				Poornima College of F				<u>r                                     </u>											
				Department of Elect	rical I	<u>Ungine</u>	ering												
5.IN [	C C 1		CON	CO-PO & CO-PSO N				Ino.4	DO5	lno.c	lno7	Inco	DOO	DO10	DO11	DO12	DCO1	DCO2	DC
_	Course Code	Course Name	CO No	Course Outcomes  Classify the nature (bounded, convergent and divergent) of	PO1 3	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PS
		-	CO 2	Describe the derivatives of function and apply concept in	3	3	<del>-</del>	-	-	-	+-	-	-	-	<del>  -</del>	-	2	1	
1	1FY2-01	Engineering	CO 3	Explain Fourier series of a given periodic function in time	3	3	-	-	-	+-	+ -	<del>-</del>	-	<del>  -</del>	-	<del>  -</del>	2	1	+ :
1	11 12-01	Mathematics-I	CO 4	Compute area, volume, work done, centre of mass and gravity	3	3	-	-	-	+-	+ -	+-	-	<del>-</del>	-	+ -	2	1	
		-		Find the solution of complex integration (double and triple	3	3	-	-	-	+-	+ -	<del>-</del>	-	+ -	<del>-</del>	+ -	2	1	+
-			CO 1	Describe the concepts of Wave and Quantum mechanics, Laser	3	2	-	-	-	+-	<del>-</del>	<del>-</del>	-	<del>  -</del>	-	<del>  -</del>	2	1	1
		-		Explain the different applications of Laser and optical fibers in	3	1	-	-	+ -	+	+-	<del>-</del>	<del>-</del>	+ -	<del>-</del>	+ -	1	-	+
2	1FY2-02	Engineering	CO 3	Find energy states in 1-D and 3-D box with the application of	3	3	<del>-</del>	-	+ -	+	+-	<del>  -</del>	-	+ -	<del>  -</del>	+-	2	1	+
-	11 12-02	Physics	CO 4	Examine the crystal structure through X-ray Diffraction,	3	3	-	-	+ -	+-	+ -	<del>-</del>	<del>-</del>	+ -	<del>-</del>	+-	2	1	
		-		Evaluate the wavelength of light with the help of Newton's	3	3	-	-	+ -	+	+-	<del>-</del>	<del>  -</del>	+ -	<del>  -</del>	+-	2	1	+
$\dashv$			CO 1	Relate sustained happiness through identifying the essentials of	<u></u>	-	-	-	-	3	2	3	-	2	-	+ -		-	+
		-		Find the happiness and human values in terms of personal and		<del>  -</del>	-	-	-	3	2	2	-	2	-	3	-	-	
3	1FY1-05	Human Values	CO 3	Use and understand practically the importance of trust,	<del>-</del>	-	<del>-</del>	-	-	3	1	2	-	2	-	3	-	-	
۱	11 11-03	Tiuman values	CO 4			<del>  -</del>	-	-	-	3	3	3	-	2	-	3	-	-	
		-	CO 5	Identify the orders of nature for the holistic perception of Implement professional ethics and natural acceptance of human		-	-	-	-	3	-	3	3	3	-	3	-	-	-
$\dashv$			CO 1	Describe an algorithm using flowchart/pseudo code for a given	2	1	-	-	-	-	+-	-	-	-	-	-	1	-	+
		-	CO 2	Write a c program to Compare various Conditional, Iterative	2	2	-	-	-	+-	+-	<del>  -</del>	-	+ -	<del>  -</del>	+-	1	1	
4	1FY3-06	Programming for	CO 3	Examine the concept of Operators, Pointer, Array, String, file to	2	2	-	-	-	+-	<del>-</del>	-	-	<del>  -</del>	-	+ -	1	1	-
1	11 13-00	Problem Solving		Write a programme for implementation of structure, union	2	2	-	-	-	+-	<del>  -</del>	<del>-</del>	-	<del>  -</del>	-	+ -	1	1	+
		-	CO 5	Assess the User Defined functions, Memory management and	2	2	-	-	-	+-	+-	+-	-	+ -	-	<del>  -</del>	1	1	-
-			CO 1	, , ,	3	-	1		+		-		1	_		1	1		
		-	CO 2	Describe basics of surveying, types of building, mode of	3	1	-	-	-	-	-	-	-	-	-	+ -	1	-	-
5	1FY3-09	Basic Civil	CO 3	Compute bearings and elevations of respective points on the Classify method of levelling, road safety measures, building	3	-	-	-	-	2	-	-	-	-	-	-	2	-	+
۱ '	11 13-09	Engineering	CO 4		3		<del>  -</del>	-		2	+ -			+ -	-	+ -	2	-	
		-	CO 5	Illustrate different types of foundation, treatment and disposal Explain solid waste management, building by law, chemical	3	-	-	-	-	$\frac{2}{2}$	<del>-</del>	-	-	<del>-</del>	-	<del>  -</del>	2	-	+-
-			CO 1	Operate the various devices for the multifarious use in the	3	2	-	-	-	-	+ -	3	3	3	1	3	2	1	-
		Engineering		Determine wavelength of different spectral lines.	3	3	-	1	2	+	+ -	3	3	3	2	3	2	2	+-
6	1FY2-20	Physics	CO 3	Identify type of semiconductor by using hall effect in addition	3	3	-	2	3	+-	+ -	3	3	3	1	3	2	3	+-
١	11 12-20	Lab	CO 4	Measure height of an object by using sextant.	3	3	<del>-</del>	3	3	+-	+ -	3	3	3	2	3	2	3	+
		Lab	CO 5	Explain the concepts of optical fiber and laser	3	-	-	3	3	+	+ -	3	3	3	2	3	2	3	-
-			CO 1			-	-	_	-	3	3	3	2	3	-	1		-	
		Human Values	CO 2	Discuss and recan the natural and section issues and then			-	-	+	3	1	2	3	3		2	-	-	+
7	1FY1-23	Activities and	CO 3			-	-	-	-	2	2	3	3	3	-	3	-	-	-
′	1F 1 1-23	Sports	CO 4	,		-	-	-	-	3	3	1	2	3	-	3	-	-	-
		Sports	CO 5	Outline the relation of human with nature and other factors in Examine and comparison of self with clear understanding of			-	-		3	3	2	3	3	-	3	-	-	+
$\dashv$			CO 1	1 2	2	-	-	-	2	3	-	1	2	3	-	1	1	1	-
		-	CO 2	Relate the fundamental of C Programming as variable,	3	2	1		2	_		2	2	3		3	2	2	-
8	1FY3-24	Computer		Write programs that perform operations using condition control		2	-	-		-	-			_	1				+
١	11 13-24	Programming Lab	CO 3	Use C programs to implement operations related to Macros and	3	2 2	-	-	2	-	-	3	2	3	1 1	3	2	2 2	+
			CO 5	Examine concept of Structure, Unions and Pointers to write C	3	2	-	-	2	-	-	3	2	3	1	3	2	2	+
$\dashv$				Investigate the implementation of operations related to File			-	-		-		<del></del>				_			+
		Basic Civil	CO 1	Calculate the linear and angular measurements of the points on	-	3	-	-	-	2	3	2	3	2	-	- 1	1	1	+
,	1FY3-27	I -		Illustrate various sanitary fittings and water supply fittings		-	-	-	-	2	3	2		2	-	1		-	+
1	1F 1 3-4/	Engineering	CO 3	Explain concepts of EDM and Total Station in the field	-	-	-	-	-		1		1 2		-	-	1 2	-	+
		Lab		Evaluate pH, Turbidity and Hardness of given tap water sample	-	3	-	-	-	2	3	2	3	2 2	-	2 2	2	1	+
-			CO 5	Evaluate pH and Total solids of given sewage sample		3	-			1 2			3		-		_	1	+
		Commutan Aidad	CO 1	Describe engineering drawing terminology	3	-	1	-	-	1	-	2	2	2	-	3	1	- 1	+
۱	1FY3-28	Computer Aided		Apply Concept of scales and conic sections.		1 2	1	-	-	-	-	2	2	2	-	2	1	1	+
0	1F 13-28	Engineering	CO 3	Draw Projection of Points, lines, planes and solids.	3	3	2	-	-	-	-	2	2	2	-	2	2	1	+
		Graphics	CO 4	Analyze the concepts of section of solids	3	2	3	-	-	-	-	2	2	2	-	2	2	1 2	+
			CO 5	Draft 2D engineering problems on CAD software.  Describe rank of matrix for the study of systems of linear	3	3	3	-	3	2	-	2	2	3	-	3	3	3	

1 1		ı	COAL	late and in haris towns of first and ODE of and in	2 1	3			1 1	ı			-				2 1	1	
1, 1	2FY2-01	Engineering		elate certain basic types of first order ODEs for which exact	3	3	-		<del>  -  </del>	-	-	-	-	-	-	-	2	1	-
1	ΔΓ 1 <b>Ζ-</b> 01	Mathematics-II		pply analytical technique of differential equation for finding	3	_	-	-	-	-	-	-	-	-	-	-		1	-
				olve Linear and non-linear Partial Differential Equations	3	3	-	-	-	-	-	-	-	-	-	-	2	1	-
$\vdash \vdash$				assify higher order partial differential equation to describe a	3	3	-	-	-	-	-	-	-	-	-	-	2	1	-
			-	escribe characteristics of water, fuel and Engineering	3	1	-	-	-	-	-	-	-	-	-	-	1	-	-
	AFT/2 02	Engineering	$\overline{}$	nderstand societal problems related to water purification,	3	2	-	-	-	-	-	-	-	-	-	-	2	1	-
2	2FY2-03	Chemistry		etermine of hardness of water and calorific value of fuels for	3	3	-	-	-	-	-	-	-	-	-	-	2	1	-
			-	ompare different techniques of water treatment, fuel analysis,	3	3	-	-	-	-	-	-	-	-	-	-	2	1	-
				epare the generic drugs or medicines by understanding the	3	3	-	-	-	-	-	-	-	-	-	-	2	1	-
		Communication	$\overline{}$	escribe the process of communication, basics of Grammar and	-	-	-	-	2	1	-	2	-	3	-	1	-	1	1
		Skills		xplain the types of communication, barriers and channels of	-	-	-	-	2	-	-	2	-	3	-	2	-	1	1
3	2FY1-04	Skins		rite and prepare professional reports, paragraph and business	-	-	-	-	2	-	2	3	-	3	-	2	-	1	1
			CO 4 Dis	iscuss and illustrate the impact of social and moral values by	-	-	-	-	-	-	3	3	-	3	-	3	-	-	2
			CO 5 Re	estate and outline the basic areas of English Language Skills	-	-	-	-	-	-	3	3	-	3	-	3	-	-	2
			CO 1 De	escribe concepts of thermal, functional design of machine	3	-	-	-	-	1	-	-	-	-	-	-	1	-	-
		Basic Mechanical	CO 2 Cla	assify different types of turbines and power plants, pumps	3	2	-	-	-	2	-	-	-	-	-	-	2	1	-
4	2FY3-07		CO 3 Ap	pply the fundamental knowledge of thermal engineering, in	3	3	1	-	-	3	-	-	-	-	-	-	3	1	-
		Engineering		camine about the turbine & pumps, IC engines, refrigeration	3	3	-	-	-	2	-	-	-	-	-	-	3	1	-
			$\overline{}$	valuate problems related to refrigeration, turbine, pump,	3	3	-	-	-	2	-	-	-	-	-	-	3	1	-
$\Box$				olve various ac and dc circuit related problems	3	3	-	-	- 1	-	-	-	-	-	-	-	2	1	-
	2EX/2 00	Basic Electrical		nderstand electromechanical energy conversion process	3	2	-	-	-	-	-	-	-	-	-	-	2	1	-
5	2FY3-08	Engineering		nalyze characteristics of various power electronic devices.	3	3	1	-	- 1	-	-	-	-	-	-	-	2	1	-
				cplore knowledge of protective devices and energy	3	2	-	-	- 1	-	-	-	-	-	-	-	2	1	-
$\vdash$		Б		etermine the strength of unknown solution by volumetric	3	2	-	-	-	-	2	3	-	2	2	2	2	1	1
	25772 24	Engineering		pply the knowledge for the determination of few	3	3	-	1	_	_	2	3	3	2	2	2	2	2	1
6	2FY2-21	Chemistry	p	nalyze Coal quality by Proximate analysis of Coal sample.	3	3	-	1	_	_		3	3	2	2	2	2	2	1
		Lab		splore their knowledge of synthesis of drugs.	3	3	-	-	-	_	_	3	2	2	2	2	2	1	1
$\vdash$				se and pronounce the words correctly.	-	-	-	_	1	3	_	2	2	3	-	3	1	1	1
				scuss and explain effectively with elaboration.	-	-	_	_	<del>                                     </del>	3	_	2	2	3	_	3	1	1	1
7	2FY1-22	Language Lab		an successfully and crack GD's, interviews and other	-	_	_	_	1	3	2	3	2	3	_	3	-	1	2
	_			escribe his/her thoughts and views in an effective manner.	-	_	-	_	-	3	3	3	2	3	_	3	1	-	2
				elate and comprehend for the correct expression.			_		-	3	3	3	2	3	1	3	1		2
$\vdash$				escribe the working of Lathe machine.	-		2	3	-	-	-	-	1	1	-	2	-		1
		Manufacturing		entify tools and develop various carpentry joints.		_	3		-		_	2	2	2	_	2	_	_	2
8	2FY3-25	Practices		pply the basic concepts of Foundry Shop.			3		-	2		2	2	2	-	2	1		2
	_1 10 20	Workshop		evelop the object by using sheet metal Shop.	-		3		-	2	_	2	2	2	-	2	1		2
		,, orkshop		valuate different type of joints in welding shop.	-		2	3	-	-		2	2	2	-	2	-	1	2
$\vdash$				iscuss measurement of electrical quantites	3		_		-			3	3		2	2	1	-	1
		Basic Electrical		ompare different connections of transformer	3		-		-	-		3	3		2	2	1	-	1
9	2FY3-26	Engineering Lab		cplain constructional features of electrical machines and	3		-		-	-		3	3		2	1	1		1
		Linginiceting Lau	-	splain constructional features of electrical machines and	3	1	-		-	-	-	3	3	-	2	1	1	1	1
$\vdash$				escribe Projections and basic Geometrical Concept	3	-	-		-	1		2	2	2	-	3	1	-	1
		Computer Aided		raw orthographic projection of engineering objects	3	1	1		-			2	2	2	-	2	1	1	1
10	2FY3-29	Machine		nalyze Sectional Views of different mechanical Components	3	3	2		-	-	-	2	2	2	-	2	2	1	2
10	21 15-27	Drawing		valuate assembly drawing	3	2	3		-			2	2	2	-	2	2	1	2
		Diawing		raft a engineering product using CAD software	3	3	3		3	2	-	2	2	3	-	3	3	3	2
$\vdash$			Do	emember the fundamental principles of technical writing and genre	J	3	, ,		'	- 4	-			, ,	-	3	3	3	
			1 (3) 1 1	written communication within technical domains.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
				nderstand the intricacies of planning, drafting, revising, editing, and															
			l orit	itiquing professional documents within the realm of technical															
			1 ((())) 1	mmunication when engaging in both individual and collaborative	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-
			1	riting.															
,	3EE1-02	Technical	$\overline{}$	pply skills in note-making, grammar editing, technical style, project															
	JEE1-02	Communication	1 1 -	port creation, and LSWR (Listening, Speaking, Writing, Reading) in	_					]		_	_	3			_	_	2
			Insp	e context of technical communication.	-	-		-		-	-	-	-	,	_	-	-	-	
1 1		I	Line	Comen of technical communication.					$\sqcup$										L

			CO 4	Evaluate research findings and synthesize content for various business communication documents, such as emails, resumes, meeting	_	_	_	_	-	-	-	_	_	_	_	3	-	-	3
				minutes, technical reports, articles, and project proposals.															
			CO 1	<b>Explain</b> the numerical methods, Laplace transform, Fourier transform, Z-transform and, complex variables.	1	-	-	-	-	-	-	-	-	-	-	-	2	-	-
			CO 2	Apply numerical methods to find unknown values with help of known values, roots of polynomial and transcendental equations, and, Solutions of the ordinary differential equation.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
2	3EE2-01	Advance	CO 3	Identify numerical differentiation and integration whenever and wherever routine methods are not applicable.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
2	3EE2-01	Mathematics	CO 4	<b>Analyze</b> the Fundamentals of the Fourier, Laplace, and Z-Transforms. These systems can be carried out in terms of either a time domain or a transform domain formulation.	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
			CO 5	Evaluate a variety of numerical problems & complex contour integrals and solve them by using appropriate technology, and Compare the viability of different approaches to directly, by the fundamental theorem and numerical solution of problems.	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
			CO 1	Prepare an assessment of the environmental impact of conventional and non-conventional sources of electricity generation for enhancing engineering knowledge. [Apply]	3	-	-	-	-	-		-	-	-	-	-	-	-	1
3	3EE3-04	Power generation Process	CO 2	Infer the types of load curves, factors used in generation, and methods for improving power factor for analyzing engineering complex problems by investigating any case study. [Analyze]	-	2	-	2	-	-	-	-	-	-	-	-	-	-	-
		Trocess	CO 3	Assess different real-time tariff issues in electrical engineering for sustainable development. [Apply]	3	-	-	-	-	-	2	-	-	-	-	-	3	-	-
			CO 4	Categorize power plant economics by applying knowledge for conventional and nonconventional plants under different conditions .[Apply]	2	-		-	-	-	-	-	-	-	-	-		-	-
			CO 1	Practice the fundamental concepts in circuit theory followed by an analytical understanding of transient and steady state stability concepts alongwith the transformations from time domain to frequency domain. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
4	3EE4-05	Electrical Circuit Analysis	CO 2	Select the fundamental concepts, theorems, transforms for computing the values of system parameters, stability states, and analysis of current & voltage values in a particular branch or node. [Analyze]	2	3	-	-	-	-	-	-	-	1	-	-	2	-	-
			CO 3	Assess the circuit and phasor diagrams, network interconnections, steady state stabilities, and gain or phase margins required for design of electrical Circuits [Evaluate]	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Develop network parameters for the given two port networks.  [Analysis]	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Explain theconcepts of I-V characteristics of diodes, their applications and use as BJT circuits.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	3EE4-06	Analog Electronics	CO 2	Analyze proportional relationship between signal and voltage or current that reprints a signal in diodes, BJT circuits, MOSFET circuits, differential amplifier and Op-AMPS and their use in linear and Nonlinear specific applications.	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
			CO 3	<b>Evaluate</b> the functioning of basic components in linear and nonlinear circuits of diodes, BJT, MOSFET, OP-AMPS.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Realize various switching and amplifying circuits by using BJT, FET, Diode and IC-741C	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	<b>Illustrate</b> basic principles and laws pertaining to the magnetic circuits of DC machines and Transformers [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-

			CO 2	Analyze the control practices and characteristics of DC Machines and Transformers.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
6	3EE4-07	Electrical Machine -	CO 3	Investigate the performance, different types of connections, equivalent circuits and testing of DC machines and Transformers under different loading conditions. [Create]	3	-	-	3	1	-	-	-	-	-	-	-	-	-	-
			CO 4	<b>Evaluate</b> scope of applicability of DC machines and Transformers in reallife multidisciplinary usages.	-	2	1	2	1	1	-	ı	-	-	-	-	1	-	-
			CO 1	<b>Demonstrate</b> the laws and theorems of electric field, magnetic field and time varying fields. [Apply]	3	2	-	-	-	-	-	-	-	-	-	-	2	-	-
			CO 2	Debate the Charge distribution, boundary conditions, Laplace, Poisson and Maxwell's equations in search of a solution. [Analyze]	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
7	3EE4-08	Electromagnetic Field	CO 3	Analyze the behaviour of dielectric and conductive material in electromagnetic fields by using electric or magnetic motive force conditions. [Analyze]	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	<b>Estimate</b> the capacitance, inductance, mutual inductance, electronic wave, electric field intensity, electric flux density, magnetic flux density and Plane wave conditions for real time problem. [Evaluate]	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	<b>Describe</b> characteristics of BJT amplifier, Push-Pull amplifier, FET and UJT.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	3EE4-21	Analog Electronics	CO 2	Measure variation of output power, distortion in load, ripple factor, line and load regulation in given analog circuits.	3	-	-	-	-	-	-	-	-	-	2	-	-	-	-
		Lab	CO 3	Apply the knowledge to compare and use wein bridge oscillator and phase shift oscillator.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	<b>Investigate</b> the effect of variation in R & C oscillator frequency in a team.	2	-	-	-	-	-	-	-	3	-	-	-	-	-	-
			CO 1	Apply the principles of Electrical Machines through laboratory experimental work	3	-	ı	-	1	ı	-	1	-	-	-	2	3	ı	-
		Electrical Machine-	CO 2	Prepare reports based on performed experiments with effective demonstration of diagrams and characteristics /graph	-	-	1	-	1	ı	-	1	3	-	-	2	ı	-	-
9	3EE4-22	I Lab	CO 3	<b>Perform</b> the experimental work on dc machines and transformers on virtual lab	-	2	-	-	ı	-	-	ı	-	-	-	-	1	-	-
			CO 4	Demonstrate the starting & speed control of DC motors  Perform various tests, find efficiency & voltage regulation of	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 5	electrical machines	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	<b>Analyze</b> data sheet reading and also acquiring knowledge for sodering and desoldering process [Apply].	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Electrical circuit	CO 2	<b>Simulate</b> the Electronic Circuit using semiconductor devices and sensors on a circuit design software tool and comparing the output analytically. <b>[Analyze]</b>	-	2	i	-	2	-	-	-	-	-	-	-	-	-	-
10	3EE4-23	design Lab	CO 3	Contribute efficiently in a team so as to achieve the desired response of analog circuits consisting of semiconductor devices and sensors. [RESPONDING]	-	-	-	-	1	-	-	1	3	-	-	-	ū	ē	-
			CO 4	Demonstrate the solution to a problem of analog circuits consisting of semiconductor devices and sensors. [PRECISION]	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Implement classroom engineering knowledge in real-world industrial/laboratory situations in specific conditions.[Apply]	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-
			CO 2	Test knowledge of advanced tools and techniques, as well as exposure to industry professional specific design approach.[Analyze]	-	-	-	-	3	-	-	-	-	-	-	-	2	-	- ]
11	3EE7-30	Industrial Training	CO 3	Organize to the engineer's role and responsibilities, as well as the code of ethics.[Apply]	-	-	-	-	-	3	-	3	-	-	-	-	-	-	-

			CO 4	Prepare industry leading documents, reports, and presentations.[Create]	-	_	-	-	-	-	-	-	-	3	-	3	-	-	-
			CO 5	Develop interpersonal and teamwork skills, and demonstrate	-	_	-	-	_	_	_	_	3	-	1	-	_	-	
-			C .	knowledge of acceptable workplace behaviour.[Create]	2.62	2.20	1.50	2.22	2.50	2.00	2.00	2.00	2.00	2.00	1.50	2.50	2.20	1.00	2.50
-	T	T	Se	emester III Overall PO	2.63	2.28	1.50	2.33	2.50	3.00	2.00	3.00	2.80	3.00	1.50	2.50	2.20	1.00	2.50
			CO 1	<b>Recall</b> the basic biological concepts and their engineering applications.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 2	Understand the biodesign principles to create novel devices and structures.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
12	4EE2-01	Biology	CO 3	Compare biological, chemical, physical phenomenon and their role in sustainable engineering.	-	2	-	-	-	-	2	-	-	-	-	-	-	-	-
			CO 4	Develop the interdisciplinary vision of biological engineering.	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Conceptual Mastery: Students will demonstrate a comprehensive understanding of fundamental economic concepts and financial accounting principles with ethics, allowing them to analyze and interpret economic and financial data effectively.	3	-	-	-	-	-	-	2	-	-	-	-	1	-	
		Managerial	CO 2	Application Proficiency: Upon completion of the course, students will be able to apply economic theories to analyze and solve managerial problems specific to engineering projects, showcasing the practical application of economic principles in real-world scenarios.	-	3	-	-	-	-	-	-	-	2	-	-	-	1	-
13	4EE1-03	Economics and Financial Accounting	CO 3	Decision Impact Assessment: Students will be equipped to critically evaluate the impact of economic factors on managerial decision-making in the engineering and technology domain. They will analyze the implications of economic trends and policies on strategic decisions within an organizational context.	-	-	-	-	-	3	1	-	-	-	-	-	1	1	-
			CO 4	Strategic Resource Management: Upon successful completion of the course, students will be capable of developing strategies for optimizing resource allocation and cost management in engineering projects. This involves synthesizing economic and financial principles to formulate effective managerial strategies for project success.	-	-	-	-	-	-	-	-	-	-	3	-	-	1	-
			CO 1	Explain the construction and operation of various measuring instrument.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Electronic	CO 2	Illustrate the measurement concepts in electrical power using poly- phase metering, CT and PT.	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
14	4EE3-04	Measurement &	CO 3	Utilize the different potentiometers with their applications	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Instrumentation	CO 4	Identify different methods of measurement of various electrical parameters in green energy solution.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
			CO 5	Find measuring values of given component by understanding AC bridges.	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Explain the fundamental concepts, principles and analysis of AC rotating machines. [Understsand]	3		-	-	-	-	-	-	-	-	-	-	3	-	_
		Electrical March	CO 2	Analyze performance of Induction & Synchronous machine in addition to revolving magnetic field theory. [Analyze]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	
15	4EE4-05	Electrical Machine -	CO 3	<b>Design</b> of winding type required for production of revolving magnetic field. [Synthesis]	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Compare characteristics of induction and synchronous machines to identify the best suitable solution for its problem. [Analysis]	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-

			CO 1	Analyze the power electronics devices like Diode, Thyristor, MOSFET and IGBT on the basis of their static and dynamic characteristics. [Analysis]	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
16	4EE4-06	Power Electronics	CO 2	<b>Demonstrate</b> the single phase and three phase converters with various types of loading conditions. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	ILL 1 00	Tower Electronics	CO 3	Implement the basic concepts of operation of dc-dc converters in steady state in continuous and discontinuous modes. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	<b>Discuss</b> the operation and performance of inverters for the single phase and three phase for specilized applications.	3	-	-	-	-	-	-	-	ı	-	-	-	2	-	-
			CO 1	<b>Explain</b> and characterize various continuous and discrete time signals.	3	-	-	1	-	-	1	-	ı	-	-	-	-	-	-
			CO 2	Develop input-output relationship for LTI systems	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
17	4EE4-07	Signals & Systems	CO 3	Apply the Laplace, Fourier and Z- transform for analyze of continuous-time and discrete-time signals and systems.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Use the technique of sampling and observe the effects of under sampling	3	1	-	-	-	-	1	-	1	-	-	-	-	-	-
			CO 1	Apply fundamental of logic gates and Boolean algebra to solve complex engineering problems of various digital applications	3	-	-	-	-	-	-	-	ı	-	-	-	-	-	-
			CO 2	Reduce Boolean expressions to design digital combinational circuits using appropriate minimization technique so as to propose a cost effective solution	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
18	4EE4-08	Digital Electronics	CO 3	Implement a sequential circuit using flip-flops as required by the application to solve specific complex engineering problems	3	-	-	-	-	-	1	-	ı	-	-	-	2	-	-
			CO 4	Configure analog to digital convertors and digital to analog convertors	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 5	Design a sequential circuit representing a system which can count using programmable logic devices	1	-	3	1	-	-	1	-	1	-	-	-	-	-	-
			CO 1	Apply the principles of Electrical Machines through laboratory experimental work.	3	-	-	-	-	-	-	-	ı	-	-	-	3	-	-
19	4EE4-21	Electrical Machine -	CO 2	Prepare reports based on performed experiments with effective demonstration of diagrams and characteristics /graph	-	-	-	-	-	-	-	-	3	-	-	3	-	-	-
17	7LL7-21	Lab	CO 3	<b>Develop</b> the experiments on ac machines on virtual lab	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		Luo	CO 4	Demonstrate the control practices of AC rotating machines	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 5	Perform various tests, find efficiency & voltage regulation of AC rotating machines	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		Power Electronics	CO 1	<b>Demonstrate</b> the performance, characteristics, ratings, and applications of power diodes, power transistors, thyristors, DIACs, TRIACs, IGBTs, MOSFETs, GTOs, MCTs, and SITs. [Apply]	3	-	-	-	-	-	-	-	1	-	-	-	-	-	-
20	4EE4-22	Lab	CO 2	Analyze the I-V characteristics of MOSFET, IGBT and UJT.	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
		Late	CO 3	<b>Interpret</b> the I-V characteristics of SCR, DIAC and TRIAC by using specilized software tool.	ı	-	-	-	3	-	-	-	ı	-	-	-	3	-	-
			CO 4	<b>Illustrate</b> the working of single phase half wave and full wave controlled rectifier design in a team.	ı	-	-	-	-	-	-	-	3	-	-	-	-	-	-
			CO 1	<b>Develop</b> the knowledge with proper understanding of number system and its application in digital electronics and compare different types of logic families [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
21	4EE4-23	Digital Electronics	CO 2	Perform experiments with analysis on adder, subtractor, multiplexer and demultiplexer to verify truth table. [Analysis]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
۷1	TLLY-23	Lab	CO 3	<b>Design</b> and model the various sequential circuits using switching speed, through put/latency, gate count and area, energy dissipation and power by Individual and team.	-	-	-	-	3	-	-	-	2	-	-	-	-	-	-

			CO 4	Use of the memory devices in different types of digital circuits for real world application.	3	-	-	-	-	-	-	-	1	1	-	3	-	-	-
			CO 1	<b>Discuss</b> the basics of measurement of electrical quantities using the C.R.O. (ii) Digital Storage C.R.O. [apply]	3	-	-	-	-	-	-	-	1	-	-	-	-	-	1
			CO 2	<b>Describe</b> the working and applications of Meggar, Tong-tester, P.F. Meter and Phase Shifter.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	4EE4-24	Measurement Lab	CO 3	Measure the errors in measuring instruments and calibrate them. [Evaluate]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	<b>Examine</b> AC bridges for the measurement of inductance, capacitance and frequency.	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 5	<b>Perform</b> the calibration of single-phase energy meter by phantom loading and specilized technique in a team.	-	-	-	-	-	-	-	-	3	-	-	-	-	3	-
			Sei	mester IV Overall PO	2.79	2.50	3.00	-	3.00	3.00	2.00	2.00	2.75	2.00	3.00	3.00	2.33	3.00	-
			CO 1	Explain the laws and concept of electrical properties, magnetic properties, semiconductors materials and superconductivity along with conductivity of metals.[Apply]		-	-	-	-	-	-	-	1	=	-	-	-	-	-
23	5EE3-01	Electrical Materials	CO 2	Examine materials science in electrical domain of different industries.[Analyze]	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 3	Discriminate the bonding structure, Carrier density and characteristics of various electrical materials. [Evaluate]	2	3	2	-	-	-	-	-	-	-	-	-	3	-	-
			CO 4	Relate internal field, thermal conduction, electron scattering and energy gaps in electrical materials science.[Create]	3	2	-	-	-	-	-	-	-	-	-	-	1	-	-
			CO 1	Summarize the basic concepts of Power Generation.[Apply]	3	-	-	-	-	-	-	-	1	-	-	-	3	-	-
1	5EE 4 02	Decree Courts at	CO 2	Illustrate various electrical characteristics of transmission lines in transient, sub-transient, and steady state stability modes. [Analyze]	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	5EE4-02	Power System - I	CO 3	Analysis the parameters of different component of the power system. [Analyze]	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Examine electrical machines parameters & insulation requirements under different stability modes. [Evaluate]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Apply the fundamentals of linear and nonlinear control systems for mathematical representation.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
			CO 2	Differenciate and formulate the time and frequency response of Linear Time Invarient systems. [Analyze]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
25	5EE4-03	Control System	CO 3	Assess the state space variables in classical control system and design mathematical modelling for state space application.[Design]	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Design various controllers using different stability condition and specifications.	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Explain the fundamental concepts of 8051 architecture, programming instructions, and 8051 interfacing schemes. [Apply]	3	-	-	-	-	-	-	-	1	-	-	-	-	-	-
26	5EE4-04	Micro processor	CO 2	Relate the programming knowledge for external devices interfacing and serial communication[Analyze]	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 3	Judge the complex 8051 real world interfacing problems with focus on application specific outputs [Evaluate]	3	2	-	-	-	-	-	-	-	-	-	-	-	-	3
			CO 4	<b>Develope</b> 8051 programs for controlling external/interfacing devices for solving a particular task/problem [ <b>Design</b> ]	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Interpret the characteristics of engineering materials used for electrical machine designing. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	5EE4-05	Electrical Machine	CO 2	Infer the performance characteristics of electrical Machines with the specified constraints .[Analyze]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
2/	3EE4-U3	Design	CO 3	Relate electrical machine models in computer aided design software. [Create]	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
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			CO 4	Interpret the design of windings & core of electrical machines by invetigating appropriate concluding remarks.	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Discover the restructuring process, reasons and objectives of deregulation, market & pricing models, and congestion management and it's impact on environment.[Apply, Design]	3	-	2	-	-	-	2	-	-	-	-	-	-	-	-
28	5EE5-11	Restructured Power System.	CO 2	Analysis of electricity market models, congestion management methods, ancillary services, and transmission pricing.[Anlyze]	-	3	i	-	-	-	-	ı	i	-	-	-	ı	-	-
			CO 3	Compare methods of congestion management, market models & pricing schemes to identify the best options.[Evaluate]	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Prepare theoratically a restructured model of existing power system by	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Explain various aspects of design considerations of different type of power plant and electrical equipment.[Apply]	2	-	i	-	-	-	-	ı	1	-	-	-	3	ı	-
		Power System - I	CO 2	Classify the different concepts related to Power Transmission and Distribution Systems. [Analyze]	3	-	-	-	-	-	-	-	ı	-	-	-	ı	-	-
29	5EE4-21	Lab	CO 3	Interpret about the generation of overvoltages and insulation coordination.	-	2	-	-	-	-	-	-	1	-	-	-	-	-	-
			CO 4	Perform experiment on filtration and Treatment of transformer oil in a team.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
			CO 1	Applying Knowledge of control theory, Plot the TF and system's step and ramp responses in state space. Plot and design curves for step, impulse, and ramp inputs in first-order R-C circuits. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
			CO 2	<b>Develop</b> the mathematical model of a given physical system by conducting appropriate experiments.	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
30	5EE4-22	Control System Lab	CO 3	Design the lead, lag, and lag-lead networks' frequency response on a graph and investigate pros and cons of concluding remarks of filter solution. [Investigation]	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Draw and analyze the bode plot using modern tools for both first- and second-order transfer functions, as well as non-inverting and inverting amplifiers, [Analyze]	-	3	1	-	2	-	-	-1	1	-	-	-	1	1	-
			CO 5	Formulate and analyze PID controller and calculate Kp, Ki, Kd.	-	3	-	-	-	-	-	-	ı	-		-	-	-	-
			CO 1	<b>Demonstrate</b> the functions, operations, memory structure and hardware units of 8085 microprocessor kit. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 2	Examine different waveforms using 8253 / 8254 programmable timer. [Analyze]	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
31	5EE4-23	Micro processor Lab	CO 3	Build and demonstrate assembly level programs for transferring data to specified output ports in serial and parallel fashion. [Evaluate]	-	-	2	-	3	-	-	-	-	-	-	-	-	-	-
			CO 4	Fabricate 8 bit LED/LCD interface to 8085 microprocessor kit using 8155 and 8255 for the specialized application/s. [Specific]	3	-	2	-	-	-	-	-	3	-	-	-	-	-	3
			CO 5	Develop programs to perform addition, subtraction, division, block trans	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Apply the basic of MATLAB features and syntaxes in mathematical Programming.	3	-	-	-	2	-	-	-	-	-	-	-	-	-	-
			CO 2	Solve various basic electrical and electronic problems in MATLAB environment [Analyze]	-	2	-	-	-	-	-	'	ı	-	-	-	-	3	-
32	5EE4-24	System Programming Lab	CO 3	Execute the single phase induction machine Torque- speed characteristics and transformer test in MATLAB Simulink.	2	-	-	-	2	-	-	-	-	-	-	-	-	-	-
			CO 4	<b>Design</b> Single Phase Full Wave Diode Bridge Rectifier With LC Filter in MATLAB Simulink.	3	-	-	-	-	-	-	-	2	-	-	-	-	-	-
			CO 5	Evalute the importance of MATLAB in research by simulation work	-	-	-	-	2	-	-	-	-	-	-	-	-	2	-

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			CO 1	Implement classroom engineering knowledge in real-world industrial/laboratory situations in specific conditions.[Apply]	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
			CO 2	Test knowledge of advanced tools and techniques, as well as exposure to industry professional specific design approach.[Analyze]	-	-	-	-	3	-	-	-	-	-	-	-	2	-	-
33	5EE7-30	Industrial Training	CO 3	Organize to the engineer's role and responsibilities, as well as the code of ethics.[Apply]	-	-	-	-	-	3	-	3	-	-	-	-	-	-	-
			CO 4	Prepare industry leading documents, reports, and presentations.[Create]	-	-	-	-	-	1	-	-	-	3	-	3	1	-	-
			CO 5	Develop interpersonal and teamwork skills, and demonstrate knowledge of acceptable workplace behaviour.[Create]	-	-	-	-	-	-	-	-	3	-	1	-	ı	-	-
			S	Semester V Overall PO	2.71	2.53	2.00	2.00	2.33	3.00	2.00	3.00	2.50	3.00	1.00	3.00	2.25	2.50	3.00
			CO 1	<b>Describe</b> the architecture, memory & input-output organization of computers along with 16,32 bit microprocessor.[Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Computer	CO 2	Infer addressing modes, programming models, instruction level pipelining, and memory management units.[Analyze]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	6EE3-01	Architecture	CO 3	Assess multi bus organization, interrupt & interrupt controllers, and analyze real mode addressing, and dynamic scheduling.[Evaluate]	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Relate data types, micro instructions, memory types, interface circuits, and instruction sets for design point of view and it's applicability in smart energy solutions[Design]	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
			CO 1	Manipulate the power flow equations to analyse the voltage and frequency issues of system.[Apply]	3	3	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO 2	Examine the system stability and contigency by observing the system voltage and frequency .[Analyze]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	6EE4-02	Power System - II	CO 3	Investigate the power and demand side management in the prospect of optimum utilization of electrical energy by dynamic pricing strategy.[Apply]	2	-	-	2	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Summarize different case studies on power system to assess system security using Simulation tools. [Modern Tool]	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-
			CO 1	Understand the power system fundamentals and demonstarte fault analysis techniques, and applications of power system protection.  [Apply]	3	-	-	-	-	1	-	-	-	-	-	-	1	-	-
36	6EE4-03	Power System Protection	CO 2	Indetify and Examine the impact of power fluctuations on various parameters of power systems. [Analyze]	-	3	-	-	-	ı	-	-	-	-	-	-	ı	-	-
		Trocetion	CO 3	Design & simulate digital modelling parameters of power system [Design]	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Investigate the power system sampling and aliasing concerns.	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-
			CO 1	<b>Describe</b> the energy scenario, energy strategy, energy law's, energy security and maximization of energy efficiency. [Apply]	3	-	-	-	-	ı	-	-	-	-	-	-	i	-	-
37	6EE4-04	Electrical Energy Conversion and	CO 2	Identify energy conservation techniques and energy efficient technologies for developing electrical and industrial equipment.[Analyze]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Auditing	CO 3	Evaluate pricing, energy audit, energy management and energy balance of an industry or organization and it's understanding.	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	<b>Develop</b> methods of energy optimization, power factor improvement and fuel & energy substitution .	2	-		-	-	-	-		-	-	-	-	-	-	-
			CO 1	Explain the in-depth concepts of DC and AC drives, scalar & vector control of ac motors, and multi-quadrant operation of drives. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-

38	6EE4-05	Electric Drives	CO 2	Relate the power electronics and roburst control system knowledge for the precise speed control of AC and DC motors. [Analyze]	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 3	Estimate the closed loop control structure of DC drives and vector control of AC drives.[Design]	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	<b>Evaluate</b> the application based accurate speed control techniques for AC and DC motors.	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Define the basic structure of Indian power sector with organizing & monitoring bodies.[Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	2
39	6EE5-11	Power System	CO 2	Select the Reliability Planning Criteria for Generation, Transmission and Distribution.[Analyze]	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
39	0EE5-11	Planning.	CO 3	Evaluate the factors affecting load dispatch and modeling of Generation Sources.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Estimate the Objectives of Transmission Planning with Network Reconfiguration.[Design]	2	-	1	-	-	1	-	1	-	-	-	-	-	-	-
			CO 1	Apply the knowledge with proper understanding of different configurations of electric vehicles and its components, hybrid vehicle configuration, sizing of components and energy management.[Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	6EE5-13	Electrical and Hybrid Vehicles.	CO 2	Analyze the performance of electric and hybrid electric vehicle	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		Hybrid Venicies.	CO 3	<b>Design</b> the hybrid vehicle and battery electric vehicles with optimized energy management strategies.	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Investigate the drive train topologies with modern tool usage in electric as well as hybrid electric vehicle for the purpose of self employment and entrepreneurship	-	-	-	3	2	-	-	-	-	-	-	-	-	-	3
			CO 1	Practice different fault conditions in power system and synchronous machine using simulation tools.[Apply]	2	-	-	-	3	-	-	-	-	-	-	-	-	-	-
		Power System - II	CO 2	Execute steady state power flow using Gauss-Seidel, Newton-Raphson and fast decoupled iterative methods for given system.[Analyze]	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
41	6EE4-21	Lab	CO 3	Assess voltage security and overload security-using MATLAB.[Evaluate]	3	-	ı	-	2	ı	-	-	-	-	-	-	-	-	-
			CO 4	Solve economic load dispatch problem for given power system network. [Precision]	-	2	1	-	-	1	-	1	-	-	-	-	-	3	-
			CO 5	Analysing invidualy the transient stability analysis using MATLAB/ETAP Software.[Design]	-	-	-	-	3	-	-	-	2	-	-	-	-	-	-
			CO 1	Explain the connections of basic and advanced control schemes of AC and DC drives.[Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 2	Select the appropriate control technique for speed control of motors based upon the requirement of the application.[Analyze]	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
42	6EE4-22	Electric Drives Lab	CO 3	<b>Evaluate</b> the strengths and limitations of theoratical models with the help of comparison with practical model operation in a team.	-	2	-	-	-	-	-	-	2	-	_	-	-	-	-
			CO 4	<b>Demonstrate</b> the safe operating range of an electric drive by applying the theoratical equations.	2	-	-	-	2	-	-	-	-	-	-	-	-	-	-
			CO 5	Relate the accuracy of drive operation with the help of obtained real time values of set parameters.	-		-	-	2	-					-	-		-	
			CO 1	Apply the knowledge and understand the operation of microprocessor based differential, distance, under/over voltage relays.[Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	6FF4_23	Power System	CO 2	Analyze the various dynamic characteristics of digital relays for transmission line and transformer protection.[Analyze]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-

ر.	UEE-23	l . D		In the state of th	1	1		ı	1		ı	1			ı	1			
		Protection Lab	CO 3	<b>Identify</b> the single phase and three phase power system faults by using appropriate techniques.	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
			CO 4	<b>Assemble</b> the microcontroller based directional DMT and IDMT type relays in over current conditions by individual and team	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
			CO 1	<b>Grasp</b> the softwares that are required for modelling of machines and Power system for solving the problems of electrical engineering for life long learning of technology.[Apply]	3		-	-	-	-	-	-	-	-	-	3	-	-	-
44	6EE4-24	Modelling and simulation lab	CO 2	Analyze the performance of electrical machines operating in cordination with reactive power compensation devices.[Analyze]		3	-	-	-	i	-	-		-	-	-	-	-	-
			CO 3	<b>Evaluate</b> the performance of FACTS controller as per power system application using modern tools. [Evaluate]		3	-	-	3	-	-	-	-	-	-	-	-	2	-
			CO 4	Formulate an efficient SMIB model implementing FACTS controller using MATLAB software.[Apply]	3	-	-	-	-	-	-	-	3	-	-	-	-	-	-
lacksquare			S	emester VI Overall PO	2.63	2.44	2.00	2.33	2.44	-	-	-	2.50	-	-	3.00	-	2.33	2.00
			CO 1	<b>Describe</b> the characteristic of ac transmission and the effect of shunt and series reactive compensation [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Power Quality and	CO 2	Make use of working principle of FACTS controllers and their operating characteristics to improve power quality. [Apply]	3	-	1	-	-	1	-	-	-	-	-	-	i	1	-
1	7EE5-12	FACTS	CO 3	Interpret different possible applications of FACTS devices in order to improve stability and for achieving better voltage regulation.  [Evaluate]	-	3	-	-	-	1	-	-	-	-	-	-	-	-	-
			CO 4	Utilize the knowledge of custom power device DSTATCOM, classification of DSTATCOM, operation and control of DSTATCOM in addition to DVR and Statcom. [Apply]	3	-	-	-	-	ı	-	-	-	-	-	-	ı	ı	-
			CO 1	Illustrate the characteristics of the wind power generation and the imp	3	-	-	-	-	-	3	-	-	-	-	-	-	-	-
2	7EE5-11	Wind and Solar	CO 2	Demonstrate the various topologies applicable for wind power genera	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	7223 11	Energy System	CO 3	Classify and explain the sun angles and types of technologies used for	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Analyze technical and power quality issues in wind and solar based en	-	3	-	-	-	-	-	-	-	-	-	-	-	-	3
			CO 1	Analyze the use of sensor with embedded system using modern tools by individuals and in a team.	-	3	-	-	3	-	-	-	2	-	-	-	-	-	-
3	7EE4-21	Embedded Systems	CO 2	Practice the programming knowledge for controlling a real time use of sensors in applications with financial approch.	-	3	-	-	-	-	-	-	-	-	2	-	-	-	-
	,	Lab	CO 3	Investigate the type of sensor required in a particular control process as life long case study.	1	-	-	-	-	-	-	-	-	-	-	3	-	-	-
			CO 4	Prepare a mini project using specific or smart energy or green energy application using embedded system.	-	-	3	2	-	-	-	-	-	-	-	-	-	-	3
			CO 1	Demonstrate the time response of a rotary and linear servo system using MATLAB. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 2	Examine DC and AC servo motor's speed positioning control transfer function. [Evaluate]	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
4	7EE4-22	Advance control system lab	CO 3	Inspect the frequency response analysis of small motion, linearized model of industrial robot using MATLAB.[Analyze]	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		System no	CO 4	Assess P, PI, and PID Controllers for a variety of control system applications in MATLAB for multidisciplinatry streams and finding the solutions as an individual or in team.[Evaluate]	-	1	-	-	-	-	-	-	2	-	-	-	-	-	-
			CO 5	Arrange an Arduino controller for practical systems for pendulums and inverted pendulums.[Create]	3	-		-	-		_		-		-	-			-
			CO 1	Implement classroom engineering knowledge in real-world industrial/laboratory situations in specific conditions.[Apply]	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-

			CO 2	Test knowledge of advanced tools and techniques, as well as exposure to industry professional specific design approach.[Analyze]	-	-	-	-	3	-	-	-	-	-	-	-	2	-	-
5	7EE7-30	Industrial Training	CO 3	Organize to the engineer's role and responsibilities, as well as the code of ethics.[Apply]	-	-	-	-	-	3	-	3	-	-	-	-	-	-	-
			CO 4	Prepare industry leading documents, reports, and presentations.[Create]	1	1	-	1	-	1	-	-	1	3	-	3	-	-	-
			CO 5	Develop interpersonal and teamwork skills, and demonstrate knowledge of acceptable workplace behaviour.[Create]	ı	1	-	1	-	1	-	-	3	-	1	1	1	ı	-
			CO 1	Demonstrate various reported engineering problem solutions from all corners of society.[Apply]	ı	1	-	1	-	2	2	2	ı	-	-	1	2	ı	-
6	7EE7-40	Seminar	CO 2	Organize a detailed literature survey and build a document with respect to technical publications, advanced tools and techniques,.[Analyze]	-	-	-	-	3	-	-	-	-	-	2	-	2	-	-
			CO 3	Analysis and comprehension of proof-of-concept and related data of life long learning. [Evaluate]	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
			CO 4	Develop communication skills and confidence level through presentation using technical communication language.[Create]	-	-	-	-	-	-	-	-	2	3	-	-	-	3	-
			CO 1	Use and apply the concepts of constructional details and principle of rotating machines in electrical drives. [Apply]	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	7EE6.60.1	Electrical Machine	CO 2	Identify motor rating and specification for efficient conversion. [Apply]	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	722010011	and Drives	CO 3	Investigate the various control techniques for speed control on various electric drives . [Analyze]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Justify the design knowledge for various closed loop control of electric drives [Evaluate]	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	<b>Describe</b> the various renewable energy sources and life long learning by conducting renewable case study. [Apply]	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-
9	7EE6-60.2	Power Generation Sources	CO 2	Inspect possible renewable energy sources for developing acumen of entreprenureship in specilized renewable engineeing. [Analyze]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	2
		Sources	CO 3	Illustrate the renewable energy sources for the need of sustainable development. [Apply]	ı	1	-	1	-	1	2	-	ı	-	-	1	-	ı	-
			CO 4	Identify the energy sources & Propose renewable energy sources as societal application. [Create]	3	-	-	-	-	-	2	-	-		-	-	-	-	-
			Sen	nester VII Overall PO	2.64	2.50	3.00	2.00	3.00	2.50	2.25	2.50	2.25	3.00	1.67	2.75	2.00	3.00	2.67
		HVDC	CO 1	<b>Demonstrate</b> DC transmission topology along with components of HVDC system. [Apply]	3	ı	-	ı	-	ı	-	-	1	-	-	-	-	i	-
10	8EE4-11	Transmission	CO 2	Compair VSCs for control of HVDC systems. [Analyze]	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		System.	CO 3	Examine the HVDC link control techniques for managing power flow,	2	3 2	_	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Recommend proper MTDC link. [Evaluate]  Use and apply the knowledge of advanced controls in AC drives	3	2	-		-	-	-	-	-	<u>-</u>	-	-	-	-	-
		Advanced Electric	CO 2	including digital signal processing based motion control. [Apply]  Analyze the Transformations and reference frame theories on AC motors for implementing the vector control scheme. [Analyze]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
11	8EE4-13	Drives	СОЗ	Identify and Evaluate the need for field flux control and DSP based control in real world application of AC motor drives. [Evaluate]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Investigate the vector or field oriented control of ac drives to accommodate parameters variations for uncompromised speed control. [Evaluate]	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Show the energy scenario, energy strategy, energy law's, energy security and energy conservation in India. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	2

12	8EE6-60.1	Energy Audit and Demand side	CO 2	Organize the Energy forecasting, Energy economics, Energy pricing and incentives, energy and its management, energy planning, and energy economics. energy auditing of motors, lighting system and building, by appropriate analysis methods through survey instrumentations. [Analyze]	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		Management	CO 3	Examine the Electrical-Load Management and Demand side Management in transport, agriculture, household and commercial sectors. [Evaluate]	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Investigate the pre or detail energy audit in lighting system, household and commercial buildings, agriculture, electric machinerye of an industry or organization. [Investigate]	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Implement the various soft computing approaches for finding the optimal solutions and hence finding solutions by modern tools for specilized electrical engineering problems. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
13	8EE6-60.2	Soft Computing	CO 2	Compair the feasibility of applying a soft computing methodology for a particular problem and it's applicability to resolve the green energy or smart energy solutions. [Analyze]	1	3	-	-	-	-	-	-	-	-	-	-	-	-	2
			CO 3	Justify soft computing technologies such as FL,NN,GA to optimize the design of complex systems. [Evaluate]	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Develop and synthesize any hybrid case study of AI system in specified engineering applications. [Analyze]	1	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Demonstrate solar panels at various levels, solar Charge controller, PWM, MPPT with boost converter, Shadowing effect and diode based solution in Solar PV System by using large area Sun Simulator. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-
			CO 2	Categarize Performance of Solar Flat Plate Thermal Collector Operation with Variation in Mass Flow Rate and Level of Radiation. [Analyze]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
14	8EE4-21	Energy Systems Lab	CO 3	Compair wind turbine generators with DC generators, DFIG, PMSG etc. [Analyze]	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 4	Write different components of Micro Grid, micro-hydel pumped storage system and Fuel Cell and its operation in a team	3	-	-	1	-	-	-	-	2	-	-	-	-	-	-
			CO 5	Design and simulate hybrid wind-solar power generation along with Performance Assessment of Hybrid Power System by using Intelligent Controllers for on-grid and off-grid Hybrid Power Systems using modern tool. [Create]	ı	-	-	1	2	-	-	-	-	-	-	-	-	3	-
			CO 1	Identify suitable, sustainable and societal as well as industrial issues to construct project title	3	-	-	-	-	3	3	-	-	-	-	-	2	-	-
			CO 2	Conduct the litrature survey to analyze the methodology applicable to provided title considering finance management.	-	3	-	-	-	-	-	-	-	-	3	-	-	-	-
1.5	0EE7.50	Ductions	CO 3	Investigate data required for Design aspects and use of modern tool if specified by the group of students.	-	-	3	3	3	-	-	-	3	-	-	-	-	2	-
15	8EE7-50	Project	CO 4	Follow the ethical practices throughout project executions	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-
			CO 5	<b>Prepare</b> technical report and <b>communicate</b> Project findings with presentation skills and confidence level.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
			CO 6	<b>Infere</b> or provide concluding remarks of developed projects as life long learning and use of project outcomes in the field of smart energy solutions or green energy solutions if any.	-	-	-	-	-	-	-	-	-	-	-	3	-	-	3
			Sem	ester VIII Overall PO	2.64	2.50	2.00	3.00	2.50	3.00	3.00	3.00	2.50	3.00	3.00	3.00	1.50	2.33	2.33

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	ering	PO 2: Probl em analys	Desig n/deve	Cond uct	Mode rn		onme	Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
		CO1	Students will be able to define and explain basic concepts definite integrals, sequence and series, periodic functions and multivariable functions.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Students will be able to understand properties of beta and gamma function, convergence of sequence and series.	2	-	-	-	-	-	-	1	-	-	-	-	-	-	-
1	Engineering Mathematics-I	CO3	The students will be able to apply properties of beta and gamma functions and definite integrals to find surface area and volumes of revolution. They will be able to apply partial derivatives and multiple integrals to solve many problems in science and engineering.	3	2	1	-	-	1	-	1	1	1	1	,	1	-	-
		CO4	Students will be able to analyse Fourier series to make many useful deductions which lay down foundation of signal processing and image processing.	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Describe characteristics of water, fuel and Engineering	1	2.5	=	-	-	-	-	-	-	-	-	-	-	-	2.
		CO2	materials- Determine of hardness of water and calorific value of fuels for Industrial as well as domestic purposes	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-
2	Engineering Chemistry	CO3	Compare different techniques of water treatment, fuel analysis, Manufacturing of engineering materials and corrosion protection methods	3	-	-	-	-	-	-	,	-	-	-	-	-	-	_
		CO4	Prepare the generic drugs or medicines by identifying the applications of organic reaction mechanism and manufacturing of engineering materials	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	-	-	-	-	-	-	-	1	2
		CO1	Describe the process of communication, basics of Grammar and Writing and Literary Aspects	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
		CO2	Explain the types of communication, barriers and channels of communication and the concept of Literature through Short Stories and poetry		-	ı	-	-	-	-	1	-	2	-	-	-	-	-
3	Communication Skills	CO3	Write and prepare professional reports, paragraph and business letters with the correct use of grammar	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
	SKIIIS	CO4	Discuss and illustrate the impact of social and moral values by implying the basics of English Writing Skills through literary aspects	-	-	-	-	-	-	-	2	-	-	1	-	-	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)  Restate and outline the basic areas of English Language Skills	Engine ering		Desig n/deve		PO 5: Mode rn tool	engine		Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	The	PSO3- The ability to
		CO5	with the applications of literature	-	-	-	-	-	-	-	- 2	-	-	-	2	-	-	-
		CO1	Students will be able to retrieve basic concepts of thermal and manufacturing process.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Students will able to compare different types of thermal and manufacturing processes and.	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-
4	Basic Mechanical Engineering	CO3	Students will able to annotating about the functioning of turbine & pumps, IC engines, refrigeration system, modes of transmission of power, materials and primary manufacturing process.	3	1	1	1	1	1	-	-	1	-	ı	-	-	-	-
		CO4	Student will be able to appraise the fundamental knowledge of thermal engineering, in addition to understanding of power transmission to solve the industrial and societal issues.		1	ı	ı	ı	-	-	-	-	-	-	-	-	-	-
				2	1	ı	-	1	-	-	-	-	-	-	-	-	-	_
		CO1	Identify basic components of electrical engineering and connect them to form different circuits to verify basic laws.Understanding	3	1	1	1	-	-	-	-	-	-	1	-	-	-	-
	Basic Electrical	CO2	Analyse the output of rectifier circuit,AC and DC machines to solve problems assosciated with Basic electrical engineering. Analyse	2	3	1	1	1	1	-	-	1	-	1	-	1	-	-
5	Engineering	CO3	Contribute efficiently in a team to acieve desired response of AC and DC Machines. Team Work	ı	ı	ı	ı	1	1	-	-	3	-	ı	-	-	ı	-
		CO4	Demonstrate the output of rectifier circuits consistiong of basic components of electrical engineering. Mechanism	1	1	1	1	-	-	-	-	-	-	3	-	2	-	-
				2.5	3	-	-	-	-	-	-	3	-	3	-	1.5	, - T	]
		CO1	Determine the strength of unknown solution by volumetric analysis.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Examine the characteristics of lubricating oil in groups	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
6	Engineering Chemistry Lab	CO3	Analyze different characteristics of water and fuel to solve societal and environmental problems	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering knowl	em	PO 3: Desig n/deve lopme		PO 5: Mode rn tool	PO 6: The engine er and		:	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	The	PSO3- The ability to
		CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1	-	-	-	-	-	2	2	2.5	-	-	-	-	-	-
		CO1	Use and pronounce the words correctly.	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
		CO2	Acquire knowledge of the correct expressions,vocabulary etc. in personal and professional lives.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
7	Language Lab	CO3	Plan successfully for leadership and teamwork,crack GD's, interviews and other professional activities.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
		CO4	Synthesize the process of communication using LSRW.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
				-	-	-	-	-	-	-	-	2	2	-	-	-	-	-
		CO1	Describe the working of Lathe machine.	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	Manufacturing	CO2	Apply the basic concepts of Foundry Shop	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-
8	Practices	CO3	Develop various carpentry joints, welding joints and sheet metal objects.	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
	Workshop	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1.5	2	-	-	-	-	-	2	3	-	-	-	1	-	-
		CO1	Discuss measurement of electrical quantites	1	-	-	-	-	-	-	-	-	-	-	-	1	2	-
	Basic Electrical	CO2	Compare different connections of transformer	2	-	-	-	-	-	-	-	-	-	-	-	1	2	-
9	Engineering Lab	CO3	Demonstrate constructional features of electrical machines and converters	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
		CO4	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
				2	-	-	-	-	-	-	2	3	2	-	-	1.333	2	-
		CO1	Describe engineering drawing terminology, concept of scales and conic sections.	1	-	-	-	-		-	-	-	-	-	-	1	-	-
	Computer Aided	CO2	Draw Projection of Points, lines, planes, solids and section of solids	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-
10	Engineering	CO3	Draft 2D engineering problems on CAD software.	-		-	-	3	-	-	-	-	-	-	-		1	1
	Graphics	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1	1	-	-	3	-	-	2	3	-	-	-	1.5	1	1
		CO1	Students will be able to define basic rank of matrix to find, eigen values and eigen vectors of the matrix, degree and order of differential equations.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	Probl em	PO 3: Desig n/deve lopme	Cond uct	Mode rn	engine		Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
11	Engineering Mathematics-II	CO2	Students will be able to explain complementary functions and particular integral of ordinary differential equation and various methods of solution of ODE to solve complex engineering problems.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO3	The students will be able to apply an appropriate analytical technique to find solution of first order and higher order differential equations.	3	2	1	1	-	-	-	-	1	1	-				
		CO4	Students will be able to classify higher order partial differential equations and analyze a wide variety of time dependent	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			- "	2.25	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Describe the concepts of Wave and Quantum mechanics, Laser and Fiber optics, material science and electromagnetic theory. (Recall/Remembering)	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-
	Engineering	CO2	Explain the different applications of Laser and optical fibers in communication, engineering, medicine and Science.  Application of Hall effect (Examine)	2	1	ı	1	-	1	1	1	1	1	-	1	1	1	-
12	Physics	CO3	Evaluate energy states in 1-D and 3-D box with the application of quantum mechanics.(Apply)	-	1	1	1	-	-	-	-	-	1	-	ı	-	-	-
		CO4	Analyze the crystal structure through X-ray Diffraction &	ı	2	ı	ı	-	1	-	-	ı	ı	-	ı	-	ı	-
				1.5	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Relate sustained happiness through identifying the essentials of human values and skills	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
		CO2	Find the happiness and human values in terms of personal and social life to create harmony in them	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
13	Human Values	CO3	Use and understand practically the importance of trust, mutually satisfaction and human relationship	-	ı	ı	ı	-	-	-	-	1	ı	-	2	-	-	-
		CO4	Identify the orders of nature for the holistic perception of harmony for human existence	-	-	-	-	-	-	-	2	-	-	-	•	-	-	-
		CO5	Implement professional ethics and natural acceptance of human values in his/her life	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-
				-	-	-	-	-	2	-	2.5	-	-	-	2	-	-	-
		CO1	Understand the basic concepts of fundamental of computer system, number system and programming. (Remembering)	1	-	ı	-	-	-	-	-	-	ı	-	-	-	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering	Probl	n/deve	Cond uct	Mode rn	PO 6: The engine er and	onme	PO 8: Ethics	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
	Programming	CO2	Explain various memory units, representation of number system and Conditional, Iterative statements using arrays, string, pointers, file structure. (Understanding)		-	-	-	-	er and	nt and	<u>-</u>	- -	-	<u>-</u>	- 10ng	<u> </u>	-	-
14	for Problem Solving	CO3	Examine the concept of algorithms, flowchart, Operators, Pointer, Array, String, structure, union using modularization to	3	-	1	-	-	-	-	1	-	-	-	-	-	-	_
		CO4	Illustrate the User Defined functions, Memory management and File concepts to solve real time problems using C Programming (Analyzing)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Describe Scope, role and Specialization of Civil Engineering, basics of surveying, types of building, Plinth area, carpet area, floor space index, R.C.C., mode of transportation and different causes of pollution. (Remember)	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-
15	Basic Civil Engineering	CO2	Explain solid waste management, building by-laws, concept of sun light and ventilation, chemical and hydrological cycle, biodiversity, causes of road accident, sanitary landfill and onsite sanitation, food chain and food web, contour maps, Global warming, Climate Change, Ozone depletion, and Green House effect. (Understand)	2	-	1	-	-	-	-	1	1	,	1	-	1	-	-
		СОЗ	Illustrate method of ranging and levelling, road safety measures, building component, environmental acts, different types of foundation, treatment and disposal of waste water, traffic sign and symbol and rain water harvesting. (Apply)	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Compute errors in linear measurement, bearings and elevations of respective points on the ground. (Analyze)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			Operate the various devices for the multifarious use in the	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	relative fields.	1	-	-	-	-	-	-	1	-	-	-	2	-	-	-
16	Engineering Physics Lab	CO2	Apply knowledge of Newton's Ring, grating, spectrometer, Optical fiber , Sextant, Hall effect , a n d L a s e r to determine wavelength of light, dispersive power, Numerical aperature Height of Object, Hall coefficient, coherence length and coherence time	2		-	-	-	-	-	-	1	-	-	-	-	-	-
		CO3	To conduct the experiments with interest and an attitude of learning.	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering knowl	em		Cond uct	PO 5: Mode rn tool	The engine		Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
			Evaluate the Band Gap and time constants (t=RC) using basic principles of semiconductors and Capacitors by graphs.	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-
				1.5	2	ı	-	-	-	-	-	1.5	-	1	2	-	-	-
			Recall the natural and social issues and their remedies.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
		(())	Describe the nature of human values and the impact of external factors over it.	-	-	ı	-	-	-	2	-	-	-	1	-	-	-	-
	Human Values		Validate through actions the significance of trust, respect and harmony with self and surroundings.	-	-	1	-	-	-	-	-	2	-	1	-	-	-	-
17	Activities and Sports	('()4	Outline the relation of human with nature and other factors in terms of human existence	-	-	1	-	-	-	2	-	-	-	-	-	-	-	-
		CO5	Associate the knowledge of self and society with clear understanding of social issues and the human beings.	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
				-	ı	ı	ı	-	2	2	1	2	ı	ı	ı	-	-	-
			Describe various sanitary fittings and water supply fittings	1	1	1	ı	-	-		-	ı	ı	1	•	-	-	-
	Basic Civil	CO2	Examine pH, Turbidity, Hardness and Total solids of given water sample	2	-	1	-	-	-		-	1	-	1	-	-	-	-
18	Engineering		Use of EDM and Total Station in the field	3	-	-	-	-	-	-	-	-	-	-	-	-		-
	Lab		Investigate the linear and angular measurements of the points on the ground and levelling	-	1	1	-	-	-	-	-		-	-	-	-	-	-
		CO5	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
				2	1	-	-	-	-	-	2	3	2	-	-	-	-	-
		COI	Relate the fundamental of C Programming as variable, operators and taxonomy to write a basic C Program	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	Computer	CO2	Write programs that perform operations using condition control statements and loop control statements, single and multi-dimensional arrays along with specific program of matrix multiplication. (Examine)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	Programming Lab	CO3	Use C programs to implement operations related to Array, Macros and inline functions, Dynamic memory allocations, concept of Structure, Unions and Pointers	3	-	-	-		-	-	-	-	-	-	-	-	-	-
		CO4	Students will show an ability to communicate effectively and work ethically			1	-	-	-		2	-	2	1	-	-	-	
				2	-	-	-	-	-	-	2	-	2	-	-	-	-	-
		CO1	Describe orthographic projections and basic Geometrical Concept	2	-	1	-	-		-	-	-	-	-	-	1	-	

