

CO-PO-PSO GRAND MATRIX

By the end of each course student will be able to

I-I

BS01	Mathematics – I	CO1	Solve the differential equations related to various engineering fields												
		CO2	Utilize mean value theorems to real life problems												
		CO3	Familiarize with functions of several variables which is useful in optimization												
		CO4	Apply double integration techniques in evaluating areas bounded by region.												
		CO5	Learn important tools of calculus in higher dimensions. Students will become familiar with 2-dimensional and 3 – dimensional coordinate systems.												
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	CO1	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO2	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO3	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO4	3	2	-	-	-	-	-	-	-	-	-	1	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	1	-	-	
BS02	Applied Physics	CO1	Understand the principles such as interference and diffraction to design and enhance the resolving power of various optical instruments.												
		CO2	Learn the basic concepts of LASER light Sources and Apply them to holography												
		CO3	Study the magnetic and dielectric materials to enhance the utility aspects of materials.												
		CO4	Learn the fundamental concepts of Quantum behaviour of matter.												
		CO5	Identify the type of semiconductors using Hall Effect.												
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	CO1	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO2	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO3	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO4	3	2	-	-	-	-	-	-	-	-	-	1	-	-
CO5	3	2	-	-	-	-	-	-	-	-	-	1	-	-	
HSM01	Communicative English	CO1	identify the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English (L3)												
		CO2	formulate sentences using proper grammatical structures and correct word forms (L3)												
		CO3	speak clearly on a specific topic using suitable discourse markers in informal discussions (L3)												
		CO4	write summaries based on global comprehension of reading/listening texts (L3)												
		CO5	produce a coherent paragraph interpreting a figure/graph/chart/table (L4)												
		CO6	take notes while listening to a talk/lecture to answer questions (L3)												
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
	CO1	-	-	-	-	-	-	-	-	2	3	-	1	-	-
	CO2	-	-	-	-	-	-	-	-	2	3	-	1	-	-
	CO3	-	-	-	-	-	-	-	-	2	3	-	1	-	-

		CO4	-	-	-	-	-	-	-	2	3	-	1	-	-	
		CO5	-	-	-	-	-	-	-	2	3	-	1	-	-	
		CO6	-	-	-	-	-	-	-	2	3	-	1	-	-	
ES01	Programming for Problem Solving using C	CO1	Understand algorithms and basic terminology of C													
		CO2	Solve problems using control structures and modular approach													
		CO3	Make use of 1D and 2D arrays along with strings for linear data handling													
		CO4	Determine the use of pointers and structure													
		CO5	Implement various operations on data files													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	2	3	2	1	-	-	-	3	3	1	2	1	2
		CO2	2	3	3	2	-	-	-	-	1	1	2	2	2	2
		CO3	3	3	3	2	-	-	-	-	2	1	2	2	2	3
		CO4	2	2	2	2	-	-	-	-	2	1	2	2	2	2
	CO5	2	2	2	2	-	-	-	-	2	1	2	2	1	2	
ES02	Engineering Graphics and Design	CO1	Prepare engineering drawings as per BIS conventions {Understand level, KL2}													
		CO2	Produce computer generated of orthographic projections of Lines and Plane surfaces using CAD software {Apply level, KL3}													
		CO3	Use the knowledge of orthographic projections of Solids to represent engineering information/concepts and present the same in the form of drawings {Apply level, KL3}													
		CO4	Use the knowledge of sectional views and Development of Solid Surfaces in Real time Applications {Apply level, KL3}													
		CO5	Develop isometric drawings of simple objects reading the orthographic projections of those objects{Analyze level, KL4}													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	1	1	-	3	-	-	-	-	2	-	1	-	-
		CO2	2	1	1	-	3	-	-	-	-	2	-	1	-	-
		CO3	2	2	2	-	3	-	-	-	-	2	-	1	-	-
		CO4	2	2	2	-	3	-	-	-	-	2	-	1	-	-
	CO5	2	2	2	-	3	-	-	-	2	-	1	-	-		
HSM011	Communicative English Lab-I	CO1	identify the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English and speak clearly on a specific topic using suitable discourse markers in informal discussions (L3)													
		CO2	take notes while listening to a talk/lecture; to answer questions in English; formulate sentences using proper grammatical structures and correct word forms; and use language effectively in competitive examinations (L3)													
		CO3	write summaries based on global comprehension of reading/listening texts; produce a coherent write-up interpreting a figure/graph/chart/table; and use English as a successful medium of communication. (L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	-	-	-	-	-	-	2	3	-	1	-	-
		CO2	-	-	-	-	-	-	-	-	2	3	-	1	-	-
	CO3	-	-	-	-	-	-	-	2	3	-	1	-	-		

