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

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B.TECH- FULL TIME (UG_2021)

COURSE CODE	COURSE TITLE	COURSE OUTCOMES	PO												PSO		
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
21147S11	PROFESSIONAL ENGLISH - I	To use appropriate words in a professional context	1	1	1	1	1	3	3	3	1	3	-	3	-	-	-
		To gain understanding of basic grammatical structures and use them in right context.	1	1	1	1		3	3	3	1	3	-	3	-	-	-
		To read and infer the denotative and connotative meanings of technical texts	2	3	2	3		3	3	3	2	3	3	3	-	-	-
		To read and interpret information presented in tables, charts and other graphic forms	2	3		3	2	3	3	3	2	3	3	3	-	-	-
		To write definitions, descriptions, narrations and essays on various topics	2	3		3		3	3	3	2	3	-	3	-	-	-
		AVg.	**1.6**	**2.2**	**1.8**	**2.2**	**1.5**	**3**	**3**	**3**	**1.6**	**3**	**3**	**3**	**-**	**-**	**-**
21148S12	MATRICES AND CALCULUS	Use the matrix algebra methods for solving practical problems.	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-

		Apply differential calculus tools in solving various application problems.	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
		Able to use differential calculus ideas on several variable functions.	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
		Apply different methods of integration in solving practical problems.	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
		Apply multiple integral ideas in solving areas, volumes and other practical problems	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
		Avg	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
21149S 13	**ENGINEERING PHYSICS**	Understand the importance of mechanics.	3	3	2	1	1	1		-	-	-	-	-	-	-	-
		Express their knowledge in electromagnetic waves.	3	3	2	1	2	1		-	-	-	-	-	-	-	-
		Demonstrate a strong foundational knowledge in oscillations, optics and lasers.	3	3	2	2	2	1		-	-	-	-	1	-	-	-
		Understand the importance of quantum physics.	3	3	1	1	2	1		-	-	-	-	-	-	-	
		Comprehend and apply quantum mechanical principles towards the formation of energy bands.	3	3	1	1	2	1		-	-	-	-	-	-	-	-
		AVG	3	3	1.6	1.2	1.8	1		-	-	-	-	1	-	-	-
21149S 14	**ENGINEERING CHEMISTRY**	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.	3	2	2	1	-	1		-	-	-	-	1	-	-	-

		To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.	2	-	-	1	-			-	-	-	-	-	-	-	-
		To apply the knowledge of phase rule and composites for material selection requirements.	3	1	-	-	-	-		-	-	-	-	-	-	-	-
		To recommend suitable fuels for engineering processes and applications.	3	1	1	-	-	1		-	-	-	-	-	-	-	-
		To recognize different forms of energy resources and apply them for suitable applications in energy sectors.	3	1	2	1	-			-	-	-	-	2	-	-	-
		Avg.	**2.8**	**1.3**	**1.6**	**1**	**-**	**.5**	**.8**	**-**		**-**	**-**	**1.5**	**-**	**-**	**-**
21150S15	**PROBLEM SOLVING AND PYTHON PROGRAMMING**	Develop algorithmic solutions to simple computational problems	3	3		3	2			-	-	-	2	2	3		3
		Develop and execute simple Python programs.	3	3		3	2			-	-	-	2	2	3		-
		Write simple Python programs using conditionals and looping for solving problems.	3	3		3	2			-	-	-	2	-	3		-
		Decompose a Python program into functions	2	2		2	2			-	-	-	1	-	3		-
		Represent compound data using Python lists, tuples, dictionaries etc	1	2			1			-	-	-	1	-	2		-
		AVg.	2	2			2			-	-	-	1	-	2		-
21150L16	**PROBLEM SOLVING AND**	On completion of the course, students will be able to:	3	3	3	3	3	-		-	-	-	3	2	3	3	-

	PYTHON PROGRAMMING LABORATORY	Develop algorithmic solutions to simple computational problems Develop and execute simple Python programs.	3	3	3	3	3	-		-	-	-	3	2	3	-	-
		Implement programs in Python using conditionals and loops for solving problems.	3	3	3	3	2	-		-	-	-	2	-	3	-	-
		Deploy functions to decompose a Python program.	3	2	-	2	2	-		-	-	-	1	-	3	-	-
		Process compound data using Python data structures.	1	2	-		1	-		-	-	-	1	-	2	-	-
		Process Value data using Python data structures.	2	-	-		2	-		-	-	-	1	-	2	-	-
		AVg.	**2**	**3**	**3**	**3**	**2**	-		-	-	-	**2**	**2**	**3**	**3**	-
21149L 17	**PHYSICS AND CHEMISTRY LABORATORY**	Understand the functioning of various physics laboratory equipment.	3	2	3	1	1	-	-	-		-	-	-	-	-	-
		Use graphical models to analyze laboratory data.	3	3	2	1	1	-	-	-		-	-	-	-	-	-
		Use mathematical models as a medium for quantitative reasoning and describing physical reality.	3	2	3	1	1	-	-	-		-	-	-	-	-	-
		Access, process and analyze scientific information.	3	3	2	1	1	-	-	-		-	-	-	-	-	-
		Solve problems	3	2	3	1	1	-	-	-		-	-	-	-	-	-
		AVG	3	2.4	2.6	1	1										