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering knowl		Desig n/deve	Cond		engine		PO 8: Ethics : Apply	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
	Computer	CO2	Analyze Sectional Views of different mechanical Components and assembly drawing	-	1	ı	-	-	-	ı	-	-	-	ı		2	-	
20	Aided Machine Drawing	CO3	Draft a engineering product using CAD software	-	-	ı	-	2	-	1	ı	-	-	ı	•	2	-	1
	Drawing	CO4	Students will show an ability to work as a team member ethically	-	-	1	-	-	-	-	2	3	-	-	-	-	-	-
				2	1	-	-	2	-	-	2	3	-	-	-	1.667	-	1
		CO 1	To Define probability models using probability mass (density) functions, need and classification of optimization terminology.	1	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Explain the probability distributions of discrete and continuous random variables and work binomial, Poisson,	2	-	1	-	-	-	-	1	-	-	1	-	2	1	-
1	Advanced Engineering	CO 3	To Solve mathematical models of the real world problems in optimization using Linear Programming methods such as	3	-	-	-	-	-	-	-	-	-	-	-	2	1	-
	Mathematics	CO 4	To Examine the correlation between two variables and regression applications for purposes of description and	-	3	-	-	-	-	-	-	-	-	-	-	2	1	1
				-	1	-	-	-	-	-	1	-	-	1	-	-	-	-
				2	3	-	-	-	-	-	•	-	•	-	-	2	1	1
		CO 1	To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national	-	1	-	-	-	1	-	ı	-	2	3	1	-	-	-
		CO 2	To Calculate the domestic product, national product and elasticity of price on demand and supply.	-	-	-	-	-	2	-	1	-	-	3	-	-	-	-
	Managerial Economics	CO 3	To Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect	3	-	2	-	-	-	-	1	-	-	2	-	-	-	-
2	and Financial Accounting	CO 4	To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment	-	3	1	-	-	-	-	1	-	-	2	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	-	-	1.5	•	•	•	2	2.5	1	-	-	-
		CO 1	To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.	2		1	-	-	1	ı	1	1		1	ı	2	-	-
		CO 2	To Recognize minimization techniques for reducing the size of any digital circuits.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
	Digital	CO 3	To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.	-	-	3	-	-	-	-	1	-	-	1	-	2	-	-
3	Electronics	CO 4	To Evaluate the performance of Digital Logic Families and its realization.	-	-	-	2	-	-	-	-	-	-	-	-	-	2	-
				-	-	-	-	-	-	-	1	-	-	ı	-	-	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering knowl	em		Cond uct	PO 5: Mode rn tool	The engine		Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
				2	2	3	2	-	-	-	-	-	•	•	•	2	2	-
		CO 1	To explain data structures and their use in daily life.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
		CO 2	To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.	-	3	-	-	-	-	-	-	-	ı	-	-	-	2	-
4	Data Structures	CO 3	To develop searching and sorting algorithms on predefind data	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
4	Algorithms	CO 4	To create the data structures in specific areas like DBMS ,Compiler, Operating system.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	3	3	-	-	-	-	-	-	-	-	-	2	2
		CO 1	Apply the various programming paradigms such as exception handling, polymorphism in software pattern	2	-	-	-	-	-	-	-	-	1	1	-	3	-	-
		CO 2	Analyze the C++ programs using different programming methodologies.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
5	Object Oriented	CO 3	Design the elements of the object oriented concepts in developing structured programs.	-	-	3	-	-	-	-	-	-	-	1	-	-	2	-
	Programming	CO 4	Investigate the real time applications using advance C++ concepts.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3
				-	•	•	-	-	-	-	-	-	•	•	•	-	-	-
				2	2	3	3	-	-	-	-	-	•	•	-	3	2	3
		CO 1	To Demostrate software life cycle models with respect to software enginneering principles.	2	ı	-	-	-	-	-	-	-	1	ı	-	3	-	2
		CO 2	To analyse cost estimation technique and risk analysis techniques in software engineering projects.	-	2	1	-	-	-	-	-	-	1	1	ı	2	3	-
	Software	CO 3	To Design Software requirement document (SRS)	-	-	3	-	-	-	-	-	-	-	-	-	2	3	-
6	Engineering	CO 4	To synthesize UML diagrams using the concepts of object oriented analysis in software development process.	-	-	-	3	-	-	-	-	-	-	-	-	3	-	-
				-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	2.5	3	2
		LO1	To Utilize searching and sorting algorithms on given values.	2	_	-	-	2	-	-	-	-	2	-	-	2	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	em			PO 5: Mode rn tool	engine er and	PO 7: Envir onme nt and	:	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
	Data Structures and	LO2 LO3	To analyze the time and space efficiency of the data structure To Evalute traversing, insertion and deletion operations on Linear and non linear data structures	-	-	-	-	-	-	2	-	-	-	-	2	2	- 2	-
7	Algorithms Lab	LO4	To construct the solutions for real time applications	-	_	-	-	2	-	-	-	2	-	-	-	-	-	3
		LO5		2	-			2	2	2	-	2	2	-	2	2	2	3
		LO1	Students will able to apply the programming concepts such as inheritance, polymorphism	-	-	-	-	2	-	-	-	-	-	-	2	3	-	_
	01.1	LO2	Students will be able to distinguish the programming methodologies to implement programs	-	-	-	-	-	2	-	-	-	-	-	2	-	2	-
8	Object Oriented Programming	LO3	Students will be able to explain the concepts to develop the structured programs.  Students will be able to construct the solutions for real	-	-	-	-	-	-	2	-	-	-	-	2	-	-	3
	Lab	LO4	time problems	-	-	-	-	-	-	-	-	2	-	3	-	-	-	3
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		LO1	onderstand and explain the basic concepts of OWL, design, test case implementation, and OOP concepts	2	-	-	-	2	2	2	-	2	-	3	2	3	2	3
		LO2	Discuss and analyze how to create software requirements specifications for a particular problem.	_	-	-	3	-	-	-	-	-	-	-	-	-	3	-
9	Software Engineering	LO3	Create Data Flow Diagrams for different systems.	-	-	3	ı	ı	1	-	-		1	-	-	ı	3	2
	Lab	LO4	Understand and develop UML diagrams of various structures and behaviors.	-	-	-	-	2	-	-	-	-	-	-	-	2	3	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Apply appropriate basic logic acts for varifying the text	2	-	3	3	2	-	-	-	-	-	-	-	2.5	3	2
		LO1	Apply appropriate basic logic gates for verifying the truth tables.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	Demonstarte ability for recognizing any IC and its fuctionality.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO3	Design any basic gates by the use of universal gates.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering		PO 3: Desig n/deve	PO 4: Cond uct	PO 5: Mode rn	PO 6: The engine	PO 7: Envir onme		PO 9: Indivi dual	PO 10: Com	PO 11: Proje	PO 12: Life-	PSO1- The ability	PSO2- The ability	PSO3- The ability
				knowl	analys	lopme	investi	tool	er and	nt and	Apply	and	munic	ct	long	to	to	to
	Digital	LO4	Identify the limitation of basic logic gates while desgining any SOP and POS logics.	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
10	Electronics Lab	LO5	Design any sequential and combinational circuits using basic gates as well as by defined IC.	-	ı	2	ı	-	-	-	-	ı	-	ı	ı	2	ı	-
	Lab	LO6	Demonstrate the working of Digital Trainer kits and usability of it.	-	ı	ı	ı	2	-	-	ı	ı		ı	ı	-	2	-
		LO7	Debug a circuit to find a problem and suggest suitable solution.	-	1	1	-	-	-	-	-	,	1	1	2	-	-	2
		LO8	Able to work in a team for desgining and rectifying any errors in the digital circuit.	-	-	1	-	-	-	-	-	2	-	-	-	-	-	2
				2	2	2.5	2	2	-	-	-	2	-	-	2	2	2	2
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	updated with all the latest changes in technological world	-	-	-	-	3	-	-	-	-	-	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	ı	ı	ı	-	-	-	-		3		ı	2	ı	-
11	Industrial	LO4	knowledge, management, leadership and	-	1	1	-	-	-	-	-	3		1	-	2	2	3
''	Training		Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	1	1	3	-	3	•	1	1	-	1	1	2	2	-
			continuous professional development and life-long	-	1	1	-	-	-	-	-	1			3	2	-	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	ı	ı	ı	-	-	3	2	-	1		ı	-	2	-
				3	•	•	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO1	Define mathematically about the fundamental data types and structures used in computer algorithms and systems.	1	ı	ı	-	-	-	-	-	1	-	1	-	2	1	-
		1(:(1))	Classify algebraic techniques to basic discrete structures and algorithms.	2	1	ı	-	-	-	-	-	-	-		-	2	1	-
12	Discrete Mathematics		Apply mathematical logic in making computer programs, computer circuits, concluding experiments, digital electronics, etc.	3	-	-	-	-	-	-	-	-	-	-	-	1	1	-
	Structure		Analyze a variety of graphs and Compare the viability of different approaches to the Model problems in Computer Science.	-	3	-	-	-	-	-	-	-	-	-	-	1	1	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	Probl	Desig n/deve	Cond uct	Mode rn		onme	Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	The	PSO3- The ability to
				1	1	1	1	1	1	1	1	1	-	-	1	-	-	-
				2	3	•		•		-				-	-	1.5	1	-
		CO1	Remember the fundamental principles of technical writing and genre in written communication within technical domains.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
		CO2	Understand the intricacies of planning, drafting, revising, editing, and critiquing professional documents within the realm of technical communication when engaging in both individual and collaborative writing.	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-
13	Technical Communication	CO3	Apply skills in note-making, grammar editing, technical style, project report creation, and LSWR (Listening, Speaking, Writing, Reading) in the context of technical communication.	-	1	1	1	1	,	-	1	1	3	-	-	-	-	2
		CO4	Evaluate research findings and synthesize content for various business communication documents, such as emails, resumes, meeting minutes, technical reports, articles, and project proposals.	-	-	-	-	-	-	-	-	-	-	-	3	-	-	3
				-	ı	•	ı	•	-	-	•	ı	-	-	-	-	-	-
				-		•		•		-		2	3	-	3	1	-	2.5
		CO1	To Examine the architecture of 8085 microprocessor, Memory and its type.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO2	To Analyse interfacing applications using microprocessors and peripherals.	-	2	ı	1			-	1	1	-	-	-	2	-	_
14	Microprocessor	CO3	To Design Assembly Language Programs by using instructions of 8085.	-	1	2	1	1	-	-	ı	1	-	-	-	2	-	-
14	& Interfaces	CO4	To investigate the connection of the microprocessor with the peripheral devices. To design assembly language programs by using	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO5	instructions of 8085 and relate	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
			CONTRACTOR DE CO	3	2	2	•	•	•	-	•	•	-	-	-	2	-	-
		CO1	Understand basic concepts and identify various data models (E-R modeling concepts) and apply these concepts for designing databases.	2	-	-	-	-	-	-	-	-	-	-	-	2	3	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering		Desig n/deve	Cond uct	Mode rn		Envir onme	Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
	Database	CO2	Apply relational database theory by SQL and describe relational algebra expression, tuple and domain relational expression for writing queries in relational algebra.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
15		соз	Identify and improve the database design by normalization and key constraints.	-	1	2	-	-	-	ı	-	-	1	-	-	2	-	-
	•	CO4	Understand and Analyze transaction processing and concurrency control concepts.		ı	2	-	-	-	ı	-	-	-	-	-	-	2	_
				-	ı	1	ı	-	-	ı	-	-	•	-	-	•	-	-
				2	1	2	-	-	-	•	•	-	•	-	-	2	2.5	-
		CO 1	To demonstrate basic concepts of computation	2	ı	ı	ı	-	-	•	-	-	ı	-	-	2	-	-
		CO 2	To analyze language expressions and Grammars in finite automata.	-	2	1	-	-	-	ı	-	-	1	-	-	1	2	-
16		CO 3	To design the solutions of computation problem using suitable machines	-	-	2	-	-	-	-	-	-	1	-	-	-	-	2
	Computation	CO 4	To apply the concepts of Computation in real life problems .	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3
				-	•	ı	•	-	-	•	-	-	•	-	-	•	-	-
				2	2	2	2	-	-	-	-	-	-	-	-	2	2	2.5
		CO1	To explain networking models and data trasmision	2		-	-	-	-			-		-	-	2	-	-
		CO2	Apply the the Error Detection and Correction techniques.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	2
	Data	CO3	To analyze the network Layer routing algorithms.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	2
17	Communication and Computer Networks	CO4	examine the transport and application layers protocol servi	-	2	1	-	-	-	-	-	-	1	-	-	2	-	2
				-	1	1	_	1	-	-	-	-	-	-		_	-	
				2	2	•	•	-	-	•	-	-	•	-	-	2	-	2
		LO1	To familriaze with the architecture and instruction set of Intel 8085	2	-	1	-	-	-	1	-	-	-	-	-	2	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering	Probl	PO 3: Desig n/deve	Cond	PO 5: Mode rn	PO 6: The engine		PO 8: Ethics	PO 9: Indivi dual	PO 10: Com	PO 11: Proje	PO 12: Life-	PSO1- The ability	PSO2- The ability	PSO3- The ability
			,		analys	lopme	investi	tool	er and	nt and	Apply	and	munic	ct	long	to	to	to
		LO2	To demonstrate operation of typical 8085 microprocessor trainer kit	-	2	-	-	-	-	-	ı	-	-	-	1	2	-	-
	Microprocesso	LO3	To provide practical hands on experience with Assembly Language Programming	-	1	ı	-	-	-	-	1	1	1	2	-	-	-	2
18	r & Interfaces Lab	LO4	To analyze limitations and applications of Assembly language Programming for the real world problem	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
		LOF	To get familiarize with interfacing of various peripheral devices using 8085 chip	-	-	1	-	-	-	-	-	-	-	-	-	2	-	-
				2	2	1	-	-	-	-	•	•	-	2	2	2	-	2
			schemas for a given application using DDL/DML SQL	-	-	2	-	2	-	-	-	-	-	-	1	2	-	-
			Apprint Concept of integrity reals and Constraints to ensure accurate and error free	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
			Identify solutions for database update using pre store Procedures and Triggers	-	-	2	-	-	-	-	-	-	-	-	2	-	-	-
4.0	Database	1.04	Compare the constraints primary key and foreign key between primary table and secondary table	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
19	Management · System Lab	1.05	Construct Views to simplify and reduce complexity of database schema	-	-	3	-	-	-	-	-	-	-	-	2	-	-	-
			Decision to users with different types of privileges and check users existence in database	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
		1.07	Assemble records from multiple tables in database through Inner joins and Outer joins	-	-	3	-	-	-	-	1	-	-	-	1	1	-	-
				3	2	2.5	2	2	-	-	•	-	-	-	1.5	1.6	-	-
		LO1	To defines the basic principles of computer networks. Understand the key topologies that support the internet.	2	-		-	-	-	-	1	-	-	-	-	2	-	-
		LO2	To demonstrate the installation and configuration of network.		-	2	-	-	-	-	-	-	-	-	-	2	-	-
00	Network	LO3	To evaluate errors using a variety of error correction techniques.	-	2	-		-	-	-	-	-	-	-	-	2	-	2
20	Programming - Lab	1.04	To apply a network routing algorithm, evaluate the process, and implement a simple routing network.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	2	-	-	-	-	•	-	-	-	-	2	-	2

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	em	PO 3: Desig n/deve lopme		PO 5: Mode rn tool	PO 6: The engine er and		PO 8: Ethics : Apply	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
		LO1	related to inode, I/O redirection and piping, process	2	1	-	-	-	-	-		-	-	-	-	2	-	1
		LO2	To analyze variety of problems of shell script using looping, case structures in the script programming.		2	-	-	-	-	-	-	-	-	-	-	2	-	1
21	Linux Shell Programming	LO3	To synthesize the logical problems using the shell script programming.	-	1	-	2	-	-	-	-	-	-	-	-	2	-	-
21	Lab	LO4	To explore the pattern problems using shell scripts.	-	1	2	-	-	-	1	1	-	-	-	-	2	-	-
		LO5	Apply C programming concepts to solve numerical problems related to array manipulation in shell scripting.	-	1	1	1	2	-	1	-	1	-	1	1	2	1	-
				2	2	2	2	2	•	•		•			•	2	•	1
		LO1	To understand the basic concepts of java.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	To eleborate the concept of file handling, multithreading and applets.	2	ı	1	1		-	ı	-	1	-	1	i	-	2	-
22	Java Lab	LO3	To analyze the terms of the packeages & Interfaces	2	2	-	-	-	-	ı	-		-	-	-	-	2	-
22	Java Lab	LO4	To design the steps for creating the project using major concept	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	-	-	•			-			-	2	2	3
		CO 1	Demonstrate the concept of information theory and entropy.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	_
		CO 2	Analyze the different coding techniques for efficient communication.	-	2	1	-	-	-	1	-	-	-	1	-	2	-	-
	Information	CO 3	Design the linear block code and cyclic code for error free communication.	-	-	2	-		-	-	-	-	-	1	-	-	2	-
23	Theory & Coding	CO 4	Evaluate the shortest path by using different algorithms techniques.	-	ı	1	3	-	-	ı	-	1	-	ı	ı	-	1	2
				-	1	1	1	-	-	1	-	1	-	1	•	-	1	-
	_			2	2	2	3	-	-	•	-	-	-	•	-	2	2	2
		CO 1	To illustrate the theoretical concepts of finite state machine	2	-	-	_	-	-	-	-	_	-	1	_	3	_	-
		CO 2	To analyze the grammars, parsing techniques, and actual code generation methods	-	3	1	-	-	-	-	-	-	-	1	-	-	2	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	Probl em	PO 3: Desig n/deve lopme	Cond uct	PO 5: Mode rn tool	engine		Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
24	Compiler	CO 3	To Evaluate the different types of error and convert the code in I.C.G.	-	-	3	1	-	-	1	-	-	1	1	-	-	-	2
24	Design	CO 4	To convert the optimized code into the machine code in the storage organisation and code optimization.	-	-	-	3	-	-	-	-	-	-	-	-	2	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	3	3	•	•	•	•	-	•	•	•	2.5	2	2
		CO 1	To demonstrate the knowledge of Operating System services including Memory, Device & File Management.	3	-	-	-	-	-	-	1	-	1	-	-	3	-	2
		CO 2	To categorize the Process management in terms of inter process communication and memory management methods for	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
25	Operating	CO 3	To Design the solution for scheduling and deadlock problems in operating system using appropriate algorithms such as round	-	-	2	-	-	-	-	-	-	-	-	-	3	-	2
23	System	CO 4	To investigate LINUX/UNIX, OS, RTOS, windows and Mobile based OS file system through case study.	-	-	-	3	-	-	-	-	-	-	-	-	2	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	3	-	-	•	•	-	•	•	•	2.5	2	2
		CO 1	Demonstrate the standards and Primitives of Drawing components like line, circle, ellipse, clipping, filling	2	-	-	-	-	-	ı	-	-	-	1	ı	2	-	-
		CO 2	Analyze the graphics quality with the help 3D Graphics and Projections	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
26	Computer Graphics &	CO 3	Design the animation using transformation and clipping	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
20	Multimedia	CO 4	Organize the primitives for Illumination, Shading and Color Models.(Evaluate)	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3
				-	-	-	1	•	-	•	•	-	•	1	•	-	-	-
				2	2	3	2	-	•	•					•	2	2	2.5
		CO 1	Analyze and evaluate the cyber security needs of an organization.	2	-	-	-	-	-	-	-	-	-	1	-	2	-	-
		CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	3	-	-	-	-	-	-	ı	-	-	-	-	2	-	-
27	Cyber Space	CO 3	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics	-	3	-	-	-	-	-	1	-	-	-	-	2	-	-
-	Operations and Design	CO 4	Design and develop a security architecture for an organization.	-	-	3	3	-	-	-	-	-	-	2	-	2	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	em	Desig n/deve	PO 4: Cond uct investi	PO 5: Mode rn tool	PO 6: The engine er and	PO 7: Envir onme nt and	:	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
		CO 5	Design operational and strategic cyber security strategies and policies.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	3	•	-	•	-	-	-	2	•	2	-	-
		CO 1	conduct digital investigations that conform to accepted professional standards and are based on the investigative	2	ı	i	-	ı	-	ı	-	-	-	ı	ı	2	ı	-
	5	CO 2	identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy,	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
28	Digital Forensics and	CO 3	apply a solid foundational grounding in computer networks, operating systems, file systems, hardware, and mobile devices	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
	Incident Response	CO 4	access and critically evaluate relevant technical and legal information and emerging industry trends.	-	-	3	-	3	-	-	-	-	-	3	-	2	-	-
		CO 5	Communicate effectively the results of a computer, network, and/or data forensic analysis verbally, in writing, and in	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	-	3	-	-	-	-	-	3	-	2	-	-
		CO 1	Understand complexity of an algorithm, asymptotic notation and divide and conquer method for developing an algorithm.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the algorithm design using greedy algorithm and dynamic programming.	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
29	Analysis of	CO 3	To Create search for problem solution using backtracking, branch and bound and pattern matching algorithm	-	-	3	-	-	-	-	-	-	-	-	-	2	-	-
	Algorithms	CO 4	To synthesize the randomized algorithm, assignment problem and types of classes such as P, NP, and NP Complete.	-	-	-	2	-	-	-	-	-	-	-	-	3	-	2
				-	-	•	-	-	-	-	-	-	-	•	-	-	-	-
				3	3	3	2	ı	-	ı	-	-	-	ı	ı	2.5	•	2
		CO 1	To Classify the challenges with transmission of signals in wireless communication systems and Cellular architechture	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	To Analyze the measures to increase the capacity in GSM systems-sectorization and Spatial Filtering for Interference	-	3	-	-	-	-	-	-	-	-	-	-	-	2	-
30	Wireless	CO 3	To formulate cell architecture in wirless communication sytem.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
	Communication	CO 4	To Distinguish digital signaling techniques for lossy channels.	-	-	ı	2	-	-	-	-	-	-	-	-	2	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	3	2	-	-	-	-	-	-	-	-	2.5	2	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	em			PO 5: Mode rn tool	PO 6: The engine er and		PO 8: Ethics : Apply	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
		CO1	To apply guidelines and imperical research method in HCI to Make User Friendly Computer Interface	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO2	To categorise Human Computer interction concept using GUI Design and Prototyping techniques	-	3	-	-	-	-	-	1	-	-	-	-	-	2	-
31	Human Computer	CO3	To design Task models and object oriented modeling for computer interface	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
	Interaction	CO4	To classify types of GOMS, Family model and LAWS	-	-	-	2	-	-	-	1	-	-	-	-	1	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	3	2	-	-	-	-	-	-	-	-	1.5	2	2
		CO1	To understand blockchain systems working and Distributed Consensus of block chain technology.	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO2	To Analyze Block Chain Technology with Crypto currency and Bitcoin.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
32	Fundamental	CO3	Design and built smart contracts and Ethereum Structure of Block chain.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
02	of Block chain	CO4	To Analyze the Block chain Types and Consensus Algorithms.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	2	ı	-	-	-	ı	•	-	ı	•	3	2	-
		CO 1	Analyze and evaluate the cyber security needs of an organization.	2	-	-	1	-	-	-	ı	1	-	ı	1	2	ı	-
		CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	3	-	-	1	ı	-	-	1	1	1	1	ı	2	ı	-
33	Cyber Space	CO 3	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics	-	3	-	ı	1	-	1	1	ı	-	ı	1	2	1	-
	Operations and Design	CO 4	Design and develop a security architecture for an organization.	-	-	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 5	Design operational and strategic cyber security strategies and policies.	-	-	-	-	1	-	-	1	-	-	1	1	-	1	-
				2.5	3	3	3	•	-	-	1	-	-	2	-	2	-	-
		CO 1	conduct digital investigations that conform to accepted professional standards and are based on the investigative	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy,	3	-	-	-	-	-	-	1	-	-	1	-	2	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

				PO 1:	PO 2:	DO 2.	PO 4:	PO 5:	PO 6:	PO 7:	PO 8:	PO 9:	PO	PO	PO	PSO1-	PSO2-	PSO3-
			Course Outcomes	Engine		Desig	Cond	Mode	The	Envir	Ethics	Indivi	10:	11:	12:	The	The	The
S.No	Course Name	CO No	(After completing the course students will be able to)	ering		n/deve	uct	rn	engine	onme	Etilics :	dual	Com	Proje	Life-	ability	ability	ability
			(After completing the course students will be able to)	knowl	analys	lopme		tool				and	munic	ct	long	to	to	to
	Digital		apply a solid foundational grounding in computer networks,	KIIUWI		юриис	mvesti	1001	Ci anu	nt anu	Appry	anu	munic	Ci .	long		10	10
	Forensics and	CO 3	operating systems, file systems, hardware, and mobile devices	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
34	Incident		access and critically evaluate relevant technical and legal															
	Response	CO 4	information and emerging industry trends.	-	-	3	-	3	-	-	-	-	-	3	-	2	-	-
			Communicate effectively the results of a computer, network,															
		CO 5	and/or data forensic analysis verbally, in writing, and in	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			wild of daw foreign didings with in		_			_										
				2.5	3	3	-	3	-	-	-	-	-	3	-	2	-	-
			to apply the concepts of transformation techniques on 2D															
		LO1	& 3D objects.	2	-	-	-	-	-	-	-	-	-	-		2	-	-
			to analyze the colour modelling, shading and animation												_			
		LO2	on graphic objects.	-	3	-	-	-	-	-	-	-	-	-		2	-	3
	Computer		to design the graphical premitives drawing algorithms			2												
35	Graphics &	LO3	such as line, circle drawing algorithms.	-	-	3	-	-	-	-	-	-	-	-	-	2	-	3
ან	Multimedia		to Generate Fractal images using graphics tool like															
	Lab	LO4	Sterling	-	-	-	2	2	-	-	-	-	-	-	-	3	-	-
		LO5	to make a project to solve real life socity based problem					_	3	3	3	3	3	3	3	3	2	3
		LOS	and demonstrate following PO related capabilities:	-	-	-	-	-	3	³	3	) ၂	3	3	3	3		3
				2	3	3	2	2	3	3	3	3	3	3	3	2.4	2	3
			T A 1 : 0 6 : 1 : 1 : 1 : 1															
		LO1	To Analysis the finite state machines, lexical analyzer,	-	-	-	-	_	-	-	-	3	-	-	-	3	-	-
			parser for the grammar.															
		LO2	comments, operators, loops and keywords, and	-	-	-	-	3	-	-	-	-	-	-	-	2	-	-
			To Design intermediate code genrator and converted into															
	Compiler	LO3	optimized code	-	-	-	-	-	-	-	-	3	-	-	-	2	-	-
36	Design Lab		To demostrate hands on experience of working on															
	Design Lab	LO4	system software.	-	-	-	-	-	3	-	-	-	-	-	-	-	3	-
			System sonware.															
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	3	3	-	-	3	-	-	-	2.333	3	-
			Apply sorting algorithms like quick sort for															
		LO1	information searching.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
			Identify problems to be broken down into simple sub				_										_	
		LO2	problems using merge sort algorithm	-	-	-	3	-	-	-	-	-	-	-	-	-	3	-
			Device solutions using topological ordering to														_	
	, , , ,	LO3	quickly compute shortest paths	-	-	2	-	-	-	-	-	-	-	-	-	-	3	-
	Analysis of Algorithms	LO4	Demonstrate real world scenarios like resourse														2	
37								_		1					2			

## B. Tech. in Artificial Intelligence (AI) & Data Science

				PO 1:	PO 2:	PO 3:	PO 4:	PO 5:	PO 6:	PO 7:	PO 8:	PO 9:	PO	PO	PO	PSO1-	PSO2-	PSO3-
			Course Outcomes	Engine		Desig	Cond	Mode	The			Indivi	10:	11:	12:	The	The	The
S.No	Course Name	CO No	(After completing the course students will be able to)	ering	em	n/deve	uct	rn	engine	onme	:	dual	Com	Proje	Life-	ability	ability	ability
				knowl	analys	lopme	investi	tool	er and	nt and	Apply	and	munic	ct	long	to	to	to
	Lab	LO5	From a given vertex, Select Dijkstra's algorithm to	_			_	2	_	_		_	_	_		_		3
		LO3	find the shortest path to other vertices	_	_				_	_		_				_	لـنَــا	
		LO6	Demonstrate minimum cost spanning tree of a	_	3		_	_	_	_	_	_	_	_	_	_	_	3
			given undirected graph using kruskal's algorithm														$\vdash$	
				3	-	2	3	2	-	-	-	-	-	-	2	3	2.667	3
		LO1	To apply event handling on AWT and Swing components.	-	ı	3	-	ı	-	1	-	-	ı	-	ı	3	-	-
		LO2	To Design a page using Swing , Servlet , JSP and JDBC connectivity.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	-
00	Advance Java	LO3	To create a project based on societal problem.	-	-	-	-	-	3	-	-	-	-	-	-	-	3	-
38	Lab	LO4	To map Java classes and object associations to relationar database tables with Hibernate	-	ı	1	-	ı	-	3	-	-	1	-	-	-	3	3
		LO5		-	1	1		1	1	1	-		1	-	-	-	1	-
				-	-	3		3	3	3	-		•	-	-	3	3	3
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	ı	-	ı	-	-	-	-	-	-	-	2	-	-
		LO2	updated with all the latest changes in technological world	-	-	-	-	3	-	-	-	-	-	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
39	Industrial	LO4	knowledge, management, leadership and	-	-	-	-	-	-	-	-	3	-	-	-	2	2	3
39	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach. Capability and entitusiasm for sen-improvement intougn	-	ı	1	3	ı	3	1	-	-	-	-	-	2	2	-
		LO6	continuous professional development and life-long	-	-	1	-	-	-	-	-	-	-	-	3	2	-	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	1	1	-	1	-	3	2	-	ı	-	-	-	2	-
				3	•	•	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO 1	To identify the elements of image and basic steps of digital Image Processing.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Apply the diffrent function types in spatial and frequency domain.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
40	Digital Image	CO 3	To use different tecniques for image enhancement and image restoration.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering	Probl		Cond		PO 6: The engine	Envir		PO 9: Indivi dual	PO 10: Com	PO 11: Proje	PO 12: Life-	PSO1- The ability	The	PSO3- The ability
-7∪	Processing		To construct enhance image using the technique of	knowl	analys	lopme	investi	tool	er and	nt and	Apply	and	munic	ct	long	to	to	to
	Trocessing	CO 4	compression and segmentation techniques.	-	2	1	-	-	-	-	1	-	1	-	-	2	-	-
				-		•	-	-	-		•	-		-	-	-	-	-
				2	2	2	-	-	-	•	•	-	•	•	-	2	-	-
		CO 1	Apply the fundamental concepts of learning in Machine Learning .	3	-	1	-	-	-	-	1	-	1	-	-	3	-	-
		CO 2	Analyze or Parse the datasets with statistical theory learning methods.	ı	3	ı	ı	-	ı	ı	ı	-	ı		-	2	-	-
41	Machine	CO 3	Analyze problem statement solution by Evaluating Machine Learning algorithms and model selection.	-	3	ı	ı	-	-	1	ı	1	1	1	-	-	2	-
71	Learning	CO 4	Design a hypothesis solution for the real world problem using Machine Learning Techniques.	-	-	2	-	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	-	-	-	-	•	-	-	-	-	2.5	2	2
		CO 1	To understand the concepts of Information Security	3	-	1	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	To Identify the fundamental techniques of information security	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Information Security	CO 3	To Demonstrate various network security applications	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
12	System			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	•	-	-	-	-	•	-	-	-	-	-	-	-
				3	2	2	•	-	-	•	ı	-	•	•	-	-	-	-
		CO 1	To Apply the concept of data representation and memory hierarchy in the CPU Organisation.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyse the instruction sets of assembly language in micro-programmed control devices.	-	2	-	-	-	-	-	-	-	-	-	-	3	-	-
43	Computer Architecture	CO 3	To analyse addressing modes, RISC and CISC architecture designs.	-	-	3	-	-	-	-	-	-	-	-	-	_	2	-
	and Organization	CO 4	To Design logical and arithmetic operations for floating and fixed point numbers.	-	-	3	-	-	-	-	-	-	-	-	-		2	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering knowl	Probl em	PO 3: Desig n/deve lopme	uct	PO 5: Mode rn tool	PO 6: The engine er and		:	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
		CO 5	Exemplify in a better way the I/O and memory organization.	-	-	-	3	-	-	-	-	-	-	-	-	2	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	2.333	2	-
		CO 1	Understand the concepts of artificial intelligence and intelligent agents.	3		1	-	-	1			-	-	-	-	2	-	-
		CO 2	To Learn basic principles of AI in solutions that require problem-solving methods.	-	2	,	_	_	,				-	_	_	-	2	_
44	Artificial	CO 3	Determine the effectiveness of truths by knowledge representation methods in Al	_	_	3	_	_	_	_		_	_	_	_	_	3	_
44	Intelligence	CO 4	Analyze the techniques presented and apply them to real world problems	-	_	-	2	_	-	_	-	_	_	_	_	-	-	2
			·	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	2	3	2	-	•	•	-	•	-	-	-	2	2.5	2
		CO 1	To apply cloud fundamentals in cloud computing architecture	2	-	1	-	-	1	-	-	1	-	-	-	2	-	-
		CO 2	To identify various cloud service models, cloud architecture, Parallel and distributed programming paradigms	-	2	1	-	-	,		1		-	-	-	2	-	-
45	Cloud Computing	CO 3	To examine the virtualization techniques regarding processor, memory, operating system, network virtualization	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
	Companing	CO 4	To descibe the basic threats, security mechanism, imporatnce of SLA's in cloud and cloud services platforms for business and industry prespectives	-	-	1	-	2	-	-	-	-	-	-	-	2	-	-
				-	-		-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	2	2	-	-	-	•	-	-	-	2	-	-
		CO1	Students will be able to gain basic knowledge on data science	2	-	ı		-	-	-	-	-		-	-	3	-	-
	Programming	CO2	Students will be able to convert the real time data into suitable form for analysis	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
1	for Data	CO3	The students will be able to apply techniques to gain the insights from the data through statistical inferences	-	-	2	2	-	-	-	-	-	-	-	-	1	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to) Students will be able to develop suitable models using	Engine ering	em			PO 5: Mode rn tool	engine	Envir	:	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
		CO4	machine learning techniques and to analyze its	2	2	2	2.5	2	-	_	-	-	-	-		2	2	2
		CO 1	Apply the fundamental concept of natural language processing (NLP) techniques to learn the structure and	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Demonstrate practical proficiency in using tools like ipython notebooks, NLTK, and other relevant	2	-	1	ı	1	-	-	1	ı	1	1	-	2	-	-
46	Natural Language	CO 3	Analyze lexical relations and various parsing techniques using WordNet and other semantic and parsing Analyze and apply distributional semantics and graphical	-	3	-	-	-	-	-	-	-	-	-	-	-	2	-
	Processing	CO 4	models for sequence labeling in NLP.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	2.5	-	-	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	To understand the working of block chain and also learn about block chain network.	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	To analyze the application of block chain and cryptography of block chain	-	2	-	-	-	-	-	-	-	-	-	-	-	2	_
	Blockchain and	CO 3	To identify the different cybercrimes and frauds and classify different cyber-attacks.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
46	Cyber Security	CO 4	Able to use different tools and methods used in cybercrime and identify different theft, digital forensic.	-	-	2	1	2	-	-	i	1	i	-	-	-	2	-
		CO 5	Learn about different network defense tools and basic of virtual private network.	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
				2	2	2	ı	2	-	-	•	ı	•	•	-	3	2	2
		CO 1	To understand the basic architecture of Neural Network.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	To analyze the different preprocessing and learning algorithm and apply on neural network.	-	3	-	-	-	-	-	-	-	-	-	-	2	-	_
46	Artificial Neural Network	CO 3	To demonstrate different applications that learn using neural network	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
	TOUWOIK																	

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	Probl em	Desig n/deve		Mode rn		Envir onme	Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
				3	3	3										2.5		3
				3	3	3	-	-	-	_	-	-	•	-	-	2.5	-	3
		CO 1	Understand the basic terminology of cybercrimes	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Apply a number of different computer forensic tools to a given scenario	-	2	-	-	-	-	-	-	-	-	-	-	-	2	<u>-</u>
46	CYBER	CO 3	Understand the basics of computer forensics	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
10	FORENSICS	CO 4	Analyze and validate digital evidence data	1	-	2	-	2	-	1	-	-	-	-	-	-	2	-
		CO 5	Analyze acquisition methods for digital evidence related to system security	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
				2	2	2	-	2	-	-	-	-	-	-	-	3	2	2
		CO 1	Outline the vulnerabilities in a system or network using computer forensic fundamentals.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Demonstrate a critical evaluation of an advanced security topic with an independent project.	1	3	-	-	-	-	1	-	-	-	-	-	3	-	-
46	ETHICAL HACKING AND DIGITAL	CO 3	Analyze and critically evaluate techniques used to break into an insecure web application and identify relevant counter measures.	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
	FORENSICS	CO 4	Evaluate the potential counter measures to advanced hacking techniques.	-	-	-	3	-	-	ı	-	-	-	-	-	-	-	3
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	3	-	-	-	-	-	-	-	-	3	3	3
		CO 1	To generalize the basic elements and design architectures in distributed system.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To analyze the concurrent processes, inter process communication and RPC and RMI case studies in	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
		CO 3	To study process scheduling, implementation and file systems along with corresponding case studies.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
46	Distributed System	CO 4	To analyze the memory sharing and failures, deadlock handling in distributed system architecture.	-	-	-	2	-	-	-	-	-	-	-	-	3	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	Probl em	Desig n/deve	PO 4: Cond uct investi	Mode rn	PO 6: The engine er and	onme	Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
			To analyse different agreements, faults and recoveries, management concept and CORBA services while implementing distributed system.	-	-	3	-	-	-	•	-	-	-	-	-	3	-	-
				3	2	2.5	2	•	•	•	•	-	-	-	•	2.5	2	-
		CO 1	To understand the CONCEPT OF Electronic Commerce, ERP and its applications	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	To apply online publishing techniques in digital marketing	-	2	-	-	-	-	-	-	-	-	-	-	3	-	-
47	Ecommerce and	CO 3	To compare E- Business models in web based applications for businesses	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
''	ERP	CO 4	To evaluate XML and HTML for creating interactive pages for Web, e-business, and portable applications.	-	-	-	2	-	-	-	-	-	-	-	-	3	3	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	2	-	-	-	-	-	-	•	-	3	3	-
		LO1	To implement the basic concept of Matlab programming tools for Digital Image processing	-	-	-	-	-	-	-	-	2	-	-	2	2	-	_
		LO2	To demonstrate and compare various image operations.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	_
48	Digital Image Processing	LO3	To apply different type of filters and transform techniques on images.	-	-	-	-	-	-	-	-	-	-	2	-	-	2	_
	Lab	LO4	To implement different morphological operations and segmentation on images.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
		LO5	To prepare students for perform different enhancement technique on image.	-	-	-	-	-	-	-	-	-	-	-	2	2	-	_
				-	2	•	-	-	•	•	•	2	-	2	2	2	2	2
		LO1	To choose basic python Libraries and commands used in Machine Learning.	-	1	ı	•	3	1	1	1	-	•		1	3	1	-
		LO2	To apply knowledge of machine learning algorithms for problem statements provided.	-	-	3	-	-	-	-	-		-		-	3	-	3
49	Machine	1 02	to analyze various Supervised and Unsupervised Machine Learning algorithms.	-	-	-	3	-	-	_	-	-	-	-	_	3	3	
43	Learning Lab	LO4	To Evaluate Machine Learning Algorithms for real world problems.	-	-	-	-	-	-	3	-	-	-	-	-	3	-	3
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering		Desig n/deve	Cond uct	PO 5: Mode rn tool		onme	Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
				-	•	3	3	3	-	3	-	-	•	•	•	3	3	3
		LO1	To apply the basic datatypes and variables	2	1	1	-	-	-	-	-	1	1	1	-	3	-	-
		LO2	To analyze the importance of conditional statement & Looping Structure.	-	3	-	-	-	-	-	-	-	1			3	3	-
50	D. H I I.	LO3	To Identify the list and tuples in container data types.	-	3	-	_	_	-	-	-	_	1	1	_	-	-	2
50	Python Lab	LO4	To be Able to produce Strings ,Character Arrays and Fuction Programming concept in python.	_	-	-	-	-	-	-	-	-	-	-	-	-	_	3
		LO5	To Develop the ability to create data structure applications in Python programming.	_	-	-	_	2	-	_	_					_	2	2
				2	3	•	-	2	-	-	-	-	-	-	-	3		2.333
		LO1	Demsotrate the installation of android studio and other IDEs including architecture and fundamental concept of	2	_	-	_	_	_	_	_	_	_	_	_	_	_	_
		100	Analyse the android framework and tookit as per the given problem	-	2	-	_	2	_	_	_	_				_	2	_
	Mobile Application		Design the layout and solutions recognize the need for sociteal problems.			_	2		_	_		_		_	1			2
51	Development Lab	LO4	Create the android application for real life application by utilizing the skills of project management	-	-			3	-	-	_	-	-	2	1	1	-	
	Lab		utilizing the skins of project management	_	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2		2	2.5	_	-	_	_		2	1	1	2	2
		CO 1	To demostrate concepts IOT plateform and conectivity with devices like Ardinuo, Rasberry pi etc.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyse IOT communication models like push-pull, publish & subscribe model.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	3
	Internet of	CO 3	To Design prototypes for Internet of Things in real time applications.	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
52	Things	CO 4	To investigate solutions of complex problems using advance concepts of IOT & Big Data.	-	-	1	3	-	-	-	-	-	-	-	-	-	2	-
				-	-	-	-	-	-	-	-	-	-		-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	2	2.5	3
		CO 1	To apply Quality Tools to monitor the overall operation and continuous process improvement.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering knowl		Desig n/deve	PO 4: Cond uct investi	PO 5: Mode rn tool	PO 6: The engine er and		PO 8: Ethics : Apply	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
	Quality	CO 2	To Analyse systematic methods in identifying where and how it might fail and relative impacts of different failures	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
53	Management /	CO 3	To formulate effectively customer requirements and convert them into detailed engineering	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
	ISO 9000 (Open Elective-1)	CO 4	To Measure themselves against internal or external standards and to improve the capability of their business processes.	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	2	-	-	-	-	•	•	-	-	2	-	-
		CO 1	To Apply basic concepts of Cybercrime and legal Perspectives of Security Implications for Organizations in respect to the	2	1	ı	-	-	-	-	-	1	1	-	-	2	-	-
		CO 2	To Analyze offences, attacks and Criminals plan for the cyber space.	-	3	1	-	-	-	-	1	-	1	-	-	- 1	2	-
54	Cyber Security (Open Elective-	CO 3	To Compose the cyber security solutions and cyber security Tools in Cybercrime.	-	-	2	-	-	1	-	,	1	1	-	-	1	2	-
34	1)	CO 4	To Select the Management Perspective human role in security systems with an Organizational, emphasis on ethics, social	-	-	-	2	-	-	-	1	-	-	-	-	-	-	2
				-	-		-	-	-				,	-	-		-	-
				2	3	2	2	-	-			•		-	-	2	2	2
		LO1	to Define the various terminal commands used in developing IOT applications.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	to develop the python scripts used in IOT applications.	-	3	ı	-	-	-	-	-	1	1	-	-	•	-	3
55	Internet of	LO3	to apply the logics of IOT for designing IOT applications	-	ı	3	-	-	-	-	-	1	ı	-	-	1	3	-
	Things Lab	LO4	and demonstrate following PO related capabilities:	-	ı	3	-	3	3	3	3	3	3	3	3	3	2	3
		LO5		-	-	1	-	-		1		1	1	-	-	-	-	-
				3	3	3	-	3	3	3	3	3	3	3	3	2.5	2.5	3
		LO1	different security-based tools like Wire shark, tcpdump,	-	3	1	-	-	-	-	-	-	-	-	-	3	-	2
		LO2	to design the substitution and transposition techniques for plain text encryption and decryption.	-	-	3	-	-	-	-	-	-	-	-	-	2	-	3
		LO3	techniques for secure data transmission across network	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering knowl	PO 2: Probl em analys	PO 3: Desig n/deve lopme	PO 4: Cond uct investi	PO 5: Mode rn tool	PO 6: The engine er and	PO 7: Envir onme nt and	PO 8: Ethics : Apply	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
56	Cyber Security Lab	LO4	to Install appropriate tools for network protocol analyze security-based tools like Wire shark, topdump etc.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	2
		LO5 LO6	may be relevant to understanding and assessing in cyber  TOMProve team working skill for designing a solution for Key Exchange problem and general attacks on system	-	-	-	-	-	-	-	3	3	-	-	-	3	2	-
			tton กับรัยกายใหญ่ แบบ กับรัยกายใหญ่ using a File Transfer Protocol mechanism and through	-	-	-	-		_	2	-		3	3	3	-	2	3
		207	socket programming and make report	-	3	3	2	3	_	2	3	3	3	3	3	2.5	2.333	2.5
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	updated with all the latest changes in technological world	-	1	1	-	3	-	-	1	-	-	3	-	3	1	3
		LO3	Ability to communicate efficiently	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
57	Industrial Training	LO4	knowledge, management, leadership and	-	-	-	-	-	-	-	-	3	-	-	-	2	2	3
	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-
		LO6	continuous professional development and life-long learning Awareness of the social, cultural, global and	-	-	-	-	-	-	-	-	-	-	-	3	2	-	3
		LO7	environmental responsibility as an engineer.	-	-	-	-	-	-	3	2	-	-	-	-	-	2	-
				3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO 1	Establish motivation for any topic of interest and develop a thought process for technical seminar	-	-	3	-	-	-	-	-	-	-	-	2	2	-	-
		CO 2	Organize a detailed literature survey and build a document with respect to technical publications and effective presentation	-	-	-	3	-	-	-	-	-	3	-	-	-	3	-
58	Seminar	CO 3	Analysis and comprehension of proof-of-concept and related data to access social, health, legal and environment issues for	-	3	-	-	-	3	3	-	-	-	-	-	2	-	-
		CO 4	Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational	-	-	-	-	-	-	-	3	2	-	-	-	3	3	-
		LO5	Make use of new and recent technology including perdition and modeling to complex activities.	-	-	-	-	3	-	-	-	-	-	-	-	-	2	2
				-	3	3	3	3	3	3	3	2	3	-	2	2.333	2.667	2
		CO 1	To apply the fundamentals of Big Data analytics in Hadoop	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

				PO 1:	DO 2.	PO 3:	PO 4:	PO 5:	PO 6:	PO 7:	DO 0.	PO 9:	PO	PO	PO	PSO1-	PSO2-	PSO3-
			Course Outcomes	Engine				Mode					10:	11:	12:	The	The	The
S.No	Course Name	CO No	(After completing the course students will be able to)	ering		n/deve	uct	rn	engine	onme	Ethics	dual	Com	Proje	Life-	ability	ability	ability
			(After completing the course students will be able to)	knowl	analys		investi	tool	er and		Apply	and	munic	ct	long	to	to	to
			To identify the input-output methods like writeable interface	KIIUWI		юрше	mvesti	1001	ei anu	nt anu	Appry	anu	munic	Ci	long		ιο	ιο
		CO 2	and serialization in Hadoop platform.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
			To produce and validate the Map Reduce programming models													_		
	Big Data	CO 3	of big data analytics	-	2	-	-	-	-	-	-	-	-	-	-	2	-	
59	Analytics		To describe/demostrate Pig and Hive architecture and their													_		
	-	CO 4	progaramming model such as HQL, Pig script.	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	_		2						_		2	_	
						_		2	_		_	_	_	_		2	_	-
		CO 1	To <b>classify</b> the concept of cybercrime offence in cyber space	3	_	_	_	_		_	_	_	_	_	_	2	_	_
			and Intellectual Property Rights in terms of copyright, patent	3	_	_					_			_			_	
		CO 2	To analyse the administrator & conventions of Intellectual	_	2	_	_	_	_	_	_	_	_	_	_	2	_	_
			Property Rights with special reference to India and abroad.															
	IPR, Copyright	CO 3	To generalize intellectual property laws including the copyright	_	_	2	_	_	_	_	_	_	_	_	_	2	_	_
60	and Cyber Law		law, patents law, designs and trademark law with appropriate			_										_		
	of India (Open	CO 4	To <b>conclude</b> the Jurisdiction Issues in Cyber Space and	_	_	_	3	_	-	_	-	_	_	_	_	2	_	-
	Elective-II)		intellectual property for conventions in India, United Kingdom															
				-	-	-	-	-	-	-	-	-	-	-	_	-	-	-
				3	2	2	3	-	-	-	-	-	-	-	-	2	-	-
-																		
		CO 1	To apply the fundamentals of Big Data analytics in Hadoop	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
			To analyze the input-output methods like writeable interface															
		CO 2	and serilization in Hadoop platform.	-	2	-	-	-	-	-	-	-	-	-	-	3	-	3
			To design the Map Reduce programming models of big data			_										_	_	
(1	Big Data	CO 3	analytics.	-	-	2	-	-	-	-	-	-	-	-	-	3	2	-
61	Analytics (Open		To evaluate of Pig and Hive architecture and their				_									_		
	Elective-II)	CO 4	progaramming model such as HQL, Pig script.	-	-	-	3	-	-	-	-	-	-	-	-	3	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	2	3							-	_	3	2	3
							3	-	-					_		ა	4	3
		LO1	To Understand Big Data and its analytics in the real world	3										_		3		
			,	,						_					_	,		
		LO2	To Analyze the Big Data framework like Hadoop and NOSQL	_	3	_	_	_	_	_	_	_	_	_	_	3	_	_
			to efficiently													,		
	5. 5 .	LO3	To Implement Big Data Activities using Hive	_	_	_	-	_	_	_	-	-	_	_	3	_	3	_
62	Big Data		1 6												-		-	

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering knowl	Probl em	n/deve	Cond uct	Mode rn	PO 6: The engine er and	Envir onme	Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
02	Analytics Lab																	
				3	3	-	-	-	-	-	•		•	-	3	3	3	-
		LO1	To understand the process of manual testing or automation testing by writing test plan and test cases based on different	-	-	-	-	-	3	-	-	-	-	-	3	-	3	-
		LO2	To analyse the mutation score using various tools like jumble testing tool.	-	-	-	-	3	-	-	-	-	-	-	3	-	-	-
63	Software Testing and	LO3	To analyse the performance of commercial websites using different automation tools like jmeter.	-	-	-	-	-	-	-	-	3	-	-	3	3	-	-
	Validation Lab	LO4	To calculate the coverage analysis of programs using different automation tools like Eclemma tool.	-	-	-	-	-	-	-	-	-	3	-	3	-	-	-
				-	-	-	-	3	3	-	•	3	3	-	3	3	3	-
		CO 1	Apply fundamental knowledge of basic Computer Engineering courses for solving complex Engineering problem	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the literature, identify problem, its context with real world / industry issue and define problem statement	-	3	-	-	-	-	-	-	-	-	-	-	2	3	-
		CO 3	Design engineering solution to the problem using knowledge of core Computer engineering	-	-	3	-	-	-	-	-	-	-	-	-	3	3	-
		CO 4	Carryout experimentations/simulations and investigate the solution to complex Computer engineering problem	-	-	-	3	-	-	-	-	-	-	-	3	2	2	3
64	Project	CO 5	Use modern tools and techniques of Computer engineering for solving the problem	-	-	-	-	3	-	-	-	-	-	-	-	2	3	-
		CO 6	Analyse sustainability of proposed solution and its impact on environment & applicability of solution in industry and societal	-	-	-	-	-	3	3	-	-	-	-	-	3	-	3
			Understand professional ethics, rules and regulations while working on interdisciplinary issues and financial management	-	-	-	-	-	-	-	3	-	-	3	-	2	3	3
		CO 8	demonstrate the ability to lead and productively participate in group situations and to use oral communication effectively	-	-	-	-	-	-	-	-	3	3	-	-	3	3	-
				3	3	3	3	3	3	3	3	3	3	3	3	2.5	2.833	3
		CO 1	To Determine and analyse the domain name system (DNS) in internet and various cybercrime offence in cyber space.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	IPR, Copyright	CO 2	To understand the concept of Intellectual Property and Intellectual Property Rights with special reference to India and	-	-	-	-	-	-	-	3	-	-	-	-	1	-	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	em	PO 3: Desig n/deve lopme		PO 5: Mode rn tool	PO 6: The engine er and		PO 8: Ethics : Apply	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
65	and Cyber Law of India (Open Elective-II)	CO 3	To Apply intellectual property law principles including the copyright law, patents law, designs and trademarks, to real  To Study the Jurisdiction Issues in Cyber Space and	-	-	-	-	-	3	-	-	-	-	-	-	1	-	-
	·	CO 4	Competition Law in India	3	2	-	-	-	3	-	3	-	-	-	-	2 1.5	-	-
		CO 1	Students will be able to analyze big data using Hadoop.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Students will be able to use pig and Hive scripting	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
66	Big Data	CO 3	To Apply various big data analysis techniques	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
	Analytics Lab	CO 4	Students able to use modern data analytical tools	-	-	-	-	3	-	-	-	-	-	-	-	3	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	•	3	-	•	•	•	-	·	•	3	•	-
		CO 1	Understand the process of applying tests to software and the fundamental components of a coverage analysis and unit	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Understand the mutation testing and Writing test suits for applications.	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
67	Software Testing and	CO 3	Apply the website performance measurement technique using JMeter and Selenium tool to perform Test sequences and	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
	Validation Lab	CO 4	Analyze the design of test cases for different testing techniques.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	-	-	3	-	-	-	-	-	-	-	3	2	-
		CO 1	Apply fundamental knowledge of basic Computer Engineering courses for solving complex Engineering problem	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the literature, Identify problem, its context with real world / industry issue and define problem statement	-	3	-	-	-	-	-	-	-	-	-	-	-	3	-
		CO 3	Design engineering solution to the problem using knowledge of core Computer engineering	-	-	3	-	-	-	-	-	-	-	-	-	3	3	-
		CO 4	Carryout experimentations/simulations and investigate the solution to complex Computer engineering problem	-	-	-	3	-	-	-	-	-	-	-	-	-	2	3
68	Project	CO 5	Use modern tools and techniques of Computer engineering for solving the problem	-	-	-	-	2	-	-	-	-	-	-	-	2	3	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering		Desig n/deve	Cond uct	PO 5: Mode rn tool	engine	Envir	Ethics :	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
		CO 6	Understand applicability of solution in industry and societal issues	ı	-		-	-	2	-	-	-	-	-	-	-	2	-
		CO 7	Analyse sustainability of proposed solution and its impact on environment	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO 8	Understand professional ethics, rules and regulations while working on interdisciplinary issues	-	-	-	-	-	-	-	2	-	-	-	-	-	3	-
				2	3	3	3	2	2	2	2	-	-	-	-	2.667	2.667	3
		CO 1	Explain the basics of composites, its structure and its properties	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	Compute the physio-mechanical properties of composites from tests	2	1	-	-	-	-	-	-	-	-	-	-	-	-	1
69	Composite	CO 3	Assessment of engineering properties of composite materials	1	2	1	-	-	-	-	-	-	-	-	-	-	-	1
	Materials	CO 4	Analyze the failure and maintenance of composite materials	1	-	1	1	1	-	-	-	-	-	-	-	1	-	1
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				1.5	1.5	1	1	1	-	-	•	-	-	-	-	1	-	1
		CO 1	Explain the fundamentals of Fire Engineering	2	-	-	-	-	1	-	-	-	-	-	-	-	1	-
		CO 2	Apply the learned principles in planning, designing and management of fire safe buildings	2	1	1	-	1	1	-	-	-	-	1	-	1	1	-
70	Fire and Safety		Assess fire fighting installations, control technologies and hazardous materials	1	2	1	-	1	1	-	-	-	-	-	-	1	1	1
, ,	Engineering		Design of fire safety building for fire resitant construction by following safety legislation	1	-	1	1	1	1	-	1	-	-	-	-	-	1	1
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				1.5	1.5	1	1	1	1	•	1	-	-	1	-	1	1	1
		CO 1	Understanding of basic concepts and Principles of EM wave, propagation reflection and transmission. [Understanding]	3	2	-	-	-	-	-	-	3	-	-	-	-	1	-
		CO 2	Apply the knowledge for interest in complex dielectric constant, dipolar loss mechanism and design mechanism to understand	3	2	-	-	-	-	-	1	3	-	-	-	1	-	-
71	Industrial and Biomedical	CO 3	Analyze the structure of RF heating in industrial application. [Analyzing]	3	2	3	-	-	-	-	-	3	-	-	-	-	1	-
'-	applications of RF Energy	CO 4	Design of Hazards and safety standards in various engineering problem. [Create & Design].	3	3	3	3	-	-	-	-	3	-	-	-	-	1	-

