

Dept: COMPUTER SCIENCE AND ENGINEERING

BTECH (FT)- 2019R

Mapping of COs and POs

Course	Title of the	COs						P	POS					
Code	Course		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		Read articles of a general kind in magazines and newspapers								✓	✓	√		✓
19147S11	COMMUNICATI VE ENGLISH	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English								✓	✓	✓		✓
1914/811	VE ENGLISH	Comprehend conversations and short talks delivered in English								√	✓	√		✓
		Write short essays of a general kind and personal letters and emails in English.								√	✓	✓		✓
	ENGINEERING	Use both the limit definition and rules of differentiation to differentiate functions.	√	✓										
19148S12	MATHEMATICS – I	Apply differentiation to solve maxima and minima problems	✓	✓	✓	✓	✓							
		Evaluate integrals both by using Riemann sums and by	✓	✓	✓	✓								

T		·		ı		1		I	ı	1	I		
		using the Fundamental											
		Theorem of Calculus											
		Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of	✓	√	✓	✓							
		variables											
		Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by	✓	✓									
		parts.											
		Determine convergence/divergence of improper integrals and evaluate convergent improper integrals	✓	√	✓								
		Apply various techniques in solving differential equations.	✓	✓	✓								
		The students will gain knowledge on the basics of properties of matter and its applications	✓	√	✓								
19149S13	ENGINEERING PHYSICS	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,	✓	√	✓	√	✓						
		The students will have adequate knowledge on the concepts of thermal properties	✓	√	✓	✓	✓						

		of materials and their applications in expansion joints and heat exchangers, The students will get knowledge on advanced physics concepts of quantum	√	√	✓	✓	✓				
		theory and its applications in tunneling microscopes The students will understand the basics of crystals, their structures and different crystal growth techniques.	✓	√	✓						
19149S14	ENGINEERING CHEMISTRY	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning	√	~	~						
		Develop algorithmic solutions to simple computational problems	✓	√	✓			√			
	PROBLEM	Read, write, execute by hand simple Python programs	✓	✓	✓		✓	✓			✓
19150S16	SOLVING AND PYTHON	Structure simple Python programs for solving problems	✓	✓	✓		✓	✓			✓
	PROGRAMMING	Decompose a Python program into functions.	✓	✓	✓		✓	✓			✓
		Represent compound data using Python lists, tuples, dictionaries	✓	✓	✓		✓	√			✓

		Read and write data from/to	√	√	1		√	√				√
		files in Python Programs	•	•	•		•	•				•
		Familiarize with the										
		fundamentals and standards of	\checkmark									
		Engineering graphics										
		Perform freehand sketching of										
		basic geometrical		✓								
19154S15	ENGINEERING	constructions and multiple		•								
19134313	GRAPHICS	views of objects.										
		Project orthographic										
		projections of lines and plane			\checkmark							
		surfaces										
		Draw projections and solids			✓	√				✓		
		and development of surfaces.			•	•				Ť		
		Write, test, and debug simple	✓									
		Python programs.	<u> </u>									
		Implement Python programs		✓	/							
	PROBLEM	with conditionals and loops.		,	•							
	SOLVING AND	Develop Python programs										
19150L17	PYTHON	step-wise by defining		✓	✓							
17130L17	PROGRAMMING	functions and calling them										
	LABORATORY	Use Python lists, tuples,										
	LIBORITORI	dictionaries for representing				✓	✓					
		compound data.										
		Read and write data from/to			✓							
		files in Python.										
		Apply principles of elasticity,										
	PHYSICS AND	optics and thermal properties	\checkmark	✓	\checkmark			✓				\checkmark
19149L18	CHEMISTRY	for engineering applications.										
17177210	LABORATORY	The students will be outfitted										
	Libonii oki	with hands-on knowledge in			✓	✓	✓					\checkmark
		the quantitative chemical										

		analysis of water quality related parameters.									
		Students will understand the importance of value based living.			✓	✓					
		Students will gain deeper understanding about the purpose of their life.			✓	✓					
191VEA1 9	VALUE EDUCATION	Students will understand and start applying the essential steps to become good leaders.						✓		✓	√
9	EDUCATION	Students will emerge as responsible citizens with clear conviction to practice values and ethics in life.			✓	✓	✓				
		Students will become value based professionals.			✓	✓	✓				
		Students will contribute in building a healthy nation			✓	✓	✓				
		Read technical texts and write area- specific texts effortlessly					✓	✓	✓		✓
19147S21	TECHNICAL	Listen and comprehend lectures and talks in their area of specialisation successfully					✓	✓	✓		√
1914/321	ENGLISH	Speak appropriately and effectively in varied formal and informal contexts.					√	✓	✓		√
		Write reports and winning job applications.					✓	✓	✓		✓
19148S22 A		Eigen values and eigenvectors, diagonalization of a matrix,	✓								

г		1				ı	1	1		1	Г	, ,	
		Symmetric matrices, Positive											
		definite matrices and similar											
		matrices.											
		Gradient, divergence and curl											
		of a vector point function and		✓		✓							
		related identities											
		Evaluation of line, surface and											
		volume integrals using Gauss,		√	./								
	ENGINEERING	Stokes and Green's theorems		•	•								
	MATHEMATICS	and their verification											
	$-\operatorname{II}$	Analytic functions, conformal											
		mapping and complex		✓	✓	✓							
		integration											
		Laplace transform and inverse											
		transform of simple functions,											
		properties, various related		√		√							
		theorems and application to		•		•							
		differential equations with											
		constant coefficients.											
		Gain knowledge on classical											
		and quantum electron theories,	\checkmark	✓									
		and energy band structures											
		Acquire knowledge on basics											
		of semiconductor physics and	✓				✓						
19149S23	PHYSICS FOR	its applications in various	•				•						
A	INFORMATION	devices,											
	SCIENCE	Get knowledge on magnetic											
		properties of materials and	✓		/								
		their applications in data	•										
		storage											
		Have the necessary		✓		✓	✓						
		understanding on the		•		-							

		functioning of optical										
		materials for optoelectronics										
		Understand the basics of										
		quantum structures and their			1	√						
		applications in carbon			•	•						
		electronics										
		Discuss the essentials of electric circuits and analysis.	✓	✓								
		Discuss the basic operation of										
	BASIC	electric machines and	\checkmark	✓								
19153S25	ELECTRICAL, ELECTRONICS	transformers										
A 19133323	AND	Introduction of renewable										
A	MEASUREMENT	sources and common domestic	\checkmark	✓	✓							
	ENGINEERING	loads.										
		Introduction to measurement	,	,								
		and metering for electric circuits.	✓	✓	_							
		Environmental Pollution or										
		problems cannot be solved by										
		mere laws. Public participation										
		is an important aspect which										
		serves the environmental						✓	✓	✓	✓	✓
	ENVIRONMENT	Protection. One will obtain										
19149S24	AL SCIENCE	knowledge on the following										
A	AND	after completing the course.										
	ENGINEERING	Public awareness of										
		environmental is at infant						✓	✓	✓	✓	✓
		stage.										
		Ignorance and incomplete										
		knowledge has lead to						✓	~	✓	✓	✓
		misconceptions										

		Development and improvement in std. of living has lead to serious environmental disasters						✓	✓	✓	✓		√
		Develop simple applications in C using basic constructs	✓	✓	✓								
		Design and implement applications using arrays and strings	✓	√	✓								
19150S26 A	PROGRAMMING IN C	Develop and implement applications in C using functions and pointers.		√	✓								
		Develop applications in C using structures.		✓	✓								
		Design applications using sequential and random access file processing.		√	✓								
		Fabricate carpentry components and pipe connections including plumbing works.	✓						√			√	
19154L27	ENGINEERING PRACTICES LABORATORY	Use welding equipments to join the structures. Carry out the basic machining operations Make the models using sheet metal works	✓		✓		✓			✓			
		Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings Carry out basic home electrical works and appliances	✓	✓	✓	√	√						

		Measure the electrical quantities Elaborate on the components, gates, soldering practices.	√	√	✓	✓	✓		✓	√		
	C	Develop C programs for simple applications making use of basic constructs, arrays and strings	✓	✓	✓							
19150L28 A	C - PROGRAMMING LAB	Develop C programs involving functions, recursion, pointers, and structures	✓	✓	✓	✓						
		Design applications using sequential and random access file processing	✓	✓	✓	✓	✓			✓		
		Have knowledge of the concepts needed to test the logic of a program	✓	✓	✓							
		Have an understanding in identifying structures on many levels	✓		✓	✓						
19148C31 A	DISCRETE MATHEMATICS	Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.	\	✓	✓	√						~
		Be aware of the counting principles.	✓	✓	✓	✓	✓				✓	√
		Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.	√	√	✓	✓	✓	√	√		√	