21147L 18	**COMMUNICATION LABORATORY- I**	To listen to and comprehend general as well as complex academic information	3	3	3	3	1	3	3	3		3	3	3	-	-			
		To listen to and understand different points of view in a discussion	3	3	3	3	1	3	3	3		3	3	3	-	-			
		To speak fluently and accurately in formal and informal communicative contexts	3	3	3	3	1	3	3	3		3	3	3	-	-			
		To describe products and processes and explain their uses and purposes clearly and accurately	3	3	3	3	1	3	3	3		3	3	3	-	-			
		To express their opinions effectively in both formal and informal discussions	3	3	3	3	1	3	3	3		3	3	3	-	-			
		AVg.	**3**	**3**	**3**	**3**	**1**	**3**	**3**	**3**		**3**	**3**	**3**	-	-			
21147S 21	**PROFESSIONAL ENGLISH - II**	To compare and contrast products and ideas in technical texts.	3	3		3	3	3	3	3		3	3	3	-	-	-		
		To identify and report cause and effects in events, industrial processes through technical texts	3	3	3	3	3	3	3	3	2	3	3	3	-	-	-		
		To analyse problems in order to arrive at feasible solutions and communicate them in the written format.	3	3		3	3	3	3	3	2	3	3	3	-	-	-		
		To present their ideas and opinions in a planned and logical manner	3	3		3	2	3	3	3		3	3	3	-	-	-		
		To draft effective resumes in the context of job search.	-	-	-	-	-	-	-	-	**3**	**3**	**3**	**3**	-	-	-		
		AVg.	**3**	**3**		**3**	**2.75**	**3**	**3**	**3**	**.2**	**3**	**3**	**3**	-	-	-		

21148S 22	**STATISTICS AND NUMERICAL METHODS**	Apply the concept of testing of hypothesis for small and large samples in real life problems.	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
		Apply the basic concepts of classifications of design of experiments in the field of agriculture.	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
		Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
		Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
		Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
		Avg	3	3	1	1	1	0	0	0	2	0	2	3	-	-	-
21149S 23A	**PHYSICS FOR INFORMATION SCIENCE**	Gain knowledge on classical and quantum electron theories, and energy band structures	3	1	-	-	-	-	-	-		-	-	-	-	-	-
		Acquire knowledge on basics of semiconductor physics and its applications in various devices	3	1	2	-	-	-	-	-		-	-	-	-	-	-
		Get knowledge on magnetic properties of materials and their applications in data storage,	3	-	-	1	2	1	1	-		-	-	-	-	-	-
		Have the necessary understanding on the functioning of optical materials for optoelectronics	3	-	2	1	3	-	1	-		-	-	-	-	-	-
		understand the basics of quantum structures and their applications and basics of quantum computing	3	2	2	2	2	1	2	-		-	-	2	-	-	-
		Avg	3	1.3	2	1.3	2.3	1	1.3	-		-	-	2	-	-	-

21149S 23D	**MATERIALS SCIENCE**	know basics of crystallography and its importance for varied materials properties	3	2	1	2	1	1		-	-	-	-	-	-	-	-
		gain knowledge on the electrical and magnetic properties of materials and their applications	3	2	1	1	2	1		-	-	-	-	-	-	-	-
		understand clearly of semiconductor physics and functioning of semiconductor devices	3	2	2	2	2	1		-	-	-	-	-	-	-	-
		understand the optical properties of materials and working principles of various optical devices	3	2	2	1	2	2		-	-	-	-	1	-	-	-
		appreciate the importance of functional nanoelectronic devices.	3	2	2	1	2	1		-	-	-	-	-	-	-	-
		AVG	3	2	1.6	1.4	1.8	1.2		-	-	-	-	1	-	-	-
21153S 25A	**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING**	Compute the electric circuit parameters for simple problems	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1
		Explain the working principle and applications of electrical machines	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1
		Analyze the characteristics of analog electronic devices	2	1	1	-	-	-	-	1	-	-	-	2	-	-	1
		Explain the basic concepts of digital electronics	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1
		Explain the operating principles of measuring instruments	2	2	1	-	-	-	-	1	-	-	-	2	-	-	1
		CO/PO & PSO Average	2	1.8	1	-	-	-	-	1	-	-	-	2	-	-	1
21154S 24	**ENGINEERING GRAPHICS**	Use BIS conventions and specifications for engineering drawing.	3	1	2		2					3		2	2	2	