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine ering	em	Desig n/deve	PO 4: Cond uct investi	PO 5: Mode rn tool	PO 6: The engine er and		PO 8: Ethics : Apply	PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
		CO 5		3	2.25	3	3	-	-	- -	-	3	-	-	-	1	1	-
		CO 1	Understand the fundamentals of robotics and its components, methods of linear motion into rotary motion and vice-verse.	3	3	2	2	2	3	3	3	2	-	3	3	2	-	-
		CO 2	Apply the appropriate techniques for movement of robotic joints with computers/microcontrollers. [Applying &	3	2	2	2	1	3	2	1	3	2	3	3	2	1	-
72	Robotics and	CO 3	Analyze parameters required to be controlled in a Robot for specific application. [Analyzing]	3	2	3	3	3	3	-	-	2	2	2	3	2	-	-
"-	control	CO 4	Design and Develop small automatic / autotronics applications with the help of Robotics for solving the real life problems	2	2	3	2	2	2	2	3	3	2	2	3	2	-	2
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.75	2.25	2.5	2.25	2.333	2.75	2.333	3	2.5	2	2.5	3	2	-	2
		CO 1	understand the current Energy Scenarios in India.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	understand the energy auditing of motors, lighting system and building, by appropriate analysis methods through survey	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
73	Energy Audit and Demand	CO 3	understand the Electrical-Load Management and Demand side Management.	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
,,,	side Management	CO 4	apply the Energy Conservation in transport, agriculture , household and commercial sectors.	3	2	2	1	-	-	-	-	-	-	1	-	-	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	2.333	2	1	-	-	-	-	-	-	-	-	-	-	-
		CO 1	Learn about soft computing techniques and their applications.	2	2	3	-	-	-	-	-	-	-	-	-	2	3	3
		CO 2	Analyze various neural network architectures.	2	2	3	-	-	-	-	-	-	-	-	-	2	2	3
74	Soft Computing	CO 3	Define the fuzzy systems	-	-	3	-	·	-	-	-	-	-	-	-	2	2	3
, ,	2011 Computing	CO 4	Understand the genetic algorithm concepts and their applications	3	2	3	-	-	-	-	-	-	-	-	-	2	2	3
		CO 5	Identify and select a suitable Soft Computing technology to solve the problem.	3	3	3	-	-	-	-	-	-	-	-	-	3	3	3
				2.5	2.25	3	-	-	-	-	-	-	-	-	-	2.2	2.4	3

## B. Tech. in Artificial Intelligence (AI) & Data Science

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering knowl	Probl em	Desig n/deve	Cond uct	Mode rn	The engine	Envir onme	PO 8: Ethics : Apply	Indivi dual	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	The	PSO2- The ability to	The
		CO 1	Define the simulation modeling and analyze the practical situations in organizations	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Examine the random numbers and random variates approach in different applications	2	1	-	-	-	-	-	-	-	-	-	-	-	1	-
75	Operations	CO 3	Investigate the sensitivity of simulation solutions for realistic problems	-	3	-	-	-	-	-	-	-	-	-	-	1	-	-
/3	Research	CO 4	Interpret the model and apply the results to solve crtitical issues of a realististic problem	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
				ı	ı	-	ı	1	-	-	1	1	-	1	1	-	1	-
				2.5	3	•	•	•	-	-	•	•	-	•	•	1.5	1	-
		CO 1	Generate methamatical models of complex engineering problems	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Analyse the various optimization techniques with the appropriate tools	3	1	-	-	-	-	-	-	-	-	-	-	2	-	-
76	Simulation Modeling and	CO 3	Identify suitable optimization techniques to solve industrial and sociatal problems	ı	3	-	ı	1	-	-	1	1	-	1	1	2	1	-
'0	Analysis	CO 4	Interpret the solution and apply the results to solve complex engineering problems	1	ı	3	1	1	-	1	1	ı	-	1	1	2	1	-
				1	ı	-	-	-	-	-	1	ı	-	1	-	-	-	-
				2.5	3	3	-	-	-	-	-	-	-	-	•	2	-	-

#### **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)		Probl	Desig n/deve	Cond		engine	Envir onme		PO 9: Indivi dual and	PO 10: Com munic	PO 11: Proje ct	PO 12: Life- long	PSO1- The ability to	PSO2- The ability to	PSO3- The ability to
		CO1	Students will be able to define and explain basic concepts definite integrals, sequence and series, periodic functions and multivariable functions.	1	-	-	-	-	-	-	1	-	-	1	-	-	-	-
		CO2	Students will be able to understand properties of beta and gamma function, convergence of sequence and series.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	Engineering Mathematics-I	CO3	The students will be able to apply properties of beta and gamma functions and definite integrals to find surface area and volumes of revolution. They will be able to apply partial derivatives and multiple integrals to solve many problems in science and engineering.	3	2	-	-	-	-	-	1	1	-	1	-	-	-	-
		CO4	Students will be able to analyse Fourier series to make many useful deductions which lay down foundation of signal processing and image processing.	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			Describe characteristics of water, fuel and Engineering	2	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	materials-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
		CO2	Determine of hardness of water and calorific value of fuels for Industrial as well as domestic purposes	2	-	-	-	-	-	-	-	-	-	-	-		1	-
2	Engineering Chemistry	CO3	Compare different techniques of water treatment, fuel analysis, Manufacturing of engineering materials and corrosion protection methods	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Prepare the generic drugs or medicines by identifying the applications of organic reaction mechanism and manufacturing of engineering materials	-	2	-	-	-	-	-	1	1	-	1	-	-	-	-
				2	2	-	-	-	-	-	-	-	-	-	-	-	1	2
		CO1	Describe the process of communication, basics of Grammar and Writing and Literary Aspects			-	-		-	-	1	-	1	-			-	-
		CO2	Explain the types of communication, barriers and channels of communication and the concept of Literature through Short Stories and poetry		-	-	-	-	-	-	-	-	2	-	-	-	-	-
3	Communication	CO3	Write and prepare professional reports, paragraph and business letters with the correct use of grammar	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
	Skills	CO4	Discuss and illustrate the impact of social and moral values by implying the basics of English Writing Skills through literary aspects	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-

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		CO5	Restate and outline the basic areas of English Language Skills with the applications of literature	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
			Students will be able to retrieve basic concepts of	-	-	-	-	-	-	-	2	-	2	-	2	-	-	-
		CO1	thermal and manufacturing process.	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-
		CO2	Students will able to compare different types of thermal and manufacturing processes and.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Basic Mechanical Engineering	CO3	Students will able to annotating about the functioning of turbine & pumps, IC engines, refrigeration system, modes of transmission of power, materials and primary manufacturing process.	3	-	-	-	-	1	-	-	-	-	-	-	-	ı	-
		CO4	Student will be able to appraise the fundamental knowledge of thermal engineering, in addition to understanding of power transmission to solve the industrial and societal issues.	-	1	-	1	-	1	-	1	-	-	-	-	-	-	-
				2	1	-	-	-	-	-	ı	-	-	-	-	-	-	-
		CO1	Identify basic components of electrical engineering and connect them to form different circuits to verify basic laws.Understanding	3	1	1	1	-	ı	ı	ı	1	-	-	-	-	ı	-
	Basic Electrical	CO2	Analyse the output of rectifier circuit,AC and DC machines to solve problems assosciated with Basic electrical engineering.Analyse	2	3	-	1	-	1	-	1	-	-	-	-	1	-	-
5	Engineering	CO3	Contribute efficiently in a team to acieve desired response of AC and DC Machines. Team Work	-	-	-	-	-	1	-	1	3	-	-	-	-	1	-
		CO4	Demonstrate the output of rectifier circuits consistiong of basic components of electrical engineering. Mechanism	-	-	-	-	-	-	-	-	-	-	3	-	2	-	-
				2.5	3	-	-	-	-	-	-	3	-	3	-	1.5	-	-
		CO1	Determine the strength of unknown solution by volumetric analysis.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Examine the characteristics of lubricating oil in groups	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
6	Engineering Chemistry Lab	CO3	Analyze different characteristics of water and fuel to solve societal and environmental problems	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-
		CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1	-	-	-	-	-	2	2	2.5	-	-	-	-	-	-
	_	CO1	Use and pronounce the words correctly.	-	-	-	-	-	-	-	-	-	1	_	-	-	-	-

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		CO2	Acquire knowledge of the correct expressions, vocabulary etc. in personal and professional lives.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
7	Language Lab	CO3	Plan successfully for leadership and teamwork,crack GD's, interviews and other professional activities.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
		CO4	Synthesize the process of communication using LSRW.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
				-	-	-	-	-	-	-	-	2	2	-	-	-	-	-
		CO1	Describe the working of Lathe machine.	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
	[	CO2	Apply the basic concepts of Foundry Shop	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-
8	Manufacturing Practices	CO3	Develop various carpentry joints, welding joints and sheet metal objects.	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
	Workshop	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1.5	2	-	-	-	-	-	2	3	-	-	-	1	-	-
		CO1	Discuss measurement of electrical quantites	1	-	-	-	-	-	-	-	-	-	-	-	1	2	-
	Basic Electrical	CO2	Compare different connections of transformer	2	-	-	-	-	-	-	-	-	-	-	-	1	2	-
9	Engineering Lab	CO3	Demonstrate constructional features of electrical machines and converters	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
		CO4	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
			,	2	_	_	_	_	_	-	2	3	2	_	-	1.333	2	_
		CO1	Describe engineering drawing terminology, concept of scales and conic sections.	1	-	-	-	-		-	-	-	-	-	-	1	-	-
	Computer	CO2	Draw Projection of Points, lines, planes, solids and section of solids	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-
10	Aided Engineering	CO3	Draft 2D engineering problems on CAD software.	-		-	-	3	-	-	-	-	-	-	-		1	1
	Graphics	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1	1	-	-	3	-	-	2	3	-	-	-	1.5	1	1
		CO1	Students will be able to define basic rank of matrix to find, eigen values and eigen vectors of the matrix, degree and order of differential equations.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Engineering Mathematics-II	CO2	Students will be able to explain complementary functions and particular integral of ordinary differential equation and various methods of solution of ODE to solve complex engineering problems.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO3	The students will be able to apply an appropriate analytical technique to find solution of first order and higher order differential equations.	3	2	-	-	-	-	-	-	-	-	-				

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		CO4	Students will be able to classify higher order partial differential equations and analyze a wide variety of time dependent	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.25	2	_	_	_	_	-	_	-	_	_	_	_	_	_
		CO1	Describe the concepts of Wave and Quantum mechanics, Laser and Fiber optics, material science and electromagnetic theory. (Recall/Remembering)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Engineering	CO2	Explain the different applications of Laser and optical fibers in communication, engineering, medicine and Science.  Application of Hall effect (Examine)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Physics	CO3	Evaluate energy states in 1-D and 3-D box with the application of quantum mechanics.(Apply)	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Analyze the crystal structure through X-ray Diffraction & Samp; wavelength of light through Newton's ring experiment and Michelson-interferometer, types of materials through Hall effect. (Analyze)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				1.5	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Relate sustained happiness through identifying the essentials of human values and skills	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
		CO2	Find the happiness and human values in terms of personal and social life to create harmony in them	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
13	Human Values	CO3	Use and understand practically the importance of trust, mutually satisfaction and human relationship	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
		CO4	Identify the orders of nature for the holistic perception of harmony for human existence	1	1	-	-	-	-	-	2	-	-	-	-	1	-	-
		CO5	Implement professional ethics and natural acceptance of human values in his/her life	1	-	-	-	-	-	-	3	-	-	-	-	-	-	-
				-	-	-	-	-	2	-	2.5	-	-	-	2	-	-	-
		CO1	Understand the basic concepts of fundamental of computer system, number system and programming. (Remembering)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Programming	CO2	Explain various memory units, representation of number system and Conditional, Iterative statements using arrays, string, pointers, file structure. (Understanding)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	for Problem Solving	CO3	Examine the concept of algorithms, flowchart, Operators, Pointer, Array, String, structure, union using modularization to	3	_	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Illustrate the User Defined functions, Memory management and File concepts to solve real time problems using C Programming (Analyzing)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2													

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		CO1	Describe Scope, role and Specialization of Civil Engineering, basics of surveying, types of building, Plinth area, carpet area, floor space index, R.C.C., mode of transportation and different causes of pollution. (Remember)	1	,	-	,		,		-	,	-	-	,	-	,	-
15	Basic Civil Engineering	CO2	Explain solid waste management, building by-laws, concept of sun light and ventilation, chemical and hydrological cycle, biodiversity, causes of road accident, sanitary landfill and onsite sanitation, food chain and food web, contour maps, Global warming, Climate Change, Ozone depletion, and Green House effect. (Understand)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO3	Illustrate method of ranging and levelling, road safety measures, building component, environmental acts, different types of foundation, treatment and disposal of waste water, traffic sign and symbol and rain water harvesting. (Apply)	3	-	1	-	-	1	-	-	-	-	-	-	-	-	-
		CO4	Compute errors in linear measurement, bearings and elevations of respective points on the ground. (Analyze)	-	2	,			,				-	-				-
				2	2		-	-	-	-	-	-	_	_	-	-	_	_
		CO1	Operate the various devices for the multifarious use in the relative fields.	1	-	-	-	-	-	-	-	-	-	-	2	-	-	-
16	Engineering Physics Lab	CO2	Apply knowledge of Newton's Ring,grating, spectrometer,Optical fiber ,Sextant, Hall effect , a n d L a s e r to determine wavelength of light, dispersive power,Numerical aperature Height of Object, Hall coefficient, coherence length and coherence time	2		1	,	-	,	1	-	1	-	-	1	-	,	-
		CO3	To conduct the experiments with interest and an attitude of learning.	-	-	ı	1	-	1	-	1	1	-	-	2	-	-	-
		CO4	Evaluate the Band Gap and time constants (t=RC) using basic principles of semiconductors and Capacitors by graphs.	-	2	ı	ı	-	1	-	1	2	-	-	ı	-	-	-
				1.5	2	1	-	-	-	-	-	1.5	-	-	2	-	-	-
		CO1	Recall the natural and social issues and their remedies.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
		CO2	Describe the nature of human values and the impact of external factors over it.	-	-	-	-	-	-	2	-	1	-	-	-	-	-	-
	Human Values	CO3	Validate through actions the significance of trust, respect and harmony with self and surroundings.	-	-	1	-	-	-	-	1	2	-	-	-	-	-	-
17	Activities and Sports	CO4	Outline the relation of human with nature and other factors in terms of human existence	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO5	Associate the knowledge of self and society with clear understanding of social issues and the human beings.	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-

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				-	-	-	-	-	2	2	1	2	-	-	-	-	-	-
		CO1	Describe various sanitary fittings and water supply fittings	1	-	-	-	-	-		-	-	-	-	-	-	-	-
		CO2	Examine pH, Turbidity, Hardness and Total solids of given water sample	2	-	-	-	-	-		-	-	-	-	-	-	-	_
	Basic Civil	CO3	Use of EDM and Total Station in the field	3	-	_	-	-	-	-	_	-	-	_	-	_	_	-
18	Engineering Lab	CO4	Investigate the linear and angular measurements of the points on the ground and levelling	-	1	-	-	-	-	-	-		-	-	-	-	-	-
		CO5	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
				2	1	_	-	-	-	-	2	3	2	-	-	-	-	_
		CO1	Relate the fundamental of C Programming as variable, operators and taxonomy to write a basic C Program	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	Computer Programming	CO2	Write programs that perform operations using condition control statements and loop control statements, single and multi-dimensional arrays along with specific program of matrix multiplication.(Examine)	2	'	-	1	-	-	,	'	1	'	-	-	1	'	-
19	Lab	CO3	Use C programs to implement operations related to Array, Macros and inline functions, Dynamic memory allocations, concept of Structure, Unions and Pointers	3	-	-	-		-	-	1	1	1	-	-	1	1	-
		CO4	Students will show an ability to communicate effectively and work ethically			-	-	-	-	-	2	-	2	-	-	-	-	-
				2	-	-	-	-	-	-	2	-	2	-	-	-	-	-
		CO1	Describe orthographic projections and basic Geometrical Concept	2	-	-	-	-		-	•	-	-	-	-	1	-	
	Computer	CO2	Analyze Sectional Views of different mechanical Components and assembly drawing	-	1	-	-	-	-	-	-	-	-	-	-	2	-	
20	Aided Machine	CO3	Draft a engineering product using CAD software	-	-	-	-	2	-	-	-	-	-	-	-	2	-	1
	Drawing	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				2	1	-	-	2	-	-	2	3	-	-	-	1.667	-	1
		CO 1	To Define probability models using probability mass (density) functions, need and classification of optimization terminology.	1	-	-	-	-	-	-	1	-	-	-	-	2	-	-
		CO 2	To Explain the probability distributions of discrete and continuous random variables and work binomial, Poisson,	2	-	-	-	_	-	-	1	1	-	-	-	2	1	-
1	Advanced Engineering	CO 3	To Solve mathematical models of the real world problems in optimization using Linear Programming methods such as	3	-	-	-	-	-	-	1	-	-	-	-	2	1	-
	Mathematics	CO 4	To Examine the correlation between two variables and regression applications for purposes of description and	-	3	-	-	-	-	-	-	-	-	-	-	2	1	1
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	-	-	-	-	-	•		-	-	-	2	1	1

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	CO 1	To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national	-	-	-	-	-	1	-	-	-	2	3	1	-	-	-
-	CO 2	To Calculate the domestic product, national product and	-	-	-	-	-	2	-	-	-	-	3	-	-	-	-
Managerial Economics	CO 3	To Draw the cost graphs, revenue graphs and forecast the	3	-	2	-	-	-	-	-	-	-	2	-	-	-	-
and Financial Accounting	CO 4	To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment	-	3	-	-	-	-	-	-	-	-	2	-	-	-	-
-			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			3	3	2	-	-	1.5	-	-	-	2	2.5	1	-	-	-
	CO 1	To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	CO 2	any digital circuits.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
Digital	CO 3	of speed, delay, energy dissipation and power.	-	-	3	-	-	-	-	-	-	-	-	-	2	-	-
Electronics	CO 4	To Evaluate the performance of Digital Logic Families and its realization.	-	-	-	2	-	-	-	-	-	-	-	-	-	2	-
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			2	2	3	2	-	-	-	-	-	-	-	-	2	2	•
	CO 1	To explain data structures and their use in daily life.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
	CO 2	To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.	-	3	-	-	-	-	-	-	-	-	-	-	-	2	-
Data Structures	CO 3	To develop searching and sorting algorithms on predefind data	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
Algorithms	CO 4	To create the data structures in specific areas like DBMS ,Compiler, Operating system.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			2	3	3	3	-	-	-	-	-	-	-	-	-	2	2
	CO 1	Apply the various programming paradigms such as exception handling, polymorphism in software pattern	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
	CO 2	methodologies.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
Object Oriented	CO 3	developing structured programs.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
Programming	CO 4	Investigate the real time applications using advance C++ concepts.	-	-	-	3	_		-	-	-	-	-	_	-	-	3
	Economics and Financial Accounting  Digital Electronics  Data Structures and Algorithms	CO 2	Managerial Economics and Financial Management and define the meaning of national CO 2 To Calculate the domestic product, national product and elasticity of price on demand and supply. To Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect position of the firm and evaluate the project investment  CO 4 To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment  CO 1 To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems. CO 2 To Recognize minimization techniques for reducing the size of any digital circuits. CO 3 To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power. CO 4 To Evaluate the performance of Digital Logic Families and its realization.  CO 1 To explain data structures and their use in daily life. CO 2 To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems. CO 4 To evelop searching and sorting algorithms on predefind data and Algorithms  CO 4 To create the data structures in specific areas like DBMS Compiler, Operating system.  CO 1 Apply the various programming paradigms such as exception handling, polymorphism in software pattern Analyze the C++ programs using different programming methodologies. CO 3 Design the elements of the object oriented concepts in developing structured programs.  Investigate the real living analyzance C++ Inves	CO 1 To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national CO 2 To Calculate the domestic product, national product and elasticity of price on demand and supply.  CO 3 To Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect mand Financial Accounting  CO 4 To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment  CO 2 To Recognize minimization techniques for reducing the size of any digital circuits.  CO 3 To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  CO 4 To explain data structures of Digital Logic Families and its realization.  CO 5 To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.  CO 4 To develop searching and sorting algorithms on predefind data  CO 4 To create the data structures in specific areas like DBMS  CO 1 Apply the various programming paradigms such as exception handling, polymorphism in software pattern  CO 2 Apply the various programming paradigms such as exception handling, polymorphism in software pattern  CO 3 Design the elements of the object oriented concepts in developing structured programs.  CO 3 Design the remember of the object oriented concepts in developing structured programs.	CO 1   To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national   CO 2   To Calculate the domestic product, national product and elasticity of price on demand and supply.   CO 3   To Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect   3   CO 4   To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment   CO 1   To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.   CO 2   To Recognize minimization techniques for reducing the size of any digital circuits.   CO 3   To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.   CO 4   To Evaluate the performance of Digital Logic Families and its realization.   CO 2   To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.   CO 3   To develop searching and sorting algorithms on predefind data   CO 4   To create the data structures in specific areas like DBMS   CO 4   To create the data structures in specific areas like DBMS   CO 4   To create the data structures in specific areas like DBMS   CO 4   CO 5   Apply the various programming paradigms such as exception   handling, polymorphism in software pattern   CO 5   CO	CO 1 To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national  CO 2 To Calculate the domestic product, national product and clasticity of price on demand and supply.  CO 3 To To Tave the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect mancial position of the firm and evaluate the project investment  CO 4 To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment  CO 1 To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.  CO 2 To Recognize minimization techniques for reducing the size of any digital circuits.  CO 3 To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  CO 4 To Evaluate the performance of Digital Logic Families and its realization.  CO 1 To explain data structures and their use in daily life.  CO 2 To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.  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CO 1   To explain data structures and their use in daily life   CO 2   To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.   CO 4   To create the data structures in specific areas like DBMS   CO 4   To create the data structures in specific areas like DBMS   CO 4   To create the data structures in specific areas like DBMS   CO 5   CO 2   Apply the various programming paradigms such as exception   Analyze the C++ programs using different programming   CO 6   CO 7   CO 8   CO 8   CO 8   CO 8   CO 8   CO 9   CO 8   CO 9   CO 9	CO 1   To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national   CO 2   Co Calculate the demostic product and elasticity of price on demand and supply.   CO 2   Co Calculate the demostic product and elasticity of price on demand and supply.   CO 3   To Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect   CO 4   To Compare the financial position of the firm and evaluate the project investment   CO 4   To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment   CO 4   To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.   CO 2   To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.   CO 3   To Recognize minimization techniques for reducing the size of any digital circuits.   CO 4   To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.   CO 4   To Evaluate the performance of Digital Logic Families and its realization.   CO 4   To explain data structures and their use in daily life.   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CO   To Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect as mell as imperfect and Financial Accounting   CO   To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment   CO   To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.   CO   To Design combinational and sequential circuits with aspects   CO   To Design combinational and sequential circuits with aspects   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To explain data structures and their use in daily life   CO   To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.   CO   To develop searching and sorting algorithms   CO   Apply the various programming paradigms such as exception   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   CO   Apply the various programming paradigms such as exception   CO   CO   Apply the various programming paradigms such as exception   CO   CO   Apply the various programming paradigms such as exception   CO   CO   Apply the various programming paradigms such as exception   CO   CO   CO   Apply the various programming paradigms such as exception   CO   CO   CO   CO   CO   CO   CO   C	CO   To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national Product and elasticity of price on demand and supply.	CO   To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national Product and clasticity of price on demand and supply.   CO   To Calculate the domestic product, national product and clasticity of price on demand and supply.   CO   To Apply the fundamental statements to interpret the financial position of the firm and evaluate the project investment   CO   To Apply the fundamentals of Number Systems and boolean   CO   To Apply the fundamentals of Number Systems and boolean   Algebra for solving the numericals and logical problems.   CO   To Apply the fundamentals of Number Systems and boolean   CO   To Design combinational and sequential circuits with aspects   CO   To Design combinational and sequential circuits with aspects   CO   To Design combinational and sequential circuits with aspects   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To Evaluate the performance of Digital Logic Families and its realization.   CO   To Evaluate the Digital Logic Families and its realization.   CO   To Evaluate the Digital Evaluate Programs in the Digital Evaluation   CO   Evaluate Programs using different programs in the Digital Evaluate Programs in the Digital	CO   To Apply the fundamental of Number Systems and boolean Algebra for solving the numericals and logical problems.   CO   To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.   CO   To Explain data structures and Algorithms   CO   To Explain data structures and Happing and Algorithms   CO   To explain data structures in specific areas like DBMS   CO   To develop searching and sorting algorithms on proclefind data   CO   To develop searching and sorting algorithms on proclefind data   CO   To explain data structures in specific areas like DBMS   CO   To explain data structures in specific areas like DBMS   CO   To explain data structures in specific areas like DBMS   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   Apply the various programming paradigms such as exception   CO   CO   Apply the various programming paradigms such as exception   CO   CO   Apply the various programming paradigms such as exception   CO   CO   Apply the certain programming paradigms such as exception   CO   CO   Apply the certain programming paradigms such as exception   CO   CO   CO   Apply the Certain programming   CO   CO   CO   CO   CO   CO   CO   C	CO   To Describe the fundamental concepts of Economics and	CO   To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national   CO   To Capulate the domestic product, national product and elasticity of price on demand and supply.	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## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

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				2	2	3	3	-	-	-	-	-	-	-	-	3	2	3
		CO 1	To Demostrate software life cycle models with respect to software enginneering principles.	2	-	-	-	-	-	-	-	-	-	-	-	3	-	2
		CO 2	To analyse cost estimation technique and risk analysis techniques in software engineering projects.	1	2	1	-	1	-	-	1	1	1	-	-	2	3	1
6	Software	CO 3	To Design Software requirement document (SRS)	-	-	3	-	-	-	-	1	-	-	-	-	2	3	-
0	Engineering	CO 4	To synthesize UML diagrams using the concepts of object oriented analysis in software development process.	ı	-	1	3	1	-	-	1	1	1	-	-	3	-	-
				ı	-	ı	-	ı	ı	-	ı	ı	ı	-	-	-	-	-
				2	2	3	3	•	•	•	ı	•	ı	-	-	2.5	3	2
		LO1	To Utilize searching and sorting algorithms on given values.	2	-	-	-	2	-	-	•	-	2	-	-	2	-	-
		LO2	To analyze the time and space efficiency of the data structure	-	-	-	-	-	2	-	1	-	-	-	-	2	-	-
7	Data Structures and	LO3	To Evalute traversing, insertion and deletion operations on Linear and non linear data structures	1	-	-	-	-	-	2	ı	1	ı	-	2	-	2	-
,	Algorithms Lab	LO4	To construct the solutions for real time applications	-	-	-	-	2	-	-	-	2	-	-	-	-	-	3
		LO5		ı	-	-	-	-	-	-	ı	1	ı	-	-	-	-	-
				2	-	-	-	2	2	2	-	2	2	-	2	2	2	3
		LO1	Students will able to apply the programming concepts such as inheritance, polymorphism	-	-	-	-	2	-		1	-	-	-	2	3	-	-
		LO2	Students will be able to distinguish the programming methodologies to implement programs	-	-	-	-	-	2	1	1	1	-	-	2	-	2	-
8	Object Oriented	LO3	Students will be able to explain the concepts to develop the structured programs.	-	-	-	-	-	-	2	1	-	-	-	2	-	-	3
	Programming Lab	LO4	Students will be able to construct the solutions for real time problems	-	-	-	-	-	-		-	2	-	3	-	-	-	3
		LO5		1	-	-	-	_	-	-	1	1		-	-	-	-	-
				•	-	-	-	2	2	2	•	2	-	3	2	3	2	3
		LO1	design, test case implementation, and OOP concepts	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		LO2	Discuss and analyze how to create software requirements specifications for a particular problem.	-	-	-	3	-	-	-	-	-	-	-	-	-	3	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

	Software	LO3	Create Data Flow Diagrams for different systems.	-	_	3	-	-	-	-	-	-	-	-	-	-	3	2
9	Engineering Lab	LO4	Understand and develop UML diagrams of various structures and behaviors.	-	-	-	-	2	1	-	ı	-	-	-	-	2	3	-
				-	-	-	-	-	1	-	1	-	-	-	-	-	-	-
				2	-	3	3	2	-	-	•	-	-	-	-	2.5	3	2
		LO1	Apply appropriate basic logic gates for verifying the truth tables.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	Demonstarte ability for recognizing any IC and its fuctionality.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO3	Design any basic gates by the use of universal gates.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
	Digital	LO4	Identify the limitation of basic logic gates while desgining any SOP and POS logics.	-	-	-	2	-	1	-	ı	-	-	-	-	2	-	-
10	Electronics	LO5	Design any sequential and combinational circuits using basic gates as well as by defined IC.	-	-	2	-	-	1	-	1	-	-	-	-	2	-	-
	Lab	LO6	Demonstrate the working of Digital Trainer kits and usability of it.	-	-	-	-	2	ı	-	ı	-	-	-	-	-	2	-
		LO7	Debug a circuit to find a problem and suggest suitable solution.	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
		LO8	Able to work in a team for desgining and rectifying any errors in the digital circuit.	-	-	i	-	-	ı	i	ı	2	-	-	-	-	-	2
				2	2	2.5	2	2		-		2	-	-	2	2	2	2
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	·	-	-	'	·	ı	•	-	-	-	2	-	-
		LO2	updated with all the latest changes in technological world	-	-	-	-	3	1	-	1	-	-	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	-	-	-	-		-		-	3	-	-	2	-	-
l	Industrial	LO4	knowledge, management, leadership and	-	-	-	-	-	-	-	1	3	-	-	-	2	2	3
11	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-
		LO6	continuous professional development and life-long	-	-	-	-	-	-	-	1	-	-	-	3	2	-	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	-	-	-	-	-	3	2	-	-	-	-	-	2	-
				3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

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		CO1	Define mathematically about the fundamental data types and structures used in computer algorithms and systems.	1	-	1	-	-	-	-	-	-	-	-	-	2	1	-
		CO2	Classify algebraic techniques to basic discrete structures and algorithms.	2	-	-	-	-	-	-	-	-	-	-	-	2	1	-
12	Discrete Mathematics	CO3	Apply mathematical logic in making computer programs, computer circuits, concluding experiments, digital electronics, etc.	3	-	1	1	-	-	-	-	-	-	-	-	1	1	-
	Structure	CO4	Analyze a variety of graphs and Compare the viability of different approaches to the Model problems in Computer Science.	-	3	ı	ı	-	-	-	-	-	-	-	-	1	1	-
				-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	•	-	-	-	-	-	-	-	-	-	1.5	1	-
		CO1	Remember the fundamental principles of technical writing and genre in written communication within technical domains.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
		CO2	Understand the intricacies of planning, drafting, revising, editing, and critiquing professional documents within the realm of technical communication when engaging in both individual and collaborative writing.	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-
13	Technical Communication	CO3	Apply skills in note-making, grammar editing, technical style, project report creation, and LSWR (Listening, Speaking, Writing, Reading) in the context of technical communication.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	2
		CO4	Evaluate research findings and synthesize content for various business communication documents, such as emails, resumes, meeting minutes, technical reports, articles, and project proposals.	-	-	1	•	-	-	-	-	-	-	-	3	-	-	3
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	•	-	-	-	-	-	2	3	-	3	1	-	2.5
		CO1	To Examine the architecture of 8085 microprocessor, Memory and its type.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO2	To Analyse interfacing applications using microprocessors and peripherals.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
14	Microprocessor &	CO3	To Design Assembly Language Programs by using instructions of 8085.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
14	Interfaces	CO4	To investigate the connection of the microprocessor with the peripheral devices.	-	2	-	_	-	-	-	-	-	-	-	-	2	-	_

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

		CO5	instructions of 8085 and relate	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
				3	2	2	-	-		•			-	-		2	-	-
		CO1	Understand basic concepts and identify various data models (E-R modeling concepts) and apply these concepts for designing databases.	2	-	-	1	-	1	1	1	-	1	-	-	2	3	-
	Database	CO2	Apply relational database theory by SQL and describe relational algebra expression, tuple and domain relational expression for writing queries in relational algebra.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
15	Management System	CO3	Identify and improve the database design by normalization and key constraints.	-	1	2	-	-	-	1	1	-	-	-	-	2	-	-
		CO4	Understand and Analyze transaction processing and concurrency control concepts.		-	2	1	-	1	1	1	1	1	-	-	1	2	_
				-			•	-			•		•	-		•	•	
				2	1	2	-	-	•	•	•		-	-	-	2	2.5	-
		CO 1	To demonstrate basic concepts of computation	2	-	-	-	-	-	ı	ı	-	1	-	-	2	-	-
		CO 2	To analyze language expressions and Grammars in finite automata.	-	2	-	-	-	-		-	-	-	-	-	-	2	-
16	Theory of	CO 3	To design the solutions of computation problem using suitable machines	-	-	2	-	-	-	1	1	-	-	-	-	1	-	2
	Computation	CO 4	To apply the concepts of Computation in real life problems .	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3
				-	-	-	•	-	1	1	•	•	1	-	-	•	•	-
				2	2	2	2	-	•	•	•	•	-	-	-	2	2	2.5
		CO1	To explain networking models and data trasmision	2	-		-	-	-		-	-	-	-	-	2	-	-
		CO2	Apply the the Error Detection and Correction techniques.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	2
	Data	CO3	To analyze the network Layer routing algorithms.	-	2	-	-	-	-	-	-	-	•	-	-	2	-	2
17	Communication and Computer Networks	CO4	examine the transport and application layers protocol servi	-	2	-	-	-	-	-	ı	-	-	-	-	2	-	2
				-	_	-		-	]		-	]		-	_	-		-
				2	2	-	-	-	-	-	•	-	-	-	-	2	-	2

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

			1 8														
	LO1	To familriaze with the architecture and instruction set of Intel 8085	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	LO2	To demonstrate operation of typical 8085 microprocessor trainer kit	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
Microprocesso	LO3	To provide practical hands on experience with Assembly Language Programming	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2
r & Interfaces Lab	LO4	To analyze limitations and applications of Assembly language Programming for the real world problem	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
	LO5	To get familiarize with interfacing of various peripheral devices using 8085 chip	-	-	1	-	-	-	-	-	-	-	-	-	2	-	-
			2	2	1	-	-	-	-	-	-	-	2	2	2	-	2
	LO1	schemas for a given application using DDL/DML SQL	-	-	2	-	2	-	-	-	-	-	-	1	2	-	-
	LO2	ensure accurate and error free	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	LO3	Identify solutions for database update using pre store Procedures and Triggers	-	-	2	-	-	-	-	-	-	-	-	2	-	-	-
Database	LO4	Compare the constraints primary key and foreign key between primary table and secondary table	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
System Lab	LO5	Construct Views to simplify and reduce complexity of database schema	-	-	3	-	-	-	-	-	-	-	-	2	-	-	-
	LO6	Decision to users with different types of privileges and check users existence in database	-	-	-	2	-	-	-	-	-	-	-	-	2	1	-
	LO7	Assemble records from multiple tables in database through Inner joins and Outer joins	-	-	3	-	-	-	-	-	-	-	-	1	1	-	-
			3	2	2.5	2	2	-	-	-	-	-	-	1.5	1.6		-
	LO1	To defines the basic principles of computer networks. Understand the key topologies that support the internet.	2	-		-	-	-	-	-	-	-	-	-	2	-	-
	LO2	To demonstrate the installation and configuration of network.		-	2	-	-	-	-	-	-	-	-	-	2	-	-
Network	LO3	To evaluate errors using a variety of error correction techniques.	-	2	-		-	-	-	-	-	-	-	-	2	-	2
Lab	LO4	To apply a network routing algorithm, evaluate the process, and implement a simple routing network.	-	2	-	-	-		-	-	-	-	-	-	2	-	2
			-		-	-	-				-	-				-	-
			2	2	2	-	-	-	-	-	-	-	-	-	2	-	2
	LO1	related to inode, I/O redirection and piping, process	2	-	-	-	-	-	-	-	-	-	-	-	2	-	1
	r & Interfaces Lab  Database Management System Lab  Network Programming	LO2	Microprocessor r & LO3	Microprocessor r &	Intel 8085   LO2   To demonstrate operation of typical 8085 microprocessor trainer kit	Microprocessor r & load provide practical hands on experience with Assembly Language Programming To analyze limitations and applications of Assembly language Programming To analyze limitations and applications of Assembly language Programming for the real world problem  LO5 To get familiarize with interfacing of various peripheral devices using 8085 chip  LO1 Select appropriate technique to design database and schemas for a given application using DDL/DML SQL Apply the Consept or integrity roles and constraints to ensure accurate and error free load lidentify solutions for database update using pre store Procedures and Triggers  LO4 Depart the constraints primary key and foreign key between primary table and secondary table  Construct Views to simplify and reduce complexity of database schema  LO6 Compare the constraints primary keys and foreign key between primary table and secondary table  Construct Views to simplify and reduce complexity of database schema  Decision to users with different types of privileges and check users existence in database  LO7 Assemble records from multiple tables in database through Inner joins and Outer joins  Network Programming Lab  LO2 To defines the basic principles of computer networks.  Understand the key topologies that support the internet.  LO2 To evaluate errors using a variety of error correction techniques.  LO3 To apply a network routing algorithm, evaluate the process, and implement a simple routing network.  LO3 To apply a network routing algorithm, evaluate the process, and implement a simple routing network.	Microprocessor r & To defines the basic principles of computer networks.  Network Programming Lab  Network Programming Lab  Network Programming Lab  Intel 8085  LO2  Intel 8085  LO2  To defines the basic principles of computer networks. Understand the key topologies that support the internet.  LO3  Intel 8085  LO4  Intel 8085  LO5  To defines the basic principles of computer networks. Understand the key topologies that support the internet.  Network Programming Lab  LO4  Intel 8085  LO5  To defines the basic principles of computer networks. Understand the key topologies that support the internet.  LO5  To depline the constraint principles of computer networks. Understand the key topologies that support the internet.  LO5  To depline the intelligence of the process, and implement a simple routing network.  LO5  To depply pasic commitments or Limbx and commitments.  LO6  LO7  To depline the installation and configuration of network.  LO7  To depply pasic commitment of the processor in the process, and implement a simple routing network.  LO5  To depply pasic commitment of the processor in the process. In the process, and implement a simple routing network.  LO7  Intel 8085  To provide practical hands on experience with Assembly and speciation with Assembly and speciation of the process, and implement a simple routing network.  LO5  LO6  LO7  To defines the basic principles of computer networks.  LO7  To defines the basic principles of computer networks.  LO7  To defines the basic principles of computer networks.  LO7  To defines the basic principles of computer networks.  LO7  To defines the basic principles of computer networks.  LO7  To evaluate errors using a variety of error correction techniques.  LO7  To Apply pasic commitments or Limbx and commitments.  LO4  LO5  LO5  LO6  LO7  To defines the basic principles of computer networks.  LO7  To defines the basic principles of computer networks.  LO7  To define the principles of computer networks.  LO7  To define the principle of the principle of the principle o	Microprocessor   To demonstrate operation of typical 8085 microprocessor   To demonstrate operation of typical 8085 microprocessor   2	LO1   Intel 8085	LO1	LOI   Intel 8085   To demonstrate operation of typical 8085 microprocessor   2	LOS   Intel 8085   LOS   To demonstrate operation of typical 8085 microprocessor   Tailler Kit   To provide practical hands on experience with Assembly   LOS   To demonstrate operation of typical 8085 microprocessor   Tailler Kit   To provide practical hands on experience with Assembly   LOS   To analyze limitations and applications of Assembly   LOS   To analyze limitations and application using DDLDML SQL   LOS   To get familiarize with interfacing of various peripheral   LOS   To get familiarize with interfacing of various peripheral   LOS   LOS	Intel 8085   To demonstrate operation of typical 8085 microprocessor   1	Microprocessor   1-02   Intel 8085   1-02   1-03   1-03   1-04	Microprocessor   1-02   To demonstrate operation of typical 8085 microprocessor   1-02   To provide practical hands on experience with Assembly   1-03   1-04   1-05   1	Intel 8085   1.02   To demonstrate operation of typical 8085 microprocessor   2   2   3   3   4   5   5   5   5   5   5   5   5   5	Microprocessor   100   Intel 8085   100   To defines the basic principles of Cambridge Programming for the real world problem   101   102   103   10

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

			To analyze variety of problems of shell script using				l					l	I			l		
		LO2	looping, case structures in the script programming.		2	-	-	-	-	-	-	-	-	-	-	2	-	1
21	Linux Shell Programming	LO3	To synthesize the logical problems using the shell script programming.	-	-	1	2	-	1	-	-	-	-	-	-	2	-	-
-	Lab	LO4	To explore the pattern problems using shell scripts.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
		LO5	Apply C programming concepts to solve numerical problems related to array manipulation in shell scripting.	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
				2	2	2	2	2	•	•	-	-	-	-	-	2	-	1
		LO1	To understand the basic concepts of java.	2		1	-	-	1	1	-	-	-	-	-	2	1	-
		LO2	To eleborate the concept of file handling, multithreading and applets.	2	-	-	-		-	-	-	-	-	-	-	-	2	-
22	Java Lab	LO3	To analyze the terms of the packeages & Interfaces	2	2	-	-	-	-	-	-		-	-	-	-	2	-
22	Java Lab	LO4	To design the steps for creating the project using major concept	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
		LO5		-	-	•	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	-	-	1	•	•	-	-	-	-	2	2	3
		CO 1	Demonstrate the concept of information theory and entropy.	2		1	-	-	1	1	-	-	-	-	-	2	-	-
		CO 2	Analyze the different coding techniques for efficient communication.	ı	2	ı	-	-	1	1	-	-	-	-	-	2	1	1
23	Information Theory &	CO 3	Design the linear block code and cyclic code for error free communication.	1		2	-		1	1	-	-	-	-	-	-	2	-
23	Coding	CO 4	Evaluate the shortest path by using different algorithms techniques.	1	-	1	3	-	1	1	-	-	-	-	-	-	-	2
				-	-	•	-	-	•	•	-	-	-	-	-	-	-	-
				2	2	2	3	-	•	•	-	-	-	-	-	2	2	2
		CO 1	To illustrate the theoretical concepts of finite state machine	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	To analyze the grammars, parsing techniques, and actual code generation methods	1	3	1	-	-	1	-	-	-	-	-	-	_	2	-
24	Compiler	CO 3	To Evaluate the different types of error and convert the code in I.C.G.	-	-	3	-	-	-	-	-	-	-	-	-		-	2
24	Design	CO 4	To convert the optimized code into the machine code in the storage organisation and code optimization.	1	-	-	3	-	-	-	-	-	-	-	-	2	-	_
				-	-		-	-	-	•	-	-	-	-	-	-	-	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

			60-1 0 Map	P8	(505)	51011		/										
				2	3	3	3	-	-	-	-	•	-	-	-	2.5	2	2
		CO 1	To demonstrate the knowledge of Operating System services including Memory, Device & File Management.	3	-	-	-	-	-	-	1	-	-	-	-	3	-	2
		CO 2	To categorize the Process management in terms of inter process communication and memory management methods for	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
	Operating	CO 3	To Design the solution for scheduling and deadlock problems in operating system using appropriate algorithms such as round	-	-	2	-	-	-	-	1	-	-	-	-	3	-	2
25	System	CO 4	To investigate LINUX/UNIX, OS, RTOS, windows and Mobile based OS file system through case study.	-	-	-	3	-	-	-	ı	-	-	-	-	2	2	-
			based OS me system through case study.	-	-	_	_	-	_	_	-	_	_	_	-	-	-	-
				3	3	2	3	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	Demonstrate the standards and Primitives of Drawing components like line, circle, ellipse, clipping, filling	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Analyze the graphics quality with the help 3D Graphics and Projections	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
26	Computer	CO 3	Design the animation using transformation and clipping	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
26	Graphics & Multimedia	CO 4	Organize the primitives for Illumination, Shading and Color Models.(Evaluate)	-	-	-	2	-	-	-	1	-	-	-	-1	-	-	3
				-	-	-	-	-	-	-	•	-	-	-	-	-	-	-
				2	2	3	2	-	-	-	-	-	-	-	-	2	2	2.5
		CO 1	Analyze and evaluate the cyber security needs of an organization.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	3	-	-	-	-	-	-	i	-	-	-	-	2	-	-
27	Cyber Space	CO 3	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
21	Operations and Design	CO 4	Design and develop a security architecture for an organization.	-	-	3	3	-	-	-	ı	-	-	2	-	2	-	-
		CO 5	Design operational and strategic cyber security strategies and policies.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	3	-	-	-	•	-	-	2	-	2	-	-
		CO 1	conduct digital investigations that conform to accepted professional standards and are based on the investigative	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy,	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
28	Digital Forensics and	CO 3	apply a solid foundational grounding in computer networks, operating systems, file systems, hardware, and mobile devices	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

			1					,										
20	Incident Response	CO 4	access and critically evaluate relevant technical and legal information and emerging industry trends.		-	3	-	3	-	-	-	-	-	3	-	2	-	-
		CO 5	Communicate effectively the results of a computer, network, and/or data forensic analysis verbally, in writing, and in	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	-	3	-	-	-	-	-	3	-	2	•	-
		CO 1	Understand complexity of an algorithm, asymptotic notation and divide and conquer method for developing an algorithm.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the algorithm design using greedy algorithm and dynamic programming.	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
	Analysis of	CO 3	To Create search for problem solution using backtracking, branch and bound and pattern matching algorithm	-	-	3	-	-	-	-	-	-	-	-	-	2	-	-
29	Algorithms	CO 4	To synthesize the randomized algorithm, assignment problem and types of classes such as P, NP, and NP Complete.	-	-	-	2	-	-	-	-	-	-	-	-	3	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	2	-	-	-	-	-	-	-	-	2.5	-	2
		CO 1	To Classify the challenges with transmission of signals in wireless communication systems and Cellular architechture	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	To Analyze the measures to increase the capacity in GSM systems- sectorization and Spatial Filtering for Interference	1	3	1	-	-	-	-	-	-	-	-	-	-	2	-
30	Wireless	CO 3	To formulate cell architecture in wirless communication sytem.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
30	Communication	CO 4	To Distinguish digital signaling techniques for lossy channels.	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	3	2	-	-	-	-	-	-	-	-	2.5	2	-
		CO1	To apply guidelines and imperical research method in HCI to Make User Friendly Computer Interface	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO2	To categorise Human Computer interction concept using GUI Design and Prototyping techniques	-	3	-	-	-	-	-	-	-	-	-	-	-	2	-
31	Human	CO3	To design Task models and object oriented modeling for computer interface	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
31	Computer Interaction	CO4	To classify types of GOMS, Family model and LAWS	-	-	-	2	-	-	-	-	-	-	-	-	1	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	3	2	-	-	-	-	-	-	-	-	1.5	2	2
		CO1	To understand blockchain systems working and Distributed Consensus of block chain technology.	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

		CO2	To Analyze Block Chain Technology with Crypto currency and Bitcoin.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
	Fundamental	CO3	Design and built smart contracts and Ethereum Structure of Block chain.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
32	of Block chain	CO4	To Analyze the Block chain Types and Consensus Algorithms.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			The state of the s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	2	-	-	-	-	-	-	-	-	-	3	2	-
		CO 1	Analyze and evaluate the cyber security needs of an organization.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
33	Cyber Space	CO 3	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
	Operations and Design	CO 4	Design and develop a security architecture for an organization.	-	-	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 5	Design operational and strategic cyber security strategies and policies.	-	-	-	-	-	-	-	-	-	-	-	-	ı	-	-
				2.5	3	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 1	conduct digital investigations that conform to accepted professional standards and are based on the investigative	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy,	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
34	Digital Forensics and	CO 3	apply a solid foundational grounding in computer networks, operating systems, file systems, hardware, and mobile devices	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
34	Incident Response	CO 4	access and critically evaluate relevant technical and legal information and emerging industry trends.	-	-	3	-	3	-	-	1	-	1	3	-	2	-	-
		CO 5	Communicate effectively the results of a computer, network, and/or data forensic analysis verbally, in writing, and in	-	-	-	-	-	-	-	-	-	-	-	-	ı	-	-
				2.5	3	3	-	3	-	-	-	-	-	3	-	2	-	-
		LO1	to apply the concepts of transformation techniques on 2D & 3D objects.	2	-	-	_	-	-	-	i		_	-	-	2	_	_
		LO2	to analyze the colour modelling, shading and animation on graphic objects.	-	3	-	-	-	-	-	-	-	-	-	-	2	-	3
35	Computer Graphics &	LO3	to design the graphical premitives drawing algorithms such as line, circle drawing algorithms.	-	-	3	-	-	-	-	-	-	-	-	-	2	-	3
35	Multimedia Lab	LO4	to Generate Fractal images using graphics tool like Sterling	_	_	-	2	2	_	_	_	_	_	_	_	3	-	-
		LO5	to make a project to solve real life socity based problem and demonstrate following PO related capabilities:	-	-	-	-	-	3	3	3	3	3	3	3	3	2	3

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

				2	3	3	2	2	3	3	3	3	3	3	3	2.4	2	3
		LO1	To Analysis the finite state machines, lexical analyzer, parser for the grammar. To Develop recognition or identifiers, constants,	-	-	-	-	-	-	-	-	3	-	-	-	3	-	-
		LO2	comments, operators, loops and keywords, and	-	-	-	-	3	-	-	-	-	-	-	-	2	-	-
36	Compiler	LO3	To Design intermediate code genrator and converted into optimzed code	-	-	-	-	-	-	-	-	3	-	-	-	2	-	-
36	Design Lab	LO4	To demostrate hands on experience of working on system software.	-	-	1	-	-	3	-	-	-	-	-	-	-	3	-
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	•	-	3	3	-	-	3	-	-	-	2.333	3	-
		LO1	Apply sorting algorithms like quick sort for information searching.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		LO2	Identify problems to be broken down into simple sub problems using merge sort algorithm	-	-	-	3	-	-	-	-	-	-	-	-	-	3	-
	_	LO3	Device solutions using topological ordering to quickly compute shortest paths	-	-	2	-	-	-	-	-	-	-	-	-	-	3	-
37	Analysis of Algorithms	LO4	Demonstrate real world scenarios like resourse allocation using knapack algorithm	-	-		-	-	-	-	-	-	-	-	2	-	2	-
	Lab ·	LO5	From a given vertex, Select Dijkstra's algorithm to find the shortest path to other vertices	-	-	•	-	2	-	-	-	-	-	-	-	-	-	3
		LO6	Demonstrate minimum cost spanning tree of a given undirected graph using kruskal's algorithm	-	3	-	-	-	-	-	-	-	-	-	-	-	-	3
			green analostou graph doing macharo argentini	3	-	2	3	2	-	-	-	-	-	-	2	3	2.667	3
		LO1	To apply event handling on AWT and Swing components.	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
		LO2	To Design a page using Swing , Servlet , JSP and JDBC connectivity.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	-
00	Advance Java	LO3	To create a project based on societal problem.	-	-	1	-	-	3	-	-	-	-	-	-	-	3	-
38	Lab	LO4	To map Java classes and object associations to relational database tables with Hibernate	-	-	-	-	-	-	3	-	-	-	-	-	-	3	3
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	3	-	3	3	3	-	-	-	-	-	3	3	3
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	engineering.  Decome master in one's specialized technology and updated with all the latest changes in technological world for decigining real time project in industry.	-	-	-	-	3	-	-	-	-	-	3	-	3	-	3

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

		LO3	Ability to communicate efficiently	-	-	1	-	-	-	1	-	-	3	-	-	2		-
	Industrial	LO4	knowledge, management, leadership and	-	-	1	-	-	-	1	-	3	-	-	-	2	2	3
39	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-
		LO6	continuous professional development and life-long	-	-	-	-	-	-	-	-	-	-	-	3	2	-	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	-	1	-	-	-	3	2	-	-	-	-	-	2	-
				3	-	•	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO 1	To identify the elements of image and basic steps of digital Image Processing.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Apply the diffrent function types in spatial and frequency domain.	2	1	1	1	1	-	1	-	-	-	-	-	2	1	-
40	Digital Image	CO 3	To use different tecniques for image enhancement and image restoration.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
10	Processing	CO 4	To construct enhance image using the technique of compression and segmentation techniques.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
				-	•	1	•	-	-	ı	-	-	-	-	-	-	•	-
				2	2	2	-	-	-	-	-	-	-	-	-	2	-	-
		CO 1	Apply the fundamental concepts of learning in Machine Learning .	3	-	1	-	-	-	1	-	-	-	-	-	3	-	-
		CO 2	Analyze or Parse the datasets with statistical theory learning methods.		3	1	-	-	1	1	-	1	-	-	-	2	1	-
41	Machine	CO 3	Analyze problem statement solution by Evaluating Machine Learning algorithms and model selection.	-	3	1	ı	1	1	1	-	1	•	-	-	-	2	-
1	Learning	CO 4	Design a hypothesis solution for the real world problem using Machine Learning Techniques.	-	-	2	-	-	-	-	-	-	-	-	-	-	-	2
				-	ı	ı	•	-	-	•	-	-	-	-	-	-	•	-
				3	3	2	ı	-	-	•	-	-	-	-	-	2.5	2	2
		CO 1	To understand the concepts of Information Security	3	1	ı	1	-	-	-	-	-	-	-	-	-	-	-
		CO 2	To Identify the fundamental techniques of information security	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-
42	Information Security	CO 3	To Demonstrate various network security applications			2			-	_		-		-	-	-	-	-
7-2	System			-	_	-	-	_	-	-	-	-	-	-	-	-	1	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

						`													
Co   To Apply the concept of data representation and memory hierarchy in the CPU Organisation.   Co   To Analyse the instruction sets of assembly language in micro-programmed control devices.   Co   To Analyse the instruction sets of assembly language in micro-programmed control devices.   Co   To Analyse the instruction sets of assembly language in micro-programmed control devices.   Co   To Analyse addressing modes, RISC and CISC architecture and organization.   Co   To analyse addressing modes, RISC and CISC architecture designs.   Co   To analyse addressing modes, RISC and CISC architecture designs.   Co   To analyse addressing modes, RISC and CISC architecture designs.   Co   To analyse addressing modes, RISC and CISC architecture designs.   Co   To analyse addressing modes, RISC and CISC architecture designs.   Co   To analyse addressing modes, RISC and CISC architecture designs.   Co   To analyse addressing modes, RISC and CISC architecture   Co   Co   To analyse addressing modes, RISC and CISC architecture   Co   Co   To analyse addressing modes, RISC and CISC architecture   Co   Co   Co   Co   Co   Co   Co   C					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Computer					3	2	2	-	-	-	-	-		-	-	-	-	-	-
Computer Architecture and Organization   Cot   Cot			CO 1	memory hierarchy in the CPU Organisation.	2	-	1	-	-	1	1	1	-	-	-	-	2	-	-
Architecture   Architecture   CO   designs.   CO   4   To Design logical and arithmetic operations for floating   and fixed point numbers.			CO 2	micro-programmed control devices.	-	2	ı	-	-	ı	-	-	-	-	-	-	3	-	ı
Organization   Organization   CO 4   In the legislation of liked point numbers   CO 5   CO	43	Architecture	CO 3	designs.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
CO   Understand the concepts of artificial intelligence and intelligent agents.   CO   Understand the concepts of artificial intelligence and intelligence   CO   To Learn basic principles of Al in solutions that require problem-solving methods.   CO   Determine the effectiveness of truths by knowledge representation methods in Al   CO   Analyze the techniques presented and apply them to real world problems   CO   Analyze the techniques presented and apply them to real world problems   CO   CO   To apply cloud fundamentals in cloud computing architecture   CO   To apply cloud fundamentals in cloud computing architecture   CO   To identify various cloud service models, cloud   CO   CO   CO   CO   CO   CO   CO   C			CO 4	and fixed point numbers.	-	-	3	-	-	-	-	-	-	-	-	-		2	-
Artificial Intelligence   Artificial Intelligence and intelligence and intelligence and intelligent agents.   3 2 2			CO 5	1 ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	-	-	-	3	-	-	-	-	-	-	-	-	2	-	-
Artificial Intelligence					2	2	3	3	-	-	-	-	-	-	-	-	2.333	2	-
Artificial Intelligence  Artificial Intelligence  CO 3  Determine the effectiveness of truths by knowledge representation methods in Al  Analyze the techniques presented and apply them to real world problems  CO 4  To apply cloud fundamentals in cloud computing architecture  To identify various cloud service models, cloud architecture, Parallel and distributed programming paradigms  To examine the virtualization  To describe the basic threats, security mechanism, imporatnce of SLA's in cloud and cloud services  - 2 2 2			CO 1	intelligent agents.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Artificial Intelligence   CO 3   representation methods in Al			CO 2	problem-solving methods.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
CO 4   real world problems	44		CO 3	representation methods in AI	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
CO 1   To apply cloud fundamentals in cloud computing architecture   2   -   -   -   -   -   -   -   -   2   2		Intelligence	CO 4		-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
CO 1 To apply cloud fundamentals in cloud computing architecture  To identify various cloud service models, cloud architecture, Parallel and distributed programming paradigms  Cloud Computing  Cloud Computing  CO 3 To examine the virtualization techniques regarding processor, memory, operating system, network rirtualization  To descibe the basic threats, security mechanism, imporatnce of SLA's in cloud and cloud services 2 2					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO 1 architecture					3	2	3	2	-	-	-	-	-	-	-	-	2	2.5	2
Cloud Computing  CO 2 architecture, Parallel and distributed programming - 2 2 2 2 2			CO 1	architecture	2	-	ı	-	-	ı	-	-	-	-	-	-	2	-	
Cloud Computing  Computing  CO 3 processor, memory, operating system, network 2 2 2			CO 2	architecture, Parallel and distributed programming	-	2	ı	ı	ı	ı	ı	ı	1	-	-	-	2	-	i
To descibe the basic threats, security mechanism, CO 4 imporatnce of SLA's in cloud and cloud services 2 2 2	45		CO 3	processor, memory, operating system, network	-	-	-	2	-	-	-	-	-	-	-	-	2	-	_
		Companing	CO 4	imporatnce of SLA's in cloud and cloud services	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