		Simplify Boolean functions using KMap	✓	✓	✓	✓		✓	✓	✓			
10150022	DIGITAL PRINCIPLES	Design and Analyze Combinational and Sequential Circuits	✓	√	~	~	✓	✓	√	√			√
19150C32	AND SYSTEM DESIGN	Implement designs using Programmable Logic Devices	✓	√	✓	✓	✓	√	✓	✓			✓
		Write HDL code for combinational and Sequential Circuits	√	√	~	✓		✓	√	✓			√
		Implement abstract data types for linear data structures.	✓	√	✓						✓		
19150C33	DATA STRUCTURES	Apply the different linear and non-linear data structures to problem solutions	√	√	~						✓		
		Critically analyze the various sorting algorithms	✓	√	√						✓		
		Develop Java programs using OOP principles	✓	✓	✓	✓	✓						✓
	ODJECT	Develop Java programs with the concepts inheritance and interfaces	✓	✓	✓	✓	✓					~	✓
19150C34	OBJECT ORIENTED PROGRAMMING	Build Java applications using exceptions and I/O streams	✓	✓	✓	✓	√					✓	✓
	PROGRAMMINING	Develop Java applications with threads and generics classes	✓	✓	✓	✓	✓				✓	✓	✓
		Develop interactive Java programs using swings	✓	✓	✓	✓	√	✓			✓	✓	✓
19150C35		Apply analog and digital communication techniques	✓		✓	✓							✓

		Has data and pulsa						1	1	1		
		Use data and pulse communication techniques.		✓						✓		✓
		Analyze Source and Error										
	COMMUNICATI	control coding.		✓						✓		✓
	ON ENGINEERING	Ability to comprehend and										
	ENGINEERING	appreciate the significance and			1							✓
		role of this course in the										
		present contemporary world										
		Write functions to implement linear and non-linear data	✓									
		structure operations	v									
		Suggest appropriate linear /										
		non-linear data structure	,									
	DATA	operations for solving a given	✓	•	✓							
19150L36	STRUCTURES	problem										
17130L30	LABORATORY	Appropriately use the linear /										
		non-linear data structure	✓	✓	✓							
		operations for a given problem Apply appropriate hash										
		functions that result in a										
		collision free scenario for data	\checkmark	✓	✓	✓	✓					
		storage and retrieval										
		Develop and implement Java										
		programs for simple										
	OBJECT	applications that make use of	\checkmark	✓	✓							
101501 27	ORIENTED	classes, packages and										
19150L37	PROGRAMMING	interfaces Develop and implement Java										
	LABORATORY	programs with arraylist,										
		exception handling and	\checkmark	✓	✓	✓						
		multithreading										

		Design applications using file processing, generic programming and event handling.		✓	✓		✓				
		Implement simplified combinational circuits using basic logic gates	✓								
19150L38	DIGITAL SYSTEMS	Implement combinational circuits using MSI devices		✓	✓						
	LABORATORY	Implement sequential circuits like registers and counters		✓	✓	✓	✓				
		Simulate combinational and sequential circuits using HDL			✓						
		Listen and respond appropriately							✓	✓	✓
101501 20	INTERPERSONA L	Participate in group discussions							✓	✓	✓
19150L39	SKILLS/LISTENI	Make effective presentations							✓	✓	✓
	NG&SPEAKING	Participate confidently and appropriately in conversations both formal and informal							✓	√	✓
19148S41 A	PROBABILITY AND QUEUING THEORY	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon	√	√	✓						
	HEORI	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications		√	✓						

		Apply the concept of random processes in engineering disciplines		✓	✓						
		Acquire skills in analyzing queueing models.		✓	✓						
		Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner		√	✓						
		Understand the basics structure of computers, operations and instructions.	✓	✓	✓	✓					
		Design arithmetic and logic unit.	✓	✓	✓	✓					
19150C42	COMPUTER ARCHITECTURE	Understand pipelined execution and design control unit.	✓	✓	✓	√					
		Understand parallel processing architectures.	✓	✓	✓	✓					
		Understand the various memory systems and I/O communication	✓	✓	✓	√					
		Classify the modern and futuristic database applications based on size and complexity	✓	✓		✓	✓	✓			
19150C43	DATABASE MANAGEMENT SYSTEMS	Map ER model to Relational model to perform database design effectively	✓	✓							
		Write queries using normalization criteria and optimize queries	✓	✓	✓						

		Compare and contrast various indexing strategies in different database systems	✓	✓		√		✓	✓					
		Appraise how advanced databases differ from traditional databases	√	✓	✓	✓	✓	✓						
		Design algorithms for various computing problems	✓			✓								
	DESIGN AND	Analyze the time and space complexity of algorithms.		√	✓	✓								
19150C44	ANALYSIS OF ALGORITHMS	Critically analyze the different algorithm design techniques for a given problem		✓	✓	✓	✓							
		Modify existing algorithms to improve efficiency.		✓	✓		✓	✓						
		Analyze various scheduling algorithms.	✓	✓	✓	✓	✓	✓						
		Understand deadlock, prevention and avoidance algorithms.	✓	✓	✓	✓	✓							
19150C45	OPERATING SYSTEMS	Compare and contrast various memory management schemes.	✓	✓	✓	√	✓							
		Understand the functionality of file systems.	✓	✓	✓	✓	✓							
		Perform administrative tasks on Linux Servers.	✓	✓	✓	✓	✓	✓	✓				√	✓
		Compare iOS and Android Operating Systems.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19150C46	SOFTWARE ENGINEERING	Identify the key activities in managing a software project.	✓	✓	✓	✓					✓	✓	✓	✓

		Compare different process models	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Concepts of requirements engineering and Analysis Modeling.	√	✓	✓	✓	✓	✓	√	✓		✓		
		Apply systematic procedure for software design and deployment.	✓	✓	✓	√	✓	✓	√	✓	✓	√	✓	✓
		Compare and contrast the various testing and maintenance	✓	✓	✓	✓	✓	✓	√	✓				
		Manage project schedule, estimate project cost and effort required.	✓	✓	✓	✓	✓	✓	√	✓	✓	√	✓	√
		Use typical data definitions and manipulation commands	✓	✓	✓						✓	✓	✓	✓
	DATEADAGE	Design applications to test Nested and Join Queries	✓	✓	✓						√	✓	✓	√
19150L47	DATABASE MANAGEMENT	Implement simple applications that use Views	✓	✓	✓						✓	✓	✓	✓
	SYSTEMS LABORATORY	Implement applications that require a Front-end Tool	✓	✓	✓						✓	✓	✓	✓
		Critically analyze the use of Tables, Views, Functions and Procedures	√	✓	✓						✓	√	√	√
	OPERATING	Compare the performance of various CPU Scheduling Algorithms	√	✓	✓		✓			✓	✓	✓		✓
19150L48	SYSTEMS LABORATORY	Implement Deadlock avoidance and Detection Algorithms	✓	✓	✓		✓			✓	✓	√		✓
		Implement Semaphores	✓	✓	✓		✓			✓	✓	✓		✓

		Create processes and implement IPC	✓	✓	✓		✓			✓	✓	✓	✓
		Analyze the performance of the various Page Replacement Algorithms	✓	✓	✓		✓			✓	✓	✓	√
		Implement File Organization and File Allocation Strategies	✓	✓	✓		✓			✓	✓	✓	✓
		Write winning job applications.	✓								✓	✓	✓
19150L49	ADVANCED READING AND	Read and evaluate texts critically.	✓								✓	✓	✓
	WRITING	Display critical thinking in various professional contexts	✓								✓	✓	✓
		Write different types of essays.	\checkmark					✓	✓	✓	✓	✓	✓
		Exposure to various research domains	✓	√	✓	√	√						✓
19150CR S	RESEARCH LED SEMINAR	Acquaintance with languages of research	✓	✓	✓	√							✓
		Development of research aptitude			✓	√	√						✓
		Apply the basic notions of groups, rings, fields which will then be used to solve related problems.	✓	✓	✓								
19148S51 A	ALGEBRA AND NUMBER THEORY	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.	✓	✓	✓								
		Demonstrate accurate and efficient use of advanced algebraic techniques.	✓	✓	✓	✓	✓						

		Demonstrate their mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text		√	✓	✓	✓							
		Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.		✓	~	✓	✓	✓						
		Understand the basic layers and its functions in computer networks	✓	✓	✓	✓								✓
		Evaluate the performance of a network	✓	✓	✓	✓	✓						✓	✓
	COMPUTER	Understand the basics of how data flows from one node to another.	✓	✓	✓	√								✓
19150C52		Analyze and design routing algorithms.	✓	✓	✓	✓	✓				✓	✓	✓	✓
	NETWORKS	Design protocols for various functions in the network.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Understand the working of various application layer protocols.	✓	✓	✓	√								
19150C53	MICROPROCESS ORS AND MICROCONTRO	Understand and execute programs based on 8086 microprocessor.	✓	✓	✓	√	✓	√						
	LLERS	Design Memory Interfacing circuits.	✓	✓	✓	✓								