ES01L	Programming for Problem Solving using C Lab	CO1	Comprehend the various concepts of a C language													
		CO2	Develop algorithms and flowcharts													
		CO3	Design and development of C problem solving skills.													
		CO4	Acquire modular programming skills.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	2	3	2	1	-	-	-	3	3	1	2	1	2
		CO2	2	3	3	2	-	-	-	-	1	1	2	2	2	2
		CO3	3	3	3	2	-	-	-	-	2	1	2	2	2	3
		CO4	2	2	2	2	-	-	-	-	2	1	2	2	2	2
		BS02L	Applied Physics Lab	CO1	Apply knowledge of Interference concepts of light(L3)											
CO2	Apply knowledge of Interference concepts of light(L3)* repeated															
CO3	Infer the applications of Lasers(L2)															
CO4	Define Acoustics of buildings and NDT applications (L1)															
CO5	Define material properties and nuclear power generation(L1)															
	PO1			PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3			3	3	2	2	-	-	-	-	-	-	-	-	-
CO2	2			2	2	3	2	-	-	-	-	-	-	-	-	-
CO3	3			2	2	2	3	-	-	-	-	-	-	-	-	-
CO4	2			2	3	3	3	-	-	-	-	-	-	-	-	-
CO5	3	2	3	2	2	-	-	-	-	-	-	-	-	-		
MC01	Constitution of India	CO1	Know the sources, features and principles of Indian Constitution.													
		CO2	Learn about Union Government, State government and its administration.													
		CO3	Get acquainted with Local administration and Pachayati Raj.													
		CO4	Be aware of basic concepts and developments of Human Rights.													
		CO5	Gain knowledge on roles and functioning of Election Commission													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	-	3	-	-	3	-	2	3	-	3	2	-	-
		CO2	2	-	2	-	-	2	-	2	2	-	3	2	-	-
		CO3	3	-	3	-	-	2	-	2	2	-	3	3	-	-
		CO4	2	-	3	-	-	2	-	2	2	-	3	3	-	-
CO5	3	-	1	-	-	3	-	3	3	-	3	2	-	-		

I-II

BS03	Mathematics – II	CO1	Evaluate approximate in the roots of polynomial and transcendental equations by different algorithms (EVALUATE)												
		CO2	Solve system of linear algebraic equations using Gauss Jacobi, Gauss Seidel and apply Newton's forward and backward interpolation and Lagrange's formulae for equal and unequal intervals (SOLVE , APPLY,FIND))												
		CO3	Apply different algorithms for approximating the solutions of ordinary differential equations to its analytical computations and also by Laplace the transforms for solving differential equations (SOLVE , APPLY,FIND)												
		CO4	Find or compute the Fourier series of periodic signals (SOLVE ,APPLY, FIND, ANALYSE)												
		CO5	Know and be able to apply integral expressions for the forwards and inverse Fourier transform to range of non-periodic waveforms (SOLVE , APPLY, FIND)												
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
	CO1	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO2	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO3	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO4	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO5	3	2	-	-	-	-	-	-	-	-	-	1	-	-
BS04	Mathematics –III	CO1	develop the use of matrix algebra techniques that is needed by engineers for practical applications (L6)												
		CO2	solve system of linear algebraic equations using Gauss elimination, Gauss Jordan (L3)												
		CO3	to interpret the physical meaning of different operators such as gradient, curl and divergence (L5)												
		CO4	estimate the work done against a field, circulation and flux using vector calculus (L5)												
		CO5	identify the solution methods for partial differential equation that model physical processes (L3)												
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
	CO1	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO2	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO3	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO4	3	2	-	-	-	-	-	-	-	-	-	1	-	-
	CO5	3	2	-	-	-	-	-	-	-	-	-	1	-	-
BS05	Applied Chemistry	CO1	explain the preparation, properties and applications of thermoplastics, thermosettings, elastomers and conducting polymers												
		CO2	know the importance of various materials and their uses in the construction of batteries and fuel cells.												
		CO3	know the applications of advanced materials in various industries												
		CO4	. apply the principles of supramolecular chemistry in the applications of molecular machines, need of green chemistry.												
		CO5	explain the principles of spectrometry such as UV, IR, and NMR												
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
	CO1	2	2	-	-	-	-	3	-	-	-	-	-	-	-
CO2	2	2	-	-	-	-	2	-	-	-	-	-	-	-	
CO3	2	2	-	-	-	-	2	-	-	-	-	-	-	-	

		CO4	2	2	-	-	-	-	3	-	-	-	-	-	-	
		CO5	2	2	-	-	-	-	3	-	-	-	-	-	-	
ES03	Basic Electrical Engineering	CO1	Able to understand the concepts of electrical circuits and verify theorems in DC circuits.													
		CO2	Able to analyse different concepts of single phase AC circuits													
		CO3	Able to explain the working and applications of DC machines.													
		CO4	Able to understand the operation of single phase Transformers.													
		CO5	: Able to understand the working and applications of AC machines.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO2	3	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO3	3	-	-	-	-	-	-	-	-	-	-	1	-	-
		CO4	3	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO5	3	-	-	-	-	-	-	-	-	-	-	1	-	-
	3	2	-	-	-	-	-	-	-	-	-	1	-	-		
ES04	Data Structures	CO1	Implement various operations on linear lists.													
		CO2	Apply data structure strategies like stacks and queues for exploring complex data structures.													
		CO3	Analyze performance and trade-offs of static and dynamic data structures..													
		CO4	Incorporate data structures into the applications such as binary trees, binary search trees.													
		CO5	Identify appropriate data structure algorithms for graphs													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	2	1	-	-	-	-	-	-	-	-	-	1	1
		CO2	1	2	2	-	-	-	-	-	-	-	-	-	2	1
		CO3	1	-	2	2	-	-	-	-	-	-	-	-	2	1
		CO4	2	-	2	1	-	-	-	-	-	-	-	-	1	1
		CO5	-	2	1	2	-	-	-	-	-	-	-	-	1	1
ES05L	Engineering Workshop	CO1	Apply wood working skills in real world applications. (L3)													
		CO2	Build different parts with metal sheets in real world applications. (L3)													
		CO3	Apply fitting operations in various applications. (L3)													
		CO4	Apply different types of basic electric circuit connections. (L3)													
		CO5	Demonstrate soldering and brazing. (L2)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO2	2	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO3	2	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO4	2	2	-	-	-	-	-	-	-	-	-	1	-	-
		CO5	2	2	-	-	-	-	-	-	-	-	-	1	-	-
BS05L	Applied Chemistry Lab	CO1	To estimate the amount of metal ions present in different solutions (L4 & L3)													
		CO2	To analyze the quality parameters of water (L4)													
		CO3	To determine the strength of different solutions by using different instrumentation techniques (L3)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	3	2	-	-	-	-	1	2	-	-	2	-	-
		CO2	-	2	3	-	-	-	-	1	3	-	-	1	-	-
		CO3	-	1	2	-	-	-	-	1	2	-	-	1	-	-

