓	✓					✓	✓

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Mapping of COs and Pos-PSO

	22152E74FP	Space TimeWireless Communication	• Design and analyze the channel characterization. • Analyze the capacity of random MIMO channel. • Design and analyze the order diversity and channel variability. • Analyze the multiple antenna coding and receivers. • Analyze the MIMO multi user detectio	✓	✓	✓	✓	✓	✓					✓	✓

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	22152P75P	Project Work & Viva Voce	• apply fundamental and disciplinary concepts and methods in ways appropriate to their principal area of study. • demonstrate skill and knowledge of current information and technological tools and techniques specific to the professional field of study. •	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓			

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