		Design and interface I/O circuits.	✓	✓	✓	✓								
		Design and implement 8051 microcontroller based systems.	✓	✓	✓	✓	✓	√	✓	✓	✓	√	✓	✓
		Construct automata, regular expression for any pattern.	✓	✓	✓									✓
		Write Context free grammar for any construct.	✓	✓	✓	✓								✓
19150C55	THEORY OF COMPUTATION	Design Turing machines for any language.	✓	✓	✓	✓		√		✓			✓	√
	COMPUTATION	Propose computation solutions using Turing machines.	✓	✓	✓	~		✓		✓			✓	✓
		Derive whether a problem is decidable or not.	✓	✓	✓	✓		√		✓			✓	✓
		Express software design with UML diagrams	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓
		Design software applications using OO concepts.	✓	✓	✓	✓	✓	√	✓	✓	✓	✓	✓	✓
19150C56	OBJECT ORIENTED	Identify various scenarios based on software requirements	✓	✓	✓	✓								
19130030	ANALYSIS AND DESIGN	Transform UML based software design into pattern based design using design patterns	✓	✓	√	✓	✓	√	✓					
		Understand the various testing methodologies for OO software	✓	✓	✓	✓	✓		✓	✓				✓
		Understanding research questions and tools	✓	✓		✓								

19150CR	Research	Experience in scientific	√	✓	✓	✓								
M	methodology	writings				-								
		Practice in various aspects of	✓	✓	✓	✓								
		scientific publications Inculcation of research ethics	✓	✓	✓	✓				✓				
		Write ALP Programmes for fixed and Floating Point and Arithmetic operations						✓						
	MICROPROCESS ORS AND	Interface different I/Os with processor								✓				✓
19150L57	MICROCONTRO LLERS	Generate waveforms using Microprocessors	✓			✓					✓			
	LABORATORY	Execute Programs in 8051			✓							✓		
		Explain the difference between simulator and Emulator	√					√		✓			√	
		Perform OO analysis and design for a given problem specification.	✓	✓	✓	√					✓			
	OBJECT ORIENTED	Identify and map basic software requirements in UML mapping.		✓	✓	✓					✓		✓	✓
19150L58	ANALYSIS AND DESIGN LABORATORY	Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns		✓	✓	✓			✓		✓	√	√	√
		Test the compliance of the software with the SRS		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
19150L59	NETWORKS LABORATORY	Implement various protocols using TCP and UDP.	✓	✓	✓			✓						✓

		Compare the performance of different transport layer protocols.	√		✓									✓
		Use simulation tools to analyze the performance of various network protocols.	√	✓		√	✓	√					✓	✓
		Analyze various routing algorithms.	✓	✓			✓		✓			✓	✓	✓
		Implement error correction codes.	✓		✓	√		✓	✓		√	✓	✓	✓
		Construct a basic website using HTML and Cascading Style Sheets.	✓	✓	✓	√	✓	√	✓	✓	✓	√	✓	√
19150C61	INTERNET	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.	✓	✓	✓	√	✓	√					√	√
19130001	PROGRAMMING	Develop server side programs using Servlets and JSP.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Construct simple web pages in PHP and to represent data in XML format.	✓	✓	✓	√	✓	√	✓	✓	✓	√	✓	✓
		Use AJAX and web services to develop interactive web applications	✓	✓	✓	✓	✓	✓	✓	✓	✓	√	✓	✓
		Use appropriate search algorithms for any AI problem	✓	✓	✓	✓								
19150C62	ARTIFICIAL	Represent a problem using first order and predicate logic	✓	✓	✓		✓	✓	✓					
	INTELLIGENCE	Provide the apt agent strategy to solve a given problem	✓	✓	✓	✓	✓	✓	✓	✓	√	✓	✓	✓

		Design software agents to solve a problem	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Design applications for NLP that use Artificial Intelligence.	✓	✓	✓	✓	✓	✓	✓	✓	✓	√	✓	✓
		Explain the basics of mobile telecommunication systems	✓	✓	✓	√								
		Illustrate the generations of telecommunication systems in wireless networks	✓	✓	✓									
19150C63	MOBILE COMPUTING	Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network	✓	✓	✓	✓	✓							
		Explain the functionality of Transport and Application layers	√	✓	✓	✓								
		Develop a mobile application using android/blackberry/ios/Windo ws SDK	✓	✓	✓	✓	√	✓	✓	✓	✓	√	✓	✓
		Understand the different phases of compiler.	✓	√	√	√	√							
		Design a lexical analyzer for a sample language.	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓
19150C64	COMPILER DESIGN	Apply different parsing algorithms to develop the parsers for a given grammar.	✓	✓	✓	✓				✓	✓	✓		
		Understand syntax-directed translation and run-time environment.	✓	✓	✓	✓	✓							

		Learn to implement code optimization techniques and a simple code generator.	√	✓	✓	✓	✓	✓	✓					
		Design and implement a scanner and a parser using LEX and YACC tools.	√	✓	✓	√	✓			√	✓	✓	√	√
		Elucidate the foundations and issues of distributed systems	✓	✓	✓									
		Understand the various synchronization issues and global state for distributed systems.	✓	✓	✓	✓								
19150C65	DISTRIBUTED SYSTEMS	Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems	✓	✓	✓	✓	✓							
		Describe the agreement protocols and fault tolerance mechanisms in distributed systems.		✓	✓	✓	√	√						
		Describe the features of peer- to-peer and distributed shared memory systems		✓	✓	✓	✓	√						
		Construct Web pages using HTML/XML and style sheets.	✓	✓	✓		✓	√	√	√	✓	✓		✓
19150L61	INTERNET PROGRAMMING LABORATORY	Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.	✓	✓	~	√	√		√	√	✓			√
		Develop dynamic web pages using server side scripting.	✓	✓	✓	✓	✓		✓	✓	✓			✓

		Use PHP programming to	√	·	√	√	· /	√	✓ ·	√	√	√	√	√
		develop web applications.		·	,	·	,	,	,	,	,	,	·	
		Construct web applications	\checkmark	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		using AJAX and web services.												
		Develop mobile applications using GUI and Layouts.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Develop mobile applications using Event Listener.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	MOBILE APPLICATION	Develop mobile applications using Databases.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
19150L62	DEVELOPMENT LABORATORY	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS.	✓	✓	✓	√	✓							
		Analyze and discover own mobile app for simple needs.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		take up any challenging practical problems and find solution by formulating proper methodology	✓	✓	✓	✓	✓	✓	√	✓	✓	√	✓	✓
19150L63	MINI PROJECT	apply the knowledge of all related courses in providing hardware/software solutions	✓	✓	✓	√	✓	✓	√	✓	✓	✓	✓	✓
		Make effective presentations	✓						✓		✓	✓	✓	✓
	PROFESSIONAL	Participate confidently in Group Discussions.	✓						✓	✓	✓	√	✓	✓
19150L64	COMMUNICATI ON	Attend job interviews and be successful in them.	✓					✓	✓	✓	✓	√	✓	✓
		Develop adequate Soft Skills required for the workplace	✓		✓			✓	✓	✓	✓	✓	✓	✓

10150GP		Hands on exposure to problem solving tools in contemporary research	✓	✓	✓	√								
19150CB R	Participation in Bounded Research	Evolution of research intuitiveness and orientation	✓	✓	✓	✓								
		Familiarity with cutting edge research trends	✓	✓	√	✓	✓							
19150C71	PRINCIPLES OF MANAGEMENT	to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management	✓					>	√	√	*	√	✓	*
		Understand the fundamentals of networks security, security architecture, threats and vulnerabilities	✓	✓				~	√	✓	✓	✓	✓	✓
		Apply the different cryptographic operations of symmetric cryptographic algorithms	✓	✓	√			>						
19150C72	CRYPTOGRAPH Y AND	Apply the different cryptographic operations of public key cryptography	✓	✓	√		✓	>						
	NETWORK SECURITY	Apply the various Authentication schemes to simulate different applications.	✓	✓	√	√	✓	√	✓					√
		Understand various Security practices and System security standards	✓	✓	√	✓	✓	√	~	✓	√	✓	✓	✓

		Articulate the main concepts, key technologies, strengths and limitations of cloud computing.	√		✓									
		Learn the key and enabling technologies that help in the development of cloud.	√	✓	✓									
		Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.	✓	✓	~	√					√			
19150C73	CLOUD COMPUTING	Explain the core issues of cloud computing such as resource management and security.	✓	✓	✓		✓	√			>			✓
	COMI OTING	Be able to install and use current cloud technologies.	✓	✓	✓	✓	✓	✓			✓			✓
		Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.	✓	✓	✓		✓	√	√	✓	\	√	√	√
19150L77	CLOUD	Configure various virtualization tools such as Virtual Box, VMware workstation.	✓	✓	✓	√	√							
	COMPUTING LABORATORY	Design and deploy a web application in a PaaS environment.	✓	✓	✓	✓	✓							