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	3	-	3	-	2	-	3	-	3	-	3	2	-	-	
	CO2	2	-	2	-	2	-	3	-	2	-	3	2	-	-	
	CO3	3	-	3	-	2	-	3	-	2	-	3	3	-	-	
	CO4	2	-	3	-	2	-	3	-	2	-	3	3	-	-	
	CO5	3	-	1	-	3	-	3	-	3	-	3	2	-	-	
II-I																
BS06	Complex Variables and Statistical Methods	CO1	Cauchy-Riemann equations to complex function in order to determine whether a given continuous function is analytic (Apply)													
		CO2	The differentiation, integration of complex functions used in engineering problems and make use of Cauchy residue theorem to evaluate certain integrals (Apply)													
		CO3	Discrete and continuous probability distributions and design the components of a classical hypothesis test (Apply&Create)													
		CO4	The statistical inferential methods based on small and large sampling tests. (Analyze)													
		CO5	Interpret the association of characteristics and through correlation and regression tools.(Analyze)													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO4	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
CO5	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	
EC01	Electronic Devices and Circuits	CO1	Describe the working of junction diodes and interpret V-I relations (Understand level)													
		CO2	Demonstrate the usage of diodes in various applications (Apply level)													
		CO3	Explain the working principles of BJTs and FETs (Understand level)													
		CO4	Learn the art of biasing of BJTs and FETs (Apply level)													
		CO5	Apply the equivalent small signal low frequency models of BJTs and FETS in amplifier analysis (Analyze level)													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	-	3	-	-	-	-	-	-	-	-	-	-	-	-	2
CO2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	2	
CO3	-	3	-	-	-	-	-	-	-	-	-	-	-	-	3	
CO4	-	3	-	-	-	-	-	-	-	-	-	-	-	-	2	
CO5	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	
EC02	Signals and Systems	CO1	The student will be able to understand various types of signals mathematically and able to calculate complex Fourier spectrum. (Understand, Calculate)													
		CO2	Analyse the continuous-time signals and continuous-time systems using Fourier transform and Apply sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct the original signal from samples. (Analyse, Apply)													
		CO3	Define systems based on their properties and determine the response of LTI system. Understand the concept convolution, correlation, energy spectral density and power spectral density. (Remember, Understand)													
		CO4	Compute Laplace transforms to analyze continuous time signals and systems and understand the concept of region of convergence. (Compute)													
		CO5	Compute Z-transform to analyze discrete-time signals and systems, and understand the concept of region of convergence. (Compute)													

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
		CO1	3	3	2	-	-	-	-	-	-	-	-	-	-	3
		CO2	3	3	2	-	-	-	-	-	-	-	-	-	-	3
		CO3	3	2	3	-	-	-	-	-	-	-	-	-	-	3
		CO4	3	2	2	-	-	-	-	-	-	-	-	-	-	3
		CO5	3	2	2	-	-	-	-	-	-	-	-	-	-	3
EC03	Digital Circuits and Logic Design	CO1	Distinguish the analog and digital systems, apply positional notations, number systems, computer codes in digital systems. (Remember, Understand, and Apply)													
		CO2	Understand the Boolean Algebra theorems, simplify and design logic circuits. (Understand, Apply, Analyze and evaluate)													
		CO3	Implement combinational logic circuit design and modular combinational circuits using encoders, decoders, multiplexers and demultiplexers. (Apply, Analyze, evaluate, and create)													
		CO4	Understand the basic elements of sequential logic circuits. (Understand, Apply, Analyze)													
		CO5	Design and analyze sequential circuits. (Apply, Analyze and create)													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	3	2	2	-	-	-	-	-	-	1	-	-	-	3	
	CO2	3	2	2	-	-	-	-	-	-	1	-	-	-	3	
	CO3	3	2	2	-	-	-	-	-	-	1	-	-	-	3	
	CO4	3	2	2	-	-	-	-	-	-	1	-	-	-	3	
	CO5	3	2	2	-	-	-	-	-	-	1	-	-	-	3	
ES06	Networks and Transmission Lines	CO1	Apply the mesh and node methods to analyze the behavior of electrical circuits (RLC circuits) under steady state conditions. (Apply)													
		CO2	Learns and gain the knowledge on characteristics of two port network parameters (Z, Y, ABCD, h & g) and solves for parameter for any sort of two port network. (Understand)													
		CO3	Analyze the transient behavior of RLC circuits in detail using time domain and s-domain methods. (Analyze)													
		CO4	Familiarize with the general characteristics of transmission lines by applying the basic circuit laws and concepts. (Understand)													
		CO5	Articulate how the standing wave phenomenon is formed on transmission lines and be able solve the problems of transmission line using Schmidt chart (Understand)													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	3	-	-	-	-	-	-	-	-	-	-	-	-	2	
	CO2	3	2	-	-	-	-	-	-	-	-	-	-	-	2	
	CO3	3	2	-	-	-	-	-	-	-	-	-	-	-	3	
	CO4	3	3	-	-	-	-	-	-	-	-	-	-	-	2	
	CO5	3	2	-	-	-	-	-	-	-	-	-	-	-	2	
ES07	Python Programming	CO1	Identify the basic python constructs with a view of using them in problem solving. (Remember, Understand, and Apply)													
		CO2	Apply control structures and use python lists in examples of problem solving. (Understand, Apply, Analyze and Evaluate)													
		CO3	Explore the utility of functions in modular programming using python. (Apply, Analyze, evaluate, and create)													
		CO4	Apply the concepts of Object Oriented Programming to solve the real-time problems. (Understand, Apply, Analyze)													
		CO5	Interface hardware components with Raspberry Pi using Python APIs. (Understand, Apply, Analyze and create)													