		Construct the conic curves, involutes and cycloid.	3	1	2		2					3		2	2	2	
		Solve practical problems involving projection of lines.	3	1	2		2					3		2	2	2	
		Draw the orthographic, isometric and perspective projections of simple solids.	3	1	2		2					3		2	2	2	
		Draw the development of simple solids.	3	1	2		2					3		2	2	2	
		Avg.	3	1	2		2					3		2	2	2	
21154L27	**ENGINEERING PRACTICES LABORATORY**	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.	3	2			1	1	1					2	2	1	1
		Wire various electrical joints in common household electrical wire work.	3	2			1	1	1					2	2	1	1
		Weld various joints in steel plates using arc welding work; Machine various simple processeslike turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.	3	2			1	1	1					2	2	1	1
		Avg.	3	2			1	1	1					2	2	1	1
21153L28C	**PROGRAMMING IN C LABORATORY**	Demonstrate knowledge on C Programming constructs	1	2	2	1	2	1	1	1	2	-	3	2	1	2	-
		Develop simple application in C using basic Constructs	2	2	2	1	2	1	1	1	2	-	3	3	2	2	-
		Design and implement applications using arrays and strings	2	3	2	1	2	1	1	1	2	-	3	2	2	2	-

		Develop and implement modular applications in C using functions.	3	2	2	1	3	1	1	1	2	-	3	3	2	2	-
		Develop applications in C using structures and pointers.	2	3	3	1	2	1	2	1	2	-	3	2	2	3	-
		Design applications using sequential and random access file processing.	2	2	3	2	1	2	-	-	2	1	2	2	2	2	
		Avg	**2**	**2**	**2**	**1**	**2**	**1**	**1**	**1**	**2**	**-**	**3**	**2**	**2**	**2**	-
21147L29	**COMMUNICATION LABORATORY – II**	Speak effectively in group discussions held in ~~a~~ formal/semi formal contexts.	2	3	3	3	1	3	3	3	3	3	3	3	-	-	-
		Discuss, analyse and present concepts and problems from various perspectives to arrive atsuitable solutions	2	3	3	3	1	3	3	3	3	3	3	3	-	-	-
		Write emails, letters and effective job applications.	2	2	3	3	1	3	3	3	3	3	3	3	-	-	-
		Write critical reports to convey data and information with clarity and precision	3	3	3	3	3	3	3	3	3	3	3	3	-	-	-
		Give appropriate instructions and recommendations for safe execution of tasks	3	3	3	3	3	3	3	3	3	3	3	3	-	-	-
		Avg	**2.4**	**2.8**	**3**	**3**		**3**	**3**	**3**	**3**	**3**	**3**	**3**	**-**	**-**	**-**
21148S31A	**DISCRETE MATHEMATICS**	Have knowledge of the concepts needed to test the logic of a program.	3	3	2	-	-	-	-	-	-	-	-	2	-	-	-
		Have an understanding in identifying structures on many levels.	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-

		Be aware of a class of functions which transform a finite set into another finite set whichrelates to input and output functions in computer science.	-	3	2	-	-	2	-	-	-	3	-	-	-	-	-
		Be aware of the counting principles.	-	2	2	2	-	-	-	-	-	-	-	-	-	-	-
		Be exposed to concepts and properties of algebraic structures such as groups, rings andfields.	-	2	2	2	-	-	-	-	-	2	-	-	-	-	-
		Avg	**1**	**3**	**2**	**1**	**-**	**-**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**-**	**-**
21150C32	**DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION**	Design various combinational digital circuits using logic gates	3	3	3	3	3	2	1	1		1	2	3	2	3	3
		Design sequential circuits and analyze the design procedures	3	3	3	3	2	1	1	1		1	2	3	1	2	2
		State the fundamentals of computer systems and analyze the execution of an instruction	3	3	3	3	2	2	1	1		1	2	3	2	3	1
		Analyze different types of control design and identify hazards	3	3	3	3	1	1	1	1		1	1	2	1	3	1
		Identify the characteristics of various memory systems and I/O communication	3	3	3	3	1	2	1	1		1	1	2	1	2	1
		Avg	3	3	3	3	1.8	1.6	1	1		1	1.6	2.6	1.4	2.6	1.6
21150C33	**DATA STRUCTURES**	Define linear and non-linear data structures.	2	3		2	2	1	1	-		2	1	3	2	1	3

		Implement linear and non–linear data structure operations.	1	2		2	2	-	-	-		1	1	2	2	2	2
		Use appropriate linear/non–linear data structure operations for solving a given problem.	2	3		2	3	-	-	-		1	1	2	2	1	2
		Apply appropriate graph algorithms for graph applications.	2	1		1	1	-	-	-		1	1	2	2	3	
		Analyze the various searching and sorting algorithms.	1	2		2	2	1	1	-		2	1	3	2	2	
		Avg	2	2		2	2	1	1	-		1	1	2	2	2	
21150C34	OBJECT ORIENTED PROGRAMMING	Apply the concepts of classes and objects to solve simple problems	1	1	3	1	3	-	-	-		2	2	2	3	1	2
		Develop programs using inheritance, packages and interfaces	2	1	3	2	1	-	-	-		1	1	3	3	3	2
		Make use of exception handling mechanisms and multithreaded model to solve real world problems	3	3	1	2	2	-	-	-		2	1	2	3	1	3
		Build Java applications with I/O packages, string classes, Collections and generics concepts	3	1	2	2	2	-	-	-		2	1	3	3	1	1
		Integrate the concepts of event handling and JavaFX components and controls for developing GUI based applications	1	1	2	3	2	-	-	-		2	1	2	3	3	3
		Avg	2	1	2	2	2	-	-	-		2	1	2	3	2	2
21150C3	FOUNDATIONS	Define the Data Science Process	2	2		2	2	-	-	-		1	1	2	2	2	