		Learn how to simulate a cloud environment to implement new schedulers.	✓	✓	✓	✓	✓				✓		✓	
		Install and use a generic cloud environment that can be used as a private cloud.	√	✓	✓	✓	✓							√
		Manipulate large data sets in a parallel environment.	✓	✓	✓	~	✓	✓	✓	✓	✓	✓	✓	✓
		Develop code for classical Encryption Techniques to solve the problems.	✓	✓	✓		✓							
	SECURITY	Build cryptosystems by applying symmetric and public key encryption algorithms.	✓	✓	✓	✓	✓							
19150L78	LABORATORY	Construct code for authentication algorithms.	✓	✓	✓	✓	✓	✓						√
19130L/8	LABORATORY	Develop a signature scheme using Digital signature standard.	√	✓	✓	✓	✓	✓				√		√
		Demonstrate the network security system using open source tools	√	✓	✓	✓	✓	✓	✓	√	✓	✓	√	✓
		Identify the problem by applying acquired knowledge.	✓	✓		1			✓	✓	✓			
19150P83	Project Work	Analyze and categorize executable project modules after considering risks.		✓	✓	√		✓	✓		✓	✓		√
		Choose efficient tools for designing project modules.			✓	✓	✓			✓	✓	✓	✓	✓
		Combine all the modules through effective team work after efficient testing.							✓	✓	✓	✓	✓	✓

		Design a Data warehouse system and perform business analysis with OLAP tools.	✓	~	✓									
19150E66	DATA WAREHOUSING	Apply suitable pre-processing and visualization techniques for data analysis	✓	✓	✓		✓							
19150E66 A	AND DATA MINING	Apply frequent pattern and association rule mining techniques for data analysis	√	✓	✓	✓	✓				√			
		Apply appropriate classification and clustering techniques for data analysis	✓	✓	✓	✓	✓			✓	✓	√	✓	✓
		Design test cases suitable for a software development for different domains.	✓	✓	✓						✓			✓
		Identify suitable tests to be carried out.	✓	✓	✓	✓					✓			✓
19150E66 B	SOFTWARE TESTING	Prepare test planning based on the document.	✓	✓	✓	✓			✓		✓	✓		✓
		Document test plans and test cases designed	✓	✓	✓	✓	✓			✓	√	✓		✓
		Use automatic testing tools. Develop and validate a test plan.	✓	✓	✓	✓	✓	√	✓	✓	✓	√	✓	√
		Design two dimensional graphics.	✓	✓	✓									
19150E66	COMPUTER GRAPHICS AND	Apply two dimensional transformations.	✓	✓	✓	√	✓							
С	MULTIMEDIA	Design three dimensional graphics.	✓	✓	✓	✓	✓	_						
		Apply three dimensional transformations.	✓	✓	✓	√	√		√			✓		✓

		Apply Illumination and color models.	✓	✓	✓	✓	✓	✓				✓		✓
		Apply clipping techniques to graphics.	✓	✓	✓	✓					√	✓		✓
		Understood Different types of Multimedia File Format	✓	✓	✓	✓	✓				✓			✓
		Design Basic 3d Scenes using Blender	✓	✓	✓	✓	✓				✓	✓		
		Understand the basic concepts of graphs, and different types of graphs	✓	✓	✓	✓	✓							
19150E66 D	GRAPH THEORY AND APPLICATIONS	Understand the properties, theorems and be able to prove theorems.	✓	✓	✓		✓		✓		~			
		Apply suitable graph model and algorithm for solving applications.	✓	✓	✓	√	✓				~			
		Work with big data tools and its analysis techniques	✓	✓	✓		✓				✓			
		Analyze data by utilizing clustering and classification algorithms	✓	✓	✓	✓	✓							✓
19150E75 A	BIG DATA ANALYTICS	Learn and apply different mining algorithms and recommendation systems for large volumes of data	✓	√	√	~			√	√				~
		Perform analytics on data streams	✓	✓	✓	✓	✓				√		✓	✓
		Learn NoSQL databases and management.	✓	✓	✓	✓	✓					√		✓
19150E75 B		Differentiate between supervised, unsupervised,	✓	✓	✓									

		semi-supervised machine learning approaches											
		Discuss the decision tree algorithm and indentity and overcome the problem of overfitting	✓	✓	✓	✓							
	MACHINE LEARNING TECHNIQUES	Discuss and apply the back propagation algorithm and genetic algorithms to various problems	✓	✓									
		Apply the Bayesian concepts to machine learning	✓	✓	✓		✓		✓		✓		
		Analyse and suggest appropriate machine learning approaches for various types of problems	√	✓	✓	✓	✓						
		Understand Project Management principles while developing software.	✓	✓									
19150E75	SOFTWARE PROJECT	Gain extensive knowledge about the basic project management concepts, framework and the process models.	✓	✓	✓								
С	MANAGEMENT	Obtain adequate knowledge about software process models and software effort estimation techniques.	✓	✓	✓		✓		✓				✓
		Estimate the risks involved in various project activities.	✓	✓	✓	✓	✓		✓			√	
		Define the checkpoints, project reporting structure,	✓	√	✓	✓							

		project progress and tracking mechanisms using project management principles.									
		Learn staff selection process and the issues related to people management	✓	✓	√	✓	✓				
		Understand XML technologies	✓			✓					
		Understand service orientation, benefits of SOA	✓	✓	✓						
19150E75	SERVICE	Understand web services and WS standards	✓		✓				✓	✓	✓
D	ORIENTED ARCHITECTURE	Use web services extensions to develop solutions	✓	✓	✓		✓			✓	✓
		Understand and apply service modeling, service oriented analysis and design for application development	✓	✓		✓	✓			✓	✓
		Explain the concept of IoT.	✓	✓							
		Analyze various protocols for IoT.	✓	✓	✓	✓	✓				✓
19150E76 A	INTERNET OF THINGS	Design a PoC of an IoT system using Rasperry Pi/Arduino	✓	✓	✓			✓	✓	√	✓
		Apply data analytics and use cloud offerings related to IoT.	✓	✓	✓	✓					
		Analyze applications of IoT in real time scenario	✓	✓	✓	✓	√				
19150E76 B	MULTI-CORE ARCHITECTURE	Describe multicore architectures and identify their characteristics and challenges.	✓	✓							

	S AND PROGRAMMING	Identify the issues in programming Parallel Processors.	✓		✓							✓
		Write programs using OpenMP and MPI.	✓	√	√	√				✓		√
		Design parallel programming solutions to common problems.	✓	✓	✓		✓			✓		✓
		Compare and contrast programming for serial processors and programming for parallel processors.	✓	✓		✓	✓	✓		✓		✓
		Design effective dialog for HCI	✓									
		Design effective HCI for individuals and persons with disabilities.	✓	✓								
19150E76	HUMAN COMPUTER	Assess the importance of user feedback.	✓		✓	✓	✓			✓		
С	INTERACTION	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites.	√	✓	✓	✓	✓			✓		√
		Develop meaningful user interface.	✓		✓	✓	✓					
19150E76	WIRELESS ADHOC AND	To identify and understand security issues in ad hoc and sensor networks	✓									
D	SENSOR NETWORKS	To analyze protocols developed for ad hoc and sensor networks	✓	✓	✓	✓	✓					✓

		Identify different issues in wireless ad hoc and sensor networks	√	✓	✓							✓	√	
		Know and understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms.	✓											
19150E81 A	DIGITAL IMAGE PROCESSING	Operate on images using the techniques of smoothing, sharpening and enhancement	✓	✓	✓				✓					
A	FROCESSINO	Understand the restoration concepts and filtering techniques.	✓	✓	✓	✓								✓
		Learn the basics of segmentation, features extraction, compression and recognition methods for color models.	✓	✓	✓	✓	✓	✓	✓		√	✓		✓
		Represent knowledge using ontology.	✓		✓			✓	✓	✓	✓			
	SOCIAL	Develop semantic web related applications.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
19150E81 B	NETWORK ANALYSIS	Predict human behaviour in social web and related communities	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
		Visualize social networks	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
19150E81 C	INFORMATION SECURITY	Discuss the basics of information security	✓				✓		✓			✓		

		Illustrate the legal, ethical and												
		professional issues in	✓	1	✓						✓		_	/
		information security	•	•	*						•		,	•
		Demonstrate the aspects of												
		risk management	\checkmark	✓	✓	✓	✓	✓			✓	✓		✓
		Become aware of various												
		standards in the Information	✓	_	✓		✓		✓		✓	√	✓	✓
		Security System	•	,	•				,		•	•		,
		Design and implementation of												
		Security Techniques.	\checkmark	✓	✓	✓	✓				✓	✓	✓	✓
		Understand the basics of												
		computer forensics	\checkmark							✓			✓	
		Apply a number of different												
		computer forensic tools to a	✓	/	✓							√		✓
		given scenario	·	,	•							•		,
19150E81	CYBER	Analyze and validate forensics												
D	FORENSICS	data	\checkmark	✓	✓	✓		✓		✓	✓	✓		✓
D	TOTELIVOICS	Identify the vulnerabilities in a												
		given network infrastructure	\checkmark	✓	✓	✓	✓		✓	✓	✓	✓		✓
		Implement real-world hacking												
		techniques to test system	✓	✓	✓		✓	✓		✓	✓	√		✓
		security.									,			·
		Use an open source search												
		engine framework and explore	✓											
		its capabilities												
	INFORMATION	Apply appropriate method of												
	RETRIEVAL	classification or clustering.	✓	✓	✓									
10150505	,,,	Design and implement												
19150E82	TECHNIQUES	innovative features in a search	\checkmark	✓	✓		✓				✓			
A		engine.												
		Design and implement a		,	,	,	,							
		recommender system.	\checkmark	~	✓	✓	✓							