				2	2	_	2	2		_	_	_		_	_	2	_	_
			Students will be able to gain basic knowledge on data		_													
		CO1	science	2	-	-	-	-	-	-	ı	-	-	-	-	3	-	-
		CO2	Students will be able to convert the real time data into suitable form for analysis	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
1	Programming for Data	CO2	The students will be able to apply techniques to gain the			2										1	_	
1	Science	CO3	insights from the data through statistical inferences Students will be able to develop suitable models using	-	-	2	2	-	-	-	-	-	-	-	-	1	-	_
		CO4	machine learning techniques and to analyze its	-	-	-	3	2	-	-	-	-	-	-	-	-	2	-
				2	2	2	2.5	2	-	-	-	-	-	-	-	2	2	2
		CO 1	Apply the fundamental concept of natural language	3					_							3		
		CO 1	processing (NLP) techniques to learn the structure and Demonstrate practical proficiency in using tools like	3	-	-		-	_		,			-	-	3	_	_
		CO 2	lipython notebooks. NLTK. and other relevant	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	Natural	CO 3	Analyze lexical relations and various parsing techniques using WordNet and other semantic and parsing	-	3	-	-	-	1	1	-	-	-	-	-	-	2	-
46	Language Processing	CO 4	Analyze and apply distributional semantics and graphical		2													2
	Processing		models for sequence labeling in NLP.			-	-	-	-		-	-	-	-	-	-	_	
				-	-	-	-	-	-	•	1	-	-	-	-	-	-	-
				2.5	2.5	-	-	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	To understand the working of block chain and also learn about block chain network.	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	To analyze the application of block chain and		2						_			_			2	
			cryptography of block chain			-		_	_	_	-					_		
	Blockchain and	CO 3	To identify the different cybercrimes and frauds and classify different cyber-attacks.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
46	Cyber Security	CO 4	Able to use different tools and methods used in cybercrime and identify different theft, digital forensic.	-	-	2	ı	2	-	-	i	ı	-	-	-	-	2	_
		CO 5	Learn about different network defense tools and basic of virtual private network.	-	-	-	-	2	1	1	1	-	-	-	-	-	1	2
				2	2	2	-	2	•	•	•	-	-	-	-	3	2	2
		CO 1	To understand the basic architecture of Neural Network.	3	-	-	-	-	-	-	-	-	-	-	-	3	1	-
		CO 2	To analyze the different preprocessing and learning algorithm and apply on neural network.	-	3	-	-	-	-	-	ı	-	-	-	-	2	-	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

46	Artificial Neural Network	CO 3	To demonstrate different applications that learn using neural network	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
				3	3	3	-	-	-	-	•	-	-	-	-	2.5	-	3
		CO 1	Understand the basic terminology of cybercrimes	2	1	-	1	-	-	1	i	1	-	-	-	3	-	-
		CO 2	Apply a number of different computer forensic tools to a given scenario	-	2	-	-	-	-	ı	ı	-	-	-	-	-	2	-
46	CYBER	CO 3	Understand the basics of computer forensics	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
	FORENSICS	CO 4	Analyze and validate digital evidence data	-	-	2	-	2	-	-	-	-	-	-	-	-	2	-
		CO 5	Analyze acquisition methods for digital evidence related to system security	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
				2	2	2	-	2	-	-	-	-	-	-	-	3	2	2
		CO 1	Outline the vulnerabilities in a system or network using computer forensic fundamentals.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Demonstrate a critical evaluation of an advanced security topic with an independent project.	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
46	ETHICAL HACKING AND DIGITAL	CO 3	Analyze and critically evaluate techniques used to break into an insecure web application and identify relevant counter measures.	-	1	3	-	-	-	-	-	1	-	-	-	ı	3	-
	FORENSICS	CO 4	Evaluate the potential counter measures to advanced hacking techniques.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	3	-	-	-	•		-	-		3	3	3
		CO 1	To generalize the basic elements and design architectures in distributed system.	3	-	-	-	-	-	-	ı	-	-	-	-	2	-	-
		CO 2	To analyze the concurrent processes, inter process communication and RPC and RMI case studies in	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
		CO 3	To study process scheduling, implementation and file systems along with corresponding case studies.  To analyze the memory sharing and failures, deadlock	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
46	Distributed System	CO 4	To analyze the memory sharing and failures, deadlock handling in distributed system architecture.	-	-	-	2	-	-	-	-	-	-	-	-	3	-	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

				1 8	(			,										
		CO 5	To analyse different agreements, faults and recoveries, management concept and CORBA services while implementing distributed system.	-	•	3	-	-	-	-	-	-	-	-	-	3	-	_
				3	2	2.5	2	-	-	-	-	-	-	-	-	2.5	2	-
		CO 1	To understand the CONCEPT OF Electronic Commerce, ERP and its applications	2	1	-	i	-	-	ı	-	-	-	-	-	3	-	-
		CO 2	To apply online publishing techniques in digital marketing	-	2	-	-	-	-	-	-	-	-	-	-	3	-	-
47	Ecommerce and	CO 3	To compare E- Business models in web based applications for businesses	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
47	ERP	CO 4	To evaluate XML and HTML for creating interactive pages for Web, e-business, and portable applications.	-		-	2	-	-	ı	-	-	-	-	-	3	3	-
				-	-	-	-	-	-		-	-	-	-	-	-	-	-
				2	2	3	2	-	-	•	-	-	-	-	-	3	3	-
		LO1	To implement the basic concept of Matlab programming tools for Digital Image processing	-	-	-	-	-	-	1	-	2	-	-	2	2	-	-
		LO2	To demonstrate and compare various image operations.	-	2	1	1	-	-	1	1	-	-	-	-	-	2	-
48	Digital Image Processing	LO3	To apply different type of filters and transform techniques on images.	-	1	-	ı	-	ı	ı	ı	-	ı	2	-	ı	2	-
40	Lab	LO4	To implement different morphological operations and segmentation on images.		2	-	-	_	-	1	-	_	-	-	_	-	-	2
		LO5	To prepare students for perform different enhancement technique on image.	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-
					2	-	-	-	•		-	2	-	2	2	2	2	2
		LO1	To choose basic python Libraries and commands used in Machine Learning.	-	•	-	•	3	-	•	•	-	-	-	-	3	-	-
		LO2	To apply knowledge of machine learning algorithms for problem statements provided.	•	1	3	1	-	1	1	1	-	ı	-	-	3	-	з
49	Machine	LO3	to analyze various Supervised and Unsupervised Machine Learning algorithms.	-	-	-	3	-	-	-	•	-	-	-	-	3	3	_
40	Learning Lab	LO4	To Evaluate Machine Learning Algorithms for real world problems.	-	-	-	-	-	-	3	-	-	-	-	-	3	-	3
				-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
				•	-	3	3	3	-	3	-	-	-	-	-	3	3	3
		LO1	To apply the basic datatypes and variables	2	-	-	1	-	-	1	-	-	-	-	-	3	-	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

			To analyze the importance of conditional statement &													l		
		LO2	Looping Structure.	-	3	-	-	-	-	-	ı	-	-	-		3	3	-
50	Python Lab	LO3	To Identify the list and tuples in container data types.	-	3	-	-	-	1	1	1	1	-	-	-	1	-	2
30	1 yulon Lab	LO4	To be Able to produce Strings ,Character Arrays and Fuction Programming concept in python.	_		_	_	_	1	ı	1	1	_	_	_	_	_	3
	•	LO5	To Develop the ability to create data structure applications in Python programming.					2									2	2
			applications in Fython programming.	2	3	_	_	2	-	-		_	_	_	_	3	2.5	2.333
			Demontrate the installation of android studio and other					_										
		LO1	Demsotrate the installation of android studio and other IDEs including architecture and fundamental concept of	2	-	-	-	-	-	-	-	-	_	-	-	-	-	_
	-	LO2	Analyse the android framework and tookit as per the given problem		2			2	_					_	_		2	
	Mobile	LO3	Design the layout and solutions recognize the need for			_			_			_						<del>-</del>
51	Application		sociteal problems.	-	-	-	2	-	-	-	-	-	-	-	1	-	-	2
	Development Lab	LO4	Create the android application for real life application by utilizing the skills of project management	_	_	-	_	3	-	_	-	-	_	2	_	1	_	_
			, , , , , , , , , , , , , , , , , , ,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	2	2.5	-	-	•	-	-	2	1	1	2	2
		CO 1	To demostrate concepts IOT plateform and conectivity with devices like Ardinuo, Rasberry pi etc.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyse IOT communication models like push-pull, publish & subscribe model.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	3
52	Internet of	CO 3	To Design prototypes for Internet of Things in real time applications.	-	-	3	-	-	-	-	1	-	-	-	-	-	3	-
32	Things	CO 4	To investigate solutions of complex problems using advance concepts of IOT & Big Data.	-	-	-	3	-	1	1	1	1	-	-	-	-	2	-
				-	-	-	-	-	-			-	-	-	-	-	-	-
				2	2	3	3	-	•	•	•	•	-	-	-	2	2.5	3
		CO 1	To apply Quality Tools to monitor the overall operation and continuous process improvement.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyse systematic methods in identifying where and how it might fail and relative impacts of different failures	-	3	-	-	-	ı	-	1	-	-	-	-	2	-	-
53	Quality Management /	CO 3	To formulate effectively customer requirements and convert them into detailed engineering	-	-	2	-	-	1	-	-	-	-	-	-	2	-	-
33	ISO 9000 (Open Elective-1)	CO 4	To Measure themselves against internal or external standards and to improve the capability of their business processes.	-	-	-	2	-	-	-	1	-	-	-	-	2	-	-
				-	-	-	-	-			-		-	-	-	-	-	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

				3	3	2	2	-	-	-	-	-	-	-	-	2	-	-
		CO 1	To Apply basic concepts of Cybercrime and legal Perspectives of Security Implications for Organizations in respect to the	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyze offences, attacks and Criminals plan for the cyber space.	-	3	-	-	-	1	-	-	-	-	-	-	-	2	-
	Cyber Security	CO 3	To Compose the cyber security solutions and cyber security Tools in Cybercrime.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
54	(Open Elective-	CO 4	To Select the Management Perspective human role in security systems with an Organizational, emphasis on ethics, social	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
			systems with an organizational, emphasis on euries, seemi	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	2	2	-	-	-	-	-	-	-	-	2	2	2
		LO1	to Define the various terminal commands used in developing IOT applications.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	to develop the python scripts used in IOT applications.	-	3	-	-	-	-	1	-	-	-	-	-	-	-	3
55	Internet of	LO3	to apply the logics of IOT for designing IOT applications	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
55	Things Lab	LO4	and demonstrate following PO related capabilities:	-	-	3	-	3	3	3	3	3	3	3	3	3	2	3
		LO5		-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
				3	3	3	-	3	3	3	3	3	3	3	3	2.5	2.5	3
		LO1	different security-based tools like Wire shark, tcpdump,	-	3	-	-	-	1	-	-	-	-	-	-	3	-	2
		LO2	to design the substitution and transposition techniques for plain text encryption and decryption.	-	-	3	-	-	-	-	-	-	-	-	-	2	-	3
		LO3	techniques for secure data transmission across network	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
	Cyber Security	LO4	to Install appropriate tools for network protocol analyze security-based tools like Wire shark, tcpdump etc.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	2
56	Lab	LO5	may be relevant to understanding and assessing in cyber	-	-	-	-	-	-	-	3	-	-	-	-	2	3	-
		LO6	Key Exchange problem and general attacks on system	-	-	-	-	-	-	-	-	3	-	-	-	3	2	-
		LO7	tion กุมั <del>fen ฝก"สารทาสักวุม โวเซต กอก ระคิงาะประกาณใช้ทางใหญ่ง</del> using a File Transfer Protocol mechanism and through	-	-	-	-	-	-	2	-	-	3	3	3	-	2	3
			assivet programming and make report	-	3	3	2	3	•	2	3	3	3	3	3	2.5	2.333	2.5
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	ı	-	-	ı	-	-	-	-	-	-	2	-	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

			CO-1 O Map	ping	(Bes	31011	2023	-24)										
		LO2	updated with all the latest changes in technological world	-	-	ı	ı	3	-	ı	ı	-	ı	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
	Industrial	LO4	knowledge, management, leadership and	-	-	-	-	-	1	-	-	3	-	-	-	2	2	3
57	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-
		LO6	engineering solution based on a systems approach. Capability and entitusiasin for self-improvement unlough continuous professional development and life-long	-	-	-	-	-	-	-	-	-	-	-	3	2	-	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	-	ı	-	-	1	3	2	-	ı	-	-	-	2	-
				3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO 1	Establish motivation for any topic of interest and develop a thought process for technical seminar	-	-	3	-	-	-	-	-	-	-	-	2	2	-	-
		CO 2	Organize a detailed literature survey and build a document with respect to technical publications and effective presentation	-	-	-	3	-	-	-	-	-	3	-	-	-	3	-
58	Seminar	CO 3	Analysis and comprehension of proof-of-concept and related data to access social, health, legal and environment issues for	-	3	-	-	-	3	3	-	-	-	-	-	2	-	-
56	Seminal	CO 4	Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational	-	-	-	-	-	-	-	3	2	-	-	-	3	3	-
		LO5	Make use of new and recent technology including perdition and modeling to complex activities.	-	-	-	-	3	-	-	-	-	-	-	-	-	2	2
				-	3	3	3	3	3	3	3	2	3	-	2	2.333	2.667	2
		CO 1	To apply the fundamentals of Big Data analytics in Hadoop	2	-	-	-	-	1	-	-	-	-	-	-	2	-	-
		CO 2	To identify the input-output methods like writeable interface and serialization in Hadoop platform.	-	2	1	-	-	-	-	-	-	-	-	-	2	-	-
	Big Data	CO 3	To produce and validate the Map Reduce programming models of big data analytics	-	2	-	-	-	-	-	-	-	-	-	-	2	-	
59	Analytics	CO 4	To describe/demostrate Pig and Hive architecture and their progaramming model such as HQL, Pig script.	-	-	-	-	2	1	-	-	-	-	-	-	2	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	2	-	-	-	-	-	-	-	2	-	-
		CO 1	To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To <b>analyse</b> the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
60	IPR, Copyright and Cyber Law	CO 3	To <b>generalize</b> intellectual property laws including the copyright law, patents law, designs and trademark law with appropriate	-	-	2	ı	-	1	-	-	-	ı	-	-	2	-	-

#### **Department of Advance Computing** B. Tech (Computer Science and Engineering) (Artificial Intelligence) CO-PO Mapping (Session 2023-24) To conclude the Jurisdiction Issues in Cyber Space and of India (Open 2 Elective-II) intellectual property for conventions in India, United Kingdom 3 2 2 3 2 3 To apply the fundamentals of Big Data analytics in Hadoop To analyze the input-output methods like writeable interface CO<sub>2</sub> 2 3 3 and serilization in Hadoop platform. To design the Map Reduce programming models of big data Big Data CO 3 2 3 2 Analytics (Open To evaluate of Pig and Hive architecture and their 3 Elective-II) CO 4 3 progaramming model such as HQL, Pig script. 2 2 3 3 2 3 3 3 To Understand Big Data and its analytics in the real world To Analyze the Big Data framework like Hadoop and NOSQL LO2 3 3 to efficiently LO3 To Implement Big Data Activities using Hive Big Data Analytics Lab 3 3 3 To understand the process of manual testing or automation 3 3 LO<sub>1</sub> testing by writing test plan and test cases based on different To analyse the mutation score using various tools like jumble LO2 3 3 To analyse the performance of commercial websites using LO3 3 3 Software 3 different automation tools like imeter. Testing and To calculate the coverage analysis of programs using different Validation Lab LO4 3 3 automation tools like Eclemma tool. 3 3 3 3 3 3 3 Apply fundamental knowledge of basic Computer Engineering 3 courses for solving complex Engineering problem

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

			CO-1 O Map	hing	(Ses	31011	2023	-24)										ļ
		CO 2	Analyze the literature, identify problem, its context with real world / industry issue and define problem statement	-	3	-	-	-	-	-	-	-	-	-	-	2	3	-
		CO 3	Design engineering solution to the problem using knowledge of core Computer engineering	-	-	3	-	-	-	-	1	-	-	-	-	3	3	-
		CO 4	Carryout experimentations/simulations and investigate the solution to complex Computer engineering problem	1	-	-	3	-	-		1	1	-	-	3	2	2	3
64	Project	CO 5	Use modern tools and techniques of Computer engineering for solving the problem	1	1	ı	-	3	1	1	1	ı	-	-	-	2	3	-
		CO 6	Analyse sustainability of proposed solution and its impact on environment & applicability of solution in industry and societal	-	-	-	-	-	3	3	ı	-	-	-	-	3	-	3
		CO 7	Understand professional ethics, rules and regulations while working on interdisciplinary issues and financial management	-	-	-	-	-	-	-	3	-	-	3	-	2	3	3
		CO 8	demonstrate the ability to lead and productively participate in group situations and to use oral communication effectively	-	-	-	-	-	-	-	-	3	3	-	-	3	3	-
				3	3	3	3	3	3	3	3	3	3	3	3	2.5	2.833	3
		CO 1	To Determine and analyse the domain name system (DNS) in internet and various cybercrime offence in cyber space.	3	-	ı	-	-	1	-	ı	ı	-	-	-	2	-	-
	IPR, Copyright	CO 2	To understand the concept of Intellectual Property and Intellectual Property Rights with special reference to India and	-	-	1	-	-	-		3	1	-	-	-	1	-	-
65	and Cyber Law of India (Open	CO 3	To Apply intellectual property law principles including the copyright law, patents law, designs and trademarks, to real	-	-	-	-	-	3	-	-	-	-	-	-	1	-	-
	Elective-II)	CO 4	To Study the Jurisdiction Issues in Cyber Space and Competition Law in India	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
				3	2	•	-	-	3	-	3	•	-	-	-	1.5	-	-
		CO 1	Students will be able to analyze big data using Hadoop.	3	-	-	-	-	-	-	1	-	-	-	-	3	-	-
		CO 2	Students will be able to use pig and Hive scripting	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
66	Big Data	CO 3	To Apply various big data analysis techniques	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
	Analytics Lab	CO 4	Students able to use modern data analytical tools	-	-	-	-	3	-	-	-	-	-	-	-	3	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	-	3	-	-	•	-	-	-	-	3	-	-
		CO 1	Understand the process of applying tests to software and the fundamental components of a coverage analysis and unit	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Understand the mutation testing and Writing test suits for applications.	3	-		-	-	-	-	-		-	-	-		2	_
67	Software	CO 3	Apply the website performance measurement technique using JMeter and Selenium tool to perform Test sequences and	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

	1 Coung and		00 10 1/1mp	P8	(~ 55	51011		/										
	Validation Lab	CO 4	Analyze the design of test cases for different testing techniques.	3	-	1	-	-	-	-	-	-	-	-	-	3	_	_
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	_	_	-
				3	3	•	•	3	•	•	•	-	•	-	-	3	2	-
		CO 1	Apply fundamental knowledge of basic Computer Engineering courses for solving complex Engineering problem	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the literature, Identify problem, its context with real world / industry issue and define problem statement	-	3	ı	-	-	1	-	-	-	-	-	-	-	3	-
		CO 3	Design engineering solution to the problem using knowledge of core Computer engineering	-	1	3	-	-	-	-	-	-	-	-	-	3	3	-
		CO 4	Carryout experimentations/simulations and investigate the solution to complex Computer engineering problem	-	-	-	3	-	-	-	-	-	-	-	-	_	2	3
68	Project	CO 5	Use modern tools and techniques of Computer engineering for solving the problem	-	-	-	-	2	-	-	-	-	-	-	-	2	3	-
		CO 6	Understand applicability of solution in industry and societal issues	-	-	-	-	-	2	-	-	-	-	-	-	-	2	-
		CO 7	Analyse sustainability of proposed solution and its impact on environment	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO 8	Understand professional ethics, rules and regulations while working on interdisciplinary issues	-	-	-	-	-	-	-	2	-	-	-	-	-	3	-
				2	3	3	3	2	2	2	2	•	•	-	-	2.667	2.667	3
		CO 1	Explain the basics of composites, its structure and its properties	2	-	-	-	-	-	-	-	-	-	-	-	_	-	-
		CO 2	Compute the physio-mechanical properties of composites from tests	2	1	1	-	-	-	-	-	-	-	-	-	_	-	1
69	Composite	CO 3	Assessment of engineering properties of composite materials	1	2	1	-	-	-	-	-	-	-	-	-	-	-	1
09	Materials	CO 4	Analyze the failure and maintenance of composite materials	1	-	1	1	1	-	-	-	-	-	-	-	1	-	1
				-	-	-	-	-	-	-	-	-	-	-	-	-	_	-
				1.5	1.5	1	1	1	•	-	-	-	-	-	-	1	-	1
		CO 1	Explain the fundamentals of Fire Engineering	2	-	-	-	-	1	-	-	-	-	-	-	_	1	-
		CO 2	Apply the learned principles in planning, designing and management of fire safe buildings	2	1	1	-	1	1		-	-	-	1	-	1	1	-
70	Fire and Safety	CO 3	Assess fire fighting installations, control technologies and hazardous materials	1	2	1	-	1	1	-	-	-	-	-	-	1	1	1
7.0	Engineering	CO 4	Design of fire safety building for fire resitant construction by	1		1		1			1							

## **B.** Tech (Computer Science and Engineering) (Artificial Intelligence)

				1 0														
				-	-	-	-	-	-	-	-	-	-	-	-	_	1	-
				1.5	1.5	1	1	1	1	-	1	-	-	1	-	1	1	1
		CO 1	Understanding of basic concepts and Principles of EM wave, propagation reflection and transmission. [Understanding]	3	2	-	-	-	-	1	-	3	-	-	-	-	1	-
		CO 2	Apply the knowledge for interest in complex dielectric constant, dipolar loss mechanism and design mechanism to understand	3	2	-	-	-	-	-	-	3	-	-	-	1	-	-
71	Industrial and Biomedical	CO 3	Analyze the structure of RF heating in industrial application. [Analyzing]	3	2	3	-	-	-	-	-	3	-	-	-	-	1	-
/1	applications of RF Energy	CO 4	Design of Hazards and safety standards in various engineering problem. [Create & Design].	3	3	3	3	-	-	-	-	3	-	-	-	-	1	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	2.25	3	3	-	-	-	-	3	-	-	-	1	1	-
		CO 1	Understand the fundamentals of robotics and its components, methods of linear motion into rotary motion and vice-verse.	3	3	2	2	2	3	3	3	2	-	3	3	2	-	-
		CO 2	Apply the appropriate techniques for movement of robotic joints with computers/microcontrollers. [Applying &	3	2	2	2	-	3	2	-	3	2	3	3	2	-	-
72	Robotics and	CO 3	Analyze parameters required to be controlled in a Robot for specific application. [Analyzing]	3	2	3	3	3	3	-	-	2	2	2	3	2	-	-
12	control	CO 4	Design and Develop small automatic / autotronics applications with the help of Robotics for solving the real life problems	2	2	3	2	2	2	2	3	3	2	2	3	2	1	2
		CO 5		1	-	1	-	-	1	-	-	-	1	-	-	1	1	-
				2.75	2.25	2.5	2.25	2.333	2.75	2.333	3	2.5	2	2.5	3	2	ı	2
		CO 1	understand the current Energy Scenarios in India.	3	-	-	-	-	-	1	-	-	-	-	-	-	1	-
		CO 2	understand the energy auditing of motors, lighting system and building, by appropriate analysis methods through survey	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
73	Energy Audit and Demand	CO 3	understand the Electrical-Load Management and Demand side Management.	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
13	side Management	CO 4	apply the Energy Conservation in transport, agriculture, household and commercial sectors.	3	2	2	1	-	,	-	-	-	-	-	-	-	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
				3	2.333	2	1	-	-	-	-	-	-	-	-	•	•	-
		CO 1	Learn about soft computing techniques and their applications.	2	2	3	-	-	-	-	-	-	-	-	-	2	3	3
		CO 2	Analyze various neural network architectures.	2	2	3	-	-	-	-	-	-	-	-	-	2	2	3

# Department of Advance Computing B. Tech (Computer Science and Engineering) (Artificial Intelligence)

					-													
74	Soft Commuting	CO 3	Define the fuzzy systems	-	-	3	-	-	1		1	-	1	-	1	2	2	3
/4	Soft Computing	CO 4	Understand the genetic algorithm concepts and their applications	3	2	3	-	-	1	-	ı	-	1	-	-	2	2	3
		CO 5	Identify and select a suitable Soft Computing technology to solve the problem.	3	3	3	-	-	-	-	1	-	1	-	-	3	3	3
				2.5	2.25	3	-	-	•	-	-	-	•	-	-	2.2	2.4	3
		CO 1	Define the simulation modeling and analyze the practical situations in organizations	3	-	-	-	-	-	-	1	-	1	-	-	2	-	-
		CO 2	Examine the random numbers and random variates approach in different applications	2	-	1	-	-	1	ı	ı	1	ı	-	1	ı	1	-
75	Operations	CO 3	Investigate the sensitivity of simulation solutions for realistic problems	1	3	1	-	-	ı	-	1	1	1	-	1	1	-	-
	Research	CO 4	Interpret the model and apply the results to solve crtitical issues of a realististic problem	ı	3	-	-	-	ı	-	1	-	ı	-	-	ı	-	-
				ı	-	1	-	-	1	-	1	-	1	-	-	1	-	-
				2.5	3	-	-	-	•	•	•	-	•	-	-	1.5	1	-
		CO 1	Generate methamatical models of complex engineering problems	2	-	1	-	-	1	-	ı	-	1	-	-	2	-	-
		CO 2	Analyse the various optimization techniques with the appropriate tools	3	-	ı	-	-	ı	-	ı	-	1	-	-	2	-	-
76	Simulation Modeling and	CO 3	Identify suitable optimization techniques to solve industrial and sociatal problems	-	3	-	-	-	-	-	1	-	-	-	-	2	-	-
'	Analysis	CO 4	Interpret the solution and apply the results to solve complex engineering problems	-	-	3	-	-	-	-	ı	-	-	-	-	2	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	-	-	-	-	-	-	-	-	-	2	-	-

## **B.** Tech in Computer Science and Engineering (Cyber Security)

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering		PO 3: Desig n/deve lopme	Cond uct		The engine	Envir onme	PO 8: Ethics		PO 10: Com munic	PO 11: Proje	PO 12: Life-	PSO1- The ability	PSO2- The ability	PSO3- The ability
		CO1	Students will be able to define and explain basic concepts definite integrals, sequence and series, periodic functions and multivariable functions.	knowl 1	-	-	investi -	-	er and	nt and	- -	and -	-	ct -	long -	to -	to -	to -
		CO2	Students will be able to understand properties of beta and gamma function, convergence of sequence and series.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	Engineering Mathematics-I	CO3	The students will be able to apply properties of beta and gamma functions and definite integrals to find surface area and volumes of revolution. They will be able to apply partial derivatives and multiple integrals to solve many problems in science and engineering.	3	2	-	-	-	-	1	-	-	1	-	1	-	-	-
		CO4	Students will be able to analyse Fourier series to make many useful deductions which lay down foundation of signal processing and image processing.	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			Describe the set of the effect of feet and Free in coincide.	2	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Describe characteristics of water, fuel and Engineering materials-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
		CO2	Determine of hardness of water and calorific value of fuels for Industrial as well as domestic purposes	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-
2	Engineering Chemistry	CO3	Compare different techniques of water treatment, fuel analysis, Manufacturing of engineering materials and corrosion protection methods	3	-	-	-	-	-	-	-	-	-	-	-	-	-	- 
		CO4	Prepare the generic drugs or medicines by identifying the applications of organic reaction mechanism and manufacturing of engineering materials	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	-	-	-	-	-	-	-	1	2
		CO1	Describe the process of communication, basics of Grammar and Writing and Literary Aspects	-	-	-	-	-	-	-	-	-	1	-	-	-	-	
		CO2	Explain the types of communication, barriers and channels of communication and the concept of Literature through Short Stories and poetry		-	-	-	-	-	-	-	-	2	-	-	-	-	-
3	Communication	CO3	Write and prepare professional reports, paragraph and business letters with the correct use of grammar	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
	Skills	CO4	Discuss and illustrate the impact of social and moral values by implying the basics of English Writing Skills through literary aspects	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-

I	1 1		Restate and outline the basic areas of English Language Skills					Ι	l									
		CO5	with the applications of literature	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
			11	-	-	-	_	-	-	-	2	-	2	-	2	-	-	-
		CO1	Students will be able to retrieve basic concepts of thermal and manufacturing process.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Students will able to compare different types of thermal and manufacturing processes and.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Basic Mechanical Engineering	CO3	Students will able to annotating about the functioning of turbine & pumps, IC engines, refrigeration system, modes of transmission of power, materials and primary manufacturing process.	3	-	-	-	-	1	-	-	1	1	-	1	-	1	-
		CO4	Student will be able to appraise the fundamental knowledge of thermal engineering, in addition to understanding of power transmission to solve the industrial and societal issues.	-	1	-	-	-	-	-	-	ı	ı	-	ı	-	ı	-
				2	1	-	-	-	-	-	-	1	•	-	•	-	1	-
		CO1	Identify basic components of electrical engineering and connect them to form different circuits to verify basic laws.Understanding	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Basic Electrical	CO2	Analyse the output of rectifier circuit,AC and DC machines to solve problems assosciated with Basic electrical engineering. Analyse	2	3	-	-	-	-	-	-	1	-	-	1	1	1	-
5	Engineering Engineering	CO3	Contribute efficiently in a team to acieve desired response of AC and DC Machines. Team Work	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
		CO4	Demonstrate the output of rectifier circuits consistiong of basic components of electrical engineering. Mechanism	-	-	-	-	-	-	-	-	1	1	3	1	2	1	-
				2.5	3	-	-	-	-	-	-	3	-	3	-	1.5	-	-
		CO1	Determine the strength of unknown solution by volumetric analysis.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Examine the characteristics of lubricating oil in groups	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
6	Engineering Chemistry Lab	CO3	Analyze different characteristics of water and fuel to solve societal and enviornmental problems	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1	-	-	-	-	-	2	2	2.5	-	-	-	-	-	-
		CO1	Use and pronounce the words correctly.	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
		CO2	Acquire knowledge of the correct expressions,vocabulary etc. in personal and professional lives.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
7	Language Lab	CO3	Plan successfully for leadership and teamwork,crack GD's, interviews and other professional activities.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
		CO4	Synthesize the process of communication using LSRW.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
				-	-	-	-	-	-	-	-	2	2	-	-	-	-	-

		CO1	Describe the working of Lathe machine.	1	_	-	-	-	-	-	-	-	-	_	_	1	_	_
		CO2	Apply the basic concepts of Foundry Shop	2	-	-	-	-	-	-	-	-	-	-	_	1		_
8	Manufacturing Practices	CO3	Develop various carpentry joints, welding joints and sheet metal objects.	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
	Workshop	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1.5	2	-	-	-	-	-	2	3	-	-	_	1	-	-
		CO1	Discuss measurement of electrical quantites	1	-	-	-	-	-	-	-	-	-	-	-	1	2	-
	Basic Electrical	CO2	Compare different connections of transformer	2	-	-	-	-	-	-	-	-	-	-	-	1	2	-
9	Engineering Lab	CO3	Demonstrate constructional features of electrical machines and converters	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
		CO4	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
				2	-	-	-	-	-	-	2	3	2	-	-	1.333	2	-
		CO1	Describe engineering drawing terminology, concept of scales and conic sections.	1	-	-	-	-		-	-	-	-	-	-	1	-	-
	Computer Aided	CO2	Draw Projection of Points, lines, planes, solids and section of solids	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-
10	Engineering	CO3	Draft 2D engineering problems on CAD software.	-		-	-	3	-	-	-	-	-	-	-		1	1
	Graphics	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1	1	-	-	3	-	-	2	3	-	-	-	1.5	1	1
		CO1	Students will be able to define basic rank of matrix to find, eigen values and eigen vectors of the matrix, degree and order of differential equations.	2	-	-	-	-	-	1	-	1	-	-	-	-	-	-
11	Engineering Mathematics-II	CO2	Students will be able to explain complementary functions and particular integral of ordinary differential equation and various methods of solution of ODE to solve complex engineering problems.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		СОЗ	The students will be able to apply an appropriate analytical technique to find solution of first order and higher order differential equations.	3	2	-	-	-	-	1	-	-	-	-				
		CO4	Students will be able to classify higher order partial differential equations and analyze a wide variety of time dependent	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.25	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Describe the concepts of Wave and Quantum mechanics, Laser and Fiber optics, material science and electromagnetic theory. (Recall/Remembering)	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-
	English 1	CO2	Explain the different applications of Laser and optical fibers in communication, engineering, medicine and Science.  Application of Hall effect (Examine)	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-
12	Engineering Physics	CO3	Evaluate energy states in 1-D and 3-D box with the application of quantum mechanics.(Apply)	-	1	-	-	-	-	-	ı	-	-	-	-	-	-	-
		CO4	Analyze the crystal structure through X-ray Diffraction & Camp; wavelength of light through Newton's ring experiment and Michelson- interferometer ,types of materials through Hall effect . (Analyze)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-

1				1.5	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Relate sustained happiness through identifying the essentials of human values and skills	-	-	-	-	-	-	•	2	-	-	-	-	-	-	-
		CO2	Find the happiness and human values in terms of personal and social life to create harmony in them	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
13	Human Values	CO3	Use and understand practically the importance of trust, mutually satisfaction and human relationship	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
		CO4	Identify the orders of nature for the holistic perception of harmony for human existence	-	-	-	-	-	-	ı	2	-	-	-	-	-	-	-
		CO5	Implement professional ethics and natural acceptance of human values in his/her life	-	-	-	-	-	-	-	3	-	-	-	-	-	1	-
				-	-	-	-	-	2	-	2.5	-	-	-	2	-	-	_
		CO1	Understand the basic concepts of fundamental of computer system, number system and programming. (Remembering)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Programming	CO2	Explain various memory units, representation of number system and Conditional, Iterative statements using arrays, string, pointers, file structure. (Understanding)	2	-	-	-	-	-	-	-	-	-	-	1	-	1	-
14	for Problem Solving	CO3	Examine the concept of algorithms, flowchart, Operators, Pointer, Array, String, structure, union using modularization to	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Illustrate the User Defined functions, Memory management and File concepts to solve real time problems using C Programming (Analyzing)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	1	1	•	-	-	•	1	-	-
		CO1	Describe Scope, role and Specialization of Civil Engineering, basics of surveying, types of building, Plinth area, carpet area, floor space index, R.C.C., mode of transportation and different causes of pollution. (Remember)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Basic Civil Engineering	CO2	Explain solid waste management, building by-laws, concept of sun light and ventilation, chemical and hydrological cycle, biodiversity, causes of road accident, sanitary landfill and onsite sanitation, food chain and food web, contour maps, Global warming, Climate Change, Ozone depletion, and Green House effect. (Understand)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO3	Illustrate method of ranging and levelling, road safety measures, building component, environmental acts, different types of foundation, treatment and disposal of waste water, traffic sign and symbol and rain water harvesting. (Apply)	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Compute errors in linear measurement, bearings and elevations of respective points on the ground. (Analyze)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Operate the various devices for the multifarious use in the relative fields.	1	-	-	-	-	-	-	-	-	-	-	2	-	-	-

16	Engineering Physics Lab	CO2	Apply knowledge of Newton's Ring,grating, spectrometer,Optical fiber ,Sextant, Hall effect , a n d L a s e r to determine wavelength of light, dispersive power,Numerical aperature Height of Object, Hall coefficient, coherence length and coherence time  To conduct the experiments with interest and an attitude of learning.	2	-	-	-	-	-	-	-	1	-	-	2	-	-	-
		CO4	Evaluate the Band Gap and time constants (t=RC) using basic principles of semiconductors and Capacitors by graphs.	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-
				1.5	2	-	-	-	-	-	-	1.5	-	-	2	-	-	-
		CO1	Recall the natural and social issues and their remedies.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
		CO2	Describe the nature of human values and the impact of external factors over it.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
	Human Values	CO3	Validate through actions the significance of trust, respect and harmony with self and surroundings.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
17	Activities and Sports	CO4	Outline the relation of human with nature and other factors in terms of human existence	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO5	Associate the knowledge of self and society with clear understanding of social issues and the human beings.	-	-	-	-	-	2	1	-	-	-	-	-	-	-	-
				-	-	-	-	-	2	2	1	2	-	-	-	-	-	-
		CO1	Describe various sanitary fittings and water supply fittings	1	-	-	-	-	-		-	-	-	-	-	-	-	-
	Basic Civil	CO2	Examine pH, Turbidity, Hardness and Total solids of given water sample	2	-	-	-	-	-		-	-	-	-	-	-	-	-
18	Engineering	CO3	Use of EDM and Total Station in the field	3	-		-	-	-	-	-	-	-	<u> </u>	-	-	-	-
	Lab	CO4	Investigate the linear and angular measurements of the points on the ground and levelling	-	1	-	-	-	-	-	-		-	-	-	-	-	-
		CO5	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
				2	1	-	-	-	-	-	2	3	2	-	-	-	-	-
		CO1	Relate the fundamental of C Programming as variable, operators and taxonomy to write a basic C Program	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	Computer Programming	CO2	Write programs that perform operations using condition control statements and loop control statements, single and multi-dimensional arrays along with specific program of matrix multiplication.(Examine)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	Lab	CO3	Use C programs to implement operations related to Array, Macros and inline functions, Dynamic memory allocations, concept of Structure, Unions and Pointers	3	-	-	-		-	-	-	-	-	-	-	-	-	-
		CO4	Students will show an ability to communicate effectively and work ethically			-	-	-	-	-	2	-	2	-	-	-	-	-
$\Box$				2	-	-	-	-	-	-	2	-	2	-	-	-	-	-
		CO1	Describe orthographic projections and basic Geometrical Concept	2	-	-	-	-		-	-	-	-	-	-	1	-	
	Computer	CO2	Analyze Sectional Views of different mechanical Components and assembly drawing	-	1	-	-	-	-	-	-	-	-	-	-	2	-	
20	Aided Machine	CO3	Draft a engineering product using CAD software	-	-	-	-	2	-	-	-	-	-	-	-	2	-	1

	Diawing [				1		I										ı	
		CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				2	1	-	-	2	-	-	2	3	-	-	-	1.667	-	1
		CO 1	To Define probability models using probability mass (density) functions, need and classification of optimization terminology.	1	1	1	1	1	-	1	1	-	ı	-	1	2	-	-
		CO 2	To Explain the probability distributions of discrete and continuous random variables and work binomial, Poisson,	2	-	1	-	-	-	1	-	-	-	-	-	2	1	-
1	Advanced Engineering	CO 3	To Solve mathematical models of the real world problems in optimization using Linear Programming methods such as	3	-	-	-	-	-	-	-	-	-	-	-	2	1	-
	Mathematics	CO 4	To Examine the correlation between two variables and regression applications for purposes of description and	-	3	-	-	-	-	-	-	-	-	-	-	2	1	1
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	-	-	-	-	-	-	-	-	-	-	2	1	1
		CO 1	To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national	-	-	-	-	-	1	-	-	-	2	3	1	-	-	-
		CO 2	To Calculate the domestic product, national product and elasticity of price on demand and supply.	-	-	1	-	-	2	1	-	-	-	3	-	-	-	-
2	Managerial Economics	CO 3	To Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect	3	-	2	-	-	-	1	-	-	-	2	-	-	-	-
	and Financial Accounting	CO 4	To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment	-	3	-	-	-	-	-	-	-	-	2	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	_		1.5	•			2	2.5	1		_	_
				J	,	4								2.5		_		
		CO 1	To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.	2	-	-	-	-	-	ı	-	-	<u>-</u>	-	-	2	-	-
		CO 1	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.		- 2	-	-	-		-	-	-	- - -	-		2	-	-
3	Digital		Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.		-	- 3	-	-		-	-	-	- - -	-	-		-	-
3	Digital Electronics	CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects		-	-		-			- - -	-	- - -		-	2		-
3		CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its		-	-	-					-			-	2	-	-
3		CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its		-	-	-								-	2	-	
3		CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.		2	3	2	- - - - - -			- - - - - -	-	- - - -		-	2 2 -	2	
3		CO 2 CO 3 CO 4	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.	2 2	2	3	2	- - - -			- - - -	- - - -	- - - -		-	2 2 -	2 - 2	- - -
	Electronics  Data Structures	CO 2 CO 3 CO 4	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.  To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.  To develop searching and sorting algorithms on predefind data	2 2	- 2 - - - 2	3 - 3	- 2 - <b>2</b>	- - - - -			- - - - -	- - - -	- - - -		-	2 2 -	- 2 - 2	- - - - 2
3	Electronics	CO 2 CO 3 CO 4 CO 1 CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.  To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.	2 - - - 2 2	- 2 - - - 2	- 3 - - 3	- 2 - <b>2</b>	- - - - -			- - - - -	- - - -	- - - - -		-	2 2 -	- 2 - 2	- - - - 2 2
	Electronics  Data Structures and	CO 2 CO 3 CO 4 CO 1 CO 2 CO 3	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.  To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.  To develop searching and sorting algorithms on predefind data  To create the data structures in specific areas like DBMS	2 - - - 2 2	- 2 - - - 2	- 3 - - 3	- 2 - 2	- - - - - - -	- - - -		- - - - - -		- - - - - -		-	2 2 -	- 2 - 2	

		CO 1	Apply the various programming paradigms such as exception handling, polymorphism in software pattern	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the C++ programs using different programming methodologies.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
5	Object Oriented	CO 3	Design the elements of the object oriented concepts in developing structured programs.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
3	Programming	CO 4	Investigate the real time applications using advance C++ concepts.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3
				•	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	3	2	3
		CO 1	To Demostrate software life cycle models with respect to software enginneering principles.	2	-	-	-	-	-	-	-	-	-	-	-	3	-	2
		CO 2	To analyse cost estimation technique and risk analysis techniques in software engineering projects.	-	2	-	-	-	-	-	-	-	-	-	-	2	3	-
	Software	CO 3	To Design Software requirement document (SRS)	-	-	3	-	-	-	-	-	-	-	-	-	2	3	-
6	Engineering	CO 4	To synthesize UML diagrams using the concepts of object oriented analysis in software development process.	-	-	-	3	-	-	-	-	-	-	-	-	3	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	2.5	3	2
		LO1	To Utilize searching and sorting algorithms on given values.	2	-	-	-	2	-	-	-	-	2	-	-	2	-	-
		LO2	To analyze the time and space efficiency of the data structure	-	_	_	_	-	2	-	-	-	-	-	-	2	_	_
	Data Structures and	LO3	To Evalute traversing, insertion and deletion operations on Linear and non linear data structures	_	_	_	_	-	-	2	-	-	-	-	2		2	_
7	Algorithms	LO4	To construct the solutions for real time applications			_		2	-	-	-	2	-	-	-			3
	Lab	LO5	To construct the solutions for real time applications	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	-	-	-	2	2	2	-	2	2	-	2	2	2	3
		LO1	Students will able to apply the programming concepts such as inheritance, polymorphism	-	-	-	-	2	-	-	-	-	-	-	2	3	-	-
		LO2	Students will be able to distinguish the programming methodologies to implement programs	-	-	-	-	-	2	-	-	-	-	-	2	-	2	-
	Object Oriented	LO3	Students will be able to explain the concepts to develop the structured programs.	-	-	-	-	-	-	2	-	-	-	-	2	-	-	3
8	Programming Lab	LO4	Students will be able to construct the solutions for real time problems	-	-	-	-	-	-	-	-	2	-	3	-	-	-	3
		LO5	unic productio	_	-	-	-	-	-	_	-	-	-	-	-	-	-	-
				-	-	-	-	2	2	2	-	2	-	3	2	3	2	3
		LO1	design, test case implementation, and OOP concepts	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-

		LO2	Discuss and analyze how to create software			_	3	_	_	_	_		_	_			3	
			requirements specifications for a particular problem.		-		3	-	-	-	-	-	-	-	_	_		
9	Software Engineering	LO3	Create Data Flow Diagrams for different systems.	-	-	3	-	-	-	-	-	-	-	-	-	-	3	2
	Lab	LO4	Understand and develop UML diagrams of various structures and behaviors.	-	-	-	-	2	-	-	-	-	-	-	-	2	3	-
				-	-	-	-	•	-	-	1	-	1	-	-	-	-	-
				2	-	3	3	2	-	-	-	-	-	-	-	2.5	3	2
		LO1	Apply appropriate basic logic gates for verifying the truth tables.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	Demonstarte ability for recognizing any IC and its fuctionality.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO3	Design any basic gates by the use of universal gates.	-		3	-	-	-	-	-	-	-	-	-	-	2	-
	Digital	LO4	Identify the limitation of basic logic gates while desgining any SOP and POS logics.	-	-	-	2	ı	i	-	i	ı	ı	i	ı	2	1	-
10	Electronics	LO5	Design any sequential and combinational circuits using basic gates as well as by defined IC.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
	Lab	LO6	Demonstrate the working of Digital Trainer kits and usability of it.	-	-	-	-	2	-	-	ı	ı	-	-	ı	-	2	-
		LO7	Debug a circuit to find a problem and suggest suitable solution.	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
		LO8	Able to work in a team for desgining and rectifying any errors in the digital circuit.	-	-	-	-	ı	i	-	ı	2	ı	i	ı	-	ı	2
				2	2	2.5	2	2	-	-	-	2	-	-	2	2	2	2
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	-	-	-	-	-	1	ı	-	-	-	2	-	-
		LO2	updated with all the latest changes in technological world	-	-	-	-	3	-	-	-	-	-	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
44	Industrial	LO4	knowledge, management, leadership and	-	-	-	-	-	-	-	-	3	-	-	-	2	2	3
11	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-
		LO6	continuous professional development and life-long	-	-	-	-	-	-	-	-	-	-	-	3	2	-	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	-	-	-	-	-	3	2	-	-	-	-	-	2	-
				3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO1	Define mathematically about the fundamental data types and structures used in computer algorithms and systems.	1	-	-	-	-	-	-	-	-	-	-	-	2	1	-
		CO2	Classify algebraic techniques to basic discrete structures and algorithms.	2	-	-	-	ı	i	-	i	i	1	i	ı	2	1	-

12	Discrete Mathematics	СОЗ	Apply mathematical logic in making computer programs, computer circuits, concluding experiments, digital electronics, etc.	3	-	-	-	-	-	-	-	-	-	-	-	1	1	-
	Structure	CO4	Analyze a variety of graphs and Compare the viability of different approaches to the Model problems in Computer Science.	-	3	-	-	-	-	-	-	-	-	-	-	1	1	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3		•	-		-	-		-	-	-	1.5	1	-
		CO1	Remember the fundamental principles of technical writing and genre in written communication within technical domains.	-	-	-	•	-	-	-	-	2	-	-	-	-	-	-
		CO2	Understand the intricacies of planning, drafting, revising, editing, and critiquing professional documents within the realm of technical communication when engaging in both individual and collaborative writing.	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-
13	Technical Communication	CO3	Apply skills in note-making, grammar editing, technical style, project report creation, and LSWR (Listening, Speaking, Writing, Reading) in the context of technical communication.	-	-	-	1	-	1	,	,	,	3	1	,	-	,	2
		CO4	Evaluate research findings and synthesize content for various business communication documents, such as emails, resumes, meeting minutes, technical reports, articles, and project proposals.	-	-	-	-	-	-	-	-	-	-	-	3	-	-	3
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	•	-		-	-	2	3	-	3	1		2.5
		CO1	To Examine the architecture of 8085 microprocessor, Memory and its type.	3	-	-	-	-		-	-	-	-	-	-	2	-	-
		CO2	To Analyse interfacing applications using microprocessors and peripherals.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
l	Microprocessor	СОЗ	To Design Assembly Language Programs by using instructions of 8085.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
14	& Interfaces	CO4	To investigate the connection of the microprocessor with the peripheral devices. To design assembly language programs by using	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO5	instructions of 8085 and relate	-	-	2	1	-	-	-	-	-	-	-	-	2	-	-
			oddrosoina modos in Voriello instructions	3	2	2	•	-	•	-	-	•	-	-	-	2	•	-
		CO1	Understand basic concepts and identify various data models (E-R modeling concepts) and apply these concepts for designing databases.	2	-	-	-	-	-	-	-	-	-	-	-	2	3	-
	Database	CO2	Apply relational database theory by SQL and describe relational algebra expression, tuple and domain relational expression for writing queries in relational algebra.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
15	Management System	соз	Identify and improve the database design by normalization and key constraints.	-	1	2	1	-	1	-	-	-	-	-	-	2	-	-

Understand and Analyze transaction processing and CO<sub>4</sub> 2 2 concurrency control concepts. 2 2 1 2 2.5 CO 1 To demonstrate basic concepts of computation 2 2 To analyze language expressions and Grammars in finite CO 2 2 2 automata. To design the solutions of computation problem using CO3 2 2 Theory of suitable machines Computation To apply the concepts of Computation in real life CO 4 2 3 problems. 2 2 2 2 2 2 2.5 CO1 2 2 To explain networking models and data trasmision CO2 Apply the the Error Detection and Correction techniques. 2 2 2 CO3 To analyze the network Layer routing algorithms. 2 2 2 Data Communication 17 CO4 examine the transport and application layers protocol servi 2 2 2 and Computer Networks 2 2 2 2 To familriaze with the architecture and instruction set of LO1 2 Intel 8085 To demonstrate operation of typical 8085 microprocessor LO2 2 2 trainer kit To provide practical hands on experience with Assembly LO3 2 2 Language Programming Microprocesso To analyze limitations and applications of Assembly r & Interfaces Lab LO4 language 2 2 Programming for the real world problem To get familiarize with interfacing of various peripheral LO<sub>5</sub> 2 devices using 8085 chip 2 2 2 2 2 2 <del>эеіест арргорнате теспінічие то чезіўн чатаразе анч</del> LO1 schemas for a given application using DDL/DML SQL 2 Appry and concept or integrity reales and constraints to LO2 ensure accurate and error free 3 Identify solutions for database update using pre store LO3 2 2 Procedures and Triggers

	Database	LO4	Compare the constraints primary key and foreign key between primary table and secondary table	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
19	Management - System Lab	LO5	Construct Views to simplify and reduce complexity of database schema	-	-	3	-	-	-	-	-	-	-	-	2	-	-	-
		LO6	Decision to users with different types of privileges and check users existence in database	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
		LO7	Assemble records from multiple tables in database through Inner joins and Outer joins	-	-	3	1	-	-	-	-	-	-	-	1	1	-	-
				3	2	2.5	2	2	-	-	-	-	-	-	1.5	1.6	•	-
		LO1	To defines the basic principles of computer networks. Understand the key topologies that support the internet.	2	-		i	-	-	-	-	-	-	-	-	2	ı	-
		LO2	To demonstrate the installation and configuration of network.		1	2	1	-	-	-	-	-	-	-	-	2	1	-
20	Network Programming	LO3	To evaluate errors using a variety of error correction techniques.	1	2	1		-	-	-	-	1	-	-	-	2	ı	2
20	Lab	LO4	To apply a network routing algorithm, evaluate the process, and implement a simple routing network.	1	2	1	1	-	-	-	-	-	-	-	-	2	ı	2
				ı	ı	ı	ı	-	-	-	-	-	-	-	-	-	ı	-
				2	2	2	ı	-	-	-	-	-	-	-	-	2	•	2
		LO1	related to inode, I/O redirection and piping, process	2	-	-	ı	-	-	-	-	-	-	-	-	2	-	1
		LO2	To analyze variety of problems of shell script using looping, case structures in the script programming.		2	-	-	-	-	-	-	-	-	-	-	2	-	1
21	Linux Shell Programming	LO3	To synthesize the logical problems using the shell script programming.	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
	Lab	LO4	To explore the pattern problems using shell scripts.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
		LO5	Apply C programming concepts to solve numerical problems related to array manipulation in shell scripting.	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
				2	2	2	2	2	-	-	-	-	-	-	-	2	-	1
		LO1	To understand the basic concepts of java.	2	ı		ı	-	-	-	-	-	-	-	-	2	ı	-
		LO2	To eleborate the concept of file handling, multithreading and applets.	2	1	1	1		-	-	1	1	-	-	-	1	2	-
22	Java Lab	LO3	To analyze the terms of the packeages & Interfaces	2	2	ı	ı	-	-	-	-		-	-	-	-	2	-
	Java Lab	LO4	To design the steps for creating the project using major concept	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	-	-	-	-	-	-	-	-	-	2	2	3
		CO 1	Demonstrate the concept of information theory and entropy.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Analyze the different coding techniques for efficient communication.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-

	Information	CO 3	Design the linear block code and cyclic code for error free communication.	-	-	2	-		-	-	-	-	-	-	-	-	2	-
23	Theory & Coding	CO 4	Evaluate the shortest path by using different algorithms techniques.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	ı	-
				2	2	2	3	-	-	-	-	-	-	-	-	2	2	2
		CO 1	To illustrate the theoretical concepts of finite state machine	2	-	-	-	-	-	-	-	-	-	-	-	3	1	_
		CO 2	To analyze the grammars, parsing techniques, and actual code generation methods	-	3	-	1	-	-	-	-	-	-	-	-	-	2	-
24	Compiler	CO 3	To Evaluate the different types of error and convert the code in I.C.G.	-	-	3	ı	-	-	-	-	-	-	-	-	-	1	2
24	Design	CO 4	To convert the optimized code into the machine code in the storage organisation and code optimization.	-	-	-	3	-	-	-	-	1	-	-	-	2	1	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	ı	-
				2	3	3	3	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	To demonstrate the knowledge of Operating System services including Memory, Device & File Management.	3	-	-	-	-	-	-	-	-	-	-	-	3	1	2
		CO 2	To categorize the Process management in terms of inter process communication and memory management methods for	-	3	-	1	-	-	-	-	1	-	-	-	2	ı	-
25	Operating	CO 3	To Design the solution for scheduling and deadlock problems in operating system using appropriate algorithms such as round	-	-	2	-	-	-	-	-	-	-	-	-	3	1	2
	System	CO 4	To investigate LINUX/UNIX, OS, RTOS, windows and Mobile based OS file system through case study.	-	-	-	3	-	-	-	-	-	-	-	-	2	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	3	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	Demonstrate the standards and Primitives of Drawing components like line, circle, ellipse, clipping, filling	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Analyze the graphics quality with the help 3D Graphics and Projections	-	2	-	1	-	1	-	1	1	-	-	-	1	2	-
26	Computer Graphics &	CO 3	Design the animation using transformation and clipping	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
20	Multimedia	CO 4	Organize the primitives for Illumination, Shading and Color Models.(Evaluate)	-	-	-	2	-	-	-	-	-	-	-	-	-	1	3
				-	-	-	•	-	-	-	-	•	-	-	-	-	ı	-
				2	2	3	2	-	-	-	-	-	-	-	-	2	2	2.5
		CO 1	Analyze and evaluate the cyber security needs of an organization.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	3	-	-	-	-	-	-	-	-	-	-	-	2	1	-
27	Cyber Space	CO 3	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-

41	Operations and Design	CO 4	Design and develop a security architecture for an organization.	-	-	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 5	Design operational and strategic cyber security strategies and policies.	1	-	-	ı	-	-	1	-	-	-	-	-	-	-	-
				2.5	3	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 1	conduct digital investigations that conform to accepted professional standards and are based on the investigative	2	-	-	1	-	1	1	- 1	-	-	-	-	2	-	-
		CO 2	identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy,	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
28	Digital Forensics and	CO 3	apply a solid foundational grounding in computer networks, operating systems, file systems, hardware, and mobile devices	1	3	-	1	-	1	1	1	-	-	-	-	2	-	-
20	Incident Response	CO 4	access and critically evaluate relevant technical and legal information and emerging industry trends.	1	-	3	ı	3	1	1	1	-	-	3	-	2	1	-
		CO 5	Communicate effectively the results of a computer, network, and/or data forensic analysis verbally, in writing, and in	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	•	3	-	-	-	-	-	3	-	2	-	-
		CO 1	Understand complexity of an algorithm, asymptotic notation and divide and conquer method for developing an algorithm.	3	-	-	-	-	ı	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the algorithm design using greedy algorithm and dynamic programming.	1	3	-	1	-	ı	1	ı	-	-	-	-	2	1	-
29	Analysis of	CO 3	To Create search for problem solution using backtracking, branch and bound and pattern matching algorithm	-	-	3	-	-		-	-	-	-	-	-	2	-	-
29	Algorithms	CO 4	To synthesize the randomized algorithm, assignment problem and types of classes such as P, NP, and NP Complete.	1	-	1	2	1	ı	1	ı	1	-	-	-	3	1	2
				ı	-	-	ı	-	ı	ı	ı	-	-	-	-	-	ı	-
				3	3	3	2	-	-	-	-	-	-	-	-	2.5	-	2
		CO 1	To Classify the challenges with transmission of signals in wireless communication systems and Cellular architechture	2	-	-	ı	-	1	1	1	-	-	-	-	3	1	-
		CO 2	To Analyze the measures to increase the capacity in GSM systems-sectorization and Spatial Filtering for Interference	1	3	1	1	1	ı	ı	1	1	-	-	-	1	2	-
30	Wireless	CO 3	To formulate cell architecture in wirless communication sytem.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
30	Communication	CO 4	To Distinguish digital signaling techniques for lossy channels.	-	-	-	2	-	1	-	-	-	-	-	-	2	-	-
				-	-	-	-	-		-	-	-	-	-	-	-	-	-
				2	3	3	2	-	•	-	-	-	-	-	-	2.5	2	-
		CO1	To apply guidelines and imperical research method in HCI to Make User Friendly Computer Interface	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO2	To categorise Human Computer interction concept using GUI Design and Prototyping techniques	-	3	-	-	-	ı	-	1	-	-	-	-	-	2	-
31	Human Computer	CO3	To design Task models and object oriented modeling for computer interface	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
<i>J</i> 1	Interaction	CO4	To classify types of GOMS, Family model and LAWS	-	-	-	2	-	-	-	-	-	-	-	-	1	2	-

				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	3	2	-	-	-	-	-	-	-	-	1.5	2	2
		CO1	To understand blockchain systems working and Distributed Consensus of block chain technology.	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO2	To Analyze Block Chain Technology with Crypto currency and Bitcoin.	-	2	-	1	-	-	-	-	-	-	-	1	-	2	-
32	Fundamental	CO3	Design and built smart contracts and Ethereum Structure of Block chain.	-	ı	2	i	-	-	-	-	-	-	-	ı	-	2	-
52	of Block chain	CO4	To Analyze the Block chain Types and Consensus Algorithms.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	2	•	-	-	-	-	-	-	-	ı	3	2	-
		CO 1	Analyze and evaluate the cyber security needs of an organization.	2	-	-	ı	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
33	Cyber Space	CO 3	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
	Operations and Design	CO 4	Design and develop a security architecture for an organization.	-	-	3	3	-	-	-	-	-	-	2	ı	2	-	-
		CO 5	Design operational and strategic cyber security strategies and policies.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	3	-	-	-	-	-	-	2	•	2	-	-
		CO 1	conduct digital investigations that conform to accepted professional standards and are based on the investigative	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy,	3	-	-	-	-	-	-	-	-	-	-	1	2	-	-
34	Digital Forensics and	CO 3	apply a solid foundational grounding in computer networks, operating systems, file systems, hardware, and mobile devices	-	3	-	ı	-	-	-	-	-	-	-	-	2	-	-
	Incident Response	CO 4	access and critically evaluate relevant technical and legal information and emerging industry trends.	-	-	3	-	3	-	-	-	-	-	3	-	2	-	-
		CO 5	Communicate effectively the results of a computer, network, and/or data forensic analysis verbally, in writing, and in	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	-	3	-	-	-	-	-	3	-	2	-	-
		LO1	to apply the concepts of transformation techniques on 2D & 3D objects.	2	-	-	1	-	-	-	-	-	-	-	-	2	-	-
		LO2	to analyze the colour modelling, shading and animation on graphic objects.	-	3	-	-	-	-	-	-	-	-	-	-	2	-	3
35	Computer Graphics &	LO3	to design the graphical premitives drawing algorithms such as line, circle drawing algorithms.	-	-	3	-	-	-	-	-	-	-	-	-	2	-	3
	Multimedia Lab	LO4	to Generate Fractal images using graphics tool like Sterling	-	-	-	2	2	-	-	-	-	-	-	-	3	-	-
		LO5	to make a project to solve real life socity based problem and demonstrate following PO related capabilities:	-	-	-	-	-	3	3	3	3	3	3	3	3	2	3