5	OF DATA SCIENCE	Understand different types of data description for data science process	2	1		1	1	-	-	-		1	1	2	2	3	
		Gain knowledge on relationships between data	2	2		2	2	1	1	-		2	1	3	2	2	
		Use the Python Libraries for Data Wrangling	3	2		1	2	-	-	-		1	2	2	3	3	
		Apply visualization Libraries in Python to interpret and explore data	2	2		2	2	-	-	-		1	1	2	2	2	
		Avg	2	2		2	2	1	1	-		1	1	2	2	2	
21150L36	DATA STRUCTURES LABORATORY	Implementg the Linear Data structure algorithms	1	2	2	1	-	-	-	-		1	2	2	2	2	3
		Implement applications using Stacks and Linked lists	3	3	1	1	-	-	-	-		1	1	3	1	2	2
		Implement Binary Search tree and AVL tree operations.	2	1	3	1	-	-	-	-		1	2	3	3	3	3
		Implement graph algorithms	3	1	3	3	-	-	-	-		2	3	3	2	1	2
		Analyze the various searching and sorting algorithms.	3	2	1	1	2	-	-	-		3	3	1	3	1	3
		Avg	2	2	2	1	2	-	-	-	2	2	2	2	2	2	3
21150L37	OBJECT ORIENTED PROGRAMMING LABORATORY	Design and develop java programs using object oriented programming concepts	2	1	2	1	-	-	-	-		2	2	2	1	2	3
		Develop simple applications using object oriented concepts such as package, exceptions	2	1	3	1	-	-	-	-		3	3	2	1	3	1
		Implement multithreading, and generics concepts	2	2	1	2	1	-	-	-		2	1	3	2	3	2
		Create GUIs and event driven programming applications for real world problems	2	2	1	3	-	-	-	-		1	1	1	2	1	2

		Implement and deploy web applications using Java	1	3	3	1	3	-	-	-		1	1	1	2	1	2
		Avg	2	2	2	2	2	-	-	-		2	2	2	2	2	2
21150L38	**DATA SCIENCE LABORATORY**	Make use of the python libraries for data science	3	2	1	1	-	-	-	-		3	3	3	1	3	2
		Make use of the basic Statistical and Probability measures for data science.	3	2	2	3	1	-	-	-		1	3	2	1	3	3
		Perform descriptive analytics on the benchmark data sets.	3	2	1	3	1	-	-	-		1	1	1	3	2	3
		Perform correlation and regression analytics on standard data sets	2	3	1	3	-	-	-	-		3	2	3	3	3	1
		Present and interpret data using visualization packages in Python.	1	2	3	1	1	-	-	-		1	3	1	1	3	3
		Avg	2	2	2	2	1	-	-	-		2	2	2	2	3	2
21150L39	**PROFESSIONAL DEVELOPMENT**	Use MS Word to create quality documents, by structuring and organizing content for their dayto day technical and academic requirements															
		Use MS EXCEL to perform data operations and analytics, record, retrieve data as perrequirements and visualize data for ease of understanding.															
		Use MS PowerPoint to create high quality academic presentations by including commontables, charts, graphs, interlinking other elements, and using media objects.															
21150C41	**THEORY OF COMPUTATION**	Construct automata theory using Finite Automata.	1	3	2	3	-	-	-	-		1	2	3	1	3	2
		Write regular expressions for any pattern.	2	2	3	2	1	-	-	-		3	2	3	3	1	2
		Design context free grammar and Pushdown Automata	2	2	3	2	1	-	-	-		3	1	2	1	2	2
		Design Turing machine for computational functions.	2	2	2	1	-	-	-	-		3	3	2	1	3	2
		Differentiate between decidable and undecidable	2	2	2	1	1	-	-	-		1	3	2	3	1	3