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	3	2	1	-	3	-	-	-	-	-	-	2	3	1	
	CO2	3	2	1	-	3	-	-	-	-	-	-	2	3	1	
	CO3	3	2	1	-	3	-	-	-	-	-	-	2	3	1	
	CO4	3	2	3	-	3	-	2	-	-	-	-	2	3	1	
	CO5	3	2	3	3	3	-	2	-	-	-	-	2	3	1	
MC03	EITK	CO1	Understand philosophy of Indian culture and civilization													
		CO2	Distinguish the Indian languages and literature among difference traditions.													
		CO3	Learn the philosophy of ancient, medieval and modern India													
		CO4	Acquire the information about the fine arts in India													
		CO5	To know the contribution of scientists of different eras.													
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
	CO1	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
	CO2	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-
	CO3	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
	CO4	-	-	-	-	-	-	-	3	3	3	-	-	-	-	-
	CO5	-	-	-	-	-	-	-	3	3	3	-	-	-	-	-
EC01L	Electronic Devices and Circuits Lab	CO1	Measure voltage, frequency and phase of any waveform using CRO.(Understand)													
		CO2	Generate sine, square and triangular waveforms with required frequency and amplitude Using function generator. (Apply)													
		CO3	Analyze the characteristics of different electronic devices such as diodes, transistors etc. (Apply)													
		CO4	Apply the diode working principles to design simple circuits like rectifiers, power supplies and amplifiers etc. (Apply)													
		CO5	Design the BJT amplifier circuit for the given operating conditions and specifications. (Apply)													
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1
	CO1	3	2	-	-	-	-	-	-	-	-	-	-	-	-	2
	CO2	3	2	-	-	-	-	-	-	-	-	-	-	-	-	2
	CO3	3	2	-	-	-	-	-	-	-	-	-	-	-	-	2
	CO4	3	3	-	-	-	-	-	-	-	-	-	-	-	-	3
	CO5	3	3	-	-	-	-	-	-	-	-	-	-	-	-	2
EC02L	SS Lab	CO1	Create and evaluate signals using MATLAB													
		CO2	Examine Fourier analysis and transformations													
		CO3	Assess and formulate analog filter designs using Laplace Transforms													
		CO4	Investigate digital signal processing and system analysis													
		CO5	Apply convolution and filtering techniques proficiently													

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	3	-	-	-	3	-		-	-	2	-	-	3	2	
	CO2	3	-	-	2	-	-	1	-	-	-	-	-	3	1	
	CO3	3	-	2	-	-	-		-	-	-	1	-	3	2	
	CO4	3	-	-	2	-	-		-	-	-	-	2	3	1	
	CO5	3	-	2	2	-	-		-	-	-	-	-	2	2	
ES07L	Python Programming Lab	CO1	Identify the basic python constructs with a view of using them in problem solving													
		CO2	Apply control structures and use python lists in examples of problem solving													
		CO3	Explore the utility of functions in modular programming using python.													
		CO4	Apply the concepts of Object-Oriented Programming to solve the real-time problems.													
		CO5	Interface hardware components with Raspberry Pi using Python APIs.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	2	3	-	-	-	-	-	-	-	-	1	2	2
		CO2	2	2	3	-	-	-	-	-	-	-	-	1	2	2
		CO3	2	2	3	-	-	-	-	-	-	-	-	1	2	2
		CO4	2	2	3	2	-	-	-	-	-	-	-	1	2	3
		CO5	-	-	3	-	3	-	-	-	-	-	-	-	-	-
II-II																
BS07	Random Variables and Stochastic Processes	CO1	Mathematically model the random phenomena and solve simple probabilistic problems.(Understand, Apply)													
		CO2	Identify different types of random variables and compute statistical averages of these random variables.(Analyse, Apply, Compute)													
		CO3	Learn how to deal with multiple random variables, conditional probability and conditional expectation, joint distribution and independence, mean square estimation.(Analyse, Apply, Compute)													
		CO4	Characterize the random processes in the time and frequency domains.(Define, Understand)													
		CO5	Analyse the LTI systems with random inputs and to Construct and analyse the mathematical modelling of noise sources.(Define, Analyse, Apply, Compute)													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	2	2	-	-	-	-	-	-	1	-	-	-	3
		CO2	3	2	3	-	-	-	-	-	-	1	-	-	-	3
		CO3	3	2	3	-	-	-	-	-	-	1	-	-	-	3
		CO4	3	2	2	-	-	-	-	-	-	1	-	-	-	3
		CO5	3	2	2	-	-	-	-	-	-	1	-	-	-	3
EC04	Analog Circuits	CO1	Analyze the RC circuits for low pass and high pass filtering and design clippers and clampers for various applications.(Analyze)													
		CO2	Apply and Analyze various amplifier circuits using BJT and MOSFET at high frequencies and multistage amplifiers.(Apply, Analyze)													
		CO3	Familiarize the concept of feedback in amplifiers and analysis of different types of feedback amplifiers.(Familiarize, Analyze)													
		CO4	Analyze and Design different types of oscillator circuits.(Analyze)													
		CO5	Understand different types of power amplifiers and perform analysis of single tuned circuits.(Understand, Analyze)													