				2	3	3	2	2	3	3	3	3	3	3	3	2.4	2	3
		LO1	To Analysis the finite state machines, lexical analyzer, parser for the grammar.	-	-	-	-	-	-	-	-	3	-	-	-	3	-	-
		LO2	comments, operators, loops and keywords, and	-	-	-	-	3	-	-	-	-	-	-	-	2	-	-
36	Compiler	LO3	To Design intermediate code genrator and converted into optimzed code	-	-	-	-	-	-	-	-	3	-	-	-	2	-	-
30	Design Lab	LO4	To demostrate hands on experience of working on system software.	-	-	-	-	-	3	-	-	-	-	-	-	-	3	-
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	3	3	-	-	3	-	-	-	2.333	3	-
		LO1	Apply sorting algorithms like quick sort for information searching.	3	-	-	-	-	-	-	-	1	-	-	-	3	-	-
		LO2	Identify problems to be broken down into simple sub problems using merge sort algorithm	-	-	-	3	-		-	-		-	-	-	-	3	-
	Analysis of	LO3	Device solutions using topological ordering to quickly compute shortest paths	-	-	2	-	-		-	-		-	-	-	-	3	-
37	Algorithms Lab	LO4	Demonstrate real world scenarios like resourse allocation using knapack algorithm	-	-	-	-	-		-	-		-	-	2	-	2	-
	Lab	LO5	From a given vertex, Select Dijkstra's algorithm to find the shortest path to other vertices	-	-	-	-	2		-	-		-	-	-	-		3
		LO6	Demonstrate minimum cost spanning tree of a given undirected graph using kruskal's algorithm	-	3	-	-	-		-	-		-	-	-	-	•	3
				3	-	2	3	2		-	-		-	-	2	3	2.667	3
		LO1	To apply event handling on AWT and Swing components.	-	-	3	-	-	1	-	-	1	-	-	-	3	-	-
		LO2	To Design a page using Swing , Servlet , JSP and JDBC connectivity.	-	-	-	ı	3	1	1	1	1	ı	-	-	3	-	-
38	Advance Java	LO3	To create a project based on societal problem.	-	-	-	•	-	3	1	1	1	ı	-	-	-	3	-
30	Lab	LO4	database tables with Hibernate	-	-	-	ı	-	1	3	1	1	ı	-	-	-	3	3
		LO5		-	-	-	ı	-	1	1	1	1	ı	-	-	-	-	-
				-	-	3	•	3	3	з	•	•	•	-	-	3	3	3
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	updated with all the latest changes in technological world	-	-	-	-	3	-	-	-	-	-	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
39	Industrial	LO4	knowledge, management, leadership and	-	-	-	-	-	-	-	-	3	-	-	-	2	2	3
	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-

		LO6	capability and entitusiasin for self-improvement unough	_	-	_	_	_	_	_	_	_	_	_	3	2	_	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	-	-	-	-	-	3	2	-	-	-	-	-	2	-
			at an original in the state of	3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO 1	To identify the elements of image and basic steps of digital Image Processing.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Apply the diffrent function types in spatial and frequency domain.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
40	Digital Image	CO 3	To use different tecniques for image enhancement and image restoration.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
40	Processing	CO 4	To construct enhance image using the technique of compression and segmentation techniques.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
				•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
				2	2	2	-	-	-	-	-	-	-	-	-	2	-	-
		CO 1	Apply the fundamental concepts of learning in Machine Learning .	3	-	-	-	-	-	-	-	-	-	-	-	3	1	-
		CO 2	Analyze or Parse the datasets with statistical theory learning methods.	1	3	-	ı	-	-	-	•	-	-	-	-	2	ı	-
41	Machine	CO 3	Analyze problem statement solution by Evaluating Machine Learning algorithms and model selection.	ı	3	-	1	-	-	-	-	-	-	-	-	-	2	-
11	Learning	CO 4	Design a hypothesis solution for the real world problem using Machine Learning Techniques.	-	-	2	-	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	-	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	To understand the concepts of Information Security	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	To Identify the fundamental techniques of information security	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Information Security	CO 3	To Demonstrate various network security applications	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
	System			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				•	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO 1	To Apply the concept of data representation and memory hierarchy in the CPU Organisation.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyse the instruction sets of assembly language in micro-programmed control devices.	ı	2			-	-	-	-	-	-	-	-	3		
43	Computer Architecture	CO 3	To analyse addressing modes, RISC and CISC architecture designs.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-

	and Organization	CO 4	To Design logical and arithmetic operations for floating	_		3		_			_	_					2	
	Organization		and fixed point numbers.  Exemplify in a better way the I/O and memory				_			_		_						
		CO 5	organization.	-	-	-	3	-	-	-	-	-	-	-	-	2	-	-
			- Samueloni	2	2	3	3	_	_	_	_	_	_	_	_	2.333	2	_
			Understand the concepts of artificial intelligence and	_	_												_	
		CO 1	intelligent agents.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Learn basic principles of AI in solutions that require															
		CO 2	problem-solving methods.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	
	Artificial	CO 3	Determine the effectiveness of truths by knowledge			_												
44	Intelligence		representation methods in Al Analyze the techniques presented and apply them to	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
	miemgenee	CO 4	real world problems	_	_	_	2	_	_	_	_	_	_	_	_	_	_	2
			lear trena president	_	_	_	_	_	_	_	_	_	_	_	_	_		
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	2	3	2	-	-	-	-	-	-	-	-	2	2.5	2
		CO 1	To apply cloud fundamentals in cloud computing architecture	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
			To identify various cloud service models, cloud															
		CO 2	architecture, Parallel and distributed programming	-	2	-	_	_	_	-	_	-	-	_	-	2	_	-
			paradigms															
			To examine the virtualization techniques regarding															
	Cloud	CO 3	processor, memory, operating system, network	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
45	Computing		virtualization															<u> </u>
			To descibe the basic threats, security mechanism,															
		CO 4	imporatnce of SLA's in cloud and cloud services	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
			platforms for business and industry prespectives															
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	2	2	-	-	-	-	-	-	-	2		-
		CO1	Students will be able to gain basic knowledge on data	2												3		
		COI	science Students will be able to convert the real time data into	2		_	-		_	-	_	-	_		_	3		
		CO2	suitable form for analysis	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
	Programming	GG.	The students will be able to apply techniques to gain the				_											
1	for Data Science	CO3	insights from the data through statistical inferences	-	_	2	2	_	-	-	-	-	-	-	-	l	-	
	Science	CO4	Students will be able to develop suitable models using	-	_	-	3	2	-	-	-	-	-	_	-	-	2	-
			machine learning techniques and to analyze its															
				2	2	2	2.5	2	-	-	-	-	-	-	-	2	2	2
		CO 1	Apply the fundamental concept of natural language	3	_	-	_	_	-	-	-	-	_	_	_	3	-	-
			processing (NLP) techniques to learn the structure and Demonstrate practical proficiency in using tools like															<u> </u>
		CO 2	ipython notebooks, NLTK, and other relevant	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-

46	Natural	CO 3	Analyze lexical relations and various parsing techniques using WordNet and other semantic and parsing	-	3	-	-	-	-	-	-	-	-	-	-	-	2	-
46	Language Processing	CO 4	Anaiyze and apply distributional semantics and graphical models for sequence labeling in NLP.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-		-	-	-	-	-	-	-
				2.5	2.5	-	-	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	To understand the working of block chain and also learn about block chain network.	2	-	-	-	-	-	-	1	-	-	-	-	3	-	-
		CO 2	To analyze the application of block chain and cryptography of block chain	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
	Blockchain and	CO 3	To identify the different cybercrimes and frauds and classify different cyber-attacks.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
46	Cyber Security	CO 4	Able to use different tools and methods used in cybercrime and identify different theft, digital forensic.	-	-	2	ı	2	-	-	1	-	-	-	-	-	2	-
		CO 5	Learn about different network defense tools and basic of virtual private network.	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
				2	2	2	-	2	-	-	-	-	-	-	-	3	2	2
		CO 1	To understand the basic architecture of Neural Network.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	To analyze the different preprocessing and learning algorithm and apply on neural network.	-	3	-	-	-	-	-	ı	-	-	-	-	2	-	-
46	Artificial Neural Network	CO 3	To demonstrate different applications that learn using neural network	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
	Network																	
				3	3	3	-	-	-	-	-	-	-	-	-	2.5	-	3
		CO 1	Understand the basic terminology of cybercrimes	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Apply a number of different computer forensic tools to a given scenario	-	2	-	ı	-	-	-	1	1	-	-	-	-	2	-
46	CYBER	CO 3	Understand the basics of computer forensics	2	-	-	-	-	-	-	ı	-	-	-	-	-	2	-
10	FORENSICS	CO 4	Analyze and validate digital evidence data	-	-	2	-	2	-	-	-	-	-	-	-	-	2	-
		CO 5	Analyze acquisition methods for digital evidence related to system security	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
				2	2	2	-	2	-	-	-	-	-	-	-	3	2	2
		CO 1	Outline the vulnerabilities in a system or network using computer forensic fundamentals.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-

			,															
		CO 2	Demonstrate a critical evaluation of an advanced	_	3	_	-	_	-	_	-	-	-	_	_	3	-	-
			security topic with an independent project.															
	ETHICAL		Analyze and critically evaluate techniques used to break														_	
46	HACKING	CO 3	into an insecure web application and identify relevant	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
"	AND DIGITAL		counter measures.															
	FORENSICS	CO 4	Evaluate the potential counter measures to advanced	-	_	-	3	_	-	-	-	-	-	_	-	-	-	3
			hacking techniques.															
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	3	-	-	-	-	-	-	-	-	3	3	3
		CO 1	To generalize the basic elements and design													_		
		COT	architectures in distributed system.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To analyze the concurrent processes, inter process	_	2	_	_	_ ا	_	_	_	_	_	_	_	2	2	_
			communication and RPC and RMI case studies in To study process scheduling, implementation and file															
		CO 3	, , , , , , , , , , , , , , , , , , , ,	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
46	Distributed	CO 4	systems along with corresponding case studies. To analyze the memory sharing and failures, deadlock			_	2		_		_	_		_		3		
	System	CO 4	handling in distributed system architecture.			_			-		-	_	_		-	3	-	-
			To analyse different agreements, faults and recoveries,															
		CO 5	management concept and CORBA services while	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
			implementing distributed system.															
				3	2	2.5	2	-	-	-	-	-	-	-	-	2.5	2	-
		CO 1	To understand the CONCEPT OF Electronic Commerce,	2												3		
		COT	ERP and its applications		-	-	-	_	-	-	-	-	-	-	-	٥	-	-
		CO 2	To apply online publishing techniques in digital	_	2	_	-	_	_	-	_	-	_	_	_	3	_	_
			marketing To compare E- Business models in web based															
	Ecommerce and	CO 3	applications for businesses	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
47	ERP	GO 4	To evaluate XML and HTML for creating interactive				_									_	_	
		CO 4	pages for Web, e-business, and portable applications.	-	-	-	2	-	-	-	-	-	-	-	-	3	3	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	2	-	-	-	-	-	-	-	-	3	3	-
		1.04	To implement the basic concept of Matlab programming															
		LO1	tools for Digital Image processing	-	_	-	-	_	-	-	-	2	-	-	2	2	-	-
	[	LO2	To dominate and assessment of the control of the co		_													
			To demonstrate and compare various image operations.  To apply different type of filters and transform	-	2	-	-	<u> </u>	-	-	-	-	-	-	-	-	2	-
	Digital Image	LO3	techniques on images.	_	_	_	_	_	_	_	_	_	_	2	_	_	2	_
48	Processing Lab	1.04	To implement different morphological operations and											<u> </u>			_	
	Lab	LO4	segmentation on images.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
	[	LO5	To prepare students for perform different enhancement															
			technique on image.	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-
				-	2	-	-	-	-	-	•	2	-	2	2	2	2	2

		LO1	To choose basic python Libraries and commands used in Machine Learning.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	-
		LO2	To apply knowledge of machine learning algorithms for	_	_	3	-	-	-	-	_	-	-	_	_	3	-	3
		1.00	problem statements provided. to analyze various Supervised and Unsupervised														_	-
49	Machine Learning Lab	LO3	Machine Learning algorithms. To Evaluate Machine Learning Algorithms for real world	-	-	-	3	-	-	-	-	-	-	-	-	3	3	<u> </u>
	Learning Lab	LO4	problems.	-	-	-	-	-	-	3	•	-	-	-	-	3	-	3
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	3	3	3	-	3	-	-	-	-	-	3	3	3
		LO1	To apply the basic datatypes and variables	2	-	-	-	-	_	-	-	-	-	-	-	3	-	-
		LO2	To analyze the importance of conditional statement & Looping Structure.	_	3	-	-	-	-	-	-	-	-	-		3	3	-
		LO3	To Identify the list and tuples in container data types.	_	3	_	_	_	_	_	_	_	_	_	_	_	_	2
50	Python Lab	LO4	To be Able to produce Strings ,Character Arrays and															
			Fuction Programming concept in python. To Develop the ability to create data structure		-	-	-	-		-	-		-	-	-	-	-	3
		LO5	applications in Python programming.	-	-	-	-	2	-	-	-					-	2	2
				2	3	-	-	2	-	-	-	-	-	-	-	3	2.5	2.333
		LO1	Demsotrate the installation of android studio and other IDEs including architecture and fundamental concept of	2	_	_	_	_	_	_	_	_	_	_	_	_	_	_
		LO2	Analyse the android framework and tookit as per the									_			_	_		<u> </u>
	Mobile		given problem Design the layout and solutions recognize the need for	-	2	-	-	2	-	-	-	-	-	-		-	2	-
51	Application	LO3	sociteal problems.   Create the android application for real life application by	-	-	-	2	-	-	-	-	-	-	-	1	-	-	2
	Development Lab	LO4	utlizing the skills of project management	-	-	_	-	3	-	-	-	-	-	2	-	1	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	2	2.5	-	-	-	-	-	2	1	1	2	2
		CO 1	To demostrate concepts IOT plateform and conectivity with devices like Ardinuo, Rasberry pi etc.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyse IOT communication models like push-pull, publish & subscribe model.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	3
	Internet of	CO 3	To Design prototypes for Internet of Things in real time applications.	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
52	Things	CO 4	To investigate solutions of complex problems using advance concepts of IOT & Big Data.	-	-	-	3	-	-	-	-	-	-	-	-	-	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	2	2.5	3
		CO 1	To apply Quality Tools to monitor the overall operation and continuous process improvement.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-

ı	ı ſ		To Analyse systematic methods in identifying where and how it		ı	l		Ι	ı	I	I	ı	l	1		Ι		
		CO 2	might fail and relative impacts of different failures	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
53	Quality Management /	CO 3	To formulate effectively customer requirements and convert them into detailed engineering	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
33	ISO 9000 (Open Elective-1)	CO 4	To Measure themselves against internal or external standards and to improve the capability of their business processes.	-	-	-	2	-	-		-	-	-	-	-	2	-	-
	Diecuve 1)		and to improve the capability of their outsiness processes.	_	_	-	_	-	-	-	-	-	_	_	_	-	-	-
				3	3	2	2	-	-	-	-	-	-	-	-	2	-	-
		CO 1	To Apply basic concepts of Cybercrime and legal Perspectives of Security Implications for Organizations in respect to the	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyze offences, attacks and Criminals plan for the cyber space.	-	3	-	i	-	-	-	-	-	-	-	-	-	2	-
	Cyber Security	CO 3	To Compose the cyber security solutions and cyber security Tools in Cybercrime.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
54	(Open Elective-	CO 4	To Select the Management Perspective human role in security systems with an Organizational, emphasis on ethics, social	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	2	2	-	-	-	-	-	-	-	•	2	2	2
		LO1	to Define the various terminal commands used in developing IOT applications.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	to develop the python scripts used in IOT applications.	-	3	-	-	-	-	-	-	-	-	-	-	-		3
55	Internet of	LO3	to apply the logics of IOT for designing IOT applications	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
33	Things Lab	LO4	and demonstrate following PO related capabilities:	-	-	3	-	3	3	3	3	3	3	3	3	3	2	3
		LO5		-	-	-	-	-	-	-	-	-	-	-		-		-
				3	3	3	•	3	3	3	3	3	3	3	3	2.5	2.5	3
		LO1	different security-based tools like Wire shark, tcpdump,	-	3	-	-	-	-	-	-	-	-	-	-	3	-	2
		LO2	both to design the substitution and transposition techniques for plain text encryption and decryption.	-	-	3	-	-	-	-	-	-	-	-	-	2	-	3
		LO3	techniques for secure data transmission across network	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
56	Cyber Security	LO4	to Install appropriate tools for network protocol analyze security-based tools like Wire shark, tcpdump etc.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	2
	Lab	LO5	may be relevant to understanding and assessing in cyber	-	-	-	-	-	-	-	3	-	-	-	-	2	3	-
		LO6	TOnnprove team working skinnor designing a solution for Key Exchange problem and general attacks on system เช็กกุมัศัยกะไลใชารณ์สามารถสา	-	-	-	-	-	-	-	-	3	-	-	-	3	2	-
		LO7	using a File Transfer Protocol mechanism and through	-	-	-	-	-	-	2	-	-	3	3	3	-	2	3
				-	3	3	2	3	-	2	3	3	3	3	3	2.5	2.333	2.5

		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	-	-	-	_	-	-	-	-	-	-	2	_	-
		LO2	updated with all the latest changes in technological world	-	-	-	-	3	-	-	-	-	-	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
	Industrial	LO4	knowledge, management, leadership and	-	-	-	-	-	-	-	-	3	-	-	-	2	2	3
57	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-
		LO6	continuous professional development and life-long	-	-	-	-	-	-	-	-	-	-	-	3	2	-	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	-	-	ı	-	-	3	2	-	ı	-	ı	-	2	-
				3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO 1	Establish motivation for any topic of interest and develop a thought process for technical seminar	-	-	3	-	-	-	-	-	-	-	-	2	2	-	-
		CO 2	Organize a detailed literature survey and build a document with respect to technical publications and effective presentation	-	-	-	3	-	-	-	-	-	3	-	-	-	3	-
50	0	CO 3	Analysis and comprehension of proof-of-concept and related data to access social, health, legal and environment issues for	-	3	-	-	-	3	3	-	-	-	-	-	2	-	-
58	Seminar ·	CO 4	Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational	-	-	-	-	-	-	-	3	2	-	-	-	3	3	-
		LO5	Make use of new and recent technology including perdition and modeling to complex activities.	-	-	-	ı	3	-	-	-	-	-	-	-	-	2	2
				-	3	3	3	3	3	3	3	2	3	-	2	2.333	2.667	2
		CO 1	To apply the fundamentals of Big Data analytics in Hadoop	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To identify the input-output methods like writeable interface and serialization in Hadoop platform.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
59	Big Data	CO 3	To produce and validate the Map Reduce programming models of big data analytics	-	2	-	-	-	-	-	-	-	-	-	-	2	-	
39	Analytics	CO 4	To describe/demostrate Pig and Hive architecture and their progaramming model such as HQL, Pig script.	-	-	-	ı	2	-	-	-	-	-	-	-	2	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	2	-	-	-	-	-	-	-	2	-	-
		CO 1	To <b>classify</b> the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent	3	-	-	-	_			-	-	_	-	-	2	-	-
		CO 2	To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.	-	2	-	-	-			-	-		-	-	2	-	-
60	IPR, Copyright and Cyber Law	CO 3	To generalize intellectual property laws including the copyright law, patents law, designs and trademark law with appropriate	-	_	2	-	-	-	-	-	-	-	-	-	2	-	-
	of India (Open Elective-II)	CO 4	To <b>conclude</b> the Jurisdiction Issues in Cyber Space and intellectual property for conventions in India, United Kingdom	_	_	-	3	-	_	_	_	-	_	-	-	2	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

				3	2	2	3	-	-	-	-	-	-	-	-	2	-	-
		CO 1	To apply the fundamentals of Big Data analytics in Hadoop	2	-	-	-	-	-	-	-	ı	-	-	-	3	-	-
		CO 2	To analyze the input-output methods like writeable interface and serilization in Hadoop platform.	1	2	-	-	-	-	-	-	1	ı	-	-	3	-	3
61	Big Data Analytics (Open	CO 3	To design the Map Reduce programming models of big data analytics.	-	-	2	-	-	-	-	-	1	-	-	-	3	2	-
01	Elective-II)	CO 4	To evaluate of Pig and Hive architecture and their progaramming model such as HQL, Pig script.	-	-	-	3	-	-	-	-	-	-	-	-	3	-	-
				•	-	-	-	-	-	-	-	•	-	-	-	-	-	-
				2	2	2	3	-	-	-	-	-	-	-	-	3	2	3
		LO1	To Understand Big Data and its analytics in the real world	3		-	-	-	-	-	-	-	-	-	-	3	-	-
		LO2	To Analyze the Big Data framework like Hadoop and NOSQL to efficiently	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
62	Big Data	LO3	To Implement Big Data Activities using Hive	-	-	-	-	-	-	-	-	-	-	-	3	-	3	-
	Analytics Lab																	
				3	3	-	-	-	-	-	-	-	-	-	3	3	3	-
		LO1	To understand the process of manual testing or automation testing by writing test plan and test cases based on different	-	-	-	-	-	3		-	1	-	-	3	-	3	-
		LO2	To analyse the mutation score using various tools like jumble testing tool.	1	-	-	-	3	1	-	-	1	-	-	3	•	-	-
63	Software	LO3	To analyse the performance of commercial websites using different automation tools like jmeter.	-	_	-	-	_	-	-	_	3	-	-	3	3	-	-
63	Testing and Validation Lab	LO4	To calculate the coverage analysis of programs using different automation tools like Eclemma tool.	-	-	-	-	-	-	-	-	1	3	-	3	-	-	-
				•	-	-	-	3	3		-	3	3	-	3	3	3	-
		CO 1	Apply fundamental knowledge of basic Computer Engineering courses for solving complex Engineering problem	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the literature, identify problem, its context with real world / industry issue and define problem statement	-	3	-	-	-	-	-	-	-	-	-	-	2	3	-
		CO 3	Design engineering solution to the problem using knowledge of core Computer engineering	-	-	3	-	_	1	-		-	-	-	-	3	3	-
		CO 4	Carryout experimentations/simulations and investigate the solution to complex Computer engineering problem	-	-	-	3	-	-	-	-	-	-	-	3	2	2	3
64	Project	CO 5	Use modern tools and techniques of Computer engineering for solving the problem	-	-	-	-	3	-	-	-		-	-	-	2	3	-
		CO 6	Analyse sustainability of proposed solution and its impact on environment & applicability of solution in industry and societal	-	-	-	-	-	3	3	-	-	-	-	-	3	-	3

		CO 7	Understand professional ethics, rules and regulations while working on interdisciplinary issues and financial management	-	-	-	-	-	-	-	3	-	-	3	-	2	3	3
		CO 8	demonstrate the ability to lead and productively participate in group situations and to use oral communication effectively	-	-	-	-	-	-	1	-	3	3	-	-	3	3	-
				3	3	3	3	3	3	3	3	3	3	3	3	2.5	2.833	3
		CO 1	To Determine and analyse the domain name system (DNS) in internet and various cybercrime offence in cyber space.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	IPR, Copyright	CO 2	To understand the concept of Intellectual Property and Intellectual Property Rights with special reference to India and	-	-	-	-	-	-	-	3	-	-	-	-	1	-	-
65	and Cyber Law of India (Open	CO 3	To Apply intellectual property law principles including the copyright law, patents law, designs and trademarks, to real	-	-	-	-	-	3	ı	1	ı	ı	-	ı	1	-	-
	Elective-II)	CO 4	To Study the Jurisdiction Issues in Cyber Space and Competition Law in India	-	2	-	-	-	-	-	-	1	-	-	1	2	-	-
				3	2	-	-	-	3	-	3	-	-	-	-	1.5	-	-
		CO 1	Students will be able to analyze big data using Hadoop.	3	-	-	-	-	-	1	1	1	ı	-	1	3	-	-
		CO 2	Students will be able to use pig and Hive scripting	-	3	-	-	-	-	ı	ı	1	1	-	1	3	-	-
66	Big Data	CO 3	To Apply various big data analysis techniques	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
	Analytics Lab	CO 4	Students able to use modern data analytical tools	-	-	-	-	3	-	-	-	-	-	-	-	3	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	-	3	-	-	-	-	-	-	-	3	-	-
		CO 1	Understand the process of applying tests to software and the fundamental components of a coverage analysis and unit	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Understand the mutation testing and Writing test suits for applications.	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
67	Software Testing and	CO 3	Apply the website performance measurement technique using JMeter and Selenium tool to perform Test sequences and	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
	Validation Lab	CO 4	Analyze the design of test cases for different testing techniques.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	-	-	3	-	•	-	-	-	-	•	3	2	-
		CO 1	Apply fundamental knowledge of basic Computer Engineering courses for solving complex Engineering problem	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the literature, Identify problem, its context with real world / industry issue and define problem statement	-	3	-	-	-	-	-	-	-	-	-	-	-	3	-
		CO 3	Design engineering solution to the problem using knowledge of core Computer engineering	-	-	3	-	-	-	-	-	-	-	-	-	3	3	-
		CO 4	Carryout experimentations/simulations and investigate the solution to complex Computer engineering problem	-	-	-	3	-	-	-	-	-	-	-	-	-	2	3
68	Project	CO 5	Use modern tools and techniques of Computer engineering for solving the problem	-	-	-	-	2	-	1	-	1	ı	-	1	2	3	-

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		CO 6	Understand applicability of solution in industry and societal issues	-	-	-	i	-	2	1	-	-	-	-	-	-	2	-
		CO 7	Analyse sustainability of proposed solution and its impact on environment	-	-	-	i	ı	1	2	-	-	-	-	-	-	-	
		CO 8	Understand professional ethics, rules and regulations while working on interdisciplinary issues	-	-	-	1	1	1	ı	2	-	-	-	1	-	3	-
				2	3	3	3	2	2	2	2	-	-	-	•	2.667	2.667	3
		CO 1	Explain the basics of composites, its structure and its properties	2	-	-	-	-		-	-	-	-	-	-	-	-	-
		CO 2	Compute the physio-mechanical properties of composites from tests	2	1	-	-	-	ı	-	-	-	-	-	-	-	-	1
69	Composite	CO 3	Assessment of engineering properties of composite materials	1	2	1	1	1	1	ı	-	-	-	-	1	-	-	1
	Materials	CO 4	Analyze the failure and maintenance of composite materials	1	-	1	1	1	-	-	-	-	-	-	-	1	-	1
				-	-	-	ı	ı	ı	ı	-	-	-	-	ı	-	-	_
				1.5	1.5	1	1	1		•	-	-	-	-	•	1	-	1
		CO 1	Explain the fundamentals of Fire Engineering	2	-	-	-	-	1	-	-	-	-	-	-	-	1	-
		CO 2	Apply the learned principles in planning, designing and management of fire safe buildings	2	1	1	-	1	1	-	-	-	-	1	-	1	1	-
	Fire and Safety	CO 3	Assess fire fighting installations, control technologies and hazardous materials	1	2	1	-	1	1	-	-	-	-	-	-	1	1	1
70	Engineering	CO 4	Design of fire safety building for fire resitant construction by following safety legislation	1	-	1	1	1	1	-	1	-	-	-	-	-	1	1
				-	-	-	-	-	1	-	-	-	-	-	-	-	-	
				1.5	1.5	1	1	1	1	•	1	-	-	1	-	1	1	1
		CO 1	Understanding of basic concepts and Principles of EM wave, propagation reflection and transmission. [Understanding]	3	2	-	-	-	-	-	-	3	-	-	-	-	1	-
		CO 2	Apply the knowledge for interest in complex dielectric constant, dipolar loss mechanism and design mechanism to understand	3	2	-	1	-	1	1	-	3	-	-	-	1	-	-
	Industrial and Biomedical	CO 3	Analyze the structure of RF heating in industrial application.  [Analyzing]	3	2	3	-	-	-	1	-	3	-	-	-	-	1	-
71	applications of RF Energy	CO 4	Design of Hazards and safety standards in various engineering problem. [Create & Design].	3	3	3	3	-	1	1	-	3	-	-	-	-	1	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	_
				3	2.25	3	3	-	-	-	-	3	-	-	-	1	1	-
		CO 1	Understand the fundamentals of robotics and its components, methods of linear motion into rotary motion and vice-verse.	3	3	2	2	2	3	3	3	2	-	3	3	2	-	
		CO 2	Apply the appropriate techniques for movement of robotic joints with computers/microcontrollers. [Applying &	3	2	2	2	-	3	2	-	3	2	3	3	2	-	-
72	Robotics and	CO 3	Analyze parameters required to be controlled in a Robot for specific application. [Analyzing]	3	2	3	3	3	3	-	-	2	2	2	3	2	-	-

/ -	control	CO 4	Design and Develop small automatic / autotronics applications with the help of Robotics for solving the real life problems	2	2	3	2	2	2	2	3	3	2	2	3	2	-	2
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	_
				2.75	2.25	2.5	2.25	2.333	2.75	2.333	3	2.5	2	2.5	3	2	•	2
		CO 1	understand the current Energy Scenarios in India.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	understand the energy auditing of motors, lighting system and building, by appropriate analysis methods through survey	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
73	Energy Audit and Demand	CO 3	understand the Electrical-Load Management and Demand side Management.	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
/3	side Management	CO 4	apply the Energy Conservation in transport, agriculture , household and commercial sectors.	3	2	2	1	-	-	-	-	-	-	-	-	-	-	-
		CO 5		1	-	-	-	-	-	-	-	-	-	-	1	-	1	-
				3	2.333	2	1	•	•	•	-	ı	•	•	•	•	•	-
		CO 1	Learn about soft computing techniques and their applications.	2	2	3	-	-	-	-	-	-	-	-	1	2	3	3
		CO 2	Analyze various neural network architectures.	2	2	3	-	-	-	1	-	-	-	-	1	2	2	3
74	Soft Computing	CO 3	Define the fuzzy systems	-	-	3	-	-	-	-	-	-	-	-	-	2	2	3
/4	Soft Computing	CO 4	Understand the genetic algorithm concepts and their applications	3	2	3	-	-	-	1	-	-	-	-	1	2	2	3
		CO 5	Identify and select a suitable Soft Computing technology to solve the problem.	3	3	3	-	-	-	-	-	-	-	-	1	3	3	3
				2.5	2.25	3	-	-	-	-	-	-	-	-	•	2.2	2.4	3
		CO 1	Define the simulation modeling and analyze the practical situations in organizations	3	-	-	-	-	-	-	-	-	-	-	ı	2	-	-
		CO 2	Examine the random numbers and random variates approach in different applications	2	-	-	-	-	-	-	-	-	-	-	1	-	1	-
75	Operations	CO 3	Investigate the sensitivity of simulation solutions for realistic problems	ı	3	-	-	-	-	-	-	-	-	-	ı	1	ı	-
/3	Research	CO 4	Interpret the model and apply the results to solve crtitical issues of a realististic problem	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	_
				2.5	3	-	-	-	-	-	-	-	-	-	-	1.5	1	-
		CO 1	Generate methamatical models of complex engineering problems	2	-	-	-	-	-	-	-	-	-	-	1	2	-	-
		CO 2	Analyse the various optimization techniques with the appropriate tools	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
76	Simulation Modeling and	CO 3	Identify suitable optimization techniques to solve industrial and sociatal problems	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
'0	Analysis	CO 4	Interpret the solution and apply the results to solve complex engineering problems	-	-	3	-	-	-	-	-	-	-	-	-	2	-	-

		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		2.5	3	3	-	-	-					-	•	2	•	-

## **Department of Computer Engineering**

# **B.**Tech. in Computer Engineeing

S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	PO 1: Engine ering	Probl em	n/deve	Cond uct	Mode rn	engine	Envir onme	PO 8: Ethics	dual	PO 10: Com	PO 11: Proje	PO 12: Life-	PSO1- The ability	PSO2- The ability	PSO3- The ability
		CO1	Students will be able to define and explain basic concepts definite integrals, sequence and series, periodic functions and multivariable functions.	knowl 1	analys -	lopme -	investi -	tool -	er and -	nt and -	Apply -	and -	munic -	ct -	long -	to -	to -	to _
		CO2	Students will be able to understand properties of beta and gamma function, convergence of sequence and series.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	Engineering Mathematics-I	CO3	The students will be able to apply properties of beta and gamma functions and definite integrals to find surface area and volumes of revolution. They will be able to apply partial derivatives and multiple integrals to solve many problems in science and engineering.	3	2	-	-	-	-	-	-	-	-	-	-	-	1	-
		CO4	Students will be able to analyse Fourier series to make many useful deductions which lay down foundation of signal processing and image processing.	2	3	-	-	-	-	-	-	-	-	-	•	-	-	-
				2	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Describe characteristics of water, fuel and Engineering materials-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
		CO2	Determine of hardness of water and calorific value of fuels for Industrial as well as domestic purposes	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-
2	Engineering Chemistry	CO3	Compare different techniques of water treatment, fuel analysis, Manufacturing of engineering materials and corrosion protection methods	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Prepare the generic drugs or medicines by identifying the applications of organic reaction mechanism and manufacturing of engineering materials	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	-	-	-	-	-	-	-	1	2
		CO1	Describe the process of communication, basics of Grammar and Writing and Literary Aspects	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
		CO2	Explain the types of communication, barriers and channels of communication and the concept of Literature through Short Stories and poetry		-	-	-	-	-	-	-	-	2	-	-	-	=	
3	Communication	CO3	Write and prepare professional reports, paragraph and business letters with the correct use of grammar	-	-	-	-	-	-	_	-	-	3	-	-	-	-	-
	Skills	CO4	Discuss and illustrate the impact of social and moral values by implying the basics of English Writing Skills through literary aspects	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-

I	1 1		Restate and outline the basic areas of English Language Skills		<u> </u>			Ι	l									
		CO5	with the applications of literature	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
			11	-	-	-	_	-	-	-	2	-	2	-	2	-	-	-
		CO1	Students will be able to retrieve basic concepts of thermal and manufacturing process.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Students will able to compare different types of thermal and manufacturing processes and.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Basic Mechanical Engineering	CO3	Students will able to annotating about the functioning of turbine & pumps, IC engines, refrigeration system, modes of transmission of power, materials and primary manufacturing process.	3	-	-	-	-	1	-	-	1	1	-	1	-	1	-
		CO4	Student will be able to appraise the fundamental knowledge of thermal engineering, in addition to understanding of power transmission to solve the industrial and societal issues.	-	1	-	-	-	-	-	-	ı	ı	-	ı	-	ı	-
				2	1	-	-	-	-	-	-	1	•	-	•	-	1	-
		CO1	Identify basic components of electrical engineering and connect them to form different circuits to verify basic laws.Understanding	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Basic Electrical	CO2	Analyse the output of rectifier circuit,AC and DC machines to solve problems assosciated with Basic electrical engineering. Analyse	2	3	-	-	-	-	-	-	1	-	-	1	1	1	-
5	Engineering Engineering	CO3	Contribute efficiently in a team to acieve desired response of AC and DC Machines. Team Work	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
		CO4	Demonstrate the output of rectifier circuits consistiong of basic components of electrical engineering. Mechanism	-	-	-	-	-	-	-	-	1	1	3	1	2	1	-
				2.5	3	-	-	-	-	-	-	3	-	3	-	1.5	-	-
		CO1	Determine the strength of unknown solution by volumetric analysis.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Examine the characteristics of lubricating oil in groups	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
6	Engineering Chemistry Lab	CO3	Analyze different characteristics of water and fuel to solve societal and enviornmental problems	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1	-	-	-	-	-	2	2	2.5	-	-	-	-	-	-
		CO1	Use and pronounce the words correctly.	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
		CO2	Acquire knowledge of the correct expressions,vocabulary etc. in personal and professional lives.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
7	Language Lab	CO3	Plan successfully for leadership and teamwork,crack GD's, interviews and other professional activities.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
		CO4	Synthesize the process of communication using LSRW.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
				-	-	-	-	-	-	-	-	2	2	-	-	-	-	-

		CO1	Describe the working of Lathe machine.	1	-	_	-	-	-	-	-	-	-	_	_	1	_	_ ]
		CO2	Apply the basic concepts of Foundry Shop	2	-	-	-	-	-	-	-	-	-	-	_	1		_
8	Manufacturing Practices	CO3	Develop various carpentry joints, welding joints and sheet metal objects.	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
	Workshop	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1.5	2	-	•	-	-	-	2	3	-	-	_	1	-	-
		CO1	Discuss measurement of electrical quantites	1	-	-	-	-	-	-	-	-	-	-	-	1	2	-
	Basic Electrical	CO2	Compare different connections of transformer	2	-	-	-	-	-	-	-	-	-	-	-	1	2	-
9	Engineering Lab	CO3	Demonstrate constructional features of electrical machines and converters	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
		CO4	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
				2	-	-	-	-	-	-	2	3	2	-	-	1.333	2	-
		CO1	Describe engineering drawing terminology, concept of scales and conic sections.	1	-	-	-	-		-	-	-	-	-	-	1	-	-
	Computer Aided	CO2	Draw Projection of Points, lines, planes, solids and section of solids	-	1	-	1	-	-	-	-	-	-	-	-	2	-	-
10	Engineering	CO3	Draft 2D engineering problems on CAD software.	-		-	ı	3	-	-	-	-	-	-	-		1	1
	Engineering Graphics	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1	1	-	-	3	-	-	2	3	-	-	-	1.5	1	1
		CO1	Students will be able to define basic rank of matrix to find, eigen values and eigen vectors of the matrix, degree and order of differential equations.	2	-	-	1	-	-	1	-	1	-	-	-	-	-	-
11	Engineering Mathematics-II	CO2	Students will be able to explain complementary functions and particular integral of ordinary differential equation and various methods of solution of ODE to solve complex engineering problems.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		СОЗ	The students will be able to apply an appropriate analytical technique to find solution of first order and higher order differential equations.	3	2	-	-	-	1	1	-	-	-	-				
		CO4	Students will be able to classify higher order partial differential equations and analyze a wide variety of time dependent	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.25	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Describe the concepts of Wave and Quantum mechanics, Laser and Fiber optics, material science and electromagnetic theory. (Recall/Remembering)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Explain the different applications of Laser and optical fibers in communication, engineering, medicine and Science.  Application of Hall effect (Examine)	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Engineering Physics	CO3	Evaluate energy states in 1-D and 3-D box with the application of quantum mechanics.(Apply)	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Analyze the crystal structure through X-ray Diffraction & Camp; wavelength of light through Newton's ring experiment and Michelson- interferometer ,types of materials through Hall effect . (Analyze)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-

1				1.5	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Relate sustained happiness through identifying the essentials of human values and skills	-	-	-	-	-	-	•	2	-	-	-	-		-	-
		CO2	Find the happiness and human values in terms of personal and social life to create harmony in them	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
13	Human Values	CO3	Use and understand practically the importance of trust, mutually satisfaction and human relationship	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
		CO4	Identify the orders of nature for the holistic perception of harmony for human existence	-	-	-	-	-	-	ı	2	ı	ı	-	-	ı	-	-
		CO5	Implement professional ethics and natural acceptance of human values in his/her life	-	-	-	-	-	-	-	3	1	-	-	-	1	1	-
				-	-	-	-	-	2	-	2.5	-	-	-	2	-	-	_
		CO1	Understand the basic concepts of fundamental of computer system, number system and programming. (Remembering)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Programming	CO2	Explain various memory units, representation of number system and Conditional, Iterative statements using arrays, string, pointers, file structure. (Understanding)	2	-	-	-	-	-	-	-	,	-	-	1	-	1	-
14	for Problem Solving	CO3	Examine the concept of algorithms, flowchart, Operators, Pointer, Array, String, structure, union using modularization to	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Illustrate the User Defined functions, Memory management and File concepts to solve real time problems using C Programming (Analyzing)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	1	1	ı	1	-	•	1	-	-
		CO1	Describe Scope, role and Specialization of Civil Engineering, basics of surveying, types of building, Plinth area, carpet area, floor space index, R.C.C., mode of transportation and different causes of pollution. (Remember)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Basic Civil Engineering	CO2	Explain solid waste management, building by-laws, concept of sun light and ventilation, chemical and hydrological cycle, biodiversity, causes of road accident, sanitary landfill and onsite sanitation, food chain and food web, contour maps, Global warming, Climate Change, Ozone depletion, and Green House effect. (Understand)	2	-	-	-	-	-	-	-	,	1	-	-	1	-	-
		CO3	Illustrate method of ranging and levelling, road safety measures, building component, environmental acts, different types of foundation, treatment and disposal of waste water, traffic sign and symbol and rain water harvesting. (Apply)	3	-	-	-	-	-	-	-	1	-	-	-	-	-	-
		CO4	Compute errors in linear measurement, bearings and elevations of respective points on the ground. (Analyze)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Operate the various devices for the multifarious use in the relative fields.	1	-	-	-	-	-	-	-	-	-	-	2	-	-	-

16	Engineering Physics Lab	CO2	Apply knowledge of Newton's Ring,grating, spectrometer,Optical fiber ,Sextant, Hall effect , a n d L a s e r to determine wavelength of light, dispersive power,Numerical aperature Height of Object, Hall coefficient, coherence length and coherence time  To conduct the experiments with interest and an attitude of learning.	2	-	-	-	-	-	-	-	1	-	-	2	-	-	-
		CO4	Evaluate the Band Gap and time constants (t=RC) using basic principles of semiconductors and Capacitors by graphs.	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-
				1.5	2	-	-	-	-	-	-	1.5	-	-	2	-	-	-
		CO1	Recall the natural and social issues and their remedies.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
		CO2	Describe the nature of human values and the impact of external factors over it.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
	Human Values	CO3	Validate through actions the significance of trust, respect and harmony with self and surroundings.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
17	Activities and Sports	CO4	Outline the relation of human with nature and other factors in terms of human existence	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO5	Associate the knowledge of self and society with clear understanding of social issues and the human beings.	-	-	-	-	-	2	1	-	-	-	-	-	-	1	-
				-	-	-	-	-	2	2	1	2	-	-	-	-	1	-
		CO1	Describe various sanitary fittings and water supply fittings	1	-	-	-	-	1		-	-	-	-	-	-	1	-
	Basic Civil	CO2	Examine pH, Turbidity, Hardness and Total solids of given water sample	2	-	-	-	-	-		-	-	-	-	-	-	-	-
18	Engineering	CO3	Use of EDM and Total Station in the field	3	-		-		-	-	-	-	-	-	-	-	-	-
10	Lab	CO4	Investigate the linear and angular measurements of the points on the ground and levelling	-	1	-	-	-	-	-	-		-	-	-	-	-	-
		CO5	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
				2	1	-	-	-	-	-	2	3	2	-	-	-	-	-
		CO1	Relate the fundamental of C Programming as variable, operators and taxonomy to write a basic C Program	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	Computer Programming	CO2	Write programs that perform operations using condition control statements and loop control statements, single and multi-dimensional arrays along with specific program of matrix multiplication.(Examine)	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-
19	Lab	CO3	Use C programs to implement operations related to Array, Macros and inline functions, Dynamic memory allocations, concept of Structure, Unions and Pointers	3	-	-	-		1	-	-	-	-	-	-	-	1	-
		CO4	Students will show an ability to communicate effectively and work ethically			-	-	-	-		2	-	2	-	-	-	-	-
				2	-	-	-	-	-	-	2	-	2	-	-	-	-	-
		CO1	Describe orthographic projections and basic Geometrical Concept	2	-	-	-	-		-	-	-	-	-	-	1	-	
	Computer	CO2	Analyze Sectional Views of different mechanical Components and assembly drawing	-	1	-	-	-	-	-	-	-	-	-	-	2	-	
20	Aided Machine	CO3	Draft a engineering product using CAD software	-	-	-	-	2	-	-	-	-	-	-	-	2	-	1

	Diawing [				1		I										ı	
		CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				2	1	-	-	2	-	-	2	3	-	-	-	1.667	-	1
		CO 1	To Define probability models using probability mass (density) functions, need and classification of optimization terminology.	1	1	1	1	1	-	1	1	-	ı	-	1	2	-	-
		CO 2	To Explain the probability distributions of discrete and continuous random variables and work binomial, Poisson,	2	-	1	-	-	-	1	-	-	-	-	-	2	1	-
1	Advanced Engineering	CO 3	To Solve mathematical models of the real world problems in optimization using Linear Programming methods such as	3	-	-	-	-	-	-	-	-	-	-	-	2	1	-
	Mathematics	CO 4	To Examine the correlation between two variables and regression applications for purposes of description and	-	3	-	-	-	-	-	-	-	-	-	-	2	1	1
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	-	-	-	-	-	-	-	-	-	-	2	1	1
		CO 1	To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national	-	-	-	-	-	1	-	-	-	2	3	1	-	-	-
		CO 2	To Calculate the domestic product, national product and elasticity of price on demand and supply.	-	-	1	-	-	2	1	-	-	-	3	-	-	-	-
2	Managerial Economics	CO 3	To Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect	3	-	2	-	-	-	1	-	-	-	2	-	-	-	-
	and Financial Accounting	CO 4	To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment	-	3	-	-	-	-	-	-	-	-	2	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	_		1.5	•			2	2.5	1		_	_
				J	,	4								2.5		_		
		CO 1	To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.	2	-	-	-	-	-	ı	-	-	<u>-</u>	-	-	2	-	-
		CO 1	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.		- 2	-	-	-		-	-	-	- - -	-		2	-	-
3	Digital		Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.		-	- 3	-	-		-	-	-	- - -	-	-		-	-
3	Digital Electronics	CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects		-	-		-			- - -	-	- - -		-	2		-
3		CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its		-	-	-	-				-			-	2	-	-
3		CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its		-	-	-								-	2	-	
3		CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.		2	3	2	- - - - - -			- - - - - -	-	- - - -		-	2 2 -	2	
3		CO 2 CO 3 CO 4	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.	2 2	2	3	2	- - - -			- - - -	- - - -	- - - -		-	2 2 -	2 - 2	- - -
	Electronics  Data Structures	CO 2 CO 3 CO 4	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.  To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.  To develop searching and sorting algorithms on predefind data	2 2	- 2 - - - 2	3 - 3	- 2 - <b>2</b>	- - - - -			- - - - -	- - - -	- - - -		-	2 2 -	- 2 - 2	- - - - 2
3	Electronics	CO 2 CO 3 CO 4 CO 1 CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.  To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.	2 - - - 2 2	- 2 - - - 2	- 3 - - 3	- 2 - <b>2</b>	- - - - -			- - - - -	- - - -	- - - - -		-	2 2 -	- 2 - 2	- - - - 2 2
	Electronics  Data Structures and	CO 2 CO 3 CO 4 CO 1 CO 2 CO 3	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.  To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.  To develop searching and sorting algorithms on predefind data  To create the data structures in specific areas like DBMS	2 - - - 2 2	- 2 - - - 2	- 3 - - 3	- 2 - 2 	- - - - - - -	- - - -		- - - - - -		- - - - - -		-	2 2 -	- 2 - 2	

		CO 1	Apply the various programming paradigms such as exception handling, polymorphism in software pattern	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the C++ programs using different programming methodologies.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
5	Object Oriented	CO 3	Design the elements of the object oriented concepts in developing structured programs.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
3	Programming	CO 4	Investigate the real time applications using advance C++ concepts.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3
				•	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	3	2	3
		CO 1	To Demostrate software life cycle models with respect to software enginneering principles.	2	-	-	-	-	-	-	-	-	-	-	-	3	-	2
		CO 2	To analyse cost estimation technique and risk analysis techniques in software engineering projects.	-	2	-	-	-	-	-	-	-	-	-	-	2	3	-
	Software	CO 3	To Design Software requirement document (SRS)	-	-	3	-	-	-	-	-	-	-	-	-	2	3	-
6	Engineering	CO 4	To synthesize UML diagrams using the concepts of object oriented analysis in software development process.	-	-	-	3	-	-	-	-	-	-	-	-	3	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	2.5	3	2
		LO1	To Utilize searching and sorting algorithms on given values.	2	-	-	-	2	-	-	-	-	2	-	-	2	-	-
		LO2	To analyze the time and space efficiency of the data structure	-	_	_	_	-	2	-	-	-	-	-	-	2	_	_
	Data Structures and	LO3	To Evalute traversing, insertion and deletion operations on Linear and non linear data structures	_	_	_	_	-	-	2	-	-	-	-	2		2	_
7	Algorithms	LO4	To construct the solutions for real time applications			_		2	-	-	-	2	-	-	-			3
	Lab	LO5	To construct the solutions for real time applications	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	-	-	-	2	2	2	-	2	2	-	2	2	2	3
		LO1	Students will able to apply the programming concepts such as inheritance, polymorphism	-	-	-	-	2	-	-	-	-	-	-	2	3	-	-
		LO2	Students will be able to distinguish the programming methodologies to implement programs	-	-	-	-	-	2	-	-	-	-	-	2	-	2	-
	Object Oriented	LO3	Students will be able to explain the concepts to develop the structured programs.	-	-	-	-	-	-	2	-	-	-	-	2	-	-	3
8	Programming Lab	LO4	Students will be able to construct the solutions for real time problems	-	-	-	-	-	-	-	-	2	-	3	-	-	-	3
		LO5	unic productio	_	-	-	-	-	-	_	-	-	-	-	-	-	-	-
				-	-	-	-	2	2	2	-	2	-	3	2	3	2	3
		LO1	design, test case implementation, and OOP concepts	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-

		LO2	Discuss and analyze how to create software			_	3	_	_	_	_		_	_			3	
			requirements specifications for a particular problem.		-		3	-	-	-	-	-	-	-	_	_		
9	Software Engineering	LO3	Create Data Flow Diagrams for different systems.	-	-	3	-	-	-	-	-	-	-	-	-	-	3	2
	Lab	LO4	Understand and develop UML diagrams of various structures and behaviors.	-	-	-	-	2	-	-	-	-	-	-	-	2	3	-
				-	-	-	-	•	-	-	1	-	1	-	-	-	-	-
				2	-	3	3	2	-	-	-	-	-	-	-	2.5	3	2
		LO1	Apply appropriate basic logic gates for verifying the truth tables.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	Demonstarte ability for recognizing any IC and its fuctionality.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO3	Design any basic gates by the use of universal gates.	-		3	-	-	-	-	-	-	-	-	-	-	2	-
	Digital	LO4	Identify the limitation of basic logic gates while desgining any SOP and POS logics.	-	-	-	2	ı	i	-	i	ı	ı	i	ı	2	1	-
10	Electronics	LO5	Design any sequential and combinational circuits using basic gates as well as by defined IC.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
	Lab	LO6	Demonstrate the working of Digital Trainer kits and usability of it.	-	-	-	-	2	-	-	ı	ı	-	-	ı	-	2	-
		LO7	Debug a circuit to find a problem and suggest suitable solution.	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
		LO8	Able to work in a team for desgining and rectifying any errors in the digital circuit.	-	-	-	-	ı	i	-	ı	2	ı	i	ı	-	ı	2
				2	2	2.5	2	2	-	-	-	2	-	-	2	2	2	2
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	-	-	-	-	-	1	ı	-	-	-	2	-	-
		LO2	updated with all the latest changes in technological world	-	-	-	-	3	-	-	-	-	-	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
44	Industrial	LO4	knowledge, management, leadership and	-	-	-	-	-	-	-	-	3	-	-	-	2	2	3
11	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-
		LO6	continuous professional development and life-long	-	-	-	-	-	-	-	-	-	-	-	3	2	-	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	-	-	-	-	-	3	2	-	-	-	-	-	2	-
				3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO1	Define mathematically about the fundamental data types and structures used in computer algorithms and systems.	1	-	-	-	-	-	-	-	-	-	-	-	2	1	-
		CO2	Classify algebraic techniques to basic discrete structures and algorithms.	2	-	-	-	ı	i	-	i	i	1	i	ı	2	1	-

12	Discrete Mathematics	СОЗ	Apply mathematical logic in making computer programs, computer circuits, concluding experiments, digital electronics, etc.	3	-	-	-	-	-	-	-	-	-	-	-	1	1	-
	Structure	CO4	Analyze a variety of graphs and Compare the viability of different approaches to the Model problems in Computer Science.	-	3	-	-	-	-	-	-	-	-	-	-	1	1	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3		•	-		-	-		-	-	-	1.5	1	-
		CO1	Remember the fundamental principles of technical writing and genre in written communication within technical domains.	-	-	-	•	-	-	-	-	2	-	-	-	-	-	-
		CO2	Understand the intricacies of planning, drafting, revising, editing, and critiquing professional documents within the realm of technical communication when engaging in both individual and collaborative writing.	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-
13	Technical Communication	CO3	Apply skills in note-making, grammar editing, technical style, project report creation, and LSWR (Listening, Speaking, Writing, Reading) in the context of technical communication.	-	-	-	1	-	1	,	,	,	3	1	,	-	,	2
		CO4	Evaluate research findings and synthesize content for various business communication documents, such as emails, resumes, meeting minutes, technical reports, articles, and project proposals.	-	-	-	-	-	-	-	-	-	-	-	3	-	-	3
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	•	-		-	-	2	3	-	3	1		2.5
		CO1	To Examine the architecture of 8085 microprocessor, Memory and its type.	3	-	-	-	-		-	-	-	-	-	-	2	-	-
		CO2	To Analyse interfacing applications using microprocessors and peripherals.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
l	Microprocessor	СОЗ	To Design Assembly Language Programs by using instructions of 8085.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
14	& Interfaces	CO4	To investigate the connection of the microprocessor with the peripheral devices. To design assembly language programs by using	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO5	instructions of 8085 and relate	-	-	2	1	-	-	-	-	-	-	-	-	2	-	-
			oddrosoina modos in Voriello instructions	3	2	2	•	-	•	-	-	•	-	-	-	2	•	-
		CO1	Understand basic concepts and identify various data models (E-R modeling concepts) and apply these concepts for designing databases.	2	-	-	-	-	-	-	-	-	-	-	-	2	3	-
	Database	CO2	Apply relational database theory by SQL and describe relational algebra expression, tuple and domain relational expression for writing queries in relational algebra.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
15	Management System	соз	Identify and improve the database design by normalization and key constraints.	-	1	2	1	-	1	-	-	-	-	-	-	2	-	-

Understand and Analyze transaction processing and CO<sub>4</sub> 2 2 concurrency control concepts. 2 2 1 2 2.5 CO 1 To demonstrate basic concepts of computation 2 2 To analyze language expressions and Grammars in finite CO 2 2 2 automata. To design the solutions of computation problem using CO3 2 2 Theory of suitable machines Computation To apply the concepts of Computation in real life CO 4 2 3 problems. 2 2 2 2 2 2 2.5 CO1 2 2 To explain networking models and data trasmision CO2 Apply the the Error Detection and Correction techniques. 2 2 2 CO3 To analyze the network Layer routing algorithms. 2 2 2 Data Communication 17 CO4 examine the transport and application layers protocol servi 2 2 2 and Computer Networks 2 2 2 2 To familriaze with the architecture and instruction set of LO1 2 Intel 8085 To demonstrate operation of typical 8085 microprocessor LO2 2 2 trainer kit To provide practical hands on experience with Assembly LO3 2 2 Language Programming Microprocesso To analyze limitations and applications of Assembly r & Interfaces Lab LO4 language 2 2 Programming for the real world problem To get familiarize with interfacing of various peripheral LO<sub>5</sub> 2 devices using 8085 chip 2 2 2 2 2 2 <del>эеіест арргорнате теспінічие то чезіўн чатаразе анч</del> LO1 schemas for a given application using DDL/DML SQL 2 Appry and concept or integrity reales and constraints to LO2 ensure accurate and error free 3 Identify solutions for database update using pre store LO3 2 2 Procedures and Triggers

10	Database	LO4	Compare the constraints primary key and foreign key between primary table and secondary table	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
19	Management · System Lab	LO5	Construct Views to simplify and reduce complexity of database schema	-	-	3	-	-	-	-	-	-	-	-	2	-	-	-
		LO6	Decision to users with different types of privileges and check users existence in database	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
		LO7	Assemble records from multiple tables in database through Inner joins and Outer joins	-	-	3	-	-	-	-	-	-	-	-	1	1	-	-
				3	2	2.5	2	2	•	-	-	-	-	-	1.5	1.6	-	-
		LO1	To defines the basic principles of computer networks. Understand the key topologies that support the internet.	2	-		-	-	-	-	-	-	-	-	-	2	-	-
		LO2	To demonstrate the installation and configuration of network.		-	2	-	-	-	-	-	-	-	-	-	2	-	-
20	Network Programming	LO3	To evaluate errors using a variety of error correction techniques.	-	2	-		1	1	1	-	1	-	-	1	2	-	2
20	Lab	LO4	To apply a network routing algorithm, evaluate the process, and implement a simple routing network.	-	2	-	-	1	1	1	-	-	-	-	-	2	-	2
				-	ı	1	-	ı	ı	ı	-	-	-	-	ı	-	-	-
				2	2	2	-	•	1	•	•	•	•	•	•	2	-	2
		LO1	related to inode, I/O redirection and piping, process	2	ı	ı	-	ı	ı	ı	-	ı	-	-	ı	2	-	1
		LO2	To analyze variety of problems of shell script using looping, case structures in the script programming.		2	-	-	-	-	-	-	-	-	-	-	2	-	1
21	Linux Shell Programming	LO3	To synthesize the logical problems using the shell script programming.	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
	Lab	LO4	To explore the pattern problems using shell scripts.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
		LO5	Apply C programming concepts to solve numerical problems related to array manipulation in shell scripting.	-	ı	-	-	2	ı	ı	-	-	-	-	-	2	-	-
				2	2	2	2	2	•	•	-	-	-	-	-	2	-	1
		LO1	To understand the basic concepts of java.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	To eleborate the concept of file handling, multithreading and applets.	2	1	-	-		-	-	-	-	-	-	-	-	2	-
22	Java Lab	LO3	To analyze the terms of the packeages & Interfaces	2	2	-	-	-	-	-	-		-	-	-	-	2	-
22	Java Lab	LO4	To design the steps for creating the project using major concept	-	1	3	-	1	1	1	-	-	-	-	-	-	-	3
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	-	-	-	-	-	-	-	-	-	2	2	3
		CO 1	Demonstrate the concept of information theory and entropy.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Analyze the different coding techniques for efficient communication.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-