		problems.															
		Avg	2	2	2	2	1	-	-	-		2	2	2	2	2	2
21150C42	**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**	Use appropriate search algorithms for problem solving	3	2	3	3	-	-	-	-		3	3	3	1	2	2
		Apply reasoning under uncertainty	1	1	1	3	1	-	-	-		2	1	3	2	3	2
		Build supervised learning models.	2	1	2	1	1	-	-	-		1	1	3	1	1	1
		Build ensembling and unsupervised models.	3	1	3	1	-	-	-	-		1	2	1	2	2	2
		Build deep learning neural network models	3	1	1	2	2	-	-	-		1	2	3	2	1	2
		Avg	2	1	2	2	1	-	-	-		2	2	3	2	2	2
21150C43	**DATABASE MANAGEMENT SYSTEMS**	Construct SQL Queries using the Relational algebra	2	2	3	2	1	-	-	-		1	1	1	2	1	3
		Design database using ER model and normalize the database	3	1	1	1	1	-	-	-		3	3	3	3	1	2
		Construct queries to handle transaction processing and maintain consistency of thedatabase	3	2	3	2	1	-	-	-		1	1	2	2	3	3
		Compare and contrast various indexing strategies and apply the knowledge to tune theperformance of the database.	1	2	3	2	-	-	-	-		2	3	3	1	2	3
		Appraise how advanced databases differ from Relational Databases and find a suitabledatabase for the given requirement.	1	1	3	3	2	-	-	-		3	3	1	2	2	2
		Avg	2	2	3	2	1	-	-	-		2	2	2	2	2	3
21150C44	**ALGORITHMS**	Analyze the efficiency of algorithms using various frameworks	3	2		-	-		1	-	-	-	-	1	-	1	-
		Apply graph algorithms to solve problems and analyze their efficiency.	2	3		-	-		1	-	-	-	-	1	-	1	-
		Make use of algorithm design techniques like divide and conquer, dynamic programmingand greedy techniques to solve problems	1	2		1	-		2	-	-	-	-	-	-	1	1
		Use the state space tree method for solving problems	1	1		-	-		-	-	-	-	-	-	-	-	-

		Solve problems using approximation algorithms and randomized algorithms	1	1		-	-		-	-	-	-	-	-	-	-		
		Avg	2.67	1.8		1	-		1.33	-	-	-	-	1	-	1		
21150C45	INTRODUCTION TO OPERATING SYSTEMS	Analyze various scheduling algorithms and process synchronization.	3	1	2	2	-	-	-	-		2	3	1	1	2		
		Explain deadlock prevention and avoidance algorithms.	2	2	3	1	1	-	-	-		1	1	2	2	1		
		Compare and contrast various memory management schemes.	1	3	2	2	1	-	-	-		2	1	1	1	2		
		Explain the functionality of file systems, I/O systems, and Virtualization	1	3	3	3	-	-	-	-		2	1	2	1	3		
		Compare iOS and Android Operating Systems.	3	1	2	1	1	-	-	-		2	3	2	2	2		
		Avg	2	2	2	2	1	-	-	-		2	2	2	1	2		
21149S46	ENVIRONMENTAL SCIENCES AND SUSTAINABILITY	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.	2	1	-			2	3	-	-	-	-	2	-	-	-	
		To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.	3	2	-			3	3	-		-	-	2	-	-	-	
		To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.	3	-	1			2	2	-		-	-	2	-	-	-	
		To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.	3	2				2	2	-	-	-	-	2	-	-	-	

		To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.	3	2				2	2	-		-	-	1	-	-	-
		Avg.	**2.8**	**1.8**				**2.2**	**2.4**	**-**	**-**	**-**	**-**	**1.8**	**-**	**-**	**-**
21150L47	**DATABASE MANAGEMENT SYSTEMS LABORATORY**	Create databases with different types of key constraints	3	3	3	3	-	-	-	-		1	3	2	2	3	2
		Construct simple and complex SQL queries using DML and DCL commands.	2	2	3	2	2	-	-	-		2	3	3	2	1	2
		Use advanced features such as stored procedures and triggers and incorporate in GUI basedapplication development.	3	3	2	1	1	-	-	-		1	1	3	2	3	3
		Create an XML database and validate with meta-data (XML schema).	1	3	3	3	1	-	-	-		1	3	2	3	1	3
		Create and manipulate data using NOSQL database.	3	2	1	1	1	-	-	-		2	3	1	3	1	2
		Avg	2	3	2	2	1	-	-	-		1	3	2	2	2	2
21150L48	**OPERATING SYSTEMS LABORATORY**	Define and implement UNIX Commands	3	1	3	1	1	-	-	-		3	3	3	2	1	3
		Compare the performance of various CPU Scheduling Algorithms.	3	1	1	2	2	-	-	-		2	1	1	3	1	2
		Compare and contrast various Memory Allocation methods.	3	3	2	1	2	-	-	-		3	1	2	2	2	2
		Define File Organization and File Allocation Strategies.	1	2	2	3	2	-	-	-		1	3	1	1	2	1
		Implement various Disk Scheduling Algorithms.	2	2	1	1	3	-	-	-		2	2	3	1	3	3
		Avg	2	2	2	2	2	-	-	-		2	2	2	2	2	2
		Understand the techniques in different phases of a compiler.	3	3	3	3	-	-	-	-	3	3	1	3	2	3	2