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	2	3	-	-	-	-	-	-	-	-	-	-	2	2	
	CO2	2	3	2	-	-	-	-	-	-	-	-	-	2	2	
	CO3	2	3	3	-	-	-	-	-	-	-	-	-	2	3	
	CO4	2	2	-	-	-	-	-	-	-	-	-	-	2	3	
	CO5	1	2	-	-	-	-	-	-	-	-	-	-	2	2	
EC05	Electromagnetic Fields and Waves	CO1	Use the concepts of vectors and space coordinates to solve the fundamental problems of static electric fields													
		CO2	Apply principles of static electric field to understand the behaviour of dielectrics and conductors													
		CO3	Understand the principles of steady magnetic field													
		CO4	Solve the Maxwell's equations of Time Varying fields and obtain the wave phenomenon in various media.													
		CO5	Analyze wave propagation characteristics and power transportation phenomenon.													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	3	2	-	-	-	-	2	-	-	-	-	-	3	2	
	CO2	3	2	-	-	-	-	2	-	-	-	-	-	3	2	
	CO3	3	2	-	-	-	-	2	-	-	-	-	-	3	2	
	CO4	3	2	-	-	-	-	2	-	-	-	-	-	3	2	
CO5	3	1	-	-	-	-	2	-	-	-	-	-	3	1		
EC06	Digital System Design with VHDL	CO1	Understanding the structural description and electrical characteristics of various digital logic families.													
		CO2	Studying basics of HDL and Programming models of VHDL.													
		CO3	Implementing digital systems using VHDL.													
		CO4	Implementing the Combinational logic using ICs and VHDL code													
		CO5	Modeling of Sequential circuits using ICs and VHDL code													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	-	2	-	3	2	-	-	-	-	-	-	-	-	3	
	CO2	2	-	-	3	3	-	-	-	-	-	-	-	2	-	
	CO3	2	-	-	3	3	-	-	-	-	-	-	2	2	-	
	CO4	3	-	-	3	3	-	-	-	-	-	-	-	3	-	
CO5	3	-	-	3	3	-	-	-	-	-	-	-	3	-		
EC07	ADC	CO1	Distinguish various Amplitude modulation and demodulation schemes and Understand various functional blocks of AM radio receivers.(Analyzing)													
		CO2	Distinguish various Angle modulation and demodulation schemes and Compare the performance of AM, FM and PM schemes with reference to SNR.(Analyzing)													
		CO3	Describe the generation and detection of base band system and Determine the performance of line codes in terms of mitigating inter symbol interference.(Evaluating)													
		CO4	Determine the probability of error for various digital modulation scheme (Evaluating)													
		CO5	Analyze the performance of different error control coding schemes for the reliable transmission of digital representation of signals and information over the channel. (Analyzing)													
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
	CO1	3	2	2	-	-	-	1	-	-	-	-	-	-	-	
	CO2	3	2	1	-	-	-	1	-	-	-	-	-	-	-	
CO3	3	2	2	-	-	-	1	-	-	-	-	-	-	-		