		Implement efficient algorithms in GPUs for common application kernels, such as matrix multiplication	√		✓							
19150E82	GPU	Write simple programs using OpenCL	✓	✓	✓			✓			✓	
СВ	ARCHITECTURE AND PROGRAMMING	Identify efficient parallel programming patterns to solve problems	✓	✓	✓	√	✓					
		Describe GPU Architecture	✓	✓	✓	✓	✓				✓	✓
		Write programs using CUDA, identify issues and debug them	✓	✓	✓	✓	✓	✓	✓	✓		✓
		To tag a given text with basic Language features	✓				✓					
		To design an innovative application using NLP components	✓	✓	✓					✓		✓
19150E82 C	NATURAL LANGUAGE PROCESSING	To implement a rule based system to tackle morphology/syntax of a language	✓	✓	✓	✓		✓		✓		✓
	PROCESSING	To design a tag set to be used for statistical processing for real-time applications	✓	✓	✓	√		✓				✓
		To compare and contrast the use of different statistical approaches for different types of NLP applications	✓	✓			✓					✓
19150E82 D	SPEECH PROCESSING	Create new algorithms with speech processing	✓									
D	FRUCESSING	Derive new speech models	✓	✓	✓	✓			✓			

		Perform various language phonetic analysis	✓	✓	✓	✓	✓				✓	✓	✓	
		Create a new speech identification system	✓	✓	✓	✓	✓	✓			✓			✓
		Generate a new speech recognition system	✓	✓	✓	✓				✓				✓
		Identify the problem by applying acquired knowledge	✓	✓		✓			✓	✓	✓			
		Analyze and categorize executable project modules after considering risks		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
1910P83	PROJECT WORK	Choose efficient tools for designing project modules								✓	✓	✓	✓	✓
		Combine all the modules through effective team work after efficient testing							✓	✓	✓	✓	✓	✓
		Elaborate the completed task and compile the project report									✓	✓		√
		Articulate the main concepts, key technologies, strengths and limitations of cloud computing.	✓					✓						
19150FE5	CLOUD	Learn the key and enabling technologies that help in the development of cloud.	√	~	✓	√	✓							
4A	COMPUTING	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.	√	✓	✓	✓					✓			
		Explain the core issues of cloud computing such as	✓	✓	✓	✓		✓			✓			✓

		resource management and										
		security.										
		Be able to install and use current cloud technologies.	✓	✓	✓		✓			✓		✓
		Choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.	✓	✓	✓		√					√
19150FE5	DATABASE	understand relational data model, evolve conceptual model of a given problem, its mapping to relational model and Normalization	✓									
4B	MANAGEMENT SYSTEMS	query the relational database and write programs with database connectivity	✓	✓	✓							✓
		understand the concepts of database security and information retrieval systems	✓	✓	✓	✓	✓			✓		✓
		To learn the different bio potential and its propagation	✓									
19152FE5	BASICS OF BIO MEDICAL	To get Familiarize the different electrode placement for various physiological recording	✓	✓	✓							
19132FE3 4A	INSTRUMENTA TION	Students will be able design bio amplifier for various physiological recording	✓	✓	✓	✓			✓			√
		Students will understand various technique non electrical physiogical measurements	✓	✓	✓	✓	✓	✓				✓

		Understand the different biochemical measurements	✓	✓	✓	✓						✓	✓	✓
		Expertise in various calibration techniques and signal types for sensors	√											
19152FE5 4B	SENSORS AND TRANSDUCERS	Apply the various sensors in the Automotive and Mechatronics applications	✓	✓	✓									
7.0	TRANSDUCERS	Study the basic principles of various smart sensors.	✓	✓	✓	✓	✓						✓	
		Implement the DAQ systems with different sensors for real time applications	✓	✓	✓	√	✓							
		To elucidate on advantages of nanotechnology based applications in each industry	✓											
19153FE5 4A	INDUSTRIAL NANO TECHNOLOGY	To provide instances of contemporary industrial applications of nanotechnology	✓	✓	✓		✓	✓			✓			✓
	TECHNOLOGY	To provide an overview of future technological advancements and increasing role of nanotechnology in each industry	✓	✓	✓	√	✓				✓			✓
	ENERGY	To analyse the energy data of industries.	✓											✓
19153FE5 4B	CONSERVATION AND	Can carryout energy accounting and balancing	✓	✓	✓	✓		✓	✓		✓	✓		✓
	MANAGEMENT	Can suggest methodologies for energy savings	✓	✓	✓	✓	✓	✓	✓	√	✓		✓	✓

		Ability to classify the solar energy collectors and methodologies of storing solar energy.	√										
		Knowledge in applying solar energy in a useful way.	✓	✓	✓								
19154FE5 4A	RENEWABLE ENERGY SOURCES	Knowledge in wind energy and biomass with its economic aspects.	✓	✓	✓	✓				✓	✓		✓
		Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
		Understanding the physics of solar radiation.	✓	✓	✓			✓		✓	✓	✓	✓
19154FE5 4B	AUTOMOTIVE SYSTEMS	the students will be able to identify the different components in automobile engineering	✓		✓	✓	✓						✓
40	SISIEWS	Have clear understanding on different auxiliary and transmission systems usual.	✓	✓	✓	✓	√	✓	✓		✓		✓
		Basic concepts of air quality management.	✓										
19155FE5 4A	AIR POLLUTION AND CONTROL	Ability to identify, formulate and solve air and noise pollution problems.	✓	✓	✓								
7/1	ENGINEERING	Ability to design stacks and particulate air pollution control devices to meet applicable standards		✓	✓								

		Ability to select control equipments		✓	✓	✓	✓				✓			
		Ability to ensure quality, control and preventive measures.		✓	✓		✓	~			✓			
		Have basic idea about the fundamentals of GIS.	✓											
	GEOGRAPHIC	Understand the types of data models.	✓	✓	✓				✓					
19155FE5 4B	INFORMATION SYSTEMS	Get knowledge about data input and topology.	✓	✓	✓			✓		✓				✓
	STSTEMS	Gain knowledge on data quality and standards.	✓	✓	✓	✓	✓			✓		✓	✓	✓
		Understand data management functions and data output	✓	✓	✓				✓			✓		✓
		Apply the basic engineering knowledge for the design of robotics	✓	✓	✓	✓	✓							
19152FE7		understand importance of robotics in today and future goods production	✓	✓	✓	✓								
19152FE7 4A	ROBOTICS	understand robot configuration and subsystems	✓	✓	✓									
		understand principles of robot programming and handle with typical robot	✓	✓	✓	✓								
		understand working of mobile robots	✓	✓	✓	✓								
	ELECTRONIC DEVICES	Analyze the characteristics of semiconductor diodes.	✓	✓	✓	✓								

19152FE7 4B		Analyze and solve problems of Transistor circuits using model	✓	✓	✓					
		parameters. Identify and characterize diodes and various types of transistors.	✓	✓	✓					
		Analyze the characteristics of special semiconductor devices.	✓	✓	✓					
		Analyze the characteristics of Power and Display devices.	✓	√	✓					
			✓	✓	✓	✓				
		Ability to introduce electric circuits and its analysis	✓	✓	✓	✓				
10152557	DAGIC CIDCUIT	Ability to impart knowledge on solving circuit equations using network theorems	✓	✓	✓	√				
19153FE7 4A	BASIC CIRCUIT THEORY	Ability to introduce the phenomenon of resonance in coupled circuits.	✓	✓	✓	√				
		Ability to introduce Phasor diagrams and analysis of three phase circuits	√	✓	✓	√				
19153FE7	INTRODUCTION TO RENEWABLE	Ability to understand and analyze power system operation, stability, control and protection.	✓	✓	✓	✓				
4B	ENERGY SYSTEM	Ability to handle the engineering aspects of electrical energy generation and utilization.	✓	✓	✓					