21150C51	**COMPILER DESIGN**	Design a lexical analyser for a sample language and learn to use the LEX tool.	3	3	3	3	3	-	-	-	3	2	3	2	2	1	2
		Apply different parsing algorithms to develop a parser and learn to use YACC tool	3	3	2	2	3	-	-	-	3	1	1	1	2	2	3
		Understand semantics rules (SDT), intermediate code generation and run-time environment	3	2	2	1	1	-	-	-	2	3	2	3	1	2	1
		Implement code generation and apply code optimization techniques.	3	3	3	2	1	-	-	-	2	1	1	3	2	1	2
		Avg	**3.00**	**2.80**	**2.60**	**2.20**	**2.00**	-	-	-	**2.60**	**2.00**	**1.60**	**2.40**	**1.80**	**1.80**	**2.00**
21150C52	**COMPUTER NETWORKS**	Explain the basic layers and its functions in computer networks.	-	2		-		-	-	-		-	-	-	3	-	-
		Understand the basics of how data flows from one node to another.	-	1		-	2	-	-	-		-	-	2	-	2	-
		Analyze routing algorithms.	-	2		-	3	-	-	-		-	-	-	-	3	-
		Describe protocols for various functions in the network.	-			1	2	-	-	-		3	-	-	-	-	-
		Analyze the working of various application layer protocols.	-	3		-	-	-	-	-		-	-	-	-	-	3
		Avg	-	1		-	1	-	-	-		1	-	-	-	1	1
21150C53	**CRYPTOGRAPHY AND CYBER SECURITY**	Understand the fundamentals of networks security, security architecture, threats andvulnerabilities	3	2	**1**	2	2	-	-	-		-	-	1	2	3	3
		Apply the different cryptographic operations of symmetric cryptographic algorithms	3	3	3	3	3	-	-	-		-	-	1	3	3	3
		Apply the different cryptographic operations of public key cryptography	3	3	3	3	3	-	-	-		-	-	1	3	3	3
		Apply the various uthentication schemes to simulate different applications.	3	3	3	3	3	-	-	-		-	-	1	3	3	3

		Understand various cyber crimes and cyber security	3	2	3	2	3	-	-	-		-	-	2	**3**	2	
		Avg	**3**	**2.6**		**2.6**	**2.8**	**-**	**-**	**-**		**-**	**-**	**1.2**	**2.8**	**2.8**	
21150C54	**DISTRIBUTED COMPUTING**	Explain the foundations of distributed systems (K2)	2	2	3	3	1	-	-	-	2	1	3	3	2	1	1
		Solve synchronization and state consistency problems (K3)	1	3	2	1	2	-	-	-	2	2	2	2	1	3	2
		Use resource sharing techniques in distributed systems (K3)	2	2	1	3	3	-	-	-	3	2	1	1	1	2	1
		Apply working model of consensus and reliability of distributed systems (K3)	1	2	2	3	1	-	-	-	3	3	2	1	3	1	1
		Explain the fundamentals of cloud computing (K2)	3	3	1	2	3	-	-	-	3	3	3	1	3	2	3
		Avg	1.8	2.4		2.4	2	-	-	-	2.6	2.2	2.2	1.6	2	1.8	
21150E55E	**BUSINESS ANALYTICS**	Explain the real world business problems and model with analytical solutions	2	2	3	1	1	-	-	-	1	2	1	1	3	2	1
		Identify the business processes for extracting Business Intelligence	3	3	3	2	3	-	-	-	1	2	2	2	3	1	2
		Apply predictive analytics for business fore-casting	2	2	3	3	2	-	-	-	3	1	1	3	3	1	2
		Apply analytics for supply chain and logistics management	2	1	1	2	2	-	-	-	3	3	2	1	1	3	1
		Use analytics for marketing and sales.	2	3	2	3	2	-	-	-	3	3	1	3	3	1	1
		Avg	2.2	2.		2.	2	-	-	-	2.	2.	1.4	2	2.	1.6	1.

				2	4	2					2	2			6		4
21150E56H	**PRINCIPLES OF PROGRAMMING LANGUAGES**	Describe syntax and semantics of programming languages	2	2	3	2	1	-	-	-		-	-	3	2	3	-
		Explain data, data types, and basic statements of programming languages	3	3	3	2	2	-	-	-		-	-	3	2	3	-
		Design and implement subprogram constructs	3	3	3	2	2	-	-	-		-	-	3	2	3	-
		Apply object-oriented, concurrency, and event handling programming constructsand Develop programs in Scheme, ML, and Prolog	3	3	3	3	2	2	-	-		-	-	-	3	2	-
		Understand and adopt new programming languages	3	3	3	3	3	3	2	2		3	1	3	3	3	-
		Avg	**2.8**	**2.8**	**3**	**2.4**	**2**	**2.5**	**2**	**2**		**3**	**1**	**3**	**2.4**	**2.8**	-
21147MC51D	**DISASTER MANAGEMENT**	To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction(DRR)	3	3	2	3	-	-	2	2	-	-	2	-	2	-	1
		To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessmentprevention and risk reduction	3	3	3	3	-	-	2	1	-	-	2	-	2	-	1
		To develop disaster response skills by adopting relevant tools and technology	3	3	3	3	-	-	2	2	-	-	-	-	2	-	1
		Enhance awareness of institutional processes for Disaster response in the country and	3	3	2	3	-	-	2	1	-	-	2	-	2	-	1
		Develop rudimentary ability to respond to their surroundings with potential Disaster responsein areas where they live, with due sensitivity	3	3	2	3	-	-	2	2	-	-	2	-	3	-	1