EC07L	Digital System Design with VHDL Lab	CO1	Understand the basics of HDL and Apply different programming approaches for obtaining digital Logic Gates and full adder, Perform simulation and verify the logical operations and also analyze the synthesis result													
		CO2	Apply programming approach using VHDL for developing decoder, encoder and multiplexer, Perform simulation and verify the logical operations and also analyze the synthesis result.													
		CO3	Write VHDL Source code for higher order comparator and ALU, Perform simulation and verify the logical operations and also analyze the synthesis result.													
		CO4	Use VHDL programming approach for developing Flip Flops, registers and shift register circuits, Perform simulation and verify the logical operations and also analyze the synthesis result.													
		CO5	Design different Counters and shift register counters using VHDL Source code, Perform simulation and verify the logical operations and also analyze the synthesis result.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	1	-	-	3	3	-	-	-	-	-	-	-	3	3
		CO2	1	-	-	3	3	-	-	-	-	-	-	-	3	3
		CO3	1	-	-	3	3	-	-	-	-	-	-	-	3	3
		CO4	1	-	-	3	3	-	-	-	-	-	-	-	3	3
		CO5	1	-	-	3	3	-	-	-	-	-	-	-	3	3
III-I																
EC08	Linear IC Applications	CO1	Understand the DC and AC analysis of Differential Amplifier, and performance parameters of OP-Amp and its characteristics. {Understand level, KL2}													
		CO2	Illustrate the linear and nonlinear applications using op-amp. {Apply level, KL3}													
		CO3	Analyze and Design active filters, Modulators and oscillators using Op-Amp. {Analysis, KL4}													
		CO4	Interpret the internal structure and operations of different analog IC's {Understand level, KL2}													
		CO5	Construct the various Digital to Analog and Analog to Digital Converters. {Apply level, KL3}.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	2	-	-	-	-	-	-	-	-	-	-	2	-
		CO2	-	3	-	2	-	-	-	-	-	-	-	-	2	-
		CO3	2	3	-	-	-	-	-	-	-	-	-	-	3	-
		CO4	2	-	-	3	-	-	-	-	-	-	-	-	3	-
		CO5	2	-	-	2	-	-	-	-	-	-	-	-	2	-
EC09	MPMC	CO1	Understand the architecture of microprocessor and their basic hardware components and operation. {Understanding level, KL1}													
		CO2	Demonstrate programming skills in assembly language for processors. {Analysis level, KL4}													
		CO3	Analyze various interfacing techniques and apply them for the design of processor {Analysis level, KL4}													
		CO4	Understand the architecture of microcontroller and their operation {Understanding level, KL1, KL2}													
		CO5	Able to illustrate how the different on ARM Cortex processors and debug. {Analyzing level, KL3}													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	2	2	-	-	-	1	-	-	-	-	-	-	-
		CO2	3	2	1	-	-	-	1	-	-	-	-	-	-	-
		CO3	3	2	2	-	-	-	1	-	-	-	-	-	-	-
		CO4	3	2	2	-	-	-	1	-	-	-	-	-	-	-
		CO5	1	2	3	-	-	-	3	-	-	-	-	-	-	-

EC12	Computer Networks	CO1	To understand OSI and TCP/IP reference models and Example networks, characteristics of transmission media and classify multiplexing techniques													
		CO2	To understand the Error Control, Flow Control and Medium Access Control Protocols													
		CO3	To Compute optimal path using Routing Algorithms													
		CO4	To understand the concepts of reliable unreliable transmission													
		CO5	To acquire the knowledge on various application layer protocols													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2		-	-	-	-	-	-	-	-	2	-	2	2
		CO2	2	2	-	-	-	-	-	-	-	-	2	-	2	2
		CO3	2	2	2	-	-	-	-	-	-	-	2	2	2	2
		CO4	-	-	2	-	-	-	-	-	-	-	2	2	2	2
CO5	-	-	2	-	-	-	-	-	-	-	2	2	2	2		
EC08L	Linear IC Applications Lab	CO1	Understand the basic Mathematical operations of Operational Amplifier													
		CO2	Design and Observe the frequency response of Active Filters													
		CO3	Measure the theoretical and practical frequency of oscillators using Operational Amplifier.													
		CO4	Construct different Waveform Generators using Operational Amplifier and 555 Timer & Investigate different Voltage Regulators IC's													
		CO5	Develop different Analog -Digital Converters and Digital – Analog Converters													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-	-	-		
CO3	3	3	-	3	-	-	-	-	-	-	-	-	-	-		
CO4	2	3	-	3	-	-	-	-	-	-	-	-	-	-		
CO5	2	3	-	3	-	-	-	-	-	-	-	-	-	-		
EC09L	MPMC Lab	CO1	Understand logical and arithmetic functions performed by 8086 and use them to implement processing activities													
		CO2	Demonstrate the interfacing of I/O with 8086 for real-time applications.													
		CO3	Develop assembly language programs to perform stack and code conversion operations													
		CO4	Compute sorting and arithmetic operations on binary numbers and arrays using 8051													
		CO5	Assess the functional performance of ARM microcontrollers using simulators.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	-	-	-	-	-	-	-	-	-	-	3	3	2
CO2	-	-	3		3	2	-	-	-	-	-	3	3	3		
CO3	-	-	3	3	3	-	-	-	-	-	-	3	3	3		
CO4	-	-	-	-	2	-	-	-	-	-	-	3	2	3		
CO5	3	-	3	3	3	-	-	-	-	-	-	3	3	3		