		Ability to understand the stand alone and grid connected renewable energy systems.	√	✓	✓	✓						
		Ability to design of power converters for renewable energy applications.	✓	✓	✓	√	✓					
		Ability to acquire knowledge on wind electrical generators and solar energy systems.	√	✓	~	√						
		Ability to design power converters used for hybrid renewable energy systems.	✓	✓	✓	√						
		Illustrate and familiarize the basic concepts and scope of engineering safety.	✓	✓				√	✓	✓		
19154FE7 4A	INDUSTRIAL SAFETY	Understand the standards of professional conduct that are published by professional safety organizations and certification bodies.						✓	✓	✓		
		Illustrate the importance of safety of employees while working with machineries.						√	✓	✓		
19154FE7 4B	TESTING OF MATERIALS	Reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear and torsion.	√	√	√	✓						
		Identify, formulate and solve engineering problems of						✓	✓	✓		

		structural elements subjected										
		to flexure.										
		Evaluate the impact of engineering solutions on the										
		society and also will be aware of contemporary issues			2							
		regarding failure of structures due to unsuitable materials.										
		Will have knowledge about adsorption and oxidation process.	✓	✓	✓	✓						
19155FE7 4A	WASTE WATER MANAGEMENT	Will gain idea about various methods available for water treatment.	√	✓	✓	√						
		Will appreciate the necessity of water and acquire knowledge of preliminary treatment.	√	✓	✓	✓			✓			
		Students should be able to describe the importance and necessity of green building.	√									
19155FE7	GREEN BUILDING	Students should be able to assess a building on the norms available for green building.	√	✓	✓	✓	✓	√	✓	✓		
4B	DESIGN	Students should be able to suggest materials and technologies to improve energy efficiency of building.	✓	✓			✓	~	✓	✓		
		Students should be able to design and assess building	✓	✓	3							
19150FE7 4A		Develop simple applications using basic constructs	✓	✓	✓							

	INTRODUCTION TO C	Develop applications using arrays and strings	✓	✓	✓	✓			✓		✓			✓
	PROGRAMMING	Develop applications using functions and structures	✓	✓	✓	✓	✓			✓		√	✓	✓
	DATA	Implement linear data structures and solve problems using them	✓	✓	✓									
19150FE7 4B	STRUCTURES AND	Implement and apply trees and graphs to solve problems.	✓	✓	✓	√				✓	√			✓
	ALGORITHMS	Implement the various searching and sorting algorithms.	√	✓	✓	√	✓	√				√		✓



Dept: COMPUTER SCIENCE AND ENGINEERING

BTECH (PT)- 2019R

Mapping of COs and POs

Course Code	Title of the Course	Course Objectives]	POS					
			PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
		Expand a function in terms of Fourier Series and apply it for solving engineering problems.	√	✓	√	√								
	To a form and Dord's 1	Gain knowledge on Fourier Transforms	✓	✓	✓	✓								
19148S11P	Transforms and Partial Differential Equations+C24	Model and solve higher order partial differential equations	✓	✓	✓	✓								
		Apply the methods of solving PDE in practical problems	✓	✓	✓	✓								
		Handle problems in Z transforms and apply it to solve difference equations	✓	✓	✓	✓								
		Simplify Boolean functions using KMap	✓	✓	✓									
10152C12D	Disital Contains	Design and Analyze Combinational and Sequential Circuits	✓	✓	✓									
19152S12P	Digital Systems	Implement designs using Programmable Logic Devices	✓	✓	✓	✓								
		Write HDL code for combinational and Sequential Circuits	✓	✓	✓	✓	✓							
		Implement abstract data types for linear data structures	✓	✓	✓									
19150H13P	Data Structures and algorithms	Apply the different linear and non-linear data structures to problem solutions.	✓	✓	✓									
		Critically analyze the various sorting algorithms	✓	✓	✓	✓								
19150H14	Computer Architecture and	Understand the basics structure of computers, operations and instructions	√	✓	✓									
P	Organization	Design arithmetic and logic unit.	✓	✓	✓						_			
		Understand pipelined execution and design control unit.	✓	✓	✓									

		Understand parallel processing architectures.	✓	✓	✓	✓	✓	✓			✓	✓
		Develop and implement Java programs for simple applications that	✓	✓	✓							
19150H15 P	Object Oriented Programming	make use of classes, packages and interfaces.	✓	✓	✓					✓		
		Develop and implement Java programs with arraylist, exception	✓	✓	✓					✓	✓	✓
		Determine the solution of algebraic and transcentendal system of linear equations	✓	✓								
		To interpolate the values of unknown functions using Newton's Formula	✓	✓		✓						
		Estimate the numerical values of the derivatives and integrals of Unknown function	✓	✓		✓						
19150H21	Numerical Methods	Solve first and second order initial value problem	✓	✓	✓	✓						
P		Solve Numerically boundary value problem	✓	✓	✓	✓						
		Understand and execute programs based on 8086/8085 microprocessor.	✓	✓	✓							
19150H22	Microprocessors and	Classify the instructions with the help of Addressing modes of 8085 with necessary programs	✓	✓	✓							
P	Interfacing	Design Memory Interfacing circuits.	✓	✓	✓	✓	✓	✓				
		Design and interface I/O circuits.	✓	✓	✓	✓						
		Design and implement 8051 microcontroller based systems.	✓	✓	✓	✓	✓					✓
		Classify the modern and futuristic database applications based on size and complexity	✓	✓	✓							
		Map ER model to Relational model to perform database design effectively	✓	✓	✓							
		Write queries using normalization criteria and optimize queries	✓	✓	✓							

	Datahasa Managamant	Compare and contrast various indexing strategies in different database systems	✓	✓	✓	✓					✓
19150H23P	Database Management Systems	Appraise how advanced databases differ from traditional databases.	✓	✓	✓	✓	✓				✓
19150H24	Design and Analysis Of	Design algorithms for various computing problems. Analyze the time and space complexity of algorithms.	✓	~	✓	√					
P P	Algorithms	Critically analyze the different algorithm design techniques for a given problem	√	√	✓	✓					✓
		Modify existing algorithms to improve efficiency	✓	✓	✓	✓					✓
		Identify the key activities in managing a software project.	✓	✓	✓						
		Compare different process models	✓	✓	✓						
		Understand Concepts of requirements engineering and Analysis Modeling.	✓	✓	✓						
101501125	Software Engineering	Apply systematic procedure for software design and deployment	✓	✓	✓	✓	✓				
19150H25 P		Compare and contrast the various testing and maintenance	✓	✓	✓	✓	✓				
		Manage project schedule, estimate project cost and effort requir	✓	✓	✓	✓	✓				
		Have an understanding in identifying structures on many levels.	✓	✓	✓						
19148S31 P	Discrete Mathematics	Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.	✓	~	✓						
		Be aware of the counting principles.	✓	✓	✓						
		Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.	✓	✓	✓						

		Have knowledge of the concepts needed to test the logic of a program.	✓	✓	✓							✓
		Analyze various scheduling algorithms.	✓	✓	✓							
		Understand deadlock, prevention and avoidance algorithms.	✓	✓	✓							
19150Н32	Omagatina System	Perform administrative tasks on Linux Servers.	✓	✓	✓	✓	✓					
P	Operating System	Compare and contrast various memory management schemes.	✓	✓	✓	✓	✓					
		Understand the functionality of file systems.	✓	✓	✓	✓	✓	✓				✓
		Compare iOS and Android Operating Systems	✓	✓	✓	✓	✓	✓				✓
		Identify problems that are amenable to solution by AI methods.	✓	✓	✓							
		Identify appropriate AI methods to solve a given problem.	✓	✓	✓	✓	✓					
19150H33 P	Artificial Intelligence	Formalise a given problem in the language/framework of different AI methods.	✓	✓	✓	✓	✓					
P	_	Implement basic AI algorithms.	✓	✓	✓	✓	✓					✓
		Design and carry out an empirical evaluation of different algorithms on a problem formalisation, and state the conclusions that the evaluation supports.	✓	✓	✓	✓	✓					✓
		Identify the components required to build different types of networks	✓	✓	✓							
19150H34		Choose the required functionality at each layer for given application	✓	✓	✓							
P	Computer Networks	Identify solution for each functionality at each layer	✓	✓	✓	✓	✓			✓		✓
		Trace the flow of information from one node to another node in the network	✓	✓	✓	✓	✓			✓		✓

		Analyze various scheduling algorithms.	✓	✓	✓							
101501.25		Understand deadlock, prevention and avoidance algorithms.	✓	✓	✓							
19150L35 P	Operating Systems and Networking	Identify the components required to build different types of networks	✓	✓	✓	✓	✓					✓
		Choose the required functionality at each layer for given application	✓	✓	✓	✓	✓		✓	✓		✓
		Apply cryptographic algorithms for encrypting and decryption for secure data transmission	✓	✓	✓							
		Understand the importance of Digital signature for secure edocuments exchange	✓	~	✓							
19150H41 P	Principles Of Cryptography	Understand the program threats and apply good programming practice	✓	✓	✓			✓				
r		Get the knowledge about the security services available for internet and web applications	✓	✓	✓	✓	✓					✓
		Understand data vulnerability and sql injection Gain the knowledge of security models and published standards	✓	✓	✓	✓	✓	✓				√
		Design simple web pages using markup languages like HTML and XHTML	✓	✓	✓					√		✓
		Design and implement 8051 microcontroller based systems.	✓	✓	✓							✓
		Create dynamic web pages using DHTML and java script that is easy to navigate and use.	✓	✓	✓		✓					✓
19150H42	Web Technology	Program server side web pages that have to process request from client side web pages	✓	~	✓	✓	✓					✓
P	50 200	Represent web data using XML and develop web pages using JSP	✓	✓	✓	✓	✓			✓	✓	✓