	Information	CO 3	Design the linear block code and cyclic code for error free communication.	-	-	2	-		-	-	-	-	-	-	-	-	2	-
23	Theory & Coding	CO 4	Evaluate the shortest path by using different algorithms techniques.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	ı	-
				2	2	2	3	-	-	-	-	-	-	-	-	2	2	2
		CO 1	To illustrate the theoretical concepts of finite state machine	2	-	-	-	-	-	-	-	-	-	-	-	3	1	_
		CO 2	To analyze the grammars, parsing techniques, and actual code generation methods	-	3	-	1	-	-	-	-	-	-	-	-	-	2	-
24	Compiler	CO 3	To Evaluate the different types of error and convert the code in LC.G.	-	-	3	ı	-	-	-	-	-	-	-	-	-	1	2
24	Design	CO 4	To convert the optimized code into the machine code in the storage organisation and code optimization.	-	-	-	3	-	-	-	-	1	-	-	-	2	1	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	ı	-
				2	3	3	3	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	To demonstrate the knowledge of Operating System services including Memory, Device & File Management.	3	-	-	-	-	-	-	-	-	-	-	-	3	1	2
		CO 2	To categorize the Process management in terms of inter process communication and memory management methods for	-	3	-	1	-	-	-	-	1	-	-	-	2	ı	-
25	Operating	CO 3	To Design the solution for scheduling and deadlock problems in operating system using appropriate algorithms such as round	-	-	2	-	-	-	-	-	-	-	-	-	3	1	2
	System	CO 4	To investigate LINUX/UNIX, OS, RTOS, windows and Mobile based OS file system through case study.	-	-	-	3	-	-	-	-	-	-	-	-	2	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	3	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	Demonstrate the standards and Primitives of Drawing components like line, circle, ellipse, clipping, filling	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Analyze the graphics quality with the help 3D Graphics and Projections	-	2	-	1	-	1	-	1	1	-	-	-	1	2	-
26	Computer Graphics &	CO 3	Design the animation using transformation and clipping	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
20	Multimedia	CO 4	Organize the primitives for Illumination, Shading and Color Models.(Evaluate)	-	-	-	2	-	-	-	-	-	-	-	-	-	1	3
				-	-	-	•	-	-	-	-	•	-	-	-	-	ı	-
				2	2	3	2	-	-	-	-	-	-	-	-	2	2	2.5
		CO 1	Analyze and evaluate the cyber security needs of an organization.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	3	-	-	-	-	-	-	-	-	-	-	-	2	1	-
27	Cyber Space	CO 3	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-

41	Operations and Design	CO 4	Design and develop a security architecture for an organization.	-	-	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 5	Design operational and strategic cyber security strategies and policies.	1	-	-	ı	-	-	1	-	-	-	-	-	-	-	-
				2.5	3	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 1	conduct digital investigations that conform to accepted professional standards and are based on the investigative	2	-	-	1	-	1	1	- 1	-	-	-	-	2	-	-
		CO 2	identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy,	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
28	Digital Forensics and	CO 3	apply a solid foundational grounding in computer networks, operating systems, file systems, hardware, and mobile devices	1	3	-	1	-	1	1	1	-	-	-	-	2	-	-
20	Incident Response	CO 4	access and critically evaluate relevant technical and legal information and emerging industry trends.	1	-	3	ı	3	1	ı	1	-	-	3	-	2	1	-
		CO 5	Communicate effectively the results of a computer, network, and/or data forensic analysis verbally, in writing, and in	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	•	3	-	-	-	-	-	3	-	2	-	-
		CO 1	Understand complexity of an algorithm, asymptotic notation and divide and conquer method for developing an algorithm.	3	-	-	-	-	ı	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the algorithm design using greedy algorithm and dynamic programming.	1	3	-	1	-	ı	1	ı	-	-	-	-	2	1	-
29	Analysis of	CO 3	To Create search for problem solution using backtracking, branch and bound and pattern matching algorithm	-	-	3	-	-		-	-	-	-	-	-	2	-	-
29	Algorithms	CO 4	To synthesize the randomized algorithm, assignment problem and types of classes such as P, NP, and NP Complete.	1	-	1	2	1	ı	1	ı	1	-	-	-	3	1	2
				ı	-	-	ı	-	ı	ı	ı	-	-	-	-	-	ı	-
				3	3	3	2	-	-	-	-	-	-	-	-	2.5	-	2
		CO 1	To Classify the challenges with transmission of signals in wireless communication systems and Cellular architechture	2	-	-	ı	-	1	1	1	-	-	-	-	3	1	-
		CO 2	To Analyze the measures to increase the capacity in GSM systems-sectorization and Spatial Filtering for Interference	1	3	1	1	1	ı	ı	1	1	-	-	-	1	2	-
30	Wireless	CO 3	To formulate cell architecture in wirless communication sytem.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
30	Communication	CO 4	To Distinguish digital signaling techniques for lossy channels.	-	-	-	2	-	1	-	-	-	-	-	-	2	-	-
				-	-	-	-	-		-	-	-	-	-	-	-	-	-
				2	3	3	2	-	•	-	-	-	-	-	-	2.5	2	-
		CO1	To apply guidelines and imperical research method in HCI to Make User Friendly Computer Interface	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO2	To categorise Human Computer interction concept using GUI Design and Prototyping techniques	-	3	-	-	-	ı	-	1	-	-	-	-	-	2	-
31	Human Computer	CO3	To design Task models and object oriented modeling for computer interface	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
<i>J</i> 1	Interaction	CO4	To classify types of GOMS, Family model and LAWS	-	-	-	2	-	-	-	-	-	-	-	-	1	2	-

I	1 1		T		I	I		I				l	I	ı	l	l		
				ı	-	-	-	-	•	-	•	-	-	-	-	-	•	•
				2	3	3	2	-	•		•	-	-	-	-	1.5	2	2
		CO1	To understand blockchain systems working and Distributed Consensus of block chain technology.	2	-	-	-	-	-	-	-	-	-	-	-	3	1	-
		CO2	To Analyze Block Chain Technology with Crypto currency and Bitcoin.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
	Fundamental	CO3	Design and built smart contracts and Ethereum Structure of Block chain.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
32	of Block chain	CO4	To Analyze the Block chain Types and Consensus Algorithms.	-	2	-	-	-	-	_	-	-	-	-	-	-	2	-
			Algorithms.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	2	-	-	-	-	-	-	-	-	-	3	2	-
		CO 1	Analyze and evaluate the cyber security needs of an organization.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	Cyber Space	CO 3	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
33	Operations and Design	CO 4	Design and develop a security architecture for an organization.	-	-	3	3	-	-	-	-	-	-	2	-	2	-	-
	Design	CO 5	Design operational and strategic cyber security strategies and policies.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			on wight and position	2.5	3	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 1	conduct digital investigations that conform to accepted professional standards and are based on the investigative	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy,	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	Digital Forensics and	CO 3	apply a solid foundational grounding in computer networks, operating systems, file systems, hardware, and mobile devices	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
34	Incident Response	CO 4	access and critically evaluate relevant technical and legal information and emerging industry trends.	-	-	3	-	3	-	-	-	-	-	3	-	2	-	-
	Response	CO 5	Communicate effectively the results of a computer, network,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			and/or data forensic analysis verbally, in writing, and in	2.5	3	3	-	3	-	-	-	-	-	3	-	2	-	-
		LO1	to apply the concepts of transformation techniques on 2D & 3D objects.	2	_	_	_	_	_	_	_	_	_	_	-	2	_	_
		LO2	to analyze the colour modelling, shading and animation on graphic objects.		3	_		_	_					_	-	2		3
	Computer	LO2	to design the graphical premitives drawing algorithms		_	3		_					_	_	_	2		3
35	Graphics & Multimedia	LO3	such as line, circle drawing algorithms. to Generate Fractal images using graphics tool like	-	_	_	2	2	_	-		_	_	_	_	3	-	3
	Lab	LO <sub>5</sub>	Sterling to make a project to solve real life socity based problem and demonstrate following PO related capabilities:	-	-	-	-	-	3	3	3	3	3	3	3	3	2	3

				2	3	3	2	2	3	3	3	3	3	3	3	2.4	2	3
		LO1	To Analysis the finite state machines, lexical analyzer, parser for the grammar.	-	-	-	-	-	-	-	-	3	-	-	-	3	-	-
		LO2	comments, operators, loops and keywords, and	-	-	-	-	3	-	-	-	-	-	-	-	2	-	-
36	Compiler	LO3	To Design intermediate code genrator and converted into optimzed code	-	-	-	-	-	-	-	-	3	-	-	-	2	-	-
30	Design Lab	LO4	To demostrate hands on experience of working on system software.	-	-	-	-	-	3	-	-	-	-	-	-	-	3	-
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	3	3	-	-	3	-	-	-	2.333	3	-
		LO1	Apply sorting algorithms like quick sort for information searching.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		LO2	Identify problems to be broken down into simple sub problems using merge sort algorithm	-	-	-	3	-		-	-		-	-	-	-	3	-
	Analysis of	LO3	Device solutions using topological ordering to quickly compute shortest paths	-	-	2	-	-		-	-		-	-	-	-	3	-
37	Algorithms Lab	LO4	Demonstrate real world scenarios like resourse allocation using knapack algorithm	-	-	-	-	-		-	-		-	-	2	-	2	-
	Lab	LO5	From a given vertex, Select Dijkstra's algorithm to find the shortest path to other vertices	-	-	-	-	2		-	-		-	-	-	-		3
		LO6	Demonstrate minimum cost spanning tree of a given undirected graph using kruskal's algorithm	-	3	-	-	-		-	-		-	-	-	-	•	3
				3	-	2	3	2		-	-		-	-	2	3	2.667	3
		LO1	To apply event handling on AWT and Swing components.	-	-	3	-	-	1	-	-	1	-	-	-	3	-	-
		LO2	To Design a page using Swing , Servlet , JSP and JDBC connectivity.	-	-	-	ı	3	1	1	1	1	ı	-	-	3	-	-
38	Advance Java	LO3	To create a project based on societal problem.	-	-	-	•	-	3	1	1	1	ı	-	-	-	3	-
30	Lab	LO4	database tables with Hibernate	-	-	-	ı	-	1	3	1	1	ı	-	-	-	3	3
		LO5		-	-	-	ı	-	1	1	1	1	ı	-	-	-	-	-
				-	-	3	•	3	3	з	•	•	•	-	-	3	3	3
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	updated with all the latest changes in technological world	-	-	-	-	3	-	-	-	-	-	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
39	Industrial	LO4	knowledge, management, leadership and	-	-	-	-	-	-	-	-	3	-	-	-	2	2	3
	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-

		LO6	capability and entitusiasin for self-improvement unough	_	-	_	_	_	_	_	_	_	_	_	3	2	_	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	-	-	-	-	-	3	2	-	-	-	-	-	2	-
			at an original in the state of	3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO 1	To identify the elements of image and basic steps of digital Image Processing.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Apply the diffrent function types in spatial and frequency domain.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
40	Digital Image	CO 3	To use different tecniques for image enhancement and image restoration.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
40	Processing	CO 4	To construct enhance image using the technique of compression and segmentation techniques.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
				•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
				2	2	2	-	-	-	-	-	-	-	-	-	2	-	-
		CO 1	Apply the fundamental concepts of learning in Machine Learning .	3	-	-	-	-	-	-	-	-	-	-	-	3	1	-
		CO 2	Analyze or Parse the datasets with statistical theory learning methods.	1	3	-	1	-	-	-	•	-	-	-	-	2	ı	-
41	Machine	CO 3	Analyze problem statement solution by Evaluating Machine Learning algorithms and model selection.	ı	3	-	1	-	-	-	-	-	-	-	-	-	2	-
11	Learning	CO 4	Design a hypothesis solution for the real world problem using Machine Learning Techniques.	-	-	2	-	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	-	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	To understand the concepts of Information Security	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	To Identify the fundamental techniques of information security	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Information Security	CO 3	To Demonstrate various network security applications	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
	System			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				•	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO 1	To Apply the concept of data representation and memory hierarchy in the CPU Organisation.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyse the instruction sets of assembly language in micro-programmed control devices.	1	2			-	-	-	-	-	-	-	-	3		
43	Computer Architecture	CO 3	To analyse addressing modes, RISC and CISC architecture designs.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-

	and Organization	CO 4	To Design logical and arithmetic operations for floating	_		3		_			_	_					2	
	Organization		and fixed point numbers. Exemplify in a better way the I/O and memory				_			_		_						
		CO 5	organization.	-	-	-	3	-	-	-	-	-	-	-	-	2	-	-
			- Samueloni	2	2	3	3	_	_	_	_	_	_	_	_	2.333	2	_
			Understand the concepts of artificial intelligence and	_	_												_	
		CO 1	intelligent agents.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Learn basic principles of AI in solutions that require															
		CO 2	problem-solving methods.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	
	Artificial	CO 3	Determine the effectiveness of truths by knowledge			_												
44	Intelligence		representation methods in Al Analyze the techniques presented and apply them to	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
	miemgenee	CO 4	real world problems	_	_	_	2	_	_	_	_	_	_	_	_	_	_	2
			lear trena president	_	_	_	_	_	_	_	_	_	_	_	_	_		
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	2	3	2	-	-	-	-	-	-	-	-	2	2.5	2
		CO 1	To apply cloud fundamentals in cloud computing architecture	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
			To identify various cloud service models, cloud															
		CO 2	architecture, Parallel and distributed programming	-	2	-	_	_	_	-	_	-	-	_	-	2	_	-
			paradigms															
			To examine the virtualization techniques regarding															
	Cloud	CO 3	processor, memory, operating system, network	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
45	Computing		virtualization															<u> </u>
			To descibe the basic threats, security mechanism,															
		CO 4	imporatnce of SLA's in cloud and cloud services	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
			platforms for business and industry prespectives															
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	2	2	-	-	-	-	-	-	-	2		-
		CO1	Students will be able to gain basic knowledge on data	2												3		
		COI	science Students will be able to convert the real time data into	2		_	-		_	-	_	-	_		_	3		
		CO2	suitable form for analysis	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
	Programming		The students will be able to apply techniques to gain the				_											
1	for Data Science	CO3	insights from the data through statistical inferences	-	_	2	2	_	-	-	-	-	-	-	-	l	-	
	Science	CO4	Students will be able to develop suitable models using	-	_	-	3	2	-	-	-	-	-	_	-	-	2	-
			machine learning techniques and to analyze its															
				2	2	2	2.5	2	-	-	-	-	-	-	-	2	2	2
		CO 1	Apply the fundamental concept of natural language	3	_	-	_	_	-	-	-	-	_	_	_	3	-	-
			processing (NLP) techniques to learn the structure and Demonstrate practical proficiency in using tools like															<u> </u>
		CO 2	ipython notebooks, NLTK, and other relevant	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-

	Natural	CO 3	Analyze lexical relations and various parsing techniques using WordNet and other semantic and parsing	-	3	-	-	-	-	-	-	-	-	-	-	-	2	-
46	Language Processing	CO 4	Analyze and apply distributional semantics and graphical models for sequence labeling in NLP.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	2.5	-	-	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	To understand the working of block chain and also learn about block chain network.	2	-	-	-	-	-	-	'	ı	-	-	-	3	1	-
		CO 2	To analyze the application of block chain and cryptography of block chain	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
	Blockchain and	CO 3	To identify the different cybercrimes and frauds and classify different cyber-attacks.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
46	Cyber Security	CO 4	Able to use different tools and methods used in cybercrime and identify different theft, digital forensic.	-	-	2	-	2	-	-	-	-	-	-	-	-	2	-
		CO 5	Learn about different network defense tools and basic of virtual private network.	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
				2	2	2	-	2	-	-	•	-	-	-	-	3	2	2
		CO 1	To understand the basic architecture of Neural Network.	3	-	-	-	-	-	-	ı	-	-	-	-	3	ı	-
		CO 2	To analyze the different preprocessing and learning algorithm and apply on neural network.	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
46	Artificial Neural Network	CO 3	To demonstrate different applications that learn using neural network	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
	Network																	
				3	3	3	-	-	-	-	•	-	-	-	-	2.5	1	3
		CO 1	Understand the basic terminology of cybercrimes	2	-	-	-	-	-	-	-	-	-	-	-	3	ı	-
		CO 2	Apply a number of different computer forensic tools to a given scenario	-	2	-	-	-	-	-	1	-	-	-	-	-	2	-
46	CYBER	CO 3	Understand the basics of computer forensics	2	-	-	-	-	-	-	ı	-	-	-	-	1	2	-
	FORENSICS	CO 4	Analyze and validate digital evidence data	-	-	2	-	2	-	-	1	-	-	-	-	-	2	-
		CO 5	Analyze acquisition methods for digital evidence related to system security	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
				2	2	2	-	2	-	-	-	-	-	-	-	3	2	2
		CO 1	Outline the vulnerabilities in a system or network using computer forensic fundamentals.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-

			,															
		CO 2	Demonstrate a critical evaluation of an advanced	_	3	_	-	_	-	_	-	-	-	_	_	3	_	-
			security topic with an independent project.															
	ETHICAL		Analyze and critically evaluate techniques used to break														_	
46	HACKING	CO 3	into an insecure web application and identify relevant	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
"	AND DIGITAL		counter measures.															
	FORENSICS	CO 4	Evaluate the potential counter measures to advanced	-	_	-	3	_	-	-	-	-	-	_	-	-	-	3
			hacking techniques.															
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	3	-	-	-	-	-	-	-	-	3	3	3
		CO 1	To generalize the basic elements and design													_		
		COT	architectures in distributed system.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To analyze the concurrent processes, inter process	_	2	_	_	_ ا	_	_	_	_	_	_	_	2	2	_
			communication and RPC and RMI case studies in To study process scheduling, implementation and file															
		CO 3	, , , , , , , , , , , , , , , , , , , ,	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
46	Distributed	CO 4	systems along with corresponding case studies. To analyze the memory sharing and failures, deadlock			_	2		_		_	_		_		3		
	System	CO 4	handling in distributed system architecture.			_			-		-	_			-	3	-	-
			To analyse different agreements, faults and recoveries,															
		CO 5	management concept and CORBA services while	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
			implementing distributed system.															
				3	2	2.5	2	-	-	-	-	-	-	-	-	2.5	2	-
		CO 1	To understand the CONCEPT OF Electronic Commerce,	2												3		
		COT	ERP and its applications		-	-	-	_	-	-	-	-	-	-	-	٥	-	-
		CO 2	To apply online publishing techniques in digital	_	2	_	-	_	_	-	_	-	_	_	_	3	_	_
			marketing To compare E- Business models in web based															
l	Ecommerce and	CO 3	applications for businesses	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
47	ERP	GO 4	To evaluate XML and HTML for creating interactive				_									_	_	
		CO 4	pages for Web, e-business, and portable applications.	-	-	-	2	-	-	-	-	-	-	-	-	3	3	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	2	-	-	-	-	-	-	-	-	3	3	-
		1.04	To implement the basic concept of Matlab programming															
		LO1	tools for Digital Image processing	-	-	-	-	_	-	-	-	2	-	-	2	2	-	-
	[	LO2	To dominate and assessment of the control of the co		_													
			To demonstrate and compare various image operations.  To apply different type of filters and transform	-	2	-	-	<u> </u>	-	-	-	-	-	-	-	-	2	-
	Digital Image	LO3	techniques on images.	_	_	_	_	_	_	_	_	_	_	2	_	_	2	_
48	Processing Lab	1.04	To implement different morphological operations and											<u> </u>			_	
	Lab	LO4	segmentation on images.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
	[	LO5	To prepare students for perform different enhancement												_			
			technique on image.	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-
				-	2	-	-	-	-	-	•	2	-	2	2	2	2	2

		LO1	To choose basic python Libraries and commands used in Machine Learning.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	-
		LO2	To apply knowledge of machine learning algorithms for	_	_	3	-	-	-	-	_	-	-	_	_	3	-	3
		1.00	problem statements provided. to analyze various Supervised and Unsupervised														_	-
49	Machine Learning Lab	LO3	Machine Learning algorithms. To Evaluate Machine Learning Algorithms for real world	-	-	-	3	-	-	-	-	-	-	-	-	3	3	<u> </u>
	Learning Lab	LO4	problems.	-	-	-	-	-	-	3	-	-	-	-	-	3	-	3
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	3	3	3	-	3	-	-	-	-	-	3	3	3
		LO1	To apply the basic datatypes and variables	2	-	-	-	-	_	-	-	-	-	-	-	3	-	-
		LO2	To analyze the importance of conditional statement & Looping Structure.	_	3	-	-	-	-	-	-	-	-	-		3	3	-
		LO3	To Identify the list and tuples in container data types.	_	3	_	_	_	_	_	_	_	_	_	_	_	_	2
50	Python Lab	LO4	To be Able to produce Strings ,Character Arrays and															
			Fuction Programming concept in python. To Develop the ability to create data structure		-	-	-	-		-	-		-	-	-	-	-	3
		LO5	applications in Python programming.	-	-	-	-	2	-	-	-					-	2	2
				2	3	-	-	2	-	-	-	-	-	-	-	3	2.5	2.333
		LO1	Demsotrate the installation of android studio and other IDEs including architecture and fundamental concept of	2	_	_	_	_	_	_	_	_	_	_	_	_	_	_
		LO2	Analyse the android framework and tookit as per the									_			_	_		<u> </u>
	Mobile		given problem Design the layout and solutions recognize the need for	-	2	-	-	2	-	-	-	-	-	-		-	2	-
51	Application	LO3	sociteal problems.   Create the android application for real life application by	-	-	-	2	-	-	-	-	-	-	-	1	-	-	2
	Development Lab	LO4	utlizing the skills of project management	-	-	_	-	3	-	-	-	-	-	2	-	1	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	2	2.5	-	-	-	-	-	2	1	1	2	2
		CO 1	To demostrate concepts IOT plateform and conectivity with devices like Ardinuo, Rasberry pi etc.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyse IOT communication models like push-pull, publish & subscribe model.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	3
	Internet of	CO 3	To Design prototypes for Internet of Things in real time applications.	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
52	Things	CO 4	To investigate solutions of complex problems using advance concepts of IOT & Big Data.	-	-	-	3	-	-	-	-	-	-	-	-	-	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	2	2.5	3
		CO 1	To apply Quality Tools to monitor the overall operation and continuous process improvement.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-

ı	ı ſ		To Analyse systematic methods in identifying where and how it		ı	l		Ι	ı	I	I	ı	l	1		Ι		
		CO 2	might fail and relative impacts of different failures	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
53	Quality Management /	CO 3	To formulate effectively customer requirements and convert them into detailed engineering	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
33	ISO 9000 (Open Elective-1)	CO 4	To Measure themselves against internal or external standards and to improve the capability of their business processes.	-	-	-	2	-	-		-	-	-	-	-	2	-	-
	Diecuve 1)		and to improve the capability of their outsiness processes.	_	-	-	_	-	-	-	-	-	_	_	-	-	-	-
				3	3	2	2	-	-	-	-	-	-	-	-	2	-	-
		CO 1	To Apply basic concepts of Cybercrime and legal Perspectives of Security Implications for Organizations in respect to the	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyze offences, attacks and Criminals plan for the cyber space.	-	3	-	i	-	-	-	-	-	-	-	-	-	2	-
	Cyber Security	CO 3	To Compose the cyber security solutions and cyber security Tools in Cybercrime.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
54	(Open Elective-	CO 4	To Select the Management Perspective human role in security systems with an Organizational, emphasis on ethics, social	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	2	2	-	-	-	-	-	-	-	•	2	2	2
		LO1	to Define the various terminal commands used in developing IOT applications.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	to develop the python scripts used in IOT applications.	-	3	-	-	-	-	-	-	-	-	-	-	-		3
55	Internet of	LO3	to apply the logics of IOT for designing IOT applications	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
33	Things Lab	LO4	and demonstrate following PO related capabilities:	-	-	3	-	3	3	3	3	3	3	3	3	3	2	3
		LO5		-	-	-	-	-	-	-	-	-	-	-		-		-
				3	3	3	•	3	3	3	3	3	3	3	3	2.5	2.5	3
		LO1	different security-based tools like Wire shark, tcpdump,	-	3	-	-	-	-	-	-	-	-	-	-	3	-	2
		LO2	both to design the substitution and transposition techniques for plain text encryption and decryption.	-	-	3	-	-	-	-	-	-	-	-	-	2	-	3
		LO3	techniques for secure data transmission across network	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
56	Cyber Security	LO4	to Install appropriate tools for network protocol analyze security-based tools like Wire shark, tcpdump etc.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	2
	Lab	LO5	may be relevant to understanding and assessing in cyber	-	-	-	-	-	-	-	3	-	-	-	-	2	3	-
		LO6	TOnnprove team working skinnor designing a solution for Key Exchange problem and general attacks on system เช็กกุมัศัยกะไลใชารณ์สามารถสา	-	-	-	-	-	-	-	-	3	-	-	-	3	2	-
		LO7	using a File Transfer Protocol mechanism and through	-	-	-	-	-	-	2	-	-	3	3	3	-	2	3
				-	3	3	2	3	-	2	3	3	3	3	3	2.5	2.333	2.5

10   Complete in the complet				Capability to acquire and apply fundamental principles of		1								ı	Г		Ι		
102   Log departed with all the latest changes in technological world   1.03   Ability to communicate efficiently   1.04   Log department   1.05   L			LO1	lengineering	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Industrial Training			LO2	updated with all the latest changes in technological world	-	-	-	ı	3	-	-	-	-	-	3	-	3	-	3
Industrial Training			LO3	, ,	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
Training		Industrial	LO4	knowledge, management, leadership and	-	-	-	1	-	-	-	-	3	-	-	-	2	2	3
LO6   Continuous professional development and life-long	57		LO5	Ability to identify, formulate and model problems and find	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-
Seminar   Col   Establish motivation for any topic of interest and develop a   1			LO6		-	-	-	-	-	-	-	-	-	-	-	3	2	-	3
Seminar   CO 1   Establish motivation for any topic of interest and develop a thought process for technical seminar   CO 2   Organiza a detailed literature survey and build a document with respect to technical publications and effective presentation   CO 3   Analysis and comprehension of proof-or-concept and related data to access social, health, legal and environment issues for   CO 4   Develop strategies for identifying and dealing with typical ethical issues social, health, legal and environment issues for   CO 4   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical success for dealing with typical ethical success for the dealing strategies for identifying and dealing dealing with typical ethical success for dealing the complex strategies for identifying and dealing dealing with typical ethical success for dealing the complex strategies for identified and and organizational   CO 5   Develop strategies for identified and property strategies for identified and complex strategies for identified and property strategies for identified and complex strategies for identified strategies			LO7		-	-	-	-	-	-	3	2	-	-	-	-	-	2	-
Seminar   CO 2   Organize a detailed literature survey and build a document with respect to technical publications and effective presentation   CO 3   Analysis and comprehension of proof-of-concept and related data to access social, health, legal and environment issues for   CO 4   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   LO5   Make use of new and recent technology including perdition and modeling to complex activities.   CO 1   To apply the fundamentals of Big Data analytics in Hadoop   2					3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
Seminar   Seminar   CO			CO 1	1	-	-	3	-	-	-	-	-	-	-	-	2	2	-	-
Seminar   Co 3   Analysis and comprehension of proof-of-concept and related data to access social, health, legal and environment issues for Co 4   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational chical final dealing with typical ethical issues, both personal and organizational chical final final dealing with typical ethical issues, both personal and organizational chical final f			CO 2	,	-	-	-	3	-	-	-	-	-	3	-	-	-	3	-
Selfillian   Co 4   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   Co 5   Make use of new and recent technology including perdition and modeling to complex activities.			CO 3	Analysis and comprehension of proof-of-concept and related	-	3	-	-	-	3	3	-	-	-	-	-	2	-	-
LOS   Make use of new and recent technology including perdition and modeling to complex activities.   - 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	58	Seminar	CO 4	Develop strategies for identifying and dealing with typical	-	-	-	-	-	-	-	3	2	-	-	-	3	3	-
Big Data Analytics  Big Data Analytics  CO 1  To apply the fundamentals of Big Data analytics in Hadoop  CO 2  To identify the input-output methods like writeable interface and serialization in Hadoop platform.  CO 3  To produce and validate the Map Reduce programming models of big data analytics  CO 4  To describe/demostrate Pig and Hive architecture and their programming model such as HQL, Pig script.  CO 4  To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights with special reference to India and abroad.  IPR, Copyright and Cyber Law of To generalize intellectual property laws including the copyright law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law properties law and trademark law with appropriate law, patents law, designs and trademark law with appropriate law properties law and properties law an			LO5	Make use of new and recent technology including perdition and	-	-	-	-	3	-	-	-	-	-	-	-	-	2	2
Big Data Analytics    CO 2   To identify the input-output methods like writeable interface and serialization in Hadoop platform.   2					-	3	3	3	3	3	3	3	2	3	-	2	2.333	2.667	2
Big Data Analytics    CO 3			CO 1	To apply the fundamentals of Big Data analytics in Hadoop	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Big Data Analytics  CO 3  To produce and validate the Map Reduce programming models of big data analytics  CO 4  To describe/demostrate Pig and Hive architecture and their programming model such as HQL, Pig script.  CO 4  To describe/demostrate Pig and Hive architecture and their programming model such as HQL, Pig script.  CO 1  To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent  CO 2  To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  CO 3  To generalize intellectual property laws including the copyright and Cyber Law of India (Open and Cyber Law patents) and trademark law with appropriate and Intellectual Property Rights interms of copyright and Cyber Law property Rights with special reference to India and abroad.  CO 3  To generalize intellectual property laws including the copyright law, patents law, designs and trademark law with appropriate and Cyber Law patents law, designs and trademark law with appropriate and Cyber Space and control of the company of India (Open and Cyber Law patents) and trademark law with appropriate and Cyber Space and control of the company of India (Open and Cyber Law patents) and trademark law with appropriate and Cyber Space and control of the company of India (Open and Cyber Law patents) and trademark law with appropriate and Cyber Space and control of the company of India (Open and Cyber Space and control of the company of India (Open and Cyber Space and control of the company of India (Open and Cyber Space and control of the company of India (Open and Cyber Space and control of the company of India (Open and Cyber Space and control of the company of India (Open and Cyber Space and control of the cont			CO 2	1	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
Analytics  CO 4 To describe/demostrate Pig and Hive architecture and their progaramming model such as HQL, Pig script.  CO 4 To describe/demostrate Pig and Hive architecture and their progaramming model such as HQL, Pig script.  CO 1 To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent  CO 2 To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  Property Rights with special reference to India and abroad.  CO 3 India (Open and Cyber Law of India (Open and Cyber Law potential) and active the Jurisdiction Issues in Cyber Space and and Cyber Space and and Cyber Space and conventions of India (Open and Cyber Space and cyber Spa		Big Data	CO 3	To produce and validate the Map Reduce programming models	-	2	-	-	-	-	-	-	-	-	-	-	2	-	
CO 1 To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent  CO 2 To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  IPR, Copyright and Cyber Law of India (Open	59	Analytics	CO 4	To describe/demostrate Pig and Hive architecture and their	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
CO 1 To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent  CO 2 To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  IPR, Copyright and Cyber Law of India (Open					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
and Intellectual Property Rights in terms of copyright, patent  CO 2  To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  IPR, Copyright and Cyber Law of India (Open Law of					2	2	-	-	2	-	-	-	-	-	-	-	2	-	-
CO 2 To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  IPR, Copyright and Cyber Law of India (Open Law of India (O			CO 1		3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
IPR, Copyright and Cyber Law of India (Open of India (Open India (			CO 2	To analyse the administrator & conventions of Intellectual	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
of India (Open To conclude the Jurisdiction Issues in Cuber Space and			CO 3	To generalize intellectual property laws including the copyright	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
Elective-II) CO 4 intellectual property for conventions in India, United Kingdom 3 2	60	of India (Open	CO 4	To conclude the Jurisdiction Issues in Cyber Space and	-	-	_	3	-	-		-	-	-	-	-	2	-	-
					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

				3	2	2	3	-	-	-	-	-	-	-	-	2	-	-
		CO 1	To apply the fundamentals of Big Data analytics in Hadoop	2	-	-	-	-	-	-	-	ı	-	-	-	3	-	-
		CO 2	To analyze the input-output methods like writeable interface and serilization in Hadoop platform.	1	2	-	-	-	-	-	-	1	ı	-	-	3	-	3
61	Big Data Analytics (Open	CO 3	To design the Map Reduce programming models of big data analytics.	-	-	2	-	-	-	-	-	1	-	-	-	3	2	-
01	Elective-II)	CO 4	To evaluate of Pig and Hive architecture and their progaramming model such as HQL, Pig script.	-	-	-	3	-	-	-	-	-	-	-	-	3	-	-
				•	-	-	-	-	-	-	•	•	•	-	-	•	-	-
				2	2	2	3	-	-	-	-	-	-	-	-	3	2	3
		LO1	To Understand Big Data and its analytics in the real world	3		-	-	-	-	-	-	-	-	-	-	3	-	-
		LO2	To Analyze the Big Data framework like Hadoop and NOSQL to efficiently	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
62	Big Data	LO3	To Implement Big Data Activities using Hive	1	-	-	-	-	-	-	-	-	-	-	3	-	3	-
	Analytics Lab																	
				3	3	-	-	-	-	-	-	-	-	-	3	3	3	-
		LO1	To understand the process of manual testing or automation testing by writing test plan and test cases based on different	-	-	-	-	-	3		-	1	-	-	3	-	3	-
		LO2	To analyse the mutation score using various tools like jumble testing tool.	-	-	-	-	3	1		-	1	-	-	3	-	-	-
00	Software	LO3	To analyse the performance of commercial websites using different automation tools like jmeter.		-	-	-	-	-	-	-	3	-	-	3	3	-	-
63	Testing and Validation Lab	LO4	To calculate the coverage analysis of programs using different automation tools like Eclemma tool.	-	-	-	-	-	-	-	-	1	3	-	3	-	-	-
				•	-	-	-	3	3	-	-	3	3	-	3	3	3	-
		CO 1	Apply fundamental knowledge of basic Computer Engineering courses for solving complex Engineering problem	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the literature, identify problem, its context with real world / industry issue and define problem statement	-	3	-	-	-	-	-	-	-	-	-	-	2	3	-
		CO 3	Design engineering solution to the problem using knowledge of core Computer engineering	-	-	3	-	_	1	-		-	-	-	-	3	3	-
		CO 4	Carryout experimentations/simulations and investigate the solution to complex Computer engineering problem	-	-	-	3	-	-	-	-	-	-	-	3	2	2	3
64	Project	CO 5	Use modern tools and techniques of Computer engineering for solving the problem	-	-	-	-	3	-	-	-	-	-	-	-	2	3	-
		CO 6	Analyse sustainability of proposed solution and its impact on environment & applicability of solution in industry and societal	-	-	-	-	-	3	3	-	-	-	-	-	3	-	3

		CO 7	Understand professional ethics, rules and regulations while working on interdisciplinary issues and financial management	-	-	-	-	-	-	-	3	-	-	3	-	2	3	3
		CO 8	demonstrate the ability to lead and productively participate in group situations and to use oral communication effectively	-	-	-	-	-	-	1	-	3	3	-	-	3	3	-
				3	3	3	3	3	3	3	3	3	3	3	3	2.5	2.833	3
		CO 1	To Determine and analyse the domain name system (DNS) in internet and various cybercrime offence in cyber space.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	IPR, Copyright	CO 2	To understand the concept of Intellectual Property and Intellectual Property Rights with special reference to India and	-	-	-	-	-	-	-	3	-	-	-	-	1	-	-
65	and Cyber Law of India (Open	CO 3	To Apply intellectual property law principles including the copyright law, patents law, designs and trademarks, to real	-	-	-	-	-	3	ı	1	ı	ı	-	ı	1	-	-
	Elective-II)	CO 4	To Study the Jurisdiction Issues in Cyber Space and Competition Law in India	-	2	-	-	-	-	-	-	1	-	-	1	2	-	-
				3	2	-	-	-	3	-	3	-	-	-	-	1.5	-	-
		CO 1	Students will be able to analyze big data using Hadoop.	3	-	-	-	-	-	1	1	1	ı	-	1	3	-	-
		CO 2	Students will be able to use pig and Hive scripting	-	3	-	-	-	-	ı	ı	1	1	-	1	3	-	-
66	Big Data	CO 3	To Apply various big data analysis techniques	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
	Analytics Lab	CO 4	Students able to use modern data analytical tools	-	-	-	-	3	-	-	-	-	-	-	-	3	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	-	3	-	-	-	-	-	-	-	3	-	-
		CO 1	Understand the process of applying tests to software and the fundamental components of a coverage analysis and unit	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Understand the mutation testing and Writing test suits for applications.	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
67	Software Testing and	CO 3	Apply the website performance measurement technique using JMeter and Selenium tool to perform Test sequences and	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
	Validation Lab	CO 4	Analyze the design of test cases for different testing techniques.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	-	-	3	-	•	-	-	-	-	•	3	2	-
		CO 1	Apply fundamental knowledge of basic Computer Engineering courses for solving complex Engineering problem	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the literature, Identify problem, its context with real world / industry issue and define problem statement	-	3	-	-	-	-	-	-	-	-	-	-	-	3	-
		CO 3	Design engineering solution to the problem using knowledge of core Computer engineering	-	-	3	-	-	-	-	-	-	-	-	-	3	3	-
		CO 4	Carryout experimentations/simulations and investigate the solution to complex Computer engineering problem	-	-	-	3	-	-	-	-	-	-	-	-	-	2	3
68	Project	CO 5	Use modern tools and techniques of Computer engineering for solving the problem	-	-	-	-	2	-	1	-	1	ı	-	1	2	3	-

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		CO 6	Understand applicability of solution in industry and societal issues	-	-	-	i	-	2	1	-	-	-	-	-	-	2	-
		CO 7	Analyse sustainability of proposed solution and its impact on environment	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO 8	Understand professional ethics, rules and regulations while working on interdisciplinary issues	-	-	-	1	-	-	1	2	-	-	-	-	-	3	-
				2	3	3	3	2	2	2	2	-	-	-	-	2.667	2.667	3
		CO 1	Explain the basics of composites, its structure and its properties	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	Compute the physio-mechanical properties of composites from tests	2	1	-	ı	ı	-	ı	-	-	-	-	ı	-	-	1
69	Composite	CO 3	Assessment of engineering properties of composite materials	1	2	1	1	1	1	ı	-	-	-	-	1	-	-	1
	Materials	CO 4	Analyze the failure and maintenance of composite materials	1	-	1	1	1	1	ı	-	1	-	-	1	1	1	1
				-		-	1	-	1	1	-	-	-	-	-	_	-	-
				1.5	1.5	1	1	1	-	•	-	-	-	-	-	1	-	1
		CO 1	Explain the fundamentals of Fire Engineering	2	-	-	-	-	1	1	-	-	-	-	-	-	1	-
		CO 2	Apply the learned principles in planning, designing and management of fire safe buildings	2	1	1	-	1	1	-	-	-	-	1	-	1	1	-
	Fire and Safety	CO 3	Assess fire fighting installations, control technologies and hazardous materials	1	2	1	-	1	1	-	-	-	-	-	-	1	1	1
70	Engineering	CO 4	Design of fire safety building for fire resitant construction by following safety legislation	1	-	1	1	1	1	-	1	-	-	-	-	-	1	1
				-	-	-	-	-	-	1	-	-	-	-	-	_	_	_
				1.5	1.5	1	1	1	1	-	1	-	-	1	-	1	1	1
		CO 1	Understanding of basic concepts and Principles of EM wave, propagation reflection and transmission. [Understanding]	3	2	-	-	-	-	-	-	3	-	-	-	-	1	
		CO 2	Apply the knowledge for interest in complex dielectric constant, dipolar loss mechanism and design mechanism to understand	3	2	-	-	-	-	1	-	3	-	-	-	1	-	-
	Industrial and Biomedical	CO 3	Analyze the structure of RF heating in industrial application.  [Analyzing]	3	2	3	-	-	-	1	-	3	-	-	-	-	1	-
71	applications of RF Energy	CO 4	Design of Hazards and safety standards in various engineering problem. [Create & Design].	3	3	3	3	-	-	ı	-	3	-	-	-	-	1	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	_	-	_
				3	2.25	3	3	-	-	-	-	3	-	-	-	1	1	-
		CO 1	Understand the fundamentals of robotics and its components, methods of linear motion into rotary motion and vice-verse.	3	3	2	2	2	3	3	3	2	-	3	3	2		-
		CO 2	Apply the appropriate techniques for movement of robotic joints with computers/microcontrollers. [Applying &	3	2	2	2	-	3	2	-	3	2	3	3	2	-	-
72	Robotics and	CO 3	Analyze parameters required to be controlled in a Robot for specific application. [Analyzing]	3	2	3	3	3	3	-	-	2	2	2	3	2	-	-

12	control	CO 4	Design and Develop small automatic / autotronics applications with the help of Robotics for solving the real life problems	2	2	3	2	2	2	2	3	3	2	2	3	2	-	2
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.75	2.25	2.5	2.25	2.333	2.75	2.333	3	2.5	2	2.5	3	2	•	2
		CO 1	understand the current Energy Scenarios in India.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	understand the energy auditing of motors, lighting system and building, by appropriate analysis methods through survey	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
73	Energy Audit and Demand	CO 3	understand the Electrical-Load Management and Demand side Management.	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
/3	side Management	CO 4	apply the Energy Conservation in transport, agriculture , household and commercial sectors.	3	2	2	1	-	-	-	-	-	-	-	-	-	-	-
		CO 5		1	-	-	-	-	-	-	-	-	-	-	1	-	1	1
				3	2.333	2	1	-	•	•	-	•	•	•	•	•	•	
		CO 1	Learn about soft computing techniques and their applications.	2	2	3	-	-	-	-	-	-	-	-	1	2	3	3
		CO 2	Analyze various neural network architectures.	2	2	3	-	-	-	-	-	-	-	-	-	2	2	3
74	Soft Computing	CO 3	Define the fuzzy systems	-	-	3	-	-	-	-	-	-	-	-	-	2	2	3
/4	Soft Computing	CO 4	Understand the genetic algorithm concepts and their applications	3	2	3	-	-	-	1	-	-	-	-	1	2	2	3
		CO 5	Identify and select a suitable Soft Computing technology to solve the problem.	3	3	3	-	-	-	-	-	-	-	-	1	3	3	3
				2.5	2.25	3	-	-	-	-	-	-	-	-	-	2.2	2.4	3
		CO 1	Define the simulation modeling and analyze the practical situations in organizations	3	-	-	-	-	-	-	-	-	-	-	ı	2	-	-
		CO 2	Examine the random numbers and random variates approach in different applications	2	-	-	-	-	-	-	-	-	-	-	1	-	1	-
75	Operations	CO 3	Investigate the sensitivity of simulation solutions for realistic problems	ı	3	-	-	-	-	-	-	-	-	-	ı	1	ı	-
/3	Research	CO 4	Interpret the model and apply the results to solve crtitical issues of a realististic problem	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	-	-	-	-	-	-	-	-	-	-	1.5	1	-
		CO 1	Generate methamatical models of complex engineering problems	2	-	-	-	-	-	-	-	-	-	-	1	2	-	-
		CO 2	Analyse the various optimization techniques with the appropriate tools	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
76	Simulation Modeling and	CO 3	Identify suitable optimization techniques to solve industrial and sociatal problems	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
'	Analysis	CO 4	Interpret the solution and apply the results to solve complex engineering problems	-	-	3	-	-	-	-	-	-	-	-	-	2	-	-

		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		2.5	3	3	-	-	-					-	•	2	•	-

## **Department of Computer Engineering**

## **B.Tech.** in Computer Engineering-Regional Course

## **CO-PO Mapping (Session 2023-24)**

				PO 1:		PO 3:		PO 5:		PO 7:			PO	PO	PO	PSO1-	PSO2-	PSO3-
S.No	Course Name	CO No	Course Outcomes (After completing the course students will be able to)	Engine		Desig n/deve	Cond		The engine		Ethics	Indivi	10: Com	11: Proje	12: Life-	The ability	The ability	The ability
			(After completing the course students will be able to)	ering knowl	em analys	lopme	uct investi	rn tool		onme nt and	: Apply	dual and	munic	ct	long	to	to	to
			Students will be able to define and explain basic concepts	KIIUWI	anarys	юрис	mvesti	1001	Ci anu	nt anu	Appry	anu	munic	- Ct	long	10	10	10
		CO1	definite integrals, sequence and series, periodic functions and multivariable functions.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Students will be able to understand properties of beta and gamma function, convergence of sequence and series.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1	Engineering Mathematics-I	CO3	The students will be able to apply properties of beta and gamma functions and definite integrals to find surface area and volumes of revolution. They will be able to apply partial derivatives and multiple integrals to solve many problems in science and engineering.	3	2	-	1	-	,	,	-	,		,	-	,	-	-
		CO4	Students will be able to analyse Fourier series to make many useful deductions which lay down foundation of signal processing and image processing.	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Describe characteristics of water, fuel and Engineering materials-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
		CO2	Determine of hardness of water and calorific value of fuels for Industrial as well as domestic purposes	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-
2	Engineering Chemistry	CO3	Compare different techniques of water treatment, fuel analysis, Manufacturing of engineering materials and corrosion protection methods	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Prepare the generic drugs or medicines by identifying the applications of organic reaction mechanism and manufacturing of engineering materials	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	-	-	-	-	-	-	-	1	2
		CO1	Describe the process of communication, basics of Grammar and Writing and Literary Aspects	-				-	-	-	-	-	1	-	-	-	-	
		CO2	Explain the types of communication, barriers and channels of communication and the concept of Literature through Short Stories and poetry		-	-	-	-	-	-	-	-	2	-	-	-	-	-
3	Communication	CO3	Write and prepare professional reports, paragraph and business letters with the correct use of grammar	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
	Skills	CO4	Discuss and illustrate the impact of social and moral values by implying the basics of English Writing Skills through literary aspects	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-

I	1 1		Restate and outline the basic areas of English Language Skills					Ι	l									
		CO5	with the applications of literature	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
			11	-	-	-	_	-	-	-	2	-	2	-	2	-	-	-
		CO1	Students will be able to retrieve basic concepts of thermal and manufacturing process.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Students will able to compare different types of thermal and manufacturing processes and.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Basic Mechanical Engineering	CO3	Students will able to annotating about the functioning of turbine & pumps, IC engines, refrigeration system, modes of transmission of power, materials and primary manufacturing process.	3	-	-	-	-	1	-	-	1	1	-	1	-	1	-
		CO4	Student will be able to appraise the fundamental knowledge of thermal engineering, in addition to understanding of power transmission to solve the industrial and societal issues.	-	1	-	-	-	-	-	-	ı	ı	-	ı	-	ı	-
				2	1	-	-	-	-	-	-	1	•	-	•	-	1	-
		CO1	Identify basic components of electrical engineering and connect them to form different circuits to verify basic laws.Understanding	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Basic Electrical	CO2	Analyse the output of rectifier circuit,AC and DC machines to solve problems assosciated with Basic electrical engineering. Analyse	2	3	-	-	-	-	-	-	1	-	-	1	1	1	-
5	Engineering Engineering	CO3	Contribute efficiently in a team to acieve desired response of AC and DC Machines. Team Work	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-
		CO4	Demonstrate the output of rectifier circuits consistiong of basic components of electrical engineering. Mechanism	-	-	-	-	-	-	-	-	1	1	3	1	2	1	-
				2.5	3	-	-	-	-	-	-	3	-	3	-	1.5	-	-
		CO1	Determine the strength of unknown solution by volumetric analysis.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO2	Examine the characteristics of lubricating oil in groups	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
6	Engineering Chemistry Lab	CO3	Analyze different characteristics of water and fuel to solve societal and enviornmental problems	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1	-	-	-	-	-	2	2	2.5	-	-	-	-	-	-
		CO1	Use and pronounce the words correctly.	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
		CO2	Acquire knowledge of the correct expressions,vocabulary etc. in personal and professional lives.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
7	Language Lab	CO3	Plan successfully for leadership and teamwork,crack GD's, interviews and other professional activities.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
		CO4	Synthesize the process of communication using LSRW.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
				-	-	-	-	-	-	-	-	2	2	-	-	-	-	-

		CO1	Describe the working of Lathe machine.	1	_	-	-	-	-	-	-	-	-	_	_	1	_	_
		CO2	Apply the basic concepts of Foundry Shop	2	-	-	-	-	-	-	-	-	-	-	_	1		_
8	Manufacturing Practices	CO3	Develop various carpentry joints, welding joints and sheet metal objects.	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
	Workshop	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1.5	2	-	-	-	-	-	2	3	-	-	-	1	-	_
		CO1	Discuss measurement of electrical quantites	1	-	-	-	-	-	-	-	-	-	-	-	1	2	-
	Basic Electrical	CO2	Compare different connections of transformer	2	-	-	-	-	-	-	-	-	-	-	-	1	2	-
9	Engineering Lab	CO3	Demonstrate constructional features of electrical machines and converters	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
		CO4	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
				2	-	-	-	-	-	-	2	3	2	-	-	1.333	2	-
		CO1	Describe engineering drawing terminology, concept of scales and conic sections.	1	-	-	-	-		-	-	-	-	-	-	1	-	-
	Computer Aided	CO2	Draw Projection of Points, lines, planes, solids and section of solids	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-
10	Engineering	CO3	Draft 2D engineering problems on CAD software.	-		-	-	3	-	-	-	-	-	-	-		1	1
	Graphics	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				1	1	-	-	3	-	-	2	3	-	-	-	1.5	1	1
		CO1	Students will be able to define basic rank of matrix to find, eigen values and eigen vectors of the matrix, degree and order of differential equations.	2	-	-	-	-	-	1	-	1	-	-	-	-	-	-
11	Engineering Mathematics-II	CO2	Students will be able to explain complementary functions and particular integral of ordinary differential equation and various methods of solution of ODE to solve complex engineering problems.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
		СОЗ	The students will be able to apply an appropriate analytical technique to find solution of first order and higher order differential equations.	3	2	-	-	-	-	1	-	-	-	-				
		CO4	Students will be able to classify higher order partial differential equations and analyze a wide variety of time dependent	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.25	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Describe the concepts of Wave and Quantum mechanics, Laser and Fiber optics, material science and electromagnetic theory. (Recall/Remembering)	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-
	English 1	CO2	Explain the different applications of Laser and optical fibers in communication, engineering, medicine and Science.  Application of Hall effect (Examine)	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-
12	Engineering Physics	CO3	Evaluate energy states in 1-D and 3-D box with the application of quantum mechanics.(Apply)	-	1	-	-	-	-	-	ı	-	-	-	-	-	-	-
		CO4	Analyze the crystal structure through X-ray Diffraction & Camp; wavelength of light through Newton's ring experiment and Michelson-interferometer ,types of materials through Hall effect . (Analyze)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-

1				1.5	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Relate sustained happiness through identifying the essentials of human values and skills	-	-	-	-	-	-	•	2	-	-	-	-		-	-
		CO2	Find the happiness and human values in terms of personal and social life to create harmony in them	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-
13	Human Values	CO3	Use and understand practically the importance of trust, mutually satisfaction and human relationship	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
		CO4	Identify the orders of nature for the holistic perception of harmony for human existence	-	-	-	-	-	-	ı	2	ı	ı	-	-	ı	-	-
		CO5	Implement professional ethics and natural acceptance of human values in his/her life	-	-	-	-	-	-	-	3	1	-	-	-	1	1	-
				-	-	-	-	-	2	-	2.5	-	-	-	2	-	-	_
		CO1	Understand the basic concepts of fundamental of computer system, number system and programming. (Remembering)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Programming	CO2	Explain various memory units, representation of number system and Conditional, Iterative statements using arrays, string, pointers, file structure. (Understanding)	2	-	-	-	-	-	-	-	,	-	-	1	-	1	-
14	for Problem Solving	CO3	Examine the concept of algorithms, flowchart, Operators, Pointer, Array, String, structure, union using modularization to	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO4	Illustrate the User Defined functions, Memory management and File concepts to solve real time problems using C Programming (Analyzing)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	1	1	ı	1	-	•	1	-	-
		CO1	Describe Scope, role and Specialization of Civil Engineering, basics of surveying, types of building, Plinth area, carpet area, floor space index, R.C.C., mode of transportation and different causes of pollution. (Remember)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	Basic Civil Engineering	CO2	Explain solid waste management, building by-laws, concept of sun light and ventilation, chemical and hydrological cycle, biodiversity, causes of road accident, sanitary landfill and onsite sanitation, food chain and food web, contour maps, Global warming, Climate Change, Ozone depletion, and Green House effect. (Understand)	2	-	-	-	-	-	-	-	,	1	-	-	1	-	-
		CO3	Illustrate method of ranging and levelling, road safety measures, building component, environmental acts, different types of foundation, treatment and disposal of waste water, traffic sign and symbol and rain water harvesting. (Apply)	3	-	-	-	-	-	-	-	1	-	-	-	-	-	-
		CO4	Compute errors in linear measurement, bearings and elevations of respective points on the ground. (Analyze)	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO1	Operate the various devices for the multifarious use in the relative fields.	1	-	-	-	-	-	-	-	-	-	-	2	-	-	-

16	Engineering Physics Lab	CO2	Apply knowledge of Newton's Ring,grating, spectrometer,Optical fiber ,Sextant, Hall effect , a n d L a s e r to determine wavelength of light, dispersive power,Numerical aperature Height of Object, Hall coefficient, coherence length and coherence time  To conduct the experiments with interest and an attitude of learning.	2	-	-	-	-	-	-	-	1	-	-	2	-	-	-
		CO4	Evaluate the Band Gap and time constants (t=RC) using basic principles of semiconductors and Capacitors by graphs.	-	2	-	-	-	-	-	-	2	-	-	-	-	-	-
				1.5	2	-	-	-	-	-	-	1.5	-	-	2	-	-	-
		CO1	Recall the natural and social issues and their remedies.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
		CO2	Describe the nature of human values and the impact of external factors over it.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
	Human Values	CO3	Validate through actions the significance of trust, respect and harmony with self and surroundings.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
17	Activities and Sports	CO4	Outline the relation of human with nature and other factors in terms of human existence	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO5	Associate the knowledge of self and society with clear understanding of social issues and the human beings.	-	-	-	-	-	2	1	-	-	-	-	-	-	1	-
				-	-	-	-	-	2	2	1	2	-	-	-	-	1	-
		CO1	Describe various sanitary fittings and water supply fittings	1	-	-	-	-	1		-	-	-	-	-	-	1	-
	Basic Civil	CO2	Examine pH, Turbidity, Hardness and Total solids of given water sample	2	-	-	-	-	-		-	-	-	-	-	-	-	-
18	Engineering	CO3	Use of EDM and Total Station in the field	3	-		-		-	-	-	-	-	-	-	-	-	-
10	Lab	CO4	Investigate the linear and angular measurements of the points on the ground and levelling	-	1	-	-	-	-	-	-		-	-	-	-	-	-
		CO5	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
				2	1	-	-	-	-	-	2	3	2	-	-	-	-	-
		CO1	Relate the fundamental of C Programming as variable, operators and taxonomy to write a basic C Program	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	Computer Programming	CO2	Write programs that perform operations using condition control statements and loop control statements, single and multi-dimensional arrays along with specific program of matrix multiplication.(Examine)	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-
19	Lab	CO3	Use C programs to implement operations related to Array, Macros and inline functions, Dynamic memory allocations, concept of Structure, Unions and Pointers	3	-	-	-		1	-	-	-	-	-	-	-	1	-
		CO4	Students will show an ability to communicate effectively and work ethically			-	-	-	-		2	-	2	-	-	-	-	-
				2	-	-	-	-	-	-	2	-	2	-	-	-	-	-
		CO1	Describe orthographic projections and basic Geometrical Concept	2	-	-	-	-		-	-	-	-	-	-	1	-	
	Computer	CO2	Analyze Sectional Views of different mechanical Components and assembly drawing	-	1	-	-	-	-	-	-	-	-	-	-	2	-	
20	Aided Machine	CO3	Draft a engineering product using CAD software	-	-	-	-	2	-	-	-	-	-	-	-	2	-	1

1	Diawing						I	1									ı	
		CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
				2	1	-	-	2	-	-	2	3	-	-	-	1.667	-	1
		CO 1	To Define probability models using probability mass (density) functions, need and classification of optimization terminology.	1	1	1	1	-	-	1	1	-	ı	-	1	2	-	-
		CO 2	To Explain the probability distributions of discrete and continuous random variables and work binomial, Poisson,	2	-	1	-	-	-	-	-	-	-	-	-	2	1	-
1	Advanced Engineering	CO 3	To Solve mathematical models of the real world problems in optimization using Linear Programming methods such as	3	-	-	-	-	-	-	-	-	-	-	-	2	1	-
	Mathematics	CO 4	To Examine the correlation between two variables and regression applications for purposes of description and	-	3	-	-	-	-	-	-	-	-	-	-	2	1	1
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	-	-	-	-	-	-	-	-	-	-	2	1	1
		CO 1	To Describe the fundamental concepts of Economics and Financial Management and define the meaning of national	-	-	-	-	-	1	-	-	-	2	3	1	-	-	-
		CO 2	To Calculate the domestic product, national product and elasticity of price on demand and supply.	-	-	1	-	-	2	-	-	-	-	3	-	-	-	-
2	Managerial Economics	CO 3	To Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect	3	-	2	-	-	-	-	-	-	-	2	-	-	-	-
	and Financial Accounting	CO 4	To Compare the financial statements to interpret the financial position of the firm and evaluate the project investment	-	3	-	-	-	-	-	-	-	-	2	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2		_	1.5	_	-	-	2	2.5	1		-	
						-								2.0	•			
		CO 1	To Apply the fundamentals of Number Systems and boolean Algebra for solving the numericals and logical problems.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 1	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.		- 2	-	-	-	-	-	-	-	-	-		2	-	-
3	Digital		Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.		-	- 3	-	-	-	-	-	-	- -	-	-		-	-
3	Digital Electronics	CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects		-	-				- - -	- - -		- - -		-	2		-
3		CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its		-	-	-							-	-	2	-	-
3		CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its		-	-	-	- - -							-	2	-	
3		CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.		2	3	2	- - - -	-		- - - - -	-	- - - -		-	2 2 -	2	- - - -
3		CO 2 CO 3 CO 4	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.	2 - - - - 2	2	3	2	- - - -	- - -		- - - -	- - -	- - - -	- - -	-	2 2 -	2 - 2	- - -
	Electronics  Data Structures	CO 2 CO 3 CO 4	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.  To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.  To develop searching and sorting algorithms on predefind data	2 - - - - 2	- 2 - - - 2	3 - 3	- 2 - <b>2</b>	- - - -	- - - -		- - - -	- - - -	- - - -		-	2 2 -	- 2 - 2	- - - - 2
3	Electronics	CO 2 CO 3 CO 4 CO 1 CO 2	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.  To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.	2 - - - 2 2	- 2 - - - 2	- 3 - - 3	- 2 - <b>2</b>	- - - -	- - - -		- - - - -	- - - -	- - - -		-	2 2 -	- 2 - 2	- - - - 2
	Electronics  Data Structures and	CO 2 CO 3 CO 4 CO 1 CO 2 CO 3	Algebra for solving the numericals and logical problems.  To Recognize minimization techniques for reducing the size of any digital circuits.  To Design combinational and sequential circuits with aspects of speed, delay, energy dissipation and power.  To Evaluate the performance of Digital Logic Families and its realization.  To explain data structures and their use in daily life.  To analyze the Linear and non Linear data structures like stack, Queues, link list, Graph, Trees to solve real time problems.  To develop searching and sorting algorithms on predefind data  To create the data structures in specific areas like DBMS	2 - - - 2 2	- 2 - - - 2	- 3 - - 3	- 2 - 2 	- - - - -	- - -		- - - - - -		- - - - -		-	2 2 -	- 2 - 2	

		CO 1	Apply the various programming paradigms such as exception handling, polymorphism in software pattern	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the C++ programs using different programming methodologies.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
5	Object Oriented	CO 3	Design the elements of the object oriented concepts in developing structured programs.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
3	Programming	CO 4	Investigate the real time applications using advance C++ concepts.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3
				•	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	3	2	3
		CO 1	To Demostrate software life cycle models with respect to software enginneering principles.	2	-	-	-	-	-	-	-	-	-	-	-	3	-	2
		CO 2	To analyse cost estimation technique and risk analysis techniques in software engineering projects.	-	2	-	-	-	-	-	-	-	-	-	-	2	3	-
	Software	CO 3	To Design Software requirement document (SRS)	-	-	3	-	-	-	-	-	-	-	-	-	2	3	-
6	Engineering	CO 4	To synthesize UML diagrams using the concepts of object oriented analysis in software development process.	-	-	-	3	-	-	-	-	-	-	-	-	3	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	2.5	3	2
		LO1	To Utilize searching and sorting algorithms on given values.	2	-	-	-	2	-	-	-	-	2	-	-	2	-	-
		LO2	To analyze the time and space efficiency of the data structure	-	_	_	_	-	2	-	-	-	-	-	-	2	_	_
	Data Structures and	LO3	To Evalute traversing, insertion and deletion operations on Linear and non linear data structures	_	_	_	_	-	-	2	-	-	-	-	2		2	_
7	Algorithms	LO4	To construct the solutions for real time applications			_		2	-	-	-	2	-	-	-			3
	Lub	LO5	To construct the solutions for real time applications	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	-	-	-	2	2	2	-	2	2	-	2	2	2	3
		LO1	Students will able to apply the programming concepts such as inheritance, polymorphism	-	-	-	-	2	-	-	-	-	-	-	2	3	-	-
		LO2	Students will be able to distinguish the programming methodologies to implement programs	-	-	-	-	-	2	-	-	-	-	-	2	-	2	-
	Object Oriented	LO3	Students will be able to explain the concepts to develop the structured programs.	-	-	-	-	-	-	2	-	-	-	-	2	-	-	3
8	Programming Lab	LO4	Students will be able to construct the solutions for real time problems	-	-	-	-	-	-	-	-	2	-	3	-	-	-	3
		LO5	and problems	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	2	2	2	-	2	-	3	2	3	2	3
		LO1	design, test case implementation, and OOP concepts	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-