EC11L	VLSI Design Lab	CO1	Develop VHDL source code, Perform simulation using relevant simulator													
		CO2	Analyze the simulation results using necessary synthesizer													
		CO3	Implement combinational and sequential circuit designs on FPGA board													
		CO4	Perform transient, DC and AC analysis of a designed circuit using mentor graphics.													
		CO5	Illustrate layout for basic digital circuits at transistor level													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	2	3	3	-	-	-	-	-	-	-	3	2
		CO2	-	-	-	3	3	-	-	-	-	-	-	-	2	3
		CO3	-	-	3	3	3	-	-	-	-	-	-	-	2	3
		CO4	-	-	3	-	3	-	-	-	-	-	-	-	3	2
CO5	-	-	3	-	3	-	-	-	-	-	-	-	3	3		
III-II																
EC13	Digital Signal Processing	CO1	Analyze the Discrete Time Signals and Systems & Apply the difference equations concept in the analysis of Discrete time systems													
		CO2	Know the importance of FFT algorithm for computation of Discrete Fourier Transform & Use the FFT algorithm for solving the DFT of a given signal													
		CO3	Design a Digital filter (FIR & IIR) from the given specifications													
		CO4	Able to realize the digital filters													
		CO5	Know the need of Multirate Processing, Use the Multirate Processing concepts in various applications & Learn the concepts of DSP Processors													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	-	2	-	-	-	1	-	-	-	-	-	-	-
		CO2	3	-	1	-	-	-	1	-	-	-	-	-	-	-
		CO3	3	-	2	-	-	-	1	-	-	-	-	-	-	-
		CO4	3	-	2	-	-	-	1	-	-	-	-	-	-	-
CO5	3	-	1	-	-	-	1	-	-	-	-	-	-	-		
HSM03	Managerial Economics and Financial Analysis	CO1	To equipped with the knowledge of estimating the Demand and demand elasticities for a product.													
		CO2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs.													
		CO3	To understand the nature of different markets and Price Output determination under various market conditions and also to have the knowledge of different Business Units.													
		CO4	To prepare Financial Statements and the usage of various Accounting tools for analysis.													
		CO5	To evaluate various investment project proposals with the help of capital budgeting techniques for decision making.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	-	-	-	-	-	1	-	-	1	-	-	-	-	-
		CO2	-	-	-	-	-	1	-	2	1	2	2	2	-	-
		CO3	-	-	-	-	-	1	-	-	1	-	-	-	-	-
		CO4	-	-	-	-	-	1	-	2	1	2	2	-	-	-
CO5	-	-	-	-	-	1	-	2	1	2	3	3	-	-		

EC14	Microwave Engineering	CO1	Understand fundamental electrical characteristics of rectangular waveguide and transmission lines through electromagnetic field analysis													
		CO2	Understand the fundamental electrical characteristics of circular waveguides through electromagnetic field analysis and design microstrip antenna													
		CO3	Apply analysis methods to determine network properties of passive microwave components													
		CO4	Understand working of microwave sources and amplifiers													
		CO5	Understand working of solid state microwave sources and able to analyze and measure various parameter using microwave bench setup.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	2	-	-	-	-	-	-	-	-	-	-	3	3
		CO2	3	2	-	-	-	-	-	-	-	-	-	-	3	3
		CO3	3	3	-	-	-	-	-	-	-	-	-	-	3	3
		CO4	3	2	-	-	-	-	-	-	-	-	-	-	2	3
		CO5	3	2	-	-	-	-	-	-	-	-	-	-	2	3
PE01	CMC	CO1	Understand inner workings of cellular system and Describe the elements of cellular systems.													
		CO2	Categorize different interferences and to Evaluate different antennas using at cell site and mobile units													
		CO3	Analyze cell coverage for signal and traffic in various environments.													
		CO4	Distinguish the frequency management and channel assignments in cellular system and Plan the handoffs in cellular systems													
		CO5	Develop and Design new technologies in wireless cellular systems.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1		3	-	-	-	-	-	-	-	-	-	-	3	2
		CO2	2	3	3	-	-	-	-	-	-	-	-	-	3	2
		CO3	3	3	3	-	-	-	-	-	-	-	-	-	2	3
		CO4	2	3	3	-	-	-	-	-	-	-	-	-	3	2
		CO5		3	3	-	-	-	-	-	-	-	-	3	3	3
PE02	ERTOS	CO1	Describe the architecture and programming of ARM processor.													
		CO2	Outline the concepts of embedded systems.													
		CO3	Explain the basic concepts of real time Operating system design.													
		CO4	Use the system design techniques to develop software for embedded systems.													
		CO5	To implement a model real-time application using embedded-system concepts													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	-	-	-	2	-	-	-	-	-	-	2	3	1
		CO2	2	-	-	-	-	-	-	-	1	-	-	1	3	1
		CO3	3	-	-	2	2	-	-	-	1	-	-	2	3	3
		CO4		-	3	2	2	-	-	-	-	-	1	1	3	1
		CO5	3	-	3	2		-	-	-	-	-	-	2	3	3

EC13L	Digital Signal Processing Lab	CO1	Understand to generate elementary signals, perform arithmetic operations on signals and obtain the response of the system through convolution operations.													
		CO2	Apply FFT of given sequence and demonstrate the reduction of computations using FFT.													
		CO3	Analyse the spectral parameter of window functions and design FIR, and IIR filters for band pass, band stop, low pass and high pass filters.													
		CO4	Construct the power density spectrum of a given signal													
		CO5	Understand the architecture of TMS320C6713 DSP Processors and employ it for real time processing.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	-	-	-	-	-	-	-	-	-	-	-	3	1
		CO2	3	-	-	-	-	-	-	-	-	-	-	-	2	3
		CO3	3	-	-	-	3	-	-	-	-	-	-	-	1	3
		CO4	3	-	-	-	2	-	-	-	-	-	-	-	1	2
		CO5	3	-	-	-	2	-	-	-	-	-	-	-	2	2
MC04	IPR	CO1	Define different types of Intellectual Property Rights													
		CO2	Classify different Intellectual Property Rights & Describe Copy Right Laws													
		CO3	Explain importance of Patents, Patent Infringement													
		CO4	Understand importance of Trade Mark and Trade Secret Laws													
		CO5	Describe Categories of Cyber Law and IT ACT 2000													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	-	-	-	-	-	-	2	-	-	-	-	-	-
		CO2	-	-	2	-	-	-	-	2	-	-	-	-	-	-
		CO3	3	2	-	-	-	2	-	2	-	-	-	-	-	-
		CO4	3	-	2	-	-	2	-	2	-	-	-	-	-	-
		CO5	3	-	-	-	2	-	-	2	-	-	-	-	-	-
	Mini Projects	CO1	Understand the advanced technology and development aspects													
		CO2	Collaborate with team members in analysing the requirements of the project to be developed.													
		CO3	Build necessary design specifications based on the societal applications													
		CO4	Develop apt domain and technical knowledge to implement/code the application													
		CO5	Justify the developed product for its implementation in the societal context.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	-	-	3	-	-	-	-	2	-	-	3	2	2
		CO2	2	2	3	-	-	-	-	-	3	-	3	3	2	2
		CO3	2	3	3	3	-	3	-	-	2	-	2	3	3	3
		CO4	2	3	3	-	3	-	-	2	2	-	3	3	3	3
		CO5	3	-	-	-	-	3	-	2	2	-	-	3	1	2