		Understand various web services and how these web services interact.	✓	✓	✓	~	✓			✓	✓	✓
		Write various applications using C# Language in the .NET Framework.	✓	✓	✓							✓
19150Н43Р	C# And .Net Framework	Create mobile applications using .NET compact Framework.	✓	✓	✓	✓	✓			✓		✓
		Develop distributed applications using .NET Framework	✓	✓	✓	✓	✓			✓		✓
19150E44A	Theory of Computation	Design Finite State Machine, Pushdown Automata, and Turing Machine.	✓	✓	✓	✓						
P	• •	Explain the Decidability or Undecidability of various problems	✓	✓	✓	✓	✓					
		Explain the basic concepts of real time Operating system design	✓	✓	✓							
19150E44B P	Real Time Systems	Use the system design techniques to develop software for embedded systems	✓	✓	✓		✓	✓				✓
		Differentiate between the general purpose operating system and the real time operating system	✓	✓	√	✓	✓	✓				✓
		Design Web pages using HTML/XML and style sheets	✓	✓	✓							
101505446		Create user interfaces using Java frames and applets.	✓	✓	✓							✓
19150E44C P	User Interface Design	Create dynamic web pages using server side scripting.	✓	✓	✓							✓
		Write Client Server applications.	✓	✓	✓		✓	✓				✓
		Use the frameworks JSP Strut, Hibernate, Spring	✓	✓	✓	✓	✓	✓				✓
19150E44D	Advanced Databases	design a database using ER diagrams and map ER intoRelations and normalize the relations	✓	✓	✓							
P	Auvanceu Databases	Acquire the knowledge of query evaluation to monitor the performance of the DBMS	✓	✓	✓							

		Acquire the knowledge about different special purpose databases and to critique how they differ from traditional database systems.	✓	✓	✓	✓	✓	✓				
19150L45		Create 3D graphical scenes using open graphics library suits	✓	✓	✓							✓
P	Internet Programming Lab	Implement image manipulation and enhancement	✓	✓	✓	✓	✓			✓		✓
		Create 2D animations using tools	✓	✓	✓	✓	✓			✓	✓	✓
		Design and implement projects using OO concepts.	✓	✓	✓	✓				✓		
19150H51		Use the UML analysis and design diagrams.	✓	✓	✓	✓	✓			✓	✓	✓
P	Object Oriented Analysis and	Apply appropriate design patterns.	✓	✓	✓	✓	✓			✓	✓	✓
		Create code from design.	✓	✓	✓	✓	✓			✓		
		Compare and contrast various testing techniques.	✓	✓	✓	✓	✓			✓	✓	✓
		Perform functional and nonfunctional tests in the life cycle of the software product	✓	✓	✓					✓		
19150H52	Coffee Oct.	Understand system testing and test execution process.	✓	✓	✓	✓	✓			✓	✓	✓
Р	Software Quality Management	Identify defect prevention techniques and software quality assurance metrics.	✓	✓	✓	✓	✓			✓	√	✓
		Apply techniques of quality assurance for typical applications.	✓	✓	✓	✓	✓			✓	✓	✓
		Gain proficiency in 3D computer graphics API programming	✓	✓	✓	✓	✓					
19150H53		Able to understand different realizations of multimedia tools	✓	✓	✓	✓	✓					
P	Graphics and Multimedia	Able to develop interactive animations using multimedia tools	✓	✓	✓	✓	✓					✓
		Gain the knowledge of different media streams in multimedia transmission	✓	✓	✓	✓	✓			✓		✓

		Enhance the perspective of modern computer system with modeling, analysis and interpretation of 2D and 3D visual information.	✓	✓	✓	✓	✓				✓
19150E54	Soft Computing	Apply suitable soft computing techniques for various applications.	✓	✓	✓						
AP	Soft Computing	Integrate various soft computing techniques for complex problems.	✓	✓	✓						
		Design and implement a prototype compiler.	✓	✓	√						
19150E54 BP	Principles of Compiler Design	Apply the various optimization techniques.	✓	✓	✓						
		Use the different compiler construction tools.	✓	✓	✓	✓	✓				
		Discuss trends in Distributed Systems.	✓	✓	✓						
		Apply network virtualization.	✓	✓	✓	✓	✓				
19150E54	Distributed Systems	Apply remote method invocation and objects	✓	✓	✓	✓	✓		✓	✓	✓
СР	, in the second	Design process and resource management systems.	✓	✓	✓	✓	✓		✓	✓	✓
		Explain the basics of mobile telecommunication system	✓	✓	✓						
10150554		Choose the required functionality at each layer for given application	✓	✓	✓						
19150E54 DP	Mobile Computing	Identify solution for each functionality at each layer	✓	✓	✓						✓
		Use simulator tools and design Ad hoc networks	✓	✓	✓	✓	✓				✓
		Develop a mobile application.	✓	✓	✓	✓	✓				✓
19150L55	Software Development Lab	Design and Implement various mobile applications using emulators.	✓	✓	✓					✓	✓
P	Software Development Lab	Deploy applications to hand-held devices	✓	✓	✓	✓	✓		✓	✓	✓
		Able to design and control real time control systems	✓	✓	✓						

		Able to understand the functionality of 8085 microprocessor	✓	✓	✓						
19150H61	Embedded Systems	Able incorporate enhanced features in the embedded systems through software	✓	✓	✓	✓	✓				
P		Able to rectify minor problems by troubleshooting	✓	✓	✓	✓	✓				
		Acquire the knowledge of real time operating system and implement real time functions	✓	✓	✓	✓	✓				
		Develop Java programs using OOP principles	✓	✓	✓						
		Develop Java programs with the concepts inheritance and interfaces	✓	✓	✓	✓	✓				
19150H62 P	Advanced Java programming	Build Java applications using exceptions and I/O streams	✓	✓	✓	✓	✓				
		Develop Java applications with threads and generics classes	✓	✓	✓	✓	✓				
		Develop interactive Java programs using swings	✓	✓	✓	✓	✓				
		Design test cases suitable for a software development for different domains.	✓	✓	✓						
		Identify suitable tests to be carried out	✓	✓	✓	✓			✓	✓	✓
19150H63 P	Software Testing	Prepare test planning based on the document.	✓	✓	✓	✓			✓	√	✓
	C	Document test plans and test cases designed.	✓	✓	✓	✓	✓		✓	✓	✓
		Use automatic testing tools.	✓	✓	✓	✓	✓		✓	✓	✓
		Develop and validate a test plan.	✓	✓	✓	✓	✓		✓	✓	✓

19160E64 AP	Principles of Management	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management	√	✓	✓			✓	✓	✓	✓	√	✓	√
		Explain UNIX Operating system and usage of file system.	✓	✓	✓									
10150564		Apply Shell Commands for a given task using filter and pipe commands.	✓	✓	✓	✓	✓							
19150E64 BP	Unix Internals	Develop and implement the Shell scripts in VI editor.	✓	✓	✓	✓	✓	✓						
		Discuss the various techniques used for optimising the cache performance	✓	✓	✓	✓	✓	✓			✓			✓
		Design hierarchal memory system	✓	✓	✓	✓	✓				✓		✓	✓
19150E64	D11-1 C	optimize sequential code for fastest possible execution	✓	✓	✓			✓					✓	✓
СР	Parallel Computing	Develop, analyze and implement algorithms for parallel computers	✓	✓	✓	✓	✓				✓		✓	✓
19150E64	Duo ang manin a mana di anna	Identify and discuss the design principles of a given language or paradigms	✓	✓	✓	√	✓							
DP	Programming paradigms	compare different programming languages from the point of view underlying design principles	√	✓	✓	✓	✓			✓			~	√
101501.65		Create 3D graphical scenes using open graphics library suits	✓	✓	✓	✓	✓							
19150L65 P	Java Programming Lab	Implement image manipulation and enhancement	✓	✓	✓	✓	✓							✓
		Create 2D animations using tools	✓	✓	✓	✓	✓							✓
19160S71 P	Total Quality Management	The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.	√	✓	✓			✓	✓	✓	✓	✓	✓	√

		Apply grid computing techniques to solve large scale scientific problems.	✓	✓	✓								
19150H72	Cuid Computing	Apply the concept of virtualization.	✓	✓	✓								
P	Grid Computing	Use the grid and cloud tool kits.	✓	✓	✓		✓						✓
		Apply the security models in the grid and the cloud environment.	✓	✓	✓	✓	✓			✓	✓		✓
		To understand how middleware facilitates the development of distributed applications in heterogenous environments	✓	✓	✓								
19150H73 P	Middleware Technologies	to learn the object oriented middleware basics through the example of cobra objects	✓	~	✓								
		To understand the basics of web services that is the most often used middleare techniques	✓	✓	✓	~	√						✓
19150E74		Will be able to analyze the various parameters of networking	✓	✓	✓	✓							
AP	High Speed Networks	Will be able to understand the algorithm and technologies involved in internet and associated networks	✓	✓	✓	✓	✓			✓		✓	✓
		Knowledge and awareness of basic principles and concepts of biology, computer science and mathematics	✓	√	√			√		√		✓	✓
19150E74 BP	Bio Informatics	Existing software effectively to extract information from large databases and to use this information in computer modeling	✓	✓	✓	✓	✓	✓		√		✓	✓
	Software Project Management	Identify the key activities in managing a software project.	✓	✓	✓					✓			✓