		Avg	3	3	3	3	-	-	2	2	-	-	2	-	2	-	1
21153OE61	**RENEWABLE ENERGY SYSTEM**	Twidell & Wier,'Renewable Energy Resources' CRC Press(Taylor & Francis).	3	-	-	-	-	-	-	-	-	-	-	2	3	3	3
		Tiwari and Ghosal/ Narosa,'Renewable energy resources'.	3	2	-	-	-	-	-	-	-	-	-	2	3	3	3
		D.P.Kothari, K.C.Singhal,'Renewable energy sources and emerging technologies', P.H.I.	3	2	-	-	-	-	-	-	-	-	-	2	3	3	3
		D.S.Chauhan, S.K. Srivastava, 'Non – Conventional Energy Resources', New AgePublishers, 2006.	3	2	-	-	-	-	-	-	-	-	-	2	3	3	3
		B.H.Khan, 'Non – Conventional Energy Resources', Tata Mc Graw Hill, 2006	3	2	-	-	-	-	-	-	-	-	-	2	3	3	3
		Avg	3	2	-	-	-	-	-	-	-	-	-	2	3	3	3
21152S62	**EMBEDDED SYSTEMS AND IOT DESIGN**	Explain the architecture of embedded processors.	3	3	3	3	-	-	-	-		2	3	3	2	1	3
		Write embedded C programs.	2	1	3	2	2	-	-	-		2	2	3	3	1	3
		Design simple embedded applications.	3	1	3	3	1	-	-	-		2	1	1	1	3	3
		Compare the communication models in IOT	3	2	3	2	1	-	-	-		2	2	3	2	2	1
		Design IoT applications using Arduino/Raspberry Pi /open platform.	2	3	3	2	2	-	-	-		3	3	2	3	1	3

		Avg	2.6	2	3	2.4	1.5	-	-	-		2.2	2.2	2.4	2.2	1.6	2.6
21150C63	**OBJECT ORIENTED SOFTWARE ENGINEERING**	Compare various Software Development Lifecycle Models	2	2	1	2	2	-	-	-		1	1	2	2	2	1
		Evaluate project management approaches as well as cost and schedule estimationstrategies	2	3	2	3	2	-	-	-		2	3	2	3	2	1
		Perform formal analysis on specifications.	2	3	2	1	1	-	-	-		2	3	2	2	3	1
		Use UML diagrams for analysis and design.	2	3	2	2	3	-	-	-		2	3	2	2	3	1
		Architect and design using architectural styles and design patterns, and test the system	2	3	1	2	2	-	-	-		-	-	1	3	2	2
		Avg	**2**	**2**	1	**2**	**2**	**-**	**-**	**-**		**1**	**1**	**2**	**2**	**2**	1
21150E64A	**CLOUD COMPUTING**	Understand the design challenges in the cloud.	3	2	1	1	1	-	-	-	2	3	1	3	2	1	3
		Apply the concept of virtualization and its types.	3	1	2	2	1	-	-	-	1	2	1	3	2	2	1
		Experiment with virtualization of hardware resources and Docker.	2	3	2	3	1	-	-	-	3	1	1	3	1	1	1
		Develop and deploy services on the cloud and set up a cloud environment.	1	2	3	3	3	-	-	-	3	3	1	2	1	3	3
		Explain security challenges in the cloud environment.	2	3	3	1	3	-	-	-	2	2	1	2	2	2	3
		Avg	2.2	2.2	2.2	2	1.8	-	-	-	2.2	2.2	1	2.6	1.6	1.8	2.2
21150E6	**NETWORK SECURITY**	Classify the encryption techniques	3	3	2	2	2	-	-	-	2	1	2	1	2	3	1

5G		Illustrate the key management technique and authentication.	1	1	3	2	2	-	-	-	2	2	1	1	3	1	2
		Evaluate the security techniques applied to network and transport layer	1	2	1	1	2	-	-	-	3	3	1	3	2	1	3
		Discuss the application layer security standards.	2	2	3	2	3	-	-	-	3	3	2	1	2	1	3
		Apply security practices for real time applications.	2	1	3	2	2	-	-	-	2	1	1	3	2	1	1
		Avg	1.8	1.8	2.4	1.8	2.2	-	-	-	2.4	2	1.4	1.8	2.2	1.4	2
21150E66B	**MULTIMEDIA AND ANIMATION**	Get the bigger picture of the context of Multimedia and its applications	3	2	3	2				-	3	2	1	2	3	2	3
		Use the different types of media elements of different formats on content pages	3	3	3	3				-	3	3	2	2	3	2	3
		Author 2D and 3D creative and interactive presentations for different target multimediaapplications.	3	3	3	3				-	3	3	2	3	3	2	3
		Use different standard animation techniques for 2D, 21/2 D, 3D applications	3	3	3	3	3	2		-	3	3	3	3	3	3	3
		Understand the complexity of multimedia applications in the context of cloud, security,bigdata streaming, social networking, CBIR etc.,	3	3	3	3	3	2		-	3	3	3	3	3	3	3
		Avg	3.	2.8	3.	2.	3.	2.		-	3.	2.80	2.	2.60	3.0	2.40	3.