		CO4	3	2	-	-	2	-	-	-	-	-	3	3	2	
		CO5	3	3	-	-	3	2	-	-	-	-	3	3	3	
PE04	Optical Communication	CO1	Describe the functionality of various components in fiber optic communication system.													
		CO2	Demonstrate losses and dispersion in optical fibers.													
		CO3	Choose appropriate optical fiber connectors and acquire understanding on splicing techniques													
		CO4	Compare various optical detectors and choose suitable one for different applications													
		CO5	Understand the design of optical system and WDM concepts													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	3	-	-	-	-	-	-	-	-	-	3	3	2
		CO2	2	3	-	-	-	-	-	-	-	-	-	-	3	2
		CO3	3	2	1	-	-	-	-	-	-	-	-	-	2	3
		CO4	3	3	1	-	-	-	-	-	-	-	-	-	2	3
CO5	3	2	2	-	-	-	-	-	-	-	-	-	3	3		
OE02	ANN	CO1	Understand the concept of Artificial Neuron.													
		CO2	Know various ANN architectures and learning strategies.													
		CO3	Understand Dynamics in Neural Networks Models.													
		CO4	Understand different structures of Artificial Neural Networks.													
		CO5	Understand Some application of Artificial Neural Networks													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	2	1	-	-	-	-	-	-	-	-	-	1	2
CO2	-	1	-	3	-	-	-	-	-	-	-	-	1	3		
CO3	2	2	2	-	-	-	-	-	-	-	-	-	2	-		
CO4	1	-	2	2	-	-	-	-	-	-	-	-	-	2		
CO5	-	3	1	-	-	-	-	-	-	-	-	-	2	-		
EC14L	MW&OC Lab	CO1	Identify and demonstrate the working of various microwave Passive components.													
		CO2	Analyze the characteristics of different microwave sources													
		CO3	Evaluate scattering parameters of microwave passive components.													
		CO4	Analyze the characteristics of different optical sources													
		CO5	Evaluate various optical fiber parameters and analyze an optical fiber communication link.													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	2	-	-	-	-	-	-	2	-	-	2	2	2
CO2	3	3	-	-	-	-	-	-	2	-	-	2	2	2		
CO3	3	3	-	-	-	-	-	-	2	-	-	2	3	3		
CO4	3	3	-	-	-	-	-	-	2	-	-	2	2	3		
CO5	3	3	-	-	-	-	-	-	2	-	-	2	3	3		
Project Stage-1	CO1	Understand the advanced technology and research in Engineering														
	CO2	Collaborate with team members in analysing the requirements of the project to be developed.														
	CO3	Build necessary design specifications and documents for the chosen project														

OE04	Entrepreneurial Skill Development	CO1	To provide an intensive & in-depth learning to the students in field of entrepreneurship													
		CO2	To encourage students to opt for self employment as an alternative career option													
		CO3	To enable students to appreciate the dynamic changes happening in the economy													
		CO4	To acquaint the students about the role of entrepreneurship in the growth and economic development of the nation													
		CO5	To analyze the role of government and non-government institutions in supporting entrepreneurial activities													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	2	3	3	-	-	-	-	1	-	-	3	2	-	-
		CO2	-	-	-	-	-	3	-	1	3	-	2	2	-	-
		CO3	-	-	-	-	-	3	-	1	-	-	2	2	-	-
		CO4	-	-	-	-	-	3	2	1	-	-	2	2	-	-
		CO5	-	2	-	3	-	-	-	1	-	1	2	2	-	-
Project Stage-2	Project Stage-2	CO1	Understand the advanced technology and research in Engineering													
		CO2	Collaborate with team members in analysing the requirements of the project to be developed.													
		CO3	Build necessary design specifications and documents for the chosen project													
		CO4	Develop apt domain and technical knowledge to implement/code the application and deploy the project after implementation													
		CO5	Demonstrate the project comprehensively with necessary tools													
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
		CO1	3	-	-	-	-	-	-	-	-	-	-	3	2	2
		CO2	2	-	2	-	3	-	-	-	3	3	3	3	2	3
		CO3	1	-	3	3	3	-	-	-	-	-	-	3	2	3
		CO4	2	-	3	3	2	-	-	2	-	-	-	3	2	2
		CO5	-	-	-	-	-	-	-	3	-	3	-	3	2	2