		LO2	Discuss and analyze how to create software			l <u>.</u>	3	_	_	_	_		_	_			3	
			requirements specifications for a particular problem.		-		3	-	-	-	-	-	-	-	_	-	-	-
9	Software Engineering	LO3	Create Data Flow Diagrams for different systems.	-	-	3	-	-	-	-	-	-	-	-	-	-	3	2
	Lab	LO4	Understand and develop UML diagrams of various structures and behaviors.	-	-	-	-	2	-	-	-	-	-	-	-	2	3	-
				-	-	-	-	•	-	-	1	-	1	-	-	-	-	-
				2	-	3	3	2	-	-	-	-	-	-	-	2.5	3	2
		LO1	Apply appropriate basic logic gates for verifying the truth tables.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	Demonstarte ability for recognizing any IC and its fuctionality.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO3	Design any basic gates by the use of universal gates.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
	Digital	LO4	Identify the limitation of basic logic gates while desgining any SOP and POS logics.	-	-	-	2	1	1	-	1	1	1	1	1	2	-	-
10	Electronics	LO5	Design any sequential and combinational circuits using basic gates as well as by defined IC.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
	Lab	LO6	Demonstrate the working of Digital Trainer kits and usability of it.	-	-	-	-	2	-	-	1	1	-	-	-	-	2	-
		LO7	Debug a circuit to find a problem and suggest suitable solution.	-	-	-	-	-	-	-	-	-	-	-	2	-	-	2
		LO8	Able to work in a team for desgining and rectifying any errors in the digital circuit.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	2
				2	2	2.5	2	2	-	-	-	2	-	-	2	2	2	2
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	updated with all the latest changes in technological world	-	-	-	-	3	-	-	-	-	-	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
11	Industrial	LO4	knowledge, management, leadership and	-	-	-	-	-	-	-	-	3	-	-	-	2	2	3
11	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-
		LO6	continuous professional development and life-long	-	-	-	-	-	-	-	-	-	-	-	3	2	-	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	-	-	-	-	-	3	2	-	-	-	-	-	2	-
				3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO1	Define mathematically about the fundamental data types and structures used in computer algorithms and systems.	1	-	-	-	-	-	-	-	-	-	-	-	2	1	-
		CO2	Classify algebraic techniques to basic discrete structures and algorithms.	2	-	-	ı	ı	i	-	i	i	ı	i	ı	2	1	-

12	Discrete Mathematics	СОЗ	Apply mathematical logic in making computer programs, computer circuits, concluding experiments, digital electronics, etc.	3	-	-	-	-	-	-	-	-	-	-	-	1	1	-
	Structure	CO4	Analyze a variety of graphs and Compare the viability of different approaches to the Model problems in Computer Science.	-	3	-	-	-	-	-	-	-	-	-	-	1	1	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3		•			•	-	•	-	-	-	1.5	1	-
		CO1	Remember the fundamental principles of technical writing and genre in written communication within technical domains.	-	-	-	•	-	-	1	-	2	-	-	-	-	-	-
		CO2	Understand the intricacies of planning, drafting, revising, editing, and critiquing professional documents within the realm of technical communication when engaging in both individual and collaborative writing.	-	-	-	-	-	-	-	-	-	3	-	-	1	-	-
13	Technical Communication	CO3	Apply skills in note-making, grammar editing, technical style, project report creation, and LSWR (Listening, Speaking, Writing, Reading) in the context of technical communication.	-	-	-	1	,	1	1	,	-	3	1	,	-	,	2
		CO4	Evaluate research findings and synthesize content for various business communication documents, such as emails, resumes, meeting minutes, technical reports, articles, and project proposals.	-	-	-	-	-	-	-	-	-	-	-	3	-	-	3
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	•			•	-	2	3	-	3	1		2.5
		CO1	To Examine the architecture of 8085 microprocessor, Memory and its type.	3	-	-	-	-		-	-	-	-	-	-	2	-	-
		CO2	To Analyse interfacing applications using microprocessors and peripherals.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
l	Microprocessor	соз	To Design Assembly Language Programs by using instructions of 8085.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
14	& Interfaces	CO4	To investigate the connection of the microprocessor with the peripheral devices. To design assembly language programs by using	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO5	instructions of 8085 and relate	-	-	2	1	-	-	-	-	-	-	-	-	2	-	-
			addressing modes in National Institutions	3	2	2	•	•	•	-	-	•	-	-	-	2	•	-
		CO1	Understand basic concepts and identify various data models (E-R modeling concepts) and apply these concepts for designing databases.	2	-	-	-	-	-	-	-	-	-	-	-	2	3	-
	Database	CO2	Apply relational database theory by SQL and describe relational algebra expression, tuple and domain relational expression for writing queries in relational algebra.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
15	Management System	соз	Identify and improve the database design by normalization and key constraints.	-	1	2	1	-	1	1	-	-	-	-	-	2	-	-

Understand and Analyze transaction processing and CO<sub>4</sub> 2 2 concurrency control concepts. 2 2 1 2 2.5 CO<sub>1</sub> To demonstrate basic concepts of computation 2 2 To analyze language expressions and Grammars in finite CO 2 2 2 automata. To design the solutions of computation problem using CO3 2 2 Theory of suitable machines Computation To apply the concepts of Computation in real life CO 4 2 3 problems. 2 2 2 2 2 2 2.5 CO1 2 2 To explain networking models and data trasmision CO2 Apply the the Error Detection and Correction techniques. 2 2 2 CO3 To analyze the network Layer routing algorithms. 2 2 2 Data Communication 17 CO4 examine the transport and application layers protocol servi 2 2 2 and Computer Networks 2 2 2 2 To familriaze with the architecture and instruction set of LO1 2 Intel 8085 To demonstrate operation of typical 8085 microprocessor LO2 2 2 trainer kit To provide practical hands on experience with Assembly LO3 2 2 Language Programming Microprocesso To analyze limitations and applications of Assembly r & Interfaces Lab LO4 language 2 2 Programming for the real world problem To get familiarize with interfacing of various peripheral LO<sub>5</sub> 2 devices using 8085 chip 2 2 2 2 2 2 <del>эеіест арргорнате теспінічие то чезіўн чатаразе анч</del> LO1 schemas for a given application using DDL/DML SQL 2 Appry and concept or integrity reales and constraints to LO2 ensure accurate and error free 3 Identify solutions for database update using pre store LO3 2 2 Procedures and Triggers

10	Database	LO4	Compare the constraints primary key and foreign key between primary table and secondary table	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
19	Management · System Lab	LO5	Construct Views to simplify and reduce complexity of database schema	-	-	3	-	-	-	-	-	-	-	-	2	-	-	-
		LO6	Decision to users with different types of privileges and check users existence in database	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
		LO7	Assemble records from multiple tables in database through Inner joins and Outer joins	-	-	3	-	-	-	-	-	-	-	-	1	1	-	-
				3	2	2.5	2	2	•	-	-	-	-	-	1.5	1.6	-	-
		LO1	To defines the basic principles of computer networks. Understand the key topologies that support the internet.	2	-		-	-	-	-	-	-	-	-	-	2	-	-
		LO2	To demonstrate the installation and configuration of network.		-	2	-	-	-	-	-	-	-	-	-	2	-	-
20	Network Programming	LO3	To evaluate errors using a variety of error correction techniques.	-	2	-		1	1	1	-	1	-	-	1	2	1	2
20	Lab	LO4	To apply a network routing algorithm, evaluate the process, and implement a simple routing network.	-	2	-	-	1	1	1	-	-	-	-	-	2	-	2
				-	ı	1	-	ı	ı	ı	-	-	-	-	ı	-	-	-
				2	2	2	-	•	1	•	•	•	•	•	•	2	•	2
		LO1	related to inode, I/O redirection and piping, process	2	ı	ı	-	ı	ı	ı	-	ı	-	-	ı	2	ı	1
		LO2	To analyze variety of problems of shell script using looping, case structures in the script programming.		2	-	-	-	-	-	-	-	-	-	-	2	-	1
21	Linux Shell Programming	LO3	To synthesize the logical problems using the shell script programming.	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
	Lab	LO4	To explore the pattern problems using shell scripts.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
		LO5	Apply C programming concepts to solve numerical problems related to array manipulation in shell scripting.	-	ı	-	-	2	ı	ı	-	-	-	-	-	2	-	-
				2	2	2	2	2	•	•	-	-	-	-	•	2	-	1
		LO1	To understand the basic concepts of java.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	To eleborate the concept of file handling, multithreading and applets.	2	1	-	-		-	-	-	-	-	-	-	-	2	-
22	Java Lab	LO3	To analyze the terms of the packeages & Interfaces	2	2	-	-	-	-	-	-		-	-	-	-	2	-
	Java Lab	LO4	To design the steps for creating the project using major concept	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	-	-	-	-	-	-	-	-	-	2	2	3
		CO 1	Demonstrate the concept of information theory and entropy.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Analyze the different coding techniques for efficient communication.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-

	Information	CO 3	Design the linear block code and cyclic code for error free communication.	-	-	2	-		-	-	-	-	-	-	-	-	2	-
23	Theory & Coding	CO 4	Evaluate the shortest path by using different algorithms techniques.	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	2	3	-	-	-	-	-	-	-	-	2	2	2
		CO 1	To illustrate the theoretical concepts of finite state machine	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	To analyze the grammars, parsing techniques, and actual code generation methods	-	3	-	1	-	1	1	-	-	-	-	-	-	2	-
24	Compiler	CO 3	To Evaluate the different types of error and convert the code in LC.G.	-	-	3	ı	-	ı	1	-	-	-	-	-	-	1	2
24	Design	CO 4	To convert the optimized code into the machine code in the storage organisation and code optimization.	-	-	-	3	-	ı	1	-	1	-	-	-	2	1	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	ı	-
				2	3	3	3	-	•	•	-	-	-	-	-	2.5	2	2
		CO 1	To demonstrate the knowledge of Operating System services including Memory, Device & File Management.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	2
		CO 2	To categorize the Process management in terms of inter process communication and memory management methods for	-	3	-	1	-	1	1	-	1	-	-	-	2	1	-
25	Operating	CO 3	To Design the solution for scheduling and deadlock problems in operating system using appropriate algorithms such as round	-	-	2	-	-	-	-	-	-	-	-	-	3	-	2
	System	CO 4	To investigate LINUX/UNIX, OS, RTOS, windows and Mobile based OS file system through case study.	-	-	-	3	-	-	-	-	-	-	-	-	2	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	3	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	Demonstrate the standards and Primitives of Drawing components like line, circle, ellipse, clipping, filling	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Analyze the graphics quality with the help 3D Graphics and Projections	-	2	-	1	-	1	1	1	1	-	-	-	1	2	-
26	Computer Graphics &	CO 3	Design the animation using transformation and clipping	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
20	Multimedia	CO 4	Organize the primitives for Illumination, Shading and Color Models.(Evaluate)	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3
				-	-	-	ı	-	ı	ı	•	•	-	-	-	•	ı	-
				2	2	3	2	-	-	-	-	-	-	-	-	2	2	2.5
		CO 1	Analyze and evaluate the cyber security needs of an organization.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
27	Cyber Space	CO 3	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-

۷,	Operations and Design	CO 4	Design and develop a security architecture for an organization.	-	-	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 5	Design operational and strategic cyber security strategies and policies.	1	-	-	ı	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 1	conduct digital investigations that conform to accepted professional standards and are based on the investigative	2	-	-	1	-	1	1	- 1	-	-	-	-	2	-	1
		CO 2	identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy,	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
28	Digital Forensics and	CO 3	apply a solid foundational grounding in computer networks, operating systems, file systems, hardware, and mobile devices	1	3	-	1	-	1	1	1	-	-	-	-	2	-	1
26	Incident Response	CO 4	access and critically evaluate relevant technical and legal information and emerging industry trends.	1	-	3	1	3	1	1	1	-	-	3	-	2	1	1
		CO 5	Communicate effectively the results of a computer, network, and/or data forensic analysis verbally, in writing, and in	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	3	-	3	-	-	-	-	-	3	-	2	-	-
		CO 1	Understand complexity of an algorithm, asymptotic notation and divide and conquer method for developing an algorithm.	3	-	-	-	-	ı	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the algorithm design using greedy algorithm and dynamic programming.	1	3	-	1	-	ı	1	ı	-	-	-	-	2	1	1
29	Analysis of	CO 3	To Create search for problem solution using backtracking, branch and bound and pattern matching algorithm		-	3	-	-	1	1	-	-	-	-	-	2	-	-
29	Algorithms	CO 4	To synthesize the randomized algorithm, assignment problem and types of classes such as P, NP, and NP Complete.	1	-	-	2	-	ı	1	1	-	-	-	-	3	1	2
				ı	-	-	ı	-	ı	ı	ı	-	-	-	-	-	ı	ı
				3	3	3	2	-	-	-	-	-	-	-	-	2.5	-	2
		CO 1	To Classify the challenges with transmission of signals in wireless communication systems and Cellular architechture	2	-	-	i	-	ı	ı	1	-	-	-	-	3	1	1
		CO 2	To Analyze the measures to increase the capacity in GSM systems-sectorization and Spatial Filtering for Interference	1	3	1	1	1	ı	1	1	1	-	-	-	1	2	1
30	Wireless	CO 3	To formulate cell architecture in wirless communication sytem.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
30	Communication	CO 4	To Distinguish digital signaling techniques for lossy channels.	-	-	-	2	-	1	-	-	-	-	-	-	2	-	-
				-	-	-	-	-		•	-	-	-	-	-	-	-	-
				2	3	3	2	-		-	-	-	-	-	-	2.5	2	-
		CO1	To apply guidelines and imperical research method in HCI to Make User Friendly Computer Interface	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO2	To categorise Human Computer interction concept using GUI Design and Prototyping techniques	-	3	-	-	-	1	-	ı	-	-	-	-	-	2	-
31	Human Computer	CO3	To design Task models and object oriented modeling for computer interface	-	-	3	-	-	-	-	-	-	-	-	-	-	-	2
J1	Interaction	CO4	To classify types of GOMS, Family model and LAWS	-	-	-	2	-	-	-	-	-	-	-	-	1	2	-

I	1 1		1		I	I		I				l	I	ı	l	l		
				ı	-	-	-	-	•	-	•	-	-	-	-	-	1	•
				2	3	3	2	-	•		•	-	-	-	-	1.5	2	2
		CO1	To understand blockchain systems working and Distributed Consensus of block chain technology.	2	-	-	-	-	-	-	-	-	-	-	-	3	1	-
		CO2	To Analyze Block Chain Technology with Crypto currency and Bitcoin.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
	Fundamental	CO3	Design and built smart contracts and Ethereum Structure of Block chain.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
32	of Block chain	CO4	To Analyze the Block chain Types and Consensus Algorithms.	-	2	-	-	-	-	_	-	-	-	-	-	-	2	-
			Algoriums.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	2	-	-	-	-	-	-	-	-	-	3	2	-
		CO 1	Analyze and evaluate the cyber security needs of an organization.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	Cyber Space	CO 3	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
33	Operations and Design	CO 4	Design and develop a security architecture for an organization.	-	-	3	3	-	-	-	-	-	-	2	-	2	-	-
	Design	CO 5	Design operational and strategic cyber security strategies and policies.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			on the periods.	2.5	3	3	3	-	-	-	-	-	-	2	-	2	-	-
		CO 1	conduct digital investigations that conform to accepted professional standards and are based on the investigative	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	identify and document potential security breaches of computer data that suggest violations of legal, ethical, moral, policy,	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	Digital Forensics and	CO 3	apply a solid foundational grounding in computer networks, operating systems, file systems, hardware, and mobile devices	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
34	Incident Response	CO 4	access and critically evaluate relevant technical and legal information and emerging industry trends.	-	-	3	-	3	-	-	-	-	-	3	-	2	-	-
	Response	CO 5	Communicate effectively the results of a computer, network,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			and/or data forensic analysis verbally, in writing, and in	2.5	3	3	-	3	-	-	-	-	-	3	-	2	-	-
		LO1	to apply the concepts of transformation techniques on 2D & 3D objects.	2	_	_	_	_	_	_	_	_	_	_	-	2	_	_
		LO2	to analyze the colour modelling, shading and animation on graphic objects.		3	_	_	_	_	_	_	_	_	_	-	2	_	3
	Computer	LO2	to design the graphical premitives drawing algorithms		_	3		_					_	_	_	2	_	3
35	Graphics & Multimedia	LO3	such as line, circle drawing algorithms. to Generate Fractal images using graphics tool like	-	_	_	2	2	_	-		_	_	_	_	3	-	3
	Lab	LO <sub>5</sub>	Sterling to make a project to solve real life socity based problem and demonstrate following PO related capabilities:	-	-	-	-	-	3	3	3	3	3	3	3	3	2	3

				2	3	3	2	2	3	3	3	3	3	3	3	2.4	2	3
		LO1	To Analysis the finite state machines, lexical analyzer, parser for the grammar.	-	-	-	-	-	-	-	-	3	-	-	-	3	-	-
		LO2	comments, operators, loops and keywords, and	-	-	-	-	3	-	-	-	-	-	-	-	2	-	-
36	Compiler	LO3	To Design intermediate code genrator and converted into optimzed code	-	-	-	-	-	-	-	-	3	-	-	-	2	-	-
30	Design Lab	LO4	To demostrate hands on experience of working on system software.	-	-	-	-	-	3	-	-	-	-	-	-	-	3	-
		LO5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	3	3	-	-	3	-	-	-	2.333	3	-
		LO1	Apply sorting algorithms like quick sort for information searching.	3	-	-	-	-	-	-	-	1	-	-	-	3	-	-
		LO2	Identify problems to be broken down into simple sub problems using merge sort algorithm	-	-	-	3	-		-	-		-	-	-	-	3	-
	Analysis of	LO3	Device solutions using topological ordering to quickly compute shortest paths	-	-	2	-	-		-	-		-	-	-	-	3	-
37	Algorithms Lab	LO4	Demonstrate real world scenarios like resourse allocation using knapack algorithm	-	-	-	-	-		-	-		-	-	2	-	2	-
	Lab	LO5	From a given vertex, Select Dijkstra's algorithm to find the shortest path to other vertices	-	-	-	-	2		-	-		-	-	-	-		3
		LO6	Demonstrate minimum cost spanning tree of a given undirected graph using kruskal's algorithm	-	3	-	-	-		-	-		-	-	-	-	•	3
				3	-	2	3	2		-	-		-	-	2	3	2.667	3
		LO1	To apply event handling on AWT and Swing components.	-	-	3	-	-	1	-	-	1	-	-	-	3	-	-
		LO2	To Design a page using Swing , Servlet , JSP and JDBC connectivity.	-	-	-	ı	3	1	1	1	1	ı	-	-	3	-	-
38	Advance Java	LO3	To create a project based on societal problem.	-	-	-	•	-	3	1	1	1	ı	-	-	-	3	-
30	Lab	LO4	database tables with Hibernate	-	-	-	ı	-	1	3	1	1	ı	-	-	-	3	3
		LO5		-	-	-	ı	-	1	1	1	1	1	-	-	-	-	-
				-	-	3	•	3	3	з	•	•	•	-	-	3	3	3
		LO1	Capability to acquire and apply fundamental principles of engineering.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	updated with all the latest changes in technological world	-	-	-	-	3	-	-	-	-	-	3	-	3	-	3
		LO3	Ability to communicate efficiently	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
39	Industrial	LO4	knowledge, management, leadership and	-	-	-	-	-	-	-	-	3	-	-	-	2	2	3
	Training	LO5	Ability to identify, formulate and model problems and find engineering solution based on a systems approach.	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-

		LO6	capability and entitusiasin for self-improvement unough	_	-	_	_	_	_	_	_	_	_	_	3	2	_	3
		LO7	Awareness of the social, cultural, global and environmental responsibility as an engineer.	-	-	-	-	-	-	3	2	-	-	-	-	-	2	-
			at an original in the second s	3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
		CO 1	To identify the elements of image and basic steps of digital Image Processing.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Apply the diffrent function types in spatial and frequency domain.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
40	Digital Image	CO 3	To use different tecniques for image enhancement and image restoration.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
40	Processing	CO 4	To construct enhance image using the technique of compression and segmentation techniques.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
				•	-	-	-	-	-	-	-	-	-	-	-	-	•	-
				2	2	2	-	-	-	-	-	-	-	-	-	2	-	-
		CO 1	Apply the fundamental concepts of learning in Machine Learning .	3	-	-	-	-	-	-	-	-	-	-	-	3	1	-
		CO 2	Analyze or Parse the datasets with statistical theory learning methods.	1	3	-	1	-	-	-	•	-	-	-	-	2	ı	-
41	Machine	CO 3	Analyze problem statement solution by Evaluating Machine Learning algorithms and model selection.	ı	3	-	1	-	-	-	-	-	-	-	-	-	2	-
11	Learning	CO 4	Design a hypothesis solution for the real world problem using Machine Learning Techniques.	-	-	2	-	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	2	-	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	To understand the concepts of Information Security	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	To Identify the fundamental techniques of information security	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
42	Information Security	CO 3	To Demonstrate various network security applications	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
	System			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				•	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
		CO 1	To Apply the concept of data representation and memory hierarchy in the CPU Organisation.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyse the instruction sets of assembly language in micro-programmed control devices.	1	2			-	-	-	-	-	-	-	-	3		
43	Computer Architecture	CO 3	To analyse addressing modes, RISC and CISC architecture designs.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-

	and Organization	CO 4	To Design logical and arithmetic operations for floating	_		3		_			_	_					2	
	Organization		and fixed point numbers.  Exemplify in a better way the I/O and memory				_			_		_						
		CO 5	organization.	-	-	-	3	-	-	-	-	-	-	-	-	2	-	-
			- Samueloni	2	2	3	3	_	_	_	_	_	_	_	_	2.333	2	_
			Understand the concepts of artificial intelligence and	_	_												_	
		CO 1	intelligent agents.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Learn basic principles of AI in solutions that require															
		CO 2	problem-solving methods.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	
	Artificial	CO 3	Determine the effectiveness of truths by knowledge			_												
44	Intelligence		representation methods in Al Analyze the techniques presented and apply them to	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
	miemgenee	CO 4	real world problems	_	_	_	2	_	_	_	_	_	_	_	_	_	_	2
			lear trong production	_	_	_	_	_	_	_	_	_	_	_	_	_		
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	2	3	2	-	-	-	-	-	-	-	-	2	2.5	2
		CO 1	To apply cloud fundamentals in cloud computing architecture	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
			To identify various cloud service models, cloud															
		CO 2	architecture, Parallel and distributed programming	-	2	-	_	_	_	-	_	-	-	_	-	2	_	-
			paradigms															
			To examine the virtualization techniques regarding															
	Cloud	CO 3	processor, memory, operating system, network	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
45	Computing		virtualization															<u> </u>
			To descibe the basic threats, security mechanism,															
		CO 4	imporatnce of SLA's in cloud and cloud services	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
			platforms for business and industry prespectives															
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	2	2	-	-	-	-	-	-	-	2		-
		CO1	Students will be able to gain basic knowledge on data	2												3		
		COI	science Students will be able to convert the real time data into	2		_	-		_	-	_	-	_		_	3		
		CO2	suitable form for analysis	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
	Programming	GG.	The students will be able to apply techniques to gain the				_											
1	for Data Science	CO3	insights from the data through statistical inferences	-	_	2	2	_	-	-	-	-	-	-	-	l	-	
	Science	CO4	Students will be able to develop suitable models using	-	_	-	3	2	-	-	-	-	-	_	-	-	2	-
			machine learning techniques and to analyze its															
				2	2	2	2.5	2	-	-	-	-	-	-	-	2	2	2
		CO 1	Apply the fundamental concept of natural language	3	_	-	_	_	-	-	-	-	_	_	_	3	-	-
			processing (NLP) techniques to learn the structure and Demonstrate practical proficiency in using tools like															<u> </u>
		CO 2	ipython notebooks, NLTK, and other relevant	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-

	Natural	CO 3	Analyze lexical relations and various parsing techniques using WordNet and other semantic and parsing	-	3	-	-	-	-	-	-	-	-	-	-	-	2	-
46	Language Processing	CO 4	Analyze and apply distributional semantics and graphical models for sequence labeling in NLP.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	2.5	-	-	-	-	-	-	-	-	-	-	2.5	2	2
		CO 1	To understand the working of block chain and also learn about block chain network.	2	-	-	-	-	-	-	'	ı	-	-	-	3	1	-
		CO 2	To analyze the application of block chain and cryptography of block chain	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
	Blockchain and	CO 3	To identify the different cybercrimes and frauds and classify different cyber-attacks.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
46	Cyber Security	CO 4	Able to use different tools and methods used in cybercrime and identify different theft, digital forensic.	-	-	2	-	2	-	-	-	-	-	-	-	-	2	-
		CO 5	Learn about different network defense tools and basic of virtual private network.	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
				2	2	2	-	2	-	-	•	-	-	-	-	3	2	2
		CO 1	To understand the basic architecture of Neural Network.	3	-	-	-	-	-	-	ı	-	-	-	-	3	ı	-
		CO 2	To analyze the different preprocessing and learning algorithm and apply on neural network.	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
46	Artificial Neural Network	CO 3	To demonstrate different applications that learn using neural network	-	-	3	-	-	-	-	-	-	-	-	-	-	-	3
	Network																	
				3	3	3	-	-	-	-	•	-	-	-	-	2.5	1	3
		CO 1	Understand the basic terminology of cybercrimes	2	-	-	-	-	-	-	-	-	-	-	-	3	ı	-
		CO 2	Apply a number of different computer forensic tools to a given scenario	-	2	-	-	-	-	-	1	-	-	-	-	-	2	-
46	CYBER	CO 3	Understand the basics of computer forensics	2	-	-	-	-	-	-	ı	-	-	-	-	1	2	-
	FORENSICS	CO 4	Analyze and validate digital evidence data	-	-	2	-	2	-	-	1	-	-	-	-	-	2	-
		CO 5	Analyze acquisition methods for digital evidence related to system security	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2
				2	2	2	-	2	-	-	-	-	-	-	-	3	2	2
		CO 1	Outline the vulnerabilities in a system or network using computer forensic fundamentals.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-

			,															
		CO 2	Demonstrate a critical evaluation of an advanced	_	3	_	-	_	-	_	-	-	-	_	_	3	-	-
			security topic with an independent project.															
	ETHICAL		Analyze and critically evaluate techniques used to break														_	
46	HACKING	CO 3	into an insecure web application and identify relevant	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
"	AND DIGITAL		counter measures.															
	FORENSICS	CO 4	Evaluate the potential counter measures to advanced	-	_	-	3	_	-	-	-	-	-	_	-	-	-	3
			hacking techniques.															
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	3	-	-	-	-	-	-	-	-	3	3	3
		CO 1	To generalize the basic elements and design													_		
		COT	architectures in distributed system.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To analyze the concurrent processes, inter process	_	2	_	_	_ ا	_	_	_	_	_	_	_	2	2	_
			communication and RPC and RMI case studies in To study process scheduling, implementation and file															
		CO 3	, , , , , , , , , , , , , , , , , , , ,	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
46	Distributed	CO 4	systems along with corresponding case studies. To analyze the memory sharing and failures, deadlock			_	2		_		_	_		_		3		
	System	CO 4	handling in distributed system architecture.			_			-		-	_			-	3	-	-
			To analyse different agreements, faults and recoveries,															
		CO 5	management concept and CORBA services while	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
			implementing distributed system.															
				3	2	2.5	2	-	-	-	-	-	-	-	-	2.5	2	-
		CO 1	To understand the CONCEPT OF Electronic Commerce,	2												3		
		COT	ERP and its applications		-	-	-	_	-	-	-	-	-	-	-	٥	-	-
		CO 2	To apply online publishing techniques in digital	_	2	_	-	_	_	-	_	-	_	_	_	3	_	_
			marketing To compare E- Business models in web based															
	Ecommerce and	CO 3	applications for businesses	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
47	ERP	GO 4	To evaluate XML and HTML for creating interactive				_									_	_	
		CO 4	pages for Web, e-business, and portable applications.	-	-	-	2	-	-	-	-	-	-	-	-	3	3	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	2	-	-	-	-	-	-	-	-	3	3	-
		1.04	To implement the basic concept of Matlab programming															
		LO1	tools for Digital Image processing	-	_	-	-	_	-	-	-	2	-	-	2	2	-	-
	[	LO2	To dominate and assessment of the control of the co		_													
			To demonstrate and compare various image operations.  To apply different type of filters and transform	-	2	-	-	<u> </u>	-	-	-	-	-	-	-	-	2	-
	Digital Image	LO3	techniques on images.	_	_	_	_	_	_	_	_	_	_	2	_	_	2	_
48	Processing Lab	1.04	To implement different morphological operations and											<u> </u>			_	
	Lab	LO4	segmentation on images.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2
	[	LO5	To prepare students for perform different enhancement															
			technique on image.	-	-	-	-	-	-	-	-	-	-	-	2	2	-	-
				-	2	-	-	-	-	-	•	2	-	2	2	2	2	2

		LO1	To choose basic python Libraries and commands used in Machine Learning.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	-
		LO2	To apply knowledge of machine learning algorithms for	_	_	3	-	-	-	-	_	-	-	-	_	3	-	3
		1.00	problem statements provided. to analyze various Supervised and Unsupervised														_	-
49	Machine Learning Lab	LO3	Machine Learning algorithms. To Evaluate Machine Learning Algorithms for real world	-	-	-	3	-	-	-	-	-	-	-	-	3	3	<u> </u>
	Learning Lab	LO4	problems.	-	-	-	-	-	-	3	-	-	-	-	-	3	-	3
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	3	3	3	-	3	-	-	-	-	-	3	3	3
		LO1	To apply the basic datatypes and variables	2	-	-	-	-	_	-	-	-	-	-	-	3	-	-
		LO2	To analyze the importance of conditional statement & Looping Structure.	_	3	-	-	-	-	-	-	-	-	-		3	3	-
		LO3	To Identify the list and tuples in container data types.	_	3	_	_	_	_	_	_	_	_	_	_	_	_	2
50	Python Lab	LO4	To be Able to produce Strings ,Character Arrays and															
			Fuction Programming concept in python. To Develop the ability to create data structure		-	-	-	-		-	-		-	-	-	-	-	3
		LO5	applications in Python programming.	-	-	-	-	2	-	-	-					-	2	2
				2	3	-	-	2	-	-	-	-	-	-	-	3	2.5	2.333
		LO1	Demsotrate the installation of android studio and other IDEs including architecture and fundamental concept of	2	_	_	_	_	_	_	_	_	_	_	_	_	_	_
		LO2	Analyse the android framework and tookit as per the									_			_	_		<u> </u>
	Mobile		given problem Design the layout and solutions recognize the need for	-	2	-	-	2	-	-	-	-	-	-		-	2	-
51	Application	LO3	sociteal problems.   Create the android application for real life application by	-	-	-	2	-	-	-	-	-	-	-	1	-	-	2
	Development Lab	LO4	utlizing the skills of project management	-	-	_	-	3	-	-	-	-	-	2	-	1	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	-	2	2.5	-	-	-	-	-	2	1	1	2	2
		CO 1	To demostrate concepts IOT plateform and conectivity with devices like Ardinuo, Rasberry pi etc.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyse IOT communication models like push-pull, publish & subscribe model.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	3
	Internet of	CO 3	To Design prototypes for Internet of Things in real time applications.	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
52	Things	CO 4	To investigate solutions of complex problems using advance concepts of IOT & Big Data.	-	-	-	3	-	-	-	-	-	-	-	-	-	2	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	2	3	3	-	-	-	-	-	-	-	-	2	2.5	3
		CO 1	To apply Quality Tools to monitor the overall operation and continuous process improvement.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-

ı	ı ſ		To Analyse systematic methods in identifying where and how it		ı	l		Ι	ı	I	I	ı	l	Т		Ι		
		CO 2	might fail and relative impacts of different failures	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
53	Quality Management /	CO 3	To formulate effectively customer requirements and convert them into detailed engineering	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
33	ISO 9000 (Open Elective-1)	CO 4	To Measure themselves against internal or external standards and to improve the capability of their business processes.	-	-	-	2	-	-		-	-	-	-	-	2	-	-
	Diecuve 1)		and to improve the capability of their outsiness processes.	_	_	-	_	-	-	-	-	-	_	_	_	-	-	-
				3	3	2	2	-	-	-	-	-	-	-	-	2	-	-
		CO 1	To Apply basic concepts of Cybercrime and legal Perspectives of Security Implications for Organizations in respect to the	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		CO 2	To Analyze offences, attacks and Criminals plan for the cyber space.	-	3	-	i	-	-	-	-	-	-	-	-	-	2	-
	Cyber Security	CO 3	To Compose the cyber security solutions and cyber security Tools in Cybercrime.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
54	(Open Elective-	CO 4	To Select the Management Perspective human role in security systems with an Organizational, emphasis on ethics, social	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2	3	2	2	-	-	-	-	-	-	-	•	2	2	2
		LO1	to Define the various terminal commands used in developing IOT applications.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		LO2	to develop the python scripts used in IOT applications.	-	3	-	-	-	-	-	-	-	-	-	-	-		3
55	Internet of	LO3	to apply the logics of IOT for designing IOT applications	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-
33	Things Lab	LO4	and demonstrate following PO related capabilities:	-	-	3	-	3	3	3	3	3	3	3	3	3	2	3
		LO5		-	-	-	-	-	-	-	-	-	-	-		-		-
				3	3	3	•	3	3	3	3	3	3	3	3	2.5	2.5	3
		LO1	different security-based tools like Wire shark, tcpdump,	-	3	-	-	-	-	-	-	-	-	-	-	3	-	2
		LO2	both to design the substitution and transposition techniques for plain text encryption and decryption.	-	-	3	-	-	-	-	-	-	-	-	-	2	-	3
		LO3	techniques for secure data transmission across network	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-
56	Cyber Security	LO4	to Install appropriate tools for network protocol analyze security-based tools like Wire shark, tcpdump etc.	-	-	-	-	3	-	-	-	-	-	-	-	3	-	2
	Lab	LO5	may be relevant to understanding and assessing in cyber	-	-	-	-	-	-	-	3	-	-	-	-	2	3	-
		LO6	TOnnprove team working skinnor designing a solution for Key Exchange problem and general attacks on system เช็กกุมัศัยกะไลใชารณ์สามารถเลือก เลือก เลื	-	-	-	-	-	-	-	-	3	-	-	-	3	2	-
		LO7	using a File Transfer Protocol mechanism and through	-	-	-	-	-	-	2	-	-	3	3	3	-	2	3
				-	3	3	2	3	-	2	3	3	3	3	3	2.5	2.333	2.5

10   Complete in the complet				Capability to acquire and apply fundamental principles of		1								ı	Г		Ι		
102   Log departed with all the latest changes in technological world   1.03   Ability to communicate efficiently   1.04   Log department   1.05   L			LO1	lengineering	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Industrial Training			LO2	updated with all the latest changes in technological world	-	-	-	ı	3	-	-	-	-	-	3	-	3	-	3
Industrial Training			LO3	, ,	-	-	-	-	-	-	-	-	-	3	-	-	2	-	-
Training		Industrial	LO4	knowledge, management, leadership and	-	-	-	1	-	-	-	-	3	-	-	-	2	2	3
LO6   Continuous professional development and life-long	57		LO5	Ability to identify, formulate and model problems and find	-	-	-	3	-	3	-	-	-	-	-	-	2	2	-
Seminar   Col   Establish motivation for any topic of interest and develop a   1			LO6		-	-	-	-	-	-	-	-	-	-	-	3	2	-	3
Seminar   CO 1   Establish motivation for any topic of interest and develop a thought process for technical seminar   CO 2   Organiza a detailed literature survey and build a document with respect to technical publications and effective presentation   CO 3   Analysis and comprehension of proof-or-concept and related data to access social, health, legal and environment issues for   CO 4   Develop strategies for identifying and dealing with typical ethical issues social, health, legal and environment issues for   CO 4   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   CO 5   Develop strategies for identifying and dealing with typical ethical success for dealing with typical ethical success for the dealing strategies for identifying and dealing dealing with typical ethical success for dealing the complex of identifical success for dealing the complex of identifical success for dealing decomplex of identifical success for dealing the complex of identification in the dealing for cop			LO7		-	-	-	-	-	-	3	2	-	-	-	-	-	2	-
Seminar   CO 2   Organize a detailed literature survey and build a document with respect to technical publications and effective presentation   CO 3   Analysis and comprehension of proof-of-concept and related data to access social, health, legal and environment issues for   CO 4   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   LO5   Make use of new and recent technology including perdition and modeling to complex activities.   CO 1   To apply the fundamentals of Big Data analytics in Hadoop   2					3	-	-	3	3	3	3	2	3	3	3	3	2.167	2	3
Seminar   Seminar   CO			CO 1	1	-	-	3	-	-	-	-	-	-	-	-	2	2	-	-
Seminar   Co 3   Analysis and comprehension of proof-of-concept and related data to access social, health, legal and environment issues for Co 4   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational chical final dealing with typical ethical issues, both personal and organizational chical final final dealing with typical ethical issues, both personal and organizational chical final f			CO 2	,	-	-	-	3	-	-	-	-	-	3	-	-	-	3	-
Selfillian   Co 4   Develop strategies for identifying and dealing with typical ethical issues, both personal and organizational   Co 5   Make use of new and recent technology including perdition and modeling to complex activities.			CO 3	Analysis and comprehension of proof-of-concept and related	-	3	-	-	-	3	3	-	-	-	-	-	2	-	-
LOS   Make use of new and recent technology including perdition and modeling to complex activities.   - 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	58	Seminar	CO 4	Develop strategies for identifying and dealing with typical	-	-	-	-	-	-	-	3	2	-	-	-	3	3	-
Big Data Analytics  Big Data Analytics  CO 1  To apply the fundamentals of Big Data analytics in Hadoop  CO 2  To identify the input-output methods like writeable interface and serialization in Hadoop platform.  CO 3  To produce and validate the Map Reduce programming models of big data analytics  CO 4  To describe/demostrate Pig and Hive architecture and their programming model such as HQL, Pig script.  CO 4  To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights with special reference to India and abroad.  IPR, Copyright and Cyber Law of To generalize intellectual property laws including the copyright law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law, patents law, designs and trademark law with appropriate law properties laws with content of the patents law, patents law, designs and trademark law with appropriate law properties laws with content of the patents law, designs and trademark law with appropriate law properties law patents law, designs and trademark law with appropriate law patents law, patents l			LO5	Make use of new and recent technology including perdition and	-	-	-	-	3	-	-	-	-	-	-	-	-	2	2
Big Data Analytics    CO 2   To identify the input-output methods like writeable interface and serialization in Hadoop platform.   2   -   -   -   -   -   -   2   -   -					-	3	3	3	3	3	3	3	2	3	-	2	2.333	2.667	2
Big Data Analytics    CO 3			CO 1	To apply the fundamentals of Big Data analytics in Hadoop	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
Big Data Analytics  CO 3  To produce and validate the Map Reduce programming models of big data analytics  CO 4  To describe/demostrate Pig and Hive architecture and their programming model such as HQL, Pig script.  CO 4  To describe/demostrate Pig and Hive architecture and their programming model such as HQL, Pig script.  CO 1  To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent  CO 2  To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  CO 3  To generalize intellectual property laws including the copyright and Cyber Law of India (Open and Cyber Law patents) and trademark law with appropriate and Intellectual Property Rights interms of copyright and Cyber Law property Rights with special reference to India and abroad.  CO 3  To generalize intellectual property laws including the copyright law, patents law, designs and trademark law with appropriate and Cyber Law patents law, designs and trademark law with appropriate and Cyber Space and control of the company of India (Open and Cyber Law patents) and trademark law with appropriate and Cyber Space and control of the company of India (Open and Cyber Law patents) and trademark law with appropriate and Cyber Space and control of the company of India (Open and Cyber Law patents) and trademark law with appropriate and Cyber Space and control of the company of India (Open and Cyber Space and control of the company of India (Open and Cyber Space and control of the company of India (Open and Cyber Space and control of the company of India (Open and Cyber Space and control of the company of India (Open and Cyber Space and control of the company of India (Open and Cyber Space and control of the cont			CO 2	1	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
Analytics  CO 4 To describe/demostrate Pig and Hive architecture and their progaramming model such as HQL, Pig script.  CO 4 To describe/demostrate Pig and Hive architecture and their progaramming model such as HQL, Pig script.  CO 1 To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent  CO 2 To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  Property Rights with special reference to India and abroad.  CO 3 India (Open and Cyber Law of India (Open and Cyber Law potential) and active the Jurisdiction Issues in Cyber Space and and Cyber Space and and Cyber Space and and Cyber Space and cybe		Big Data	CO 3	To produce and validate the Map Reduce programming models	-	2	-	-	-	-	-	-	-	-	-	-	2	-	
CO 1 To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent  CO 2 To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  IPR, Copyright and Cyber Law of India (Open	59	Analytics	CO 4	To describe/demostrate Pig and Hive architecture and their	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-
CO 1 To classify the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent  CO 2 To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  IPR, Copyright and Cyber Law of India (Open					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
and Intellectual Property Rights in terms of copyright, patent  CO 2  To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  IPR, Copyright and Cyber Law of India (Open Law of					2	2	-	-	2	-	-	-	-	-	-	-	2	-	-
CO 2 To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.  IPR, Copyright and Cyber Law of India (Open Law of India (O			CO 1		3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
IPR, Copyright and Cyber Law of India (Open of India (Open India (			CO 2	To analyse the administrator & conventions of Intellectual	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
of India (Open To conclude the Jurisdiction Issues in Cuber Space and			CO 3	To generalize intellectual property laws including the copyright	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
Elective-II) CO 4 intellectual property for conventions in India, United Kingdom 3 2	60	of India (Open	CO 4	To conclude the Jurisdiction Issues in Cyber Space and	-	-	_	3	-	-		-	-	-	-	-	2	-	-
					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

				3	2	2	3	-	-	-	-	-	-	-	-	2	-	-
		CO 1	To apply the fundamentals of Big Data analytics in Hadoop	2	-	-	-	-	-	-	-	ı	-	-	-	3	-	-
		CO 2	To analyze the input-output methods like writeable interface and serilization in Hadoop platform.	1	2	-	-	-	-	-	-	1	ı	-	-	3	-	3
61	Big Data Analytics (Open	CO 3	To design the Map Reduce programming models of big data analytics.	-	-	2	-	-	-	-	-	1	-	-	-	3	2	-
01	Elective-II)	CO 4	To evaluate of Pig and Hive architecture and their progaramming model such as HQL, Pig script.	-	-	-	3	-	-	-	-	-	-	-	-	3	-	-
				•	-	-	-	-	-	-	•	•	•	-	-	•	-	-
				2	2	2	3	-	-	-	-	-	-	-	-	3	2	3
		LO1	To Understand Big Data and its analytics in the real world	3		-	-	-	-	-	-	-	-	-	-	3	-	-
		LO2	To Analyze the Big Data framework like Hadoop and NOSQL to efficiently	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
62	Big Data	LO3	To Implement Big Data Activities using Hive	1	-	-	-	-	-	-	-	-	-	-	3	-	3	-
	Analytics Lab																	
				3	3	-	-	-	-	-	-	-	-	-	3	3	3	-
		LO1	To understand the process of manual testing or automation testing by writing test plan and test cases based on different	-	-	-	-	-	3		-	1	-	-	3	-	3	-
		LO2	To analyse the mutation score using various tools like jumble testing tool.	-	-	-	-	3	1		-	1	-	-	3	-	-	-
00	Software	LO3	To analyse the performance of commercial websites using different automation tools like jmeter.		-	-	-	-	-	-	-	3	-	-	3	3	-	-
63	Testing and Validation Lab	LO4	To calculate the coverage analysis of programs using different automation tools like Eclemma tool.	-	-	-	-	-	-	-	-	1	3	-	3	-	-	-
				•	-	-	-	3	3	-	-	3	3	-	3	3	3	-
		CO 1	Apply fundamental knowledge of basic Computer Engineering courses for solving complex Engineering problem	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the literature, identify problem, its context with real world / industry issue and define problem statement	-	3	-	-	-	-	-	-	-	-	-	-	2	3	-
		CO 3	Design engineering solution to the problem using knowledge of core Computer engineering	-	-	3	-	_	1	-		-	-	-	-	3	3	-
		CO 4	Carryout experimentations/simulations and investigate the solution to complex Computer engineering problem	-	-	-	3	-	-	-	-	-	-	-	3	2	2	3
64	Project	CO 5	Use modern tools and techniques of Computer engineering for solving the problem	-	-	-	-	3	-	-	-	-	-	-	-	2	3	-
		CO 6	Analyse sustainability of proposed solution and its impact on environment & applicability of solution in industry and societal	-	-	-	-	-	3	3	-	-	-	-	-	3	-	3

		CO 7	Understand professional ethics, rules and regulations while working on interdisciplinary issues and financial management	-	-	-	-	-	-	-	3	-	-	3	-	2	3	3
		CO 8	demonstrate the ability to lead and productively participate in group situations and to use oral communication effectively	-	-	-	-	-	-	1	-	3	3	-	-	3	3	-
				3	3	3	3	3	3	3	3	3	3	3	3	2.5	2.833	3
		CO 1	To Determine and analyse the domain name system (DNS) in internet and various cybercrime offence in cyber space.	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
	IPR, Copyright	CO 2	To understand the concept of Intellectual Property and Intellectual Property Rights with special reference to India and	-	-	-	-	-	-	-	3	-	-	-	-	1	-	-
65	and Cyber Law of India (Open	CO 3	To Apply intellectual property law principles including the copyright law, patents law, designs and trademarks, to real	-	-	-	-	-	3	ı	1	ı	ı	-	ı	1	-	-
	Elective-II)	CO 4	To Study the Jurisdiction Issues in Cyber Space and Competition Law in India	-	2	-	-	-	-	-	-	1	-	-	1	2	-	-
				3	2	-	-	-	3	-	3	-	-	-	-	1.5	-	-
		CO 1	Students will be able to analyze big data using Hadoop.	3	-	-	-	-	-	1	1	1	ı	-	1	3	-	-
		CO 2	Students will be able to use pig and Hive scripting	-	3	-	-	-	-	ı	ı	1	1	-	1	3	-	-
66	Big Data	CO 3	To Apply various big data analysis techniques	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-
	Analytics Lab	CO 4	Students able to use modern data analytical tools	-	-	-	-	3	-	-	-	-	-	-	-	3	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	3	-	3	-	-	-	-	-	-	-	3	-	-
		CO 1	Understand the process of applying tests to software and the fundamental components of a coverage analysis and unit	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Understand the mutation testing and Writing test suits for applications.	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
67	Software Testing and	CO 3	Apply the website performance measurement technique using JMeter and Selenium tool to perform Test sequences and	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-
	Validation Lab	CO 4	Analyze the design of test cases for different testing techniques.	3	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				3	3	-	-	3	-	•	-	-	-	-	•	3	2	-
		CO 1	Apply fundamental knowledge of basic Computer Engineering courses for solving complex Engineering problem	2	-	-	-	-	-	-	-	-	-	-	-	3	-	-
		CO 2	Analyze the literature, Identify problem, its context with real world / industry issue and define problem statement	-	3	-	-	-	-	-	-	-	-	-	-	-	3	-
		CO 3	Design engineering solution to the problem using knowledge of core Computer engineering	-	-	3	-	-	-	-	-	-	-	-	-	3	3	-
		CO 4	Carryout experimentations/simulations and investigate the solution to complex Computer engineering problem	-	-	-	3	-	-	-	-	-	-	-	-	-	2	3
68	Project	CO 5	Use modern tools and techniques of Computer engineering for solving the problem	-	-	-	-	2	-	1	-	1	ı	-	1	2	3	-

1			TT 1 4 1 11 1114 C 141 1 1 1 4 1 1 1 4 1						1		ı	1	ı	ı				
		CO 6	Understand applicability of solution in industry and societal issues	-	-	-	i	-	2	1	-	-	-	-	-	-	2	-
		CO 7	Analyse sustainability of proposed solution and its impact on environment	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
		CO 8	Understand professional ethics, rules and regulations while working on interdisciplinary issues	-	-	-	1	-	-	1	2	-	-	-	-	-	3	-
				2	3	3	3	2	2	2	2	-	-	-	-	2.667	2.667	3
		CO 1	Explain the basics of composites, its structure and its properties	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	Compute the physio-mechanical properties of composites from tests	2	1	-	i	ı	-	ı	-	-	-	-	ı	-	-	1
69	Composite	CO 3	Assessment of engineering properties of composite materials	1	2	1	1	1	1	ı	-	-	-	-	1	-	-	1
	Materials	CO 4	Analyze the failure and maintenance of composite materials	1	-	1	1	1	ı	ı	-	1	-	-	1	1	1	1
				-		-	1	-	1	1	-	-	-	-	-	_	-	-
				1.5	1.5	1	1	1	-	-	-	-	-	-	-	1	-	1
		CO 1	Explain the fundamentals of Fire Engineering	2	-	-	-	-	1	1	-	-	-	-	-	-	1	-
		CO 2	Apply the learned principles in planning, designing and management of fire safe buildings	2	1	1	-	1	1	-	-	-	-	1	-	1	1	-
	Fire and Safety	CO 3	Assess fire fighting installations, control technologies and hazardous materials	1	2	1	-	1	1	-	-	-	-	-	-	1	1	1
70	Engineering	CO 4	Design of fire safety building for fire resitant construction by following safety legislation	1	-	1	1	1	1	-	1	-	-	-	-	-	1	1
				-	-	-	-	-	-	1	-	-	-	-	-	_	_	_
				1.5	1.5	1	1	1	1	-	1	-	-	1	-	1	1	1
		CO 1	Understanding of basic concepts and Principles of EM wave, propagation reflection and transmission. [Understanding]	3	2	-	-	-	-	-	-	3	-	-	-	-	1	
		CO 2	Apply the knowledge for interest in complex dielectric constant, dipolar loss mechanism and design mechanism to understand	3	2	-	-	-	-	1	-	3	-	-	-	1	-	-
	Industrial and Biomedical	CO 3	Analyze the structure of RF heating in industrial application.  [Analyzing]	3	2	3	-	-	-	1	-	3	-	-	-	-	1	-
71	applications of RF Energy	CO 4	Design of Hazards and safety standards in various engineering problem. [Create & Design].	3	3	3	3	-	-	1	-	3	-	-	-	-	1	-
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	_	-	_
				3	2.25	3	3	-	-	-	-	3	-	-	-	1	1	-
		CO 1	Understand the fundamentals of robotics and its components, methods of linear motion into rotary motion and vice-verse.	3	3	2	2	2	3	3	3	2	-	3	3	2		-
		CO 2	Apply the appropriate techniques for movement of robotic joints with computers/microcontrollers. [Applying &	3	2	2	2	-	3	2	-	3	2	3	3	2	-	-
72	Robotics and	CO 3	Analyze parameters required to be controlled in a Robot for specific application. [Analyzing]	3	2	3	3	3	3	-	-	2	2	2	3	2	-	-

12	control	CO 4	Design and Develop small automatic / autotronics applications with the help of Robotics for solving the real life problems	2	2	3	2	2	2	2	3	3	2	2	3	2	-	2
		CO 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.75	2.25	2.5	2.25	2.333	2.75	2.333	3	2.5	2	2.5	3	2	•	2
		CO 1	understand the current Energy Scenarios in India.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		CO 2	understand the energy auditing of motors, lighting system and building, by appropriate analysis methods through survey	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-
73	Energy Audit and Demand	CO 3	understand the Electrical-Load Management and Demand side Management.	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
/3	side Management	CO 4	apply the Energy Conservation in transport, agriculture , household and commercial sectors.	3	2	2	1	-	-	-	-	-	-	-	-	-	-	-
		CO 5		1	-	-	-	-	-	-	-	-	-	-	1	-	1	1
				3	2.333	2	1	-	•	•	-	ı	•	•	•	•	•	
		CO 1	Learn about soft computing techniques and their applications.	2	2	3	-	-	-	-	-	-	-	-	1	2	3	3
		CO 2	Analyze various neural network architectures.	2	2	3	-	-	-	-	-	-	-	-	-	2	2	3
74	Soft Computing	CO 3	Define the fuzzy systems	-	-	3	-	-	-	-	-	-	-	-	-	2	2	3
/4	Soft Computing	CO 4	Understand the genetic algorithm concepts and their applications	3	2	3	-	-	-	1	-	-	-	-	1	2	2	3
		CO 5	Identify and select a suitable Soft Computing technology to solve the problem.	3	3	3	-	-	-	-	-	-	-	-	1	3	3	3
				2.5	2.25	3	-	-	-	-	-	-	-	-	-	2.2	2.4	3
		CO 1	Define the simulation modeling and analyze the practical situations in organizations	3	-	-	-	-	-	-	-	-	-	-	ı	2	-	-
		CO 2	Examine the random numbers and random variates approach in different applications	2	-	-	-	-	-	-	-	-	-	-	1	-	1	-
75	Operations	CO 3	Investigate the sensitivity of simulation solutions for realistic problems	ı	3	-	-	-	-	-	-	-	-	-	ı	1	ı	-
/3	Research	CO 4	Interpret the model and apply the results to solve crtitical issues of a realististic problem	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				2.5	3	-	-	-	-	-	-	-	-	-	-	1.5	1	-
		CO 1	Generate methamatical models of complex engineering problems	2	-	-	-	-	-	-	-	-	-	-	1	2	-	-
		CO 2	Analyse the various optimization techniques with the appropriate tools	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
76	Simulation Modeling and	CO 3	Identify suitable optimization techniques to solve industrial and sociatal problems	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-
'	Analysis	CO 4	Interpret the solution and apply the results to solve complex engineering problems	-	-	3	-	-	-	-	-	-	-	-	-	2	-	-

		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		2.5	3	3	-	-	-					-	•	2	•	-

## Department of Mechanical Engineering

**B.Tech. in Mechnical Engineering** 

CO-PO Mapping (Session 2023-24)

				CO-PO Mapping (Session	2023-	24)													
SN	Course Code	Course Name	СО	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
			CO1	Define the sequence ,series and multivariable calculus.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	1FY2-01	Engineering	CO2	Explain the certain method for the test of series and solution of Fourier series.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
'	11 12-01	Mathematics-I	CO3	Apply the principles of integral to solve a variety of practical problems in sciences and engineering.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Analyze concepts of functions with several variables, its derivatives in partial forms with other important related concepts, their applications in	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
					2.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO1	Describe the concepts of Wave and Quantum mechanics, Laser and Fiber optics, electromagnetic theory and material science	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1FY2-02	Engineering	CO2	Explain the different applications of Laser and optical fibers in communication, engineering, medicine and Science.	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
_	11 12-02	Physics	CO3	Find energy states in 1-D and 3-D box with the application of quantum mechanics.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Analyze the crystal structure through X-ray Diffraction & wavelength of light through Newton's ring experiment and Michelson- interferometer	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
					2.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO1	Relate sustained happiness through identifying the essentials of human values and skills	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
			CO2	Find the happiness and human values in terms of personal and social life to create harmony in them	-	-	-	-	- 1	2	-	-	-	-	-	-	-	1	-
3	1FY1-05	Human Values	CO3	Use and understand practically the importance of trust, mutually satisfaction and human relationship	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
			CO4	Identify the orders of nature for the holistic perception of harmony for human existence	-	-	-	-	-	-	-	2	-	-	-	-	-	1	-
			CO5	Implement professional ethics and natural acceptance of human values in his/her life	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-
					-	-	-	-	-	2.00	-	2.50	-	-	-	2.00	-	-	-
			CO1	Describe concepts of thermal, functional design of machine elements, materials and primary manufacturing process.	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-
		Basic	CO2	Classify different types of turbines and power plants, pumps and IC engines, refrigeration system, transmission of power, engineering materials	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
4	1FY3-07	Mechanical	CO3	Apply the fundamental knowledge of thermal engineering, in addition to understanding of materials and primary manufacturing process to solve the	3	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		Engineering	CO4	Examine about the turbine & pumps, IC engines, refrigeration system, modes of transmission of power, materials and primary manufacturing	-	1	-	-	-	-	-	-	-	-	-	-	-	2	1
			CO5	Evaluate problems related to refrigeration, turbine, pump, power transmission and primary manufacturing process.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	1
					2.50	1.50	-	-	-	-	-	-	-	-	-	-	2.00	2.00	1.00

			CO1	Describe basics of surveying, types of building, mode of transportation and different causes of air and noise pollution	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
		Basic Civil	CO2	Explain solid waste management, building by law, chemical cycle, biodiversity, causes of road accident, sanitary landfill and on-site sanitation	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	1FY3-09	Engineering	CO3	Illustrate method of levelling, road safety measures, building component, hydrological cycle and environ different types of foundation, treatment and disposal of waste water, chemical cycle, traffic sign and symbol and rain water harvestingmental act	3	-	-	-	-	-	-	-	1	-	-	-	-		-
			CO4	Compute bearings and elevations of respective points on the ground, various road traffic sign, food chain and contour maps.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
					2.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	1.00
			CO1	Find out the characteristics of optical fiber and laser	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	1FY2-20	Engineering	CO2	Determine wavelength of different spectral lines and height of an object by sextant	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
В	1F 12-20	Physics Lab	CO3	Analyze the band gap of semiconductor and type of semiconductor through hall effect	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
					1.50	1.00	-	-	-	-	-	2.00	3.00	2.00	-	-	-		-
			CO1	Recall the natural and social issues and their remedies.	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
		Human Values	CO2	Describe the nature of human values and the impact of external factors over it.	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
7	1FY1-23	Activities and	CO3	Validate through actions the significance of trust, respect and harmony with self and surroundings.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
		Sports	CO4	Outline the relation of human with nature and other factors in terms of human existence	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
			CO5	Associate the knowledge of self and society with clear understanding of social issues and the human beings.	-	-	-	-	-	2	-	1	1	-	-	-	-	-	-
					-	-	-	-	-	2.00	2.00	-	2.00	-	-	-	-	-	
			CO1	Describe the working of Lathe machine.	1	-	-	-	-	-	-	1	1	-	-	-	1	-	-
8	1FY3-25	Manufacturing Practices	CO2	Apply the basic concepts of Foundry Shop	2	-	-	-	-	-	-	-	ı	-	-	-	1	-	-
	11 10-20	Workshop	CO3	Develop various carpentry joints, welding joints and sheet metal objects.	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
			CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
					1.50	2.00	-	-	-	-	-	2.00	3.00	-	-	-	1.00	-	-
			CO1	Describe various sanitary fittings and water supply fittings	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Basic Civil	CO2	Examine pH, Turbidity, Hardness and Total solids of given water sample	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	1FY3-27	Engineering Lab	CO3	Use of EDM and Total Station in the field	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		_40	CO4	Investigate the linear and angular measurements of the points on the ground and levelling	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-