			00	0	00	80	00	00			00		20		0		00
21150E67D	CYBER SECURITY	Explain the basics of cyber security, cyber crime and cyber law (K2)	1	1	1	1	-	1	-	-		-	1	-	2	2	2
		Classify various types of attacks and learn the tools to launch the attacks (K2)	1	3	1	3	2	1	-	-		-	-	-	2	2	1
		Apply various tools to perform information gathering (K3)	2	1	1	1	-	1	-	-		-	1	-	2	2	2
		Apply intrusion techniques to detect intrusion (K3)	3	3	2	2	2	1	-	-		-	-	-	2	2	3
		Apply intrusion prevention techniques to prevent intrusion (K3)	3	2	1	1	1	1	-	1		-	1	-	2	2	2
		Avg	2	2	1.2	1.6	1	1	0	0.2		0	0.6	0	2	2	2
21147MC61E	INDUSTRIAL SAFETY	Understand the basic concept of safety	3	3	3	1	1	3	2	2	3	3	1	3	3	3	3
		Obtain knowledge of Statutory Regulations and standards	2	3	2	2	1	3	2	3	3	2	1	3	3	3	3
		Know about the safety Activities of the Working Place.	2	2	2	2	1	2	2	2	3	2	1	2	3	3	3
		Analyze on the impact of Occupational Exposures and their Remedies	3	3	3	2	2	3	2	2	3	2	1	3	3	3	3
		Obtain knowledge of Risk Assessment Techniques.	3	2	3	2	2	3	2	2	3	2	2	3	3	3	3
		Avg	3	3	3	2	1	3	2	2	3	2	1	3	3	3	3
21147S	HUMAN VALUES AND ETHICS	Identify the importance of democratic, secular and scientific values in harmonious functioning of social life															

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		Practice democratic and scientific values in both their personal and professional life.															
		Find rational solutions to social problems.															
		Behave in an ethical manner in society															
		Practice critical thinking and the pursuit of truth															
21160E 75A	**PRINCIPLES OF MANAGEMENT**	Upon completion of the course, students will be able to have clear understanding ofmanagerial functions like planning, organizing, staffing, leading & controlling.	3			-	-		-	-	-	-	-	-	2	1	1
		Have same basic knowledge on international aspect of management.	-	1		-	-		-	-	-	-	-	-	2	1	-
		Ability to understand management concept of organizing.	1			2	-		1	-	2	-	1	1	-	-	2
		Ability to understand management concept of directing.	-	1		1	2		-	1	2	-	-	-	1	1	1
		Ability to understand management concept of controlling.	1			-	1		-	-	-	3	-	1	1	-	1
		Avg	1.66	1		1.5	1.5		1	1	2	3	1	1	1.5	1	1.25
		Expand their vocabulary and gain practical techniques to read and comprehend a wide rangeof texts with the emphasis required	1	3	3	1	3	3	3	3		3	1	3	-	-	

21147OE73A	**ENGLISH FOR COMPETITIVE EXAMINATIONS**	Identify errors with precision and write with clarity and coherence	2	3	3	2	3	3	3	3		3	3	3	-	-	
		Understand the importance of task fulfilment and the usage of task-appropriate vocabulary	3	3	3	3	3	3	3	3		3	3	3	-	-	
		Communicate effectively in group discussions, presentations and interviews	2	2	2	2	2	2	2	2		3	3	3	-	-	
		Write topic based essays with precision and accuracy	2	2	2	2	2	2	2	2		3	2	3	-	-	
		Avg	**2**	**2.6**	**2.6**	**2**	**2.6**	**2**	**2**	**2.6**		**3**	**2.4**	**3**	**-**	**-**	
21155OE74B	**GEOGRAPHICAL INFORMATION SYSTEM**	Have basic idea about the fundamentals of GIS.	3												3	3	3
		Understand the types of data models	3				3								3	3	3
		Get knowledge about data input and topology	3		3	3									3	3	3
		Gain knowledge on data quality and standards	3	3	3	3	3								3	3	3
		Understand data management functions and data output	3	3	3	3	3								3	3	3
		Avg	**3**	**3**	3	3	3								3	3	3
21150INT76	**SUMMER INTERNSHIP**	Industry Practices, Processes,Techniques, technology, automation and other coreaspects of software industry															

		Analyze, Design solutions to complex business problems															
		Build and Deploy solutions for target platform															
		Preparation of Technical reports and presentation															
21150C81	**PROJECT WORK**	Gain Domain knowledge and technical skill set required for solving industry /research problems															
		Provide solution architecture, module level designs, algorithms															
		Implement, test and deploy the solution for the target platform															
		Prepare detailed technical report, demonstrate and present the work															

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