				Students will show an ability to communicate effectively and work as a team															
			CO5	member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-
				Inombot canodity	2.50	1.00	-	-	-	-	-	2.00	3.00	2.00	-	-	-	-	-
			CO1	Describe engineering drawing terminology, concept of scales and conic sections.	1	-	-	-	-	-	-	-	-	-	ı	-	1	-	-
10	1FY3-28	Computer Aided	CO2	Draw Projection of Points, lines, planes, solids and section of solids	-	1	-	-	-	-	-	-	-	-	-	-	2	-	-
10	1F13-26	Engineering Graphics	CO3	Draft 2D engineering problems on CAD software.	-	-	-	-	3	-	-	-	-	-	1	-	-	1	1
		·	CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
					1.00	1.00	-	-	3.00	-	-	2.00	3.00	-	-	-	1.50	1.00	1.00
				Semester I - Average Mapping	1.88	1.56	-	-	3.00	2.00	2.00	2.10	2.80	2.00	-	2.00	1.50	1.50	1.00
			CO1	Define the characteristics of matrices, ordinary and partial differential equation of first and higher order	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-
		Engineering	CO2	Explain the certain type of method for solution of linear system of equation, ordinary and partial differential equation of first and higher order	2	-	-	-	-	-	-	-	-	-	1	-	-	-	-
11	2FY2-01	Engineering Mathematics-II	СОЗ	Apply the method of separation of variables to solve the higher order partial differential equation including two dimensional Laplace, one dimensional Heat and one dimensional Wave equations.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Enhance and develop the ability of using the language of mathematics in analyzing the real world problems of sciences and engineering	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
					2.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO1	Describe characteristics of water, fuel and Engineering materials	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	2FY2-03	Engineering	CO2	Determine of hardness of water and calorific value of fuels for Industrial as well as domestic purposes	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	2712-03	Chemistry	CO3	Compare different techniques of water treatment, fuel analysis, Manufacturing of engineering materials and corrosion protection methods	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Prepare the generic drugs or medicines by understanding the applications of organic reaction mechanism and manufacturing of engineering materials	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
					2.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO1	Describe the process of communication, basics of Grammar and Writing and Literary Aspects	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
			CO2	Explain the types of communication, barriers and channels of communication and the concept of Literature through Short Stories and	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
13	2FY1-04	Communication Skills	CO3	Write and prepare professional reports, paragraph and business letters with the correct use of grammar	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
			CO4	Discuss and illustrate the impact of social and moral values by implying the basics of English Writing Skills through literary aspects	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
			CO5	Restate and outline the basic areas of English Language Skills with the applications of literature	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
					-	-	-	-	-	-	-	2.00	-	2.50	-	2.00	-	-	-
			CO1	Describe an algorithm using flowchart/pseudo code for a given problem and fundamental of computer system	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	2FY3-06	Programming for Problem	CO2	Write a c program to compare various Conditional, Iterative statements using arrays, string, pointers, file structure and classify different	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2. 10 30	Solving	CO3	Examine the concept of Operators, Pointer, Array, String, structure, union using modularization to solve complex problems using C Programming	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-

			CO4	Assess the User Defined functions, Memory management and File	_	2	-	-	-	_	_	_	-	_	_	_	_	_	_
				concepts to solve real time problems using C Programming	2.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO1	Define various ac and dc circuit related problems	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	2FY3-08	Basic Electrical	CO2	Explain electromechanical energy conversion process	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-
13	21 13-00	Engineering	CO3	Classify characteristics of various power electronic devices.	3	-	-	-	-	-	-	-	-	-	-	-	1	-	-
			CO4	Identify knowledge of protective devices and energy consumption calculations.	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
					2.00	2.00	-	-	-	-	-	-	-	-	-	-	1.50	-	-
			CO1	Determine the strength of unknown solution by volumetric analysis.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	2FY2-21	Engineering		Examine the characteristics of lubricating oil in groups	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
10	21 12-21	Chemistry Lab	CO3	Analyze different characteristics of water and fuel to solve societal and enviornmental problems	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
			CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
					1.00	-	-	-	-	-	2.00	2.00	2.50	-	-	-	-	-	
			CO1	Use and pronounce the words correctly.	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
17	2FY1-22	Language Lab	CO2	Acquire knowledge of the correct expressions,vocabulary etc. in personal and professional lives.	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-
	22	Language Lub	CO3	Plan successfully for leadership and teamwork,crack GD's, interviews and other professional activities.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
			CO4	Synthesize the process of communication using LSRW.	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
					-	-	-	-	-	-	-	-	2.00	2.00	-	-	-	-	-
			CO1	Relate the fundamental of C Programming as variable, operators and taxonomy to write a basic C Program	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	2FY3-24	Computer Programming	CO2	Write programs that perform operations using condition control statements and loop control statements, single and multi-dimensional arrays along with	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	21 10-24	Lab	CO3	Use C programs to implement operations related to Array, Macros and inline functions, Dynamic memory allocations, concept of Structure, Unions	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Students will show an ability to communicate effectively and work ethically	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-
					2.00	-	-	-	-	-	-	2.00	-	2.00	-	-	-	-	-
			CO1	Discuss measurement of electrical quantites	1	-	-	-	-	-	-	-	-	-	-	-	1	2	-
19	2FY3-26	Basic Electrical	CO2	Compare different connections of transformer	2	-	-	-	-	-	-	-	-	-	-	-	1	2	-
.3	2.7526	Engineering Lab	CO3	Demonstrate constructional features of electrical machines and converters	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Students will show an ability to communicate effectively and work as a team member ethically	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-

					2.00	-	-	-	-	-	-	2.00	3.00	2.00	-	-	1.33	2.00	-
			CO1	Describe orthographic projections and basic Geometrical Concept	2	-	_	_	-	_	-	-	-	-	-	-	1	-	-
		Computer	CO2	Analyze Sectional Views of different mechanical Components and assembly		1				_							2		
20	2FY3-29	Aided Machine		drawing			_	-	-	_	-		-	-		-		-	
		Drawing	CO3	Draft a engineering product using CAD software	-	-	-	-	2	-	-	-	-	-	-	-	2	-	1
			CO4	Students will show an ability to work as a team member ethically	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
					2.00	1.00	-	-	2.00	-	-	2.00	3.00	-	-	-	1.67	-	1.00
				Semester II (Average Mapping)	1.88	1.80	-	-	2.00	•	2.00	2.00	2.63	2.13	-	2.00	1.50	2.00	1.00
				Semester I,II (Commulative Mapping)	1.88	1.68	-	-	2.50	2.00	2.00	2.05	2.71	2.06	-	2.00	1.50	1.75	1.00
			CO1	Explain the fundamentals characteristics and structure of technical writing and communication	-	-	-	-	-	-	-	2	-	2	-	2	-	-	-
		Technical	CO2	Apply the fundamentals of technical writing to prepare the professional	_					_		2		2		2		_	
21	3ME1-02	Communicatio		documents like resume, coverletter, reports		_	_	-	_	-	_		-		_		-	-	
		ns		Analyse the professional documents in grametical perspective	-	-	-	-	-	-	-	2	-	2	-	2	-	-	-
			CO4	Prepare report, artical, research proposals using grametical and	-	-	-	-	-	-	-	2	2	3	-	2	-	-	-
					-	-	-	-	-	-	-	2.00	2.00	2.25	-	2.00	-	-	-
			CO1	Understanding the concept of numerical methods, Laplace transform, Fourier transform and Z-transform.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO2	Explain numerical methods to find unknown values with help of known values, roots of polynomial and transcendental equations and Solution of	2	_	_	_	_	_	_	-	_	_	_	_	_	_	_
22	3ME2-01	Advanced Engineering	CC2	Apply the appropriate technology for the viability of different approaches to	3														
22	SIVIEZ-U1	Mathematics	CO3	the numerical solution of problems  Analyze the Fundamentals of the Fourier transform, Laplace transform, and		-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Z-Transforms in terms of either a time domain or a transform domain	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO5	Solve differential equations involved in Vibration theory, Heat transfer and related engineering applications by Laplace transform and Fourier transform	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
					2.50	3.00	3.00	-	-	-	-	-	-	-	-	-	-	2.00	-
			CO1	Explain the Statics and Dynamic forces in Mechanical System	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
		Engineering	CO2	Apply the motion characteristics of a body subjected to a System of Forces	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
23	3ME3-04	Mechanics	CO3	Analyse the equilibrium and motion of various Mechanical systems and Structures	-	3	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Evaluate the engineering problems of statics and dynamics systems	-	-	2	_	_	_	_	-	_	_	_	_	2	2	-
					2.50	3.00	2.00	_	_	-	_	-	_	_	-	_	2.00	2.00	-
			CO1	Describe the basic concept of thermodynamics	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
24	2ME4.05	Engineering	CO2	Apply the basic concepts of thermodynamics to solve complex problems	3	-	-	-	-	-	-	-	-	-	-	-	2	2	2
24	3ME4-05	Thermodynami cs	CO3	Analyze the thermodynamic power cycles like Carnot, Otto, Diesel, Brayton, Ericsson and Rankine	-	3	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Evaluate the various thermodynamic parameters using the concepts of Entropy, Availability and Thermodynamics Relationship	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
				, , , , , , , , , , , , , , , , , , , ,	2.50	2.50	-	-	-	_	_	-	-	-	-	_	2.00	2.00	2.00
			CO1	Describe the various mechanical properties and the testing methods for engineering materials.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
		Material	CO2	Identify general crystal structures and engineering materials on the basis of	2	-	-	-	-	-	-	-	-	-	-	_	2	2	2
25	3ME4-06	Science And Engineering	CO3	their properties and applications  Analyze the iron carbon equilibrium diagram and the phase transformation	_	2	-	_	-	-	_	_	_	_	_	_	2	2	-
				which take place during solidification of metals and alloys.															

			CO4	Justify the isothermal transformation diagrams and heat treatment processes for metallic material to obtain the desired properties in it.	-	-	2	-	-	-	-	-	-	-	-	-	2	2	2
					2.00	2.00	2.00	-	-	-	-	-	-	-	-	-	2.00	2.00	2.00
			CO1	Explain basic concepts of stress, strain, torsion, bending and strain Energy.	2	-	-	-	1	-	-	-	-	1	-	1	2	2	2
26	3ME4-07	Mechanics of	CO2	Apply the concept of stresses and strain, theories of failure, bending & torsion on different types of loading conditions and sections.	2	-	-	-	ı	-	-	-	-	1	-	ı	3	2	2
	SMIL4-07	Solids	СОЗ	Analyze the stresses in shafts, cylindrical and sperical thin wall pressure vessels, long and short columns for different end conditions.	-	2	-	-	-	-	-	-	-	-	-	-	3	2	2
				Evaluate the deflection of beams and stresses in principal plane by analytical & graphical method.	-	-	3	-	-	-	-	-	-	-	-	-	3	2	-
					2.00	2.00	3.00	-	-	-	-	-	-	-	-	-	2.75	2.00	2.00

			CO1	Draw simple mechanical parts & their assembly using fundamental Engineering Drawing Standards.	2	-	-	-	-	-	-	-	_	2	-	-	2	2	-
27	3ME4-21	Machine Drawing	CO2	Apply the Geometrical Limits & tolerances using BIS Codes to Machine Parts drawings & their Assemblies.	2	-	-	-	-	-	-	2	-	-	-	-	2	2	-
		Practice	CO3	Analyze dimensioning, sectioning and development of views of complex feature components.	-	2	-	-	-	-	-	-	1	-	-	-	2	2	-
			CO4	Create 2D and 3D components using CAD software.	-	-	2	-	2	-	_	-	-	-	-	-	2	2	-
					2.00	2.00	2.00	-	2.00	-	-	2.00	-	2.00	-	-	2.00	2.00	-
			CO1	Explain the crystal/micro structrure and properties of engineering materials	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
28	3ME4-22	Material Testing Lab-l	CO2	Apply the basic concepts of material science for material testings through machines and visulizations.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
		resting Lab-i	CO3	Analyze mechanical properties of engineering materials.	_	2	_	_	_	-	-	-	-	-	-	-	2	2	-
			CO4	Compare the micro-structures and mechanical properties of engineering materials for various heat treatment and machining operations.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
					2.00	2.00	-	·	-	-	-	-	ı	-	-	-	2.00	2.00	-
			CO1	Explain the various component and working of the machines.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
	2115 4 22	Basic Mechanical	CO2	Analyze the complex Mechanical systems via cut sections, visits, videos and computer simulations.	-	3	-	-	2	-	-	-	-	-	-	-	-	2	2
29	3ME4-23	Engineering Lab	CO3	Design of simple machines/systems including specifications formulation.	-	-	2	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Write and present the report on designed mechanical systems in a team or individual.	-	-	-	-	-	-	-	2	2	2	-	2	-	-	-
					2.00	3.00	2.00	-	2.00	-	-	2.00	2.00	2.00	-	2.00	2.00	2.00	2.00
			CO1	Apply MATLAB in-built functions to solve mathmatical problems.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	3ME4-24	Programming	CO2	Analyse the mathematical problems encountered in Mechanical Engineering using SimScape and Simulink tools.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
		Using MATLAB	CO3	Develope the programs for different types of mathematical problems.	-	-	2	-	2	-	-	-	-	-	-	-	-	-	-
			CO4	Execute the programming for the evaluation and simulation in teamwork ethically	-	-	-	-	2	-	-	-	2	-	-	2	-	-	-
					3.00	2.00	2.00	-	2.00	-	-	-	2.00	-	-	2.00	2.00	2.00	-
				Relating the real time applications to the mechanical engineering concepts.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
		Industrial	CO2	Develop the problem solving approach by developing projects.	-	2	-	-	-	2	-	-	-	-	2	2	-	2	-
31	3ME7-30	Training	CO3	Build skills to be working as a team member and become employable.	-	-	-	-	-	-	-	2	2	-	-	-	-	2	-
			CO4	Create a well organized report employing elements of technical writing and critical thinking	-	-	-	-	-	-	-	-	-	2	-	2	-	2	-
					2.00	2.00	-	-	-	2.00	-	2.00	2.00	2.00	2.00	2.00	-	2.00	-

				Semester III (Average Mapping)	2.25	2.35	2.29	-	2.00	2.00	-	2.00	2.00	2.06	2.00	2.00	2.09	2.00	2.00
				Semester I,II,III (Commulative Mapping)	2.00	1.90	2.29	-	2.33	2.00	2.00	2.03	2.48	2.06	2.00	2.00	1.70	1.83	1.33
			CO1	Describe the fundamental concepts of Economics and Financial Management and define the meaning of national income, demand, supply, cost, market structure, and balance sheet.	-	-	-	-	-	2	-	2	-	-	2	-	-	2	-
		Managerial Economics	CO2	Calculate the domestic product, national product and elasticity of price on demand and supply	-	2	-	-	-	2	-	2	-	-	2	-	-	2	-
32	4ME1-03	and Financial Accounting	CO3	Draw the cost graphs, revenue graphs and forecast the impact of change in price in various perfect as well as imperfect market structures.	-	-	-	-	-	-	-	2	-	-	-	-	-	2	-
			CO4	Compare the financial statements to interpret the financial position of the firm and evaluate the project investment decisions.	-	2	-	-	-	2	-	2	-	-	2	-	-	2	-
					-	2.00	-	-	-	2.00	-	2.00	-	-	2.00	-	-	2.00	-
			CO1	Apply statistical tools for different types of problems in Data Analytics.	2	-	-	-	-	-		-	-	-	1	1	2	2	-
33	4ME2-01	Data Analytics	CO2	Analyze sample data and interpret the same for given problem.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	_
			CO3	Formulate data analysis problems by selecting appropriate analysis model.	1	3	-	-	-	- 1	1	1	-	-	1	1	2	2	-
			CO4	Evaluate complex engineering problems Using PCA, Logistic regression	-	-	2	-	-	-	-	-	-	-	-	-	2	2	-
					2.00	2.50	2.00	-	-	-	-	-	-	-	-	-	2.00	2.00	-
			CO1	Explain the concepts of electronics components like Diodes, BJT, Power supply, IC 555, Op-Amp and digital electronics components.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
34	4ME3-04	Digital	CO2	Apply the concepts of electronics to develop electronics systems.	3	-	-	-	-	-	-	-	-	-	-	1	-	2	-
04	411120-04	Electronics	CO3	Analyse the performance.parameters of elctronics devices and systems	-	2	-	-	-	-	-	-	-	-	1	-	-	2	-
			CO4	Design and develop the application based electronics circuitery systems	1	3	-	-	-	-	1	1	-	-	1	ı	1	2	-
					2.50	2.50	-	-	-	-	-	-	-	-	-	-	-	2.00	-
			CO1	Explain the basic principles of fluid mechanics and its application	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
35	4ME4-05	Fluid Mechanics and	CO2	Apply the concept of pressure, Flow characteristics and theory of rota- dynamic machine	3	-	-	-	-	-	-	-	-	-	-	-	2	2	-
33	410124-03	Fluid Machines	CO3	Analyse basic equation of fluid statics and fluid dynamics	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Evaluate the work done and efficiencies of pump and turbines	-	-	3	-	-	-	-	1	1	-	1	-	2	2	-
					2.50	2.00	3.00	-	-	-	-	-	-	-	-	-	2.00	2.00	•
			CO1	Describe the principle and applications of Manufacturing Processes	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
36	4ME4-06	Manufacturing	CO2	Apply the concepts of manufacturing processes to develop a product.	2	-	-	-	-	-	-	-	-	-	-	_	2	2	_
30	411124-00	Processes	CO3	Identify the possible defects in manufacturing processes and their remedies.	-	2	_	_	-	-	-	1	-	-	_	_	2	2	_
			CO4	Anlayse the various processing parameters of manufacturing processes	_	2	-	_	_	_	-		-	-	-	_	2	2	_

38 4ME3-21 El La Series	Theory of Machines  Digital Electronics Lab	CO3 CO4 CO1 CO1 CO2 CO3	Explain the basic principles of machines, mechanisms & its inversions and working of various mechanical elements.  Solve the basic problems on various fundamental machine mechanisms by graphical and analytical method.  Evaluate the various mechanisms and motion of various mechanical components like Power screw, Clutches, Gears, Gear Trains, Cam & Analyse the terms, laws and concepts related with machines, machine parts and mechanisms to solve the problems related with practical applications.  Verify the truth tables.of various types of logic gates and Boolean expression.	2 3 - - 2.50	- - - 2	- - 2	- - -	-	-	-	-	-	-	-	-	2	2	2
38 4ME3-21 El La Septembrie 1	Machines  Digital Electronics	CO2 CO3 CO4 CO4 CO1 CO2 CO3 CO2 CO3 CO2 CO3	Solve the basic problems on various fundamental machine mechanisms by graphical and analytical method.  Evaluate the various mechanisms and motion of various mechanical components like Power screw, Clutches, Gears, Gear Trains, Cam & Analyse the terms, laws and concepts related with machines, machine parts and mechanisms to solve the problems related with practical applications.  Verify the truth tables.of various types of logic gates and Boolean	3 -	- 2	- 2	-	-		-	-						2	
38 4ME3-21 El La Septembrie	Machines  Digital Electronics	CO1 CO2 CO3 CO4 CO1 CO2 CO3	graphical and analytical method.  Evaluate the various mechanisms and motion of various mechanical components like Power screw, Clutches, Gears, Gear Trains, Cam & Analyse the terms, laws and concepts related with machines, machine parts and mechanisms to solve the problems related with practical applications.  Verify the truth tables of various types of logic gates and Boolean	-	- - 2	2	-	-	-	-	-	-	-					
38 4ME3-21 EL La	Digital Electronics	CO4  CO4  CO1  CO2  CO2  CO3	components like Power screw, Clutches, Gears, Gear Trains, Cam & Analyse the terms, laws and concepts related with machines, machine parts and mechanisms to solve the problems related with practical applications.  Verify the truth tables of various types of logic gates and Boolean	-	- 2	2	-								-	2	2	2
38 4ME3-21 EI La  39 4ME4-22 FI M	Electronics	CO1 CO2 CO3	Analyse the terms, laws and concepts related with machines, machine parts and mechanisms to solve the problems related with practical applications.  Verify the truth tables of various types of logic gates and Boolean	- 2.50	2			- 1	-	-	-	-	-	-	-	2	2	2
38 4ME3-21 EI La  39 4ME4-22 FI M	Electronics	conics CO2	Verify the truth tables of various types of logic gates and Boolean	2.50		-	-	-	-	-	-	-	-	-	-	2	2	2
38 4ME3-21 EI La  39 4ME4-22 FI M	Electronics	conics CO2			2.00	2.00	-	-	-	-	-	-	-	-	-	2.00	2.00	2.00
38 4ME3-21 EI La  39 4ME4-22 FI M	Electronics	CO3		2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39 4ME4-22 FI M	Lab		Realise different airthmetic operations using logic gates.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
40 4ME4-23 Pr		004	Design the different combinational circuits using digital ICs.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
40 4ME4-23 Pr		CO4	Develope the different sequencial circuits using digital ICs.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
40 4ME4-23 Pr				2.00	2.00	2.50	-	-	-	-	-	-	-	-	-	-	2.00	-
40 4ME4-23 Pr		CO1	Detrermine various fluid parameters with the help of experimental setup.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
40 4ME4-23 PI	Fluid	CO2	Explain the velocity distribution and velocity profile in pipes and over flat plates.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
40 4ME4-23 Pi	Mechanics Lab	nics Lab CO3	Apply the concepts of fluid mechanics theorems for its verification with experimentation,	-	3	-	-	-	-	-	-	-	-	-	-	2	2	-
40 4ME4-23 Pi		CO4	Analyse the characteristic curves through experimental data of fluid machines.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
40 4ME4-23 Pi				2.00	2.50	-	-	-	-	-	-	-	-	-	-	2.00	2.00	-
40 4ME4-23 Pi		CO1	Explain the working principle, opeartions and specifications of machine tools.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
41 4ME4.24 Ti	Production	CO2	Perform operations on various machine tools.	-	-	-	-	2	-	-	2	2	-	-	2	2	2	-
	Practise Lab	cO3	Analyse the various properties and strength of moulding sand	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
		CO4	Develop a mould and cast replica of a given pattern in group or individual.	-	-	-	-	-	-	-	2	2	-	-	2	2	2	-
				2.00	2.00	-	-	2.00	-	-	2.00	2.00	-	-	2.00	2.00	2.00	-
		CO1	Explain the basic mechanism of Mechanical elements and machines.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
$\Delta = \Delta W = \Delta = 2\Delta$	Theory of	of CO2	Apply the basic concept of theory of machine to prepare velocity and acceleration diagram.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
M AMEN EN		nes Lab CO3	Analyse the coefficient of friction and power transmission of various mechanism.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
	Machines Lab	CO4	Evaluate theoritical and experimental parameter of gyroscope, governers, cam followers, brakes and clucthes.	-	-	-	-	-	-	-	2	2	-	-	2	2	2	2
				2.00	2.00	-	-	-	-	-		2.00	-	-			2.00	2.00
			Semester IV (Average Mapping)	2.17	2.15	2.38	-	2.00	2.00	-	2.00	2.00	-	2.00	2.00	2.00	2.00	2.00
			Semester I,II,III,IV (Commulative Mapping)	2.04	1.97	2.33	_	2.25	2.00	2.00	2.03	2.36	2.06	2.00	2.00	1.77	1.88	1.50

			CO1	Explain the basic fundamentals and applications of Mechatronic systems with various electrical parameters.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
40	<b>5115</b> 0.04	Mechatronic	CO2	Apply the concept of sensors, actuators, pneumatic & hydraulic systems and microcontrollers in mechanical systems	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
42	5ME3-01	Systems	CO3	· · · · · · · · · · · · · · · · · · ·	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Design Instrumentation and Data Acquisition system for automation.	-	-	2	-	-	-	-	-	-	-	-	-	2	2	2
					2.00	2.00	2.00	-	-	-	-	-	-	-	-	-	2.00	2.00	2.00
			CO1	Explain the concept of heat transfer and its different modes conduction, convection and radiation	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
43	5ME4-02	Heat Transfer	CO2	Apply the concept of heat transfer to calculate the heat transfer coefficient and effectiveness of heat exchangers	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
43	31VIE4-02	neat Hallslei	CO3	Analize the heat tranfer parametrs for heat exchangers	-	2	-	-	-	-	-	1	-	-	1	-	2	2	2
			CO4	Design the Heat exchangers for suitable applications .	-	-	2	-	-	-	-	-	-	-	-	-	2	2	2
					2.00	2.00	2.00	-	-		-	-	-	-	-	-	2.00	2.00	2.00
			CO1	Explain different types of manufacturing processes.	2	-	-	-	-	-	-	1	-	-	1	-	2	2	-
44	5ME4-03	Manufacturing	CO2	Apply the machining process concepts in assessing operating parameters for a machining process.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
	3WE4-03	Technology	CO3	Analyse the forces during machining operations.	-	2	-	-	-	-	-	ı	-	-	-	-	2	2	-
			CO4	Identify the suitable newer maching method to develop a industrial product.	-	3	-	-	2	-	-	-	-	-	-	2	2	2	-
					2.00	2.50	-	-	2.00	-	-	-	-	-	-	2.00	2.00	2.00	-
			CO1	Explain fundamentals of mechanical components design subjected to static loading.	2	-	-	-	-	-	-	1	-	-	-	-	2	2	2
45	5ME4-04	Design of Machine	CO2	Apply the basic design concept to design various Mechanical components.	3	-	-	-	-	-	-	-	-	-	-	-	2	2	2
		Elements-I	CO3	Analyse the machine elements subjected to various loading conditions.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Evaluate the design parameters of mechanical components.	-	-	2	-	-	-	-	-	-	-	-	-	2	2	2
					2.50	2.00	2.00	-	-	-	-	-	-	-	-	-	2.00	2.00	2.00
			CO1	Explain the different concepts of management.	2	-	-	-	-	-	-	1	-	-	2	-	-	2	-
			CO2	Apply the concepts of the management to optimize the operations.	2	-	-	-	-	-	-	-	-	-	2	-	-	2	-
46	5ME4-05	Principles of Management	CO3	Analys the function of management for leading, organising, planning, staffing and controlling	-	2	-	-	-	-	-	-	-	-	2	-	-	2	-
			CO4	Prepare a leadership profile using concept of management and its functions	-	-	2	-	-	-	-	2	-	2	2	-	-	2	-
			CO5	Plan the course of action using case studies to solve behavioural problems in organisation.	-	-	2	-	-	-	-	2	-	2	2	-	-	2	-
					2.00	2.00	2.00	-	-	-	-	2.00	-	2.00	2.00	-	-	2.00	-
			CO1	Explain various parts, their mechanism and functions of automobile vehicles	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
				Identify the Gear boxes, brakes, cluches and drives for specific utilities of														0	2
		Automobile	CO2	vehicles.	-	2	-		-	-	-		-	-	-	-	-	2	2
47	5ME5-12	Automobile Engineering			-	2	-	-	-	-	-	-	-	-	-	-	-	2	2

			CO4	Evaluate the various parameter of automobile systems.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	2
					2.00	2.00	2.00	-	-	-	-	-	-	-	-	-	-	2.00	2.00
			CO1	Describe NDT methods used for evaluation of materials	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	5ME5-11	NDET	CO2	Apply the various inspection processes in accordance with the established procedure for in service damage in the components	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO3	Analyze various defect occurs in materials and select the appropriate NDT method for evaluation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Identify the effect of Regenerative Feed Heating and Reheating cycle on	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO1	Apply the fundamental concept of Transducers, mobile robot, PLC and MATLAB programming	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
10	-ME0 04	Mechatroncs	CO2	Analyse the programming parameters for PLC and MATLAB	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
49	5ME3-21	Lab	CO3	Design PID controller using MATLAB Simulink	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Develop a mini project with integration of sensor, actuator and transduction units for various home and office applications	-	-	2	-	-	-	-	2	2	2	2	2	-	2	-
					2.00	2.00	2.00	-	-	-	-	2.00	2.00	2.00	2.00	2.00	-	2.00	-
			CO1	Explain the concepts of conduction, convection and radiation mode of heat transfer.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
50	5ME4-22	Heat Transfer	CO2	Determine the various heat transfer parameters for different materials and geometries	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
	02.1.22	Lab	CO3	Analyse the rates of heat transfer for different materials and geometries	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Design of heat exchanger for different applications using relevant BIS codes.	-	-	2	-	-	-	-	-	-	-	-	-	2	2	2
					2.00	2.00	2.00	-	-	-	-	-	-	-	-	-	2.00	2.00	2.00
			CO1	Explain various measuring tools and processes to measure the various parameters.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
51	5ME4-23	Production Engineering	CO2	Determine chip tool Interface temperature during turning using thermocouple technique.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
0.	OME4-20	Lab	CO3	Analyze the force generated on the workpiece during various machining operations.	-	2	-	-	-	-	-	2	2	2	-	2	2	2	-
			CO4	Develop a mini project using various machine tools in a team or individual.	-	-	2	-	2	-	-	2	2	2	2	2	2	2	-
					2.00	2.00	2.00	-	2.00	-	-	2.00	2.00	2.00	2.00	2.00	2.00	2.00	-
			CO1	Apply production considerations, selection of materials and fits and tolerances using BIS standards to design mechanical elements.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
52	5ME4-24	Machine Design	CO2		-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
52	SIVIE4-24	Practice - I	CO3	Evaluate various design parameters for desiging of machine element.	-	-	2	-	-	-	-	-	-	-	-	-	2	2	-
			CO4	Develop a simple mechanical systems/products as per designed parameters in a team or individual.	-	-	2	-	2	-	-	2	2	2	2	2	2	2	-
					2.00	2.00	2.00	-	2.00	-	-	2.00	2.00	2.00	2.00	2.00	2.00	2.00	-
			CO1	Relating the real time applications to the mechanical engineering concepts.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
53	5ME7-30	Industrial	CO2	Develop the problem solving approach by developing projects.	-	2	-	-	-	2	-	-	-	-	2	2	-	2	-
		Training	CO3	Build skills to be working as a team member and become employable.	-	-	-	-	-	-	-	2	2	-	-	-	-	2	-
			CO4	Create a well organized report employing elements of technical writing and critical thinking	-	-	-	-	-	-	-	-	-	2	-	2	-	2	-
					2.00	2.00	-	-	-	2.00	-	2.00	2.00	2.00	2.00	2.00	-	2.00	-

				Semester V (Average Mapping)	2.05	2.05	2.00	-	2.00	2.00	-	2.00	2.00	2.00		2.00		2.00	2.00
				Semester I,II,III,IV,V (Commulative Mapping)	2.04	1.98	2.22	-	2.20	2.00	2.00	2.02	2.29	2.05	2.00	2.00	1.82	1.90	1.60
			CO1	Describe the measuring concept and working principle of metrological instruments.	2	-	-	-	-	-	1	-	-	-	-	-	-	2	-
	CMEO O4	Measurement	CO2	Apply metrological concept for measuring engineering parameters.	2	-	-	-	-	-	1	-	-	-	1	-	-	2	-
54	6ME3-01	and Metrology	CO3	Identify the appropriate measuring device and method as per their application.	-	2	-	-	-	-	1	-	-	-	-	-	-	2	-
			CO4	Evaluate various parameters of measurement in Instrumentation and Metrological Engineering.	-	-	2	1	-	-	ı	ı	-	1	ı	-	-	2	-
					2.00	2.00	2.00	-	-		ı	•	-	•	•	-	-	2.00	-
			CO1	Describe the importance and scope CIM in fabrication/ manufacturing industry.	2	-	-	1	-	-	1	1	-	1	1	-	-	2	-
55	6ME4-02	CIMS	CO2	Explain and compare the different components of CIM.	2	-	-	-	-	-	1	-	-	-	1	-	-	2	-
33	J.II.24-02		CO3	Apply modern tools in manufacturing industry for automation i.e. Computer Aided Process Planning, Group Technology, Computer Aided Production	2	-	-	_	2	-	-	_	-	-	_	_	_	2	_
			004	Create program for varies parts made by CNC machine.	-	-	2	-	-	_	-	-	-	-	-	-	2	2	_
					2.00	-	2.00	-	2.00	-	•	-	-	-	-	-	2.00	2.00	-

			CO1	Explain the fundamentals of mechanical vibrations, sound and noise	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
50	CME 4 00	Mechanical	CO2	Apply different methods to formulate the equation of motion for free undamped, damped and force vibation of single degree of freedom system	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
56	6ME4-03	Vibrations	CO3	Analyse and compute the natural frequencies and mode shapes of 2 degree and multiple degree of freedom system and calculate the critical speed of	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Evaluate the natural frequency of vibrations of continous system.	-	-	2	-	-	-	-	-	-	-	-	-	2	2	2
					2.00	2.00	2.00	·	·	-	-	-	-	-	-	-	2.00	2.00	2.00
			CO1	Explain the fundamentals on designing of machine elements subjected to variable load.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
		Design of	CO2	Apply the basic design concept to design Shaft, IC Engine components, bolts, springs, rope and belt drives and other components based on their applications in industries or on field.	3	-	-	-	-	-	-	-	-	-	-	-	2	2	2
57	6ME4-04	Machine Elements-II	CO3	Analyse and solve the problems of components when designed for variable stresses, considering stress concentration, fatigue and combined loading.	1	2	-	1	1	1	1	-	-	-	-	-	2	2	-
			CO4	Evaluate the design, stresses & parameters of mechanical components like beam, shaft, bolts, bearings, IC Engine Components, Belt, Rope & Pulley Drive. Etc.	-	-	2	1	1	-	-	-	-	-	-	-	2	2	2
					2.50	2.00	2.00	-	-	-	-	-	-	-	-	-	2.00	2.00	2.00
			CO1	Describe the basic concept of Quality Management.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
58	6ME4-05	Quality	CO2	Implement the process to meet desired needs within limits using modeling process quality and learn the concept of control charts.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
30	OWIL4-03	Management	СОЗ	Identify the technique of Design of experiments to solve engineering problems	-	2	-	-	ı	-	-	-	-	-	-	-	-	2	-
			CO4	Analize the concept of Quality Assurance, Acceptance sampling and study quality systems like ISO9000, ISO 14000 and Six Sigma.	-	3	-	-	-	-	-	-	-	-	-	-	2	3	-
			CO4	quality systems like ISO9000, ISO 14000 and Six Sigma.	- 2.00	3 2.50	-	-	-	-	-	-	-	-	-	-	2.00	3 2.25	-
			CO4		2.00 2		- - -	- - -	-			- -	- - -	- - -	- -	- - -	_		- - -
59	6ME4-21	CIMS Lab		quality systems like ISO9000, ISO 14000 and Six Sigma.  Explain the concept of G & M codes and cutting tool path of CNC programming  Apply the CNC programming for different machining operations.			- - -	- - -	- - - 2	-	-	- - -	- - -	-	- - -	- - -	2.00	2.25	- - -
59	6ME4-21	CIMS Lab	CO1 CO2	quality systems like ISO9000, ISO 14000 and Six Sigma.  Explain the concept of G & M codes and cutting tool path of CNC programming  Apply the CNC programming for different machining operations.  Analyse the Tool Path for different Machining operations of small components using CNC simulator software.	2 2 -		- - -	- - -	- 2 2		- - -	- - - -	- - - -	- - -	- - - -		2.00 2 2 2	2.25 2 2 2	- - -
59	6ME4-21	CIMS Lab	CO1 CO2	quality systems like ISO9000, ISO 14000 and Six Sigma.  Explain the concept of G & M codes and cutting tool path of CNC programming  Apply the CNC programming for different machining operations.  Analyse the Tool Path for different Machining operations of small	2 2 -	2.50	- - - 2	- - -	- 2 2	- - -	-	- - - -	- - - -		- - - -		2.00 2 2 2 2 2	2.25 2 2 2 2	- - - -
59	6ME4-21	CIMS Lab	CO1 CO2	quality systems like ISO9000, ISO 14000 and Six Sigma.  Explain the concept of G & M codes and cutting tool path of CNC programming  Apply the CNC programming for different machining operations.  Analyse the Tool Path for different Machining operations of small components using CNC simulator software.  Develop machine parts using CNC machine in a team or individual.	2 2 -	2.50	- - -	- - -	- 2 2		- - -	-	- -	- -	- -	- -	2.00 2 2 2	2.25 2 2 2	- -
59	6ME4-21	CIMS Lab	CO1 CO2	quality systems like ISO9000, ISO 14000 and Six Sigma.  Explain the concept of G & M codes and cutting tool path of CNC programming  Apply the CNC programming for different machining operations.  Analyse the Tool Path for different Machining operations of small components using CNC simulator software.  Develop machine parts using CNC machine in a team or individual.  Verify the principles and parameters of mechanical vibration by experimental setups.	2 2 -	2.50	- - - 2	- - -	- 2 2	- - -	-	-	- - -	- - -	- -	- -	2.00 2 2 2 2 2	2.25 2 2 2 2	- -
			CO1 CO2 CO3 CO4	quality systems like ISO9000, ISO 14000 and Six Sigma.  Explain the concept of G & M codes and cutting tool path of CNC programming  Apply the CNC programming for different machining operations.  Analyse the Tool Path for different Machining operations of small components using CNC simulator software.  Develop machine parts using CNC machine in a team or individual.  Verify the principles and parameters of mechanical vibration by	2 2 - - 2.00	2.50	- - - 2	- - -	- 2 2	- - -	-	-	- - -	- - -	- -	- -	2.00 2 2 2 2 2	2.25 2 2 2 2 2 2.00	- -
59 60	6ME4-21	CIMS Lab  Vibration Lab	CO1 CO2 CO3 CO4 CO1	quality systems like ISO9000, ISO 14000 and Six Sigma.  Explain the concept of G & M codes and cutting tool path of CNC programming  Apply the CNC programming for different machining operations.  Analyse the Tool Path for different Machining operations of small components using CNC simulator software.  Develop machine parts using CNC machine in a team or individual.  Verify the principles and parameters of mechanical vibration by experimental setups.  Apply the principles of vibration to verify the parameters using virtual lab	2 - - 2.00 2	2.50	- - - 2	- - -	- 2 2	- - -	-	-	- - -	- - -	- -	- -	2.00 2 2 2 2 2	2.25 2 2 2 2 2 2 2.00 2	- -

			1		2.50	2.00	2.00	-	2.00	-	-	-	-	-	-	-	2.00	2.00	-
			CO1	Apply the knowledge of machine design principles to solve various problems related to fatigue Loading.	2	1	-	-	-	-	1	-	-	-	-	-	2	1	-
61	6ME4-23	Machine Design	CO2	Analyze the mechanical components (Bolts, Shaft, Bearings, IC Engine Components, Gears etc.) under variable stresses.	ı	3	-	-	-	-	ı	-	ı	-	-	ı	2	2	2
01	OWIE4-23	Practice - II	соз	Evaluate fatigue life cycle & failure criteria of IC engine and other mechanical components	-	2	-	-	-	-	-	-	-	-	-	- 1	2	2	2
			CO4	Develop a design project for small mechanical components in a team or individual.	-	-	3	-	-	-	-	2	2	2	2	2	2	2	2
					2.00	2.50	3.00	-	-	-	-	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
			CO1	Explain the working of IC Engines, Boilers and automobile systems.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
62	6ME4-24	Thermal Engineering	CO2	Identify steering geometry angles and valve timing diagram, and their impact on vehicle performance.	-	2	-	-	-	-	1	-	-	-	-	-	-	2	2
52	S2121	Lab I	CO3	Analyse the automobile systems by Assembly and disassembly.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Develop a research paper on advanced thermal technology and present it in a team or individual.	-	-	-	-	-	-	-	2	2	2	-	2	-	2	2
					2.00	2.00	-	-	-	-	-	2.00	2.00	2.00	-	2.00	2.00	2.00	2.00
			CO1	Explain the fundamentals of refrigeration and air-conditioning systems	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
63	6ME5-11	Refrigeration and Air	CO2	Apply the basics of refrigeration and air-conditioning to measeure the performance parameters of different refrigeration and air conditioning	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
63	OMES-11	Conditioning (Elective-1)	CO3	Identify the suitable refrigeration and air conditioning systems as per the applications	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Design the refrigeration and air-conditioning system for various applications	-	-	3	-	-	-	-	-	-	-	-	-	2	2	2
					2.00	2.00	3.00	-	-	-	-	-	-	-	-	-	2.00	2.00	2.00
		Non	CO1	Explain the various non conventional machining methods.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
64	6ME5-12	Conventional Machining	CO2	Apply the principle and mechanics of metal removal for non conventional machining methods.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		Methods	CO3	Identify the non conventional machining methods for real time applications	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		(Elective-2)	CO4	Analyse the process parameters of non conventional machining methods.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				Semester VI (Average Mapping)	2.10	2.11	2.25	-	2.00	-	-	2.00	2.00	2.00	2.00	2.00	2.00	2.03	2.00
			CO1	Semester I,II,III,IV,V,VI (Commulative Mapping)  Explain the fundamental concepts and working of I C engine systems and	2.05	2.00	2.23	-	2.17	2.00	2.00	2.02	2.24	2.04	2.00	2.00	1.85	<b>1.92</b>	<b>1.67</b>

				Identify first matering first comply tubelecting and legition systems for LC									l .						
65	7ME5-11	I. C. Engines	CO2	Identify fuel metering, fuel supply, lubricating and Ignition systems for I C engines.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	2
		ogc	CO3	Analyze the performance, emission and combustion characteristics of I C		3											2	2	2
				engines	-	3	-	-	-	-	-	-	-	-	-	-	2		
			CO4	Evaluate the fuel mixture ratio for different operating conditions	-	-	2	-	-	-	-	-	-	-	-	-	-	2	2
					3.00	2.50	2.00	-	-	-	-	-	-	-	-	-	2.00	2.00	2.00
			CO1	Explain the fundamentals concepts of turbomachines															
66	7ME5-13	Turbo Machine	CO2	Apply the basic concepts of turbomachines to solve real time problems															
			CO3	Analyze the basic principles of gas turbines through velocity triangles															
			CO4	Evaluate performance parameters of turbomachines															
					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO1	Understand the constructional details and principle of operation of rotating electrical machines	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
67	7550 00 4	Electrical	CO2	Acquire knowledge about the working principle and various aspects of electric drives.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
67	766-60.1	Machines and Drives	CO3	Aanalyze the various control techniques for speed control on various electric drives .	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Design the speed control and current control loops of an electric drive	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-
					2.00	2.00	2.00	-	-	-	-	-	-	-	-		-	2.00	-
			CO1	Describe the various renewable energy sources and life long learning by conducting renewable case study. [Apply]	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
		Power	CO2	Inspect possible renewable energy sources for developing acumen of entreprenureship in specilized renewable engineeing. [Analyze]	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
68	7EE6-60.2	Generation Sources	CO3	Illustrate the renewable energy sources for the need of sustainable development. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Identify the energy sources & Propose renewable energy sources as societal application. [Create]	-	-	2	1	-	-	-	-	-	-	-	-	-	2	-
					2.50	2.00	2.00	1.00	-	-	-	-	-	-	-	-	-	2.00	-
			CO1	Understand the Environmental Impact Assessment concept and impact of anthropogenic interventions on water, air, flaura and fauna	2	-	-	-	-	-	-	-	-	-	-	-	-	2	_
		Environementa	CO2	Analyze Stockholm and Basal convention, Copenhagen conference, Rio- Earth summit, and Guidelines of MoEF and CPCB	-	2	-	-	-	-	-	-	-	-	-	-	-	2	
69	7CE6-60.1	I Impact Analysis (EIA)	CO3	Apply environmental impact assessment like water, noise air pollution by a project/activity like thermal and water power plants	3	-	-	-	-	-	-	-	-	-	-	-	-	2	
			CO4	Evaluate Ad hoc, Overlays, Checklist, Matrix and Network methods of EIA, quality standards for environmental assessment	-	3	-	-	-	-	-	-	-	-	-	-	-	2	
				Manufacture of Charletter accomment	2.50	2.50	-	-	-	-	-	-	-	-	-		-	2.00	-
			CO1	Understand concept of disasters, risks, hazards, capacity building, coping with disaster and disaster management act and policy in India	2	-	-	-	-	-	-	-	-	-	-	-	_	2	_
	7050 00 0	Disaster	CO2	Explain concept of disasters, risks, hazards, capacity building, coping with disaster and disaster management act and policy in India	2	-	-	-	-	-	-	-	-	-	-	-	_	2	_
70	7CE6-60.2	Management (DM)	CO3	Classify disasters, risks, hazards, management techniques.	-	2	-	-	-	-	-	-	-	-	-	-	_	2	_
			CO4	Apply the concept of capacity building, coping with disaster and disaster management act and policy in India	3	-	-	-	-	-	-	-	-	-	-	-	_	2	
					2.33	2.00	-	-	-	-	-	-	-	-	-	-	-	2.00	-
		Ovality	CO1	Apply Quality Tools to monitor the overall operation and continuous process improvement.	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-
		Quality Management /	CO2	Analyse systematic methods in identifying where and how it might fail and relative impacts of different failures	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-
71	7056-60 1		CO2	relative impacts of different failures	-	2	-	-	-	-	-	-	-	-	-	-	2	-	

-	7 000-00.1	100 3000		Formulate effectively customer requirements and convert them into detailed															
		(Open Elective-	CO3	engineering	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		1)	CO4	Measure themselves against internal or external standards and to improve the capability of their business processes.	-	-	2	-	-	-	-	-	-	-	-	-	2	-	-
					2.00	2.00	2.00	-	-	•	-	-	-	-	-	•	2.00	-	-
			CO1	Apply basic concepts of Cybercrime and legal Perspectives of Security Implications for Organizations in respect to the Mobile and Wireless	2	-	-	-	-	-	-	-	-	-	-	-	1	-	-
7.	7086.60.2	Cyber Security (Open Elective-		Analyze offences, attacks and Criminals plan for the cyber space.	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-
(1	7000-00.2	1)	003	Compose the cyber security solutions and cyber security Tools in Cybercrime.	-	2	-	-	3	-	-	-	-	-	-	-	-	-	-
			CO4	Select the Management Perspective human role in security systems with an Organizational, emphasis on ethics, social engineering vulnerabilities and	-	1	-	1	-	-	1	1	1	-	-	-	1	-	-
					2.00	1.67	-	-	3.00	-	-	-	-	-	-	-	1.00	-	-
			CO1	Describe the principles of various digital modulation systems and their properties,including bandwidth, channel capacity, transmission over	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
73	7EC6-60.1	Principle of Electronic	CO2	Apply the concepts to practical applications in telecommunication	3	-	-	-	-	-	-	-	-	2	-	-	-	-	-
,	7230-00.1	communicatio n		Analyse communication systems in both the time and frequency domains.	-	2	2	- 1	2	-	1	1	-	-	-	-	-	1	-
			CO4	Design a communication system comprised of both analog and digital modulation techniques.	-	-	2	-	-	-	-	-	-	2	-	-	-	1	-
					2.50	2.00	2.00	-	2.00	-				2.00	-			1.00	-

			CO1	Explain the smart grids components and architecture	2	_	_	_	_	_	_	_	_	_	_	_	_	2	_
		Micro System		Apply different measuring methods and sensors used in smart grid	3					_			_					2	
74	7EC6.60.2	Smart		· · · · · · · · · · · · · · · · · · ·	3	-	-	-	-	-	_	-	-	-	-	-	-		-
		Technology	CO3	Analyze various renewable energy technologies	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Designing of various smart grid technology based devices.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
					2.50	2.00	3.00	-	-	-	-	-	-	-	-	-	-	2.00	-
			CO1	Explain the basic features of an analysis softwares	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO2	Apply the concept of FEA for structural analysis of different mechnical components.	3	-	-	-	ı	-	-	1	-	-	-	-	-	2	1
75	7ME4-21	FEA Lab	CO3	Analyze the stress, strain and other design parameters of various mechanical components using FEA softwares.	-	2	-	-	-	-		1	-	-	-	-	-	2	-
			CO4	Develop own code for plane stress, strain and modal analysis problems using MATLAB	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-
					2.50	2.00	3.00	-	•	-	-	-	-	-	-	-	-	2.00	•
			CO1	Explain the basic performance parameters of IC engine, heat pump, refrigeration system and fluid machines.	2	-	-	-	-	-	-	-	-	-	-	-	2	2	2
		Thermal	CO2	Apply the thermal engineering concept to determine various parameters by IC engine, heat pump, refrigeration system and fluid machines.	2	-	-	-	-	-	-	-	2	-	-	-	2	2	2
76	7ME4-22	Engineering Lab-II	CO3	Analysis of engine exhaust gases using Orsat apparatus /Engine gas analyzer	-	2	-	-	-	-	2	-	2	-	-	-	2	2	2
			CO4	Evaluate the performance characteristics of fluid machines, refrigeration and heat pump systems.	-	3	-	-	-	-	-	-	-	2	-	-	2	2	2
					2.00	2.50	-	-	-	-	2.00	-	2.00	2.00	-	-	2.00	2.00	2.00
			CO1	Explain quality control charts for variables and attributes using modern tools.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
77	7ME4-23	Quality Control	CO2	Apply the sampling plans to select a correct lot from given lots	3	-	-	-	-	-	2	2	2	-	-	-	-	2	-
"	7 IVIE 4-23	Lab	CO3	Analyse the OC curves for mechanical processes and operations.	-	2	-	-	-	-	-	1	-	-	-	-	-	2	-
			CO4	Carryout a case study to solve real industrial problems using seven magnificent tools of SQC	-	3	-	-	-	-	-	-	-	-	-	-	-	2	-
					2.50	2.50	-	-	-	-	2.00	2.00	2.00	-	-	-	-	2.00	-
			CO1	Relating the real time applications to the mechanical engineering concepts.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
78	7ME7-30	Industrial	CO2	Develop the problem solving approach by developing projects.	-	2	-	-	-	2	-	-	-	-	2	2	-	2	-
70	/ IVIL / -30	Training	CO3	Build skills to be working as a team member and become employable.	-	-	-	-	-	-	-	2	2	-	-	-	-	2	-
			CO4	Create a well organized report employing elements of technical writing and critical thinking	-	-	-	-	-	-	-	-	-	2	-	2	-	2	-
					2.00	2.00	-	-	-	2.00	-	2.00	2.00	2.00	2.00	2.00	-	2.00	-

			CO1	Review the surveyed literature to explore the specific problem.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO2	Summarise the reviewed literature related to the problem.	-	2	-	-	1	-	-	-	-	-	-	-	-	-	-
79	7ME7-40	Seminar	CO3	Create a well organized report employing elements of technical writing and critical thinking	-	-	-	-	-	-	-	2	-	2	-	-	-	2	-
			CO4	Present a well organised presentation on the problem in a group or individual.	-	-	-	-	-	-	-	2	2	2	-	-	-	2	-
					-	2.00	-	-	-	-	-	2.00	2.00	2.00	-	-	-	2.00	-
				Semester VII (Average Mapping)	2.33	2.12	2.29	1.00	2.50	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.75	1.92	2.00
				Semester I,II,III,IV,V,VI,VII (Commulative Mapping)	2.09	2.02	2.24	1.00	2.21	2.00	2.00	2.01	2.20	2.03	2.00	2.00	1.83	1.92	1.71
			CO1	Explain the basics of electric and hybrid electric vehicles, their architecture, technologies and fundamentals.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
80	8ME5-11	Hybrid and Electric	CO2	Apply the fundamentals of conventional vehicles for the working of hybrid and electric.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	2
00	OWIES-11	Vehicles	CO3	Aanalys the hybridization of different energy storage devices of hybrid and electric vehicles	-	2	-	-	-	-	-	-	-	-	-	-	2	2	2
			CO4	Design (Sizing) the various equipments of hybrid and electric vehicle with conventional vehicles	-	-	2	-	1	-	-	-	-	-	-	-	2	2	2
					2.00	2.00	2.00	-	-	-	-	-	-	-	-	-	2.00	2.00	2.00
			CO1	Explain the various process used in Additive Manufacturing	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
81	8ME5-13	Additive	CO2	Apply technique of CAD and reverse engineering for geometry transformation in Additive Manufacturing.	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-
"	OMEO-10	Manufacturing	CO3	Analyze the process parameters used in Additive Manufacturing	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Create a STL file to develop desired product by 3D printing machine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO 1	Show the energy scenario, energy strategy, energy law's, energy security and energy conservation in India. [Apply]	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
		Energy Audit	CO 2	Organize the Energy forecasting, Energy economics, Energy pricing and incentives, energy and its management, energy planning, and energy	3	3	-	-	-	-	-	-	-	-	-	-	-	2	-
82	8EE6-60.1	and Demand side Management	CO 3	<b>Examine</b> the Electrical-Load Management and Demand side Management in transport, agriculture, household and commercial sectors. [Evaluate]	3	2	2	-	-	-	-	-	-	-	-	-	-	2	-
		Ĭ	CO 4	Investigate the pre or detail energy audit in lighting system, household and commercial buildings, agriculture, electric machinerye of an industry or organization. [Investigate]	3	2	2	1	-	-	-	-	-	-	-	-	-	2	-
					3.00	2.33	2.00	1.00	-	-	-	-	-	-	-	-	-	2.00	-
			CO1	Implement the various soft computing approaches for finding the optimal solutions and hence finding solutions by modern tools for specilized	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO2	<b>Compair</b> the feasibility of applying a soft computing methodology for a particular problem and it's applicability to resolve the green energy or smart	-	3	-	-	-	-	-	-	-	-	-	,	-	-	-
83	8EE6-60.2	Soft Computing		energy solutions. [Analyze]															

			CO3	Justify soft computing technologies such as FL,NN,GA to optimize the	3	_		_	_	_	_	_		_	_	_	_	_	_
				design of complex systems. [Evaluate]  Develop and synthesize any hybrid case study of AI system in specified															
			CO4	engineering applications. [Analyze]	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
					3.00	3.00	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO1	Explain the basics of composites, its structure and its properties like metal matrix, polymer matrix and ceramic matrix composites, Fibers Matric.	2	-	-	-	-	-	-	-	-	-	-	-	_	1	_
84	8CE6-60.1	Composite Materials (CM)	CO2	Discuss micromechanics, macro-mechanics properties like volume fraction, weight fraction, density of composites longitudinal elastic properties, Transverse elastic properties.	2	-	-	-	-	-	-	-	-	-	-	-	-	1	_
			CO3	Analyze engineering properties of composite materials, elastic behavior of composite Lamina-Macro-mechanics.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Evaluate testing of composites like Mechanical testing of composites, Tensile testing, Compressive testing, Intra-Laminar shear testing, Fracture testing, failure, and maintenance.	-	-	2	-	-	-	1	1	-	-	-	-	-	1	-
					2.00	2.00	2.00	-	-	-	-	-	-	-	•	-	-	1.25	-
			CO1	Understand the basics of fire engineering including fire types, causes, detection, prevention, and the use of initial firefighting and first aid methods.	1	-	-	-	-	-	-	-	-	-	-	-	-	2	_
85	8CE6-60 2	Fire and Safety	CO2	Apply fixed firefighting systems, utilizing water-based and non-water-based technologies, and operate firefighting equipment effectively.	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-
	0020-00.2	(F&SE)	CO3	Analyze the characteristics and handling of hazardous materials, assess fire-resistant construction, and appraise fire safety design elements.	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-
			CO4	Evaluate fire safety designs in buildings for compliance with safety norms and standards, and evaluate legislative adherence for fire safety management.	-	-	2	-	-	-	-	-	-	-	-	-	-	2	_
					1.50	2.00	2.00	-	-	-	-	-	-	-	-	-	-	2.00	-
		Big Data	CO1	Understanding of Big Data and their needs in Industry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
86	8CS6-60.1	Analytics (Open Elective-	CO2	Designing of Hadoop and Google File System	-	-	-	-	-	-	1	1	-	-	-	-	1	-	-
		II)	CO3	Analysis of Map Reduce and their basic programs map reduce.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO4	Design an Hive Data system.	- 1	-	-	-	-	-	-	-	- 1	- 1	- 1	-		-	- 1
					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CO1	To apply the concept of cybercrime offence in cyber space and Intellectual Property Rights in terms of copyright, patent and trademark.	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		IPR, Copyright and Cyber Law	CO2	To apply intellectual property laws including the copyright law, patents law, designs and trademark law with appropriate consideration for the societal &	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
87	8CS6-60.2	of India (Open Elective-II)	CO3	To analyse the administrator & conventions of Intellectual Property Rights with special reference to India and abroad.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
		Licotive-iij	CO4	To conclude the Jurisdiction Issues in Cyber Space and intellectual property for conventions in India, United Kingdom and United State of America.	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-
					3.00	2.00	-	-	-	-	-	-	-	-	-	-	-	-	-

				Evaloin the basis concents and Dringinles of EM wave managetion															
			CO1	Explain the basic concepts and Principles of EM wave, propagation	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				reflection and transmission.															
				Apply knowledge in complex dielectric constant, dipolar loss															
		Industrial and	CO2	mechanism and design mechanism to understand the effect of rate	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
88	8EC6.60.1	Medical		rise of temperature.															
		applications of		Analyse the ability of students to identify the interest in industrial															
		RF Energy	CO3		3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				application.															
			CO4	Design and develop the hazards and safety standards for various		3													
			CO4	engineering problems.	-	3	-	-	-	-	-	_	_	-	-	-	-	-	-
					3.00	3.00	-	-	-	-	-	-	-	-	-	-	-	-	-
			004	Explain about the fundamentals of control system, robotics system															
			CO1	and its sensing and imaging components.	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-
				Apply the appropriate techniques for movement of robotic joints with															
		<b>5</b>	CO2	computers/microcontrollers.	3	-	-	-	-	-	-	-	-	-	-	-	-	2	
89	8EC6-60.2	Robotics		^												_			
		and Control	CO3	Analyze parameters required to be controlled in a Robot for specific	_	3	_	_	_	_	_	_	_	_	_	_	_	2	_
				application.		)												_	
			CO4	Design and Develop small automatic / autotronics applications with			,							_				0	
			CO4	the help of Robotics for solving the real life problems.	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-

			CO1	Explain various process charts and ABC analysis of data set	2	-	-	-	-	-	-	-	-	-	-	-	2	2	-
		Industrial	CO2	Apply OR software tool to solve operations research problems.	-	3	-	-	-	-	-	-	-	-	-	-	2	2	-
90	8ME4-21	Engineering Lab	CO3	Develop Bill of Materials/Product structure tree and calculate planned order release (POR) using MRP format	-	-	2	- 1	-	-	-	2	2	2	-	-	2	3	-
			CO4	Carryout a case study on project management, sales forecasting, plant layout and capacity planning	-	-	-	-	-	-	-	2	2	2	2	2	-	2	-
					2.00	3.00	2.00	-	-	-	-	2.00	2.00	2.00	2.00	2.00	2.00	2.25	-
			CO1	Apply the principle of metrology for measuring various parameters by using different measuring instruments.	2	-	-	-	-				-		-	-	2	2	-
91	8ME4-22	Metrology Lab	CO2	Analyze the surface generated on the work piece during various machining operations.	-	2	-	-	-	-	-	-	-	-	-	-	2	2	-
			CO3	Evaluate various metrological parameters using metrological instruments	-	-	2	-	-	-	-	2	2	-	-	2	2	2	-
			CO4	Develop a plot for composite errors of a given set of gears using composite gear tester.	-	-	2	-	-	-	-	2	-	-	-	2	2	2	-
					2.00	2.00	2.00	-	-	-	-	2.00	2.00	-	-	2.00	2.00	2.00	-
			CO1	Apply the knowledge of engineering and scineces to finalize the problem statement.	3	-	-	-	-	2	2	-	-	-	-	-	2	2	2
			CO2	Analyse the existing research in the field of stated problem.	-	3	-	-	-	-	-	-	-	-	-	-	3	3	2
92	8ME7-50	Final Project	CO3	Formulate the research plan for the solution of the stated problem.	-	-	3	3	2	2	-	1	2	-	1	2	3	3	2
			CO4	Develop a physical/ simulated prototype as a solution and validate the results.	-	-	1	- 1	-	-	-	-	3	-	2	3	2	3	2
			CO5	To prepare report and present the findings of the study conducted in a team or individual.	-	-	-	-	-	-	-	2	3	3	3	3	3	2	2
					-	3.00	3.00	3.00	2.00	2.00		2.00	2.67	3.00	2.50	2.67	2.75	2.75	2.00
				Semester VIII (Average Mapping)	2.45	2.48	2.25	2.00	2.00	2.00	-	2.00	2.22	2.50	2.25	2.22	2.19	2.03	2.00
				Semester I,II,III,IV,V,VI,VII & VIII (Commulative Mapping)	2.14	2.08	2.24	1.50	2.19	2.00	2.00	2.01	2.21	2.10	2.04	2.03	1.88	1.93	1.75
				Proposed Target	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
				Curriculam Target Gap	0.86			1.50											1.25
								3.00											-