			Compare diff	erent p	roces	ss mo	odels.	•	✓	✓	✓					✓		✓	✓
19150E74			Concepts of r engineering an				leling	g.	✓	✓	✓					✓		✓	✓
CP			Apply system software design						✓	✓	✓	✓	✓			✓		✓	✓
			Compare and testing and ma	intena	nce.				√	✓	✓	✓	✓			✓		✓	✓
			Know and un fundamentals processing, su sampling, qua 2Dtransforms	of digi ch as c ntizati	tal in ligitiz on, ar	nage zation nd		nd	✓	✓	✓								
19150E74 DP	Digital	Image Processing	Operate on in techniques of and enhancem	smootl			penin	ıg	✓	✓	✓								
			Understand th			1 cor	ncepts	S	✓	✓	✓								✓
			Learn the bas features extrac recognition m	tion, c	comp	ressi	on an		√	✓	✓	√	✓						√
19150P75 P	Project	To independently carry out research /investigation to identify and solve practical problems		/			✓	✓	√					,	/		~		✓
		To write and present a report	,	/			✓	✓	✓	,	/			,	/		✓		✓
			To identify the problem in the existing power system and to	<i>(</i> √	✓	✓	√	✓					√			✓		✓	

develop software / hardwar e solution by doing research										
To write and present a substant ial technical report	✓	✓	✓	✓	√	✓		✓	√	✓

HOD

Head of the Department
Department of Computer Science
and Engineering
Ponnel (and Ramajayam Institute of
Science And Ramajayam Institute of
(Insulton Deemed to be University
142 3 of the UGC Act. 1896)
THANJAVUR - 613 403. TAMIL NADU

Summy _

School of Engineering and Technology, Ponnalysh Ramajayam Institute of Science and Technology (PRIST) Deemed to be University Vallam, Thanjavur-613 403.



COMPUTER SCIENCE AND ENGINEERING

M.TECH (FT)- 2019R

Mapping of COs and POs

Course	Title of the Course	Course Objectives						PO	S					
Code	The of the Course	Course Objectives	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2
		Have knowledge of the concepts needed to test the logic of a program	✓		✓	✓								
19248S11A	Higher Mathematics	Have gained knowledge which has application in expert system, in data base and a basic for the prolog language	✓	✓	√	✓	√				√			
		Have an understanding in identifying patterns on many levels		✓		✓	✓	✓	✓	✓				

		To have an overview of different types of operating systems.	✓		✓								
19250H12	Modern Operating System	To know the components of an operating system.	✓	✓	✓	✓		✓		✓		✓	
		To have a thorough knowledge of process management.	✓	✓	✓	✓		✓		✓	✓		
19250H13	Parallel and High Performance	To understand the models and parameters used.	✓		✓	✓	✓				✓		
19230H13	Computing	To understand the Matrix Algorithms and Design Issues		✓	✓	✓		✓	✓			✓	
	Adhoc and Sensor	A broad overview of the state of wireless and ad hoc networking.	✓			✓	✓				✓	✓	
19250H14	Network	The overview of the physical, networking and architectural issues of ad hoc networks		✓	✓		√		✓	✓			
	Advanced Data	The Different Heap Structures, Search Structures and Multimedia Structures.	✓	✓			✓			✓		✓	
19250H15	Structures and Algorithms	The various coding scheduling and algorithms.	✓	✓	✓		✓						
		The various multimedia structures.	✓		\checkmark	✓	✓	✓	✓		✓	✓	
19250E16	Multimodia Cuatana	To study the graphics techniques and algorithms.	✓	✓	✓		✓						
A	Multimedia Systems	To study the multimedia concepts and various I/O technologies				✓	✓		✓		✓	✓	
		Understand and be able to apply fundamental GA theory	✓	✓	✓				✓			✓	
19250E16 B	Genetic Algorithms	be able to implement or modify simple genetic algorithms.	✓				✓	✓		✓			
		be able to apply GAs to problems in the student's field.					✓	✓			✓	✓	
19250E16		To introduce an integrated approach to software development incorporating quality management methodologies.	✓	✓	✓		✓						
C 19230E10	Software Metrics	To study about the quality improvements in software					✓				✓	✓	
		To understand the Software Quality software standards	✓	✓			✓		✓			✓	

19250L17	Advanced Web Technologies Lab	On completion of this course, a student will be familiar with client server architecture and able to develop a web application using java technologies To create fully functional website/web application with MVC architecture	√	✓	✓	✓	✓	✓	✓					
19250CRS	Research Led	Exposure to various research domains	✓	~	✓		✓	✓		✓	✓			✓
	Seminar	Acquaintance with languages of research	✓	✓	✓	√		✓		✓		✓	✓	✓
		Development of research aptitude	✓	✓		√						✓	✓	✓
		To study the set of services that a middleware system constitutes of.	✓	√	✓	✓	✓			✓	✓			
19250Н21	Middleware Technologies	To understand how middleware facilitates the development of distributed applications in heterogeneous environments.	✓	✓			✓	✓		✓	✓	~		
	J	To study how it helps to incorporate application portability, distributed application component interoperability and integration.	✓	✓		✓	√	✓		√	✓			
	Object Oriented	To learn about software prototyping, analysis and design.	√	✓		✓	✓			✓	✓			
19250H22	Software	To learn UML and its usage.	✓	✓	✓	✓		✓		✓				
	Engineering	Case studies to apply the principles												
		To study the image fundamentals and mathematical transforms necessary for image processing.	✓	✓	✓		√		✓		✓	✓		
	Digital Image	To study the image enhancement techniques		✓		✓			✓	✓		✓		
19250H23	Processing	To study image restoration procedures.		✓	✓									
	S	To study the image compression procedures.	✓		√	✓								
		To study the image segmentation and representation techniques												

19250E24	Advanced	processing, distributed systems, operating system issues.	✓	✓		✓		✓				
A	Distributed	learn about distributed transaction	✓	✓	✓		✓	✓	✓			
	Computing	study about the distributed databases	✓	✓	✓	✓						
19250E24 B	Data Warehousing & Data Mining	To introduce the concept of data mining with in detail coverage of basic tasks, metrics, issues, and implication. Core topics like classification, clustering and association rules are exhaustively dealt with.	✓	✓	√							
		To introduce the concept of data warehousing with special emphasis on architecture and design			√	✓						
19250E24	Artificial Neural	To introduce the concepts of artificial neural networks such as biological neural networks, clustering and structures	✓	✓	√	✓						
С	Networks	To study the linear models for regression, classification, kernel methods and feed forward neural networks			✓	✓	✓					
19250E25	Service Oriented	Understand SOA, service orientation and web services	✓	✓	✓							
A A	Architecture	Analyzing and designing business based on SOA principles.			✓	✓						
		Learning the concepts of XML				✓	✓	✓				
		Describe and interpret the basics of high speed networking technologies.	✓	✓								
19250E25 B	High Speed Networks	Apply the concept learnt in this course to optimize and troubleshoot highspeed network.		✓	✓	✓						
		Demonstrate the knowledge of network planning and optimization				✓	✓	✓		✓		
	Embedded Systems	To introduce students to the embedded systems, its hardware and software.	✓	✓								

		To introduce devices and buses used for embedded networking.		✓	✓	✓								
19250E25		To explain programming concepts and embedded programming in C and C++.			✓	✓	✓	✓	✓	✓				
С		To explain real time operating systems, inter-task communication and an exemplary case of MUCOS – IIRTOS			✓	✓	~	✓						
19250L26	.NET Technologies Lab	Create Simple application using web controls	√	✓	√	√	√				✓	✓	✓	√
		Work with States of ASP.NET Pages & Adrotator Control Use of calendar control, Treeview control & Validation controls	√	✓	√	✓	√				✓	√	✓	√
192TECW R	Technical Writing /Seminars	Understand professional writing by studying management communication	√	✓	√	✓	√				✓	√	✓	√
		Understanding research questions and tools	✓	✓	✓	✓	✓		✓					
19250CR	Research	Experience in scientific writings	✓	✓	✓	✓	✓	✓	✓					
M	Methodology	Practice in various aspects of scientific publications	✓	✓	✓			✓	✓					
		Inculcation of research ethics	✓	✓		✓	✓			✓		✓		
19250CBR	Participation in Bounded Research	Knowledge and awareness of basic principles and concepts of biology, computer science and mathematics	✓	~	✓	✓			✓	✓	~	√		
		Understand Project planning and management.	✓	✓										
19250H31	Software Project Management	Identify Client management and project definition.		✓	✓									
	J	Understand testing based approach to development.				✓	✓							
19250E32	Cloud Computing	Identify cloud computing models, characteristics, and technologies.	✓	✓										
A	Croud Computing	Get knowledge about the different architectures in cloud.			✓	✓								

		Identify the information about service management and cloud securities				✓	✓	✓			
		To understand the basics of Information Security.	✓	✓							
19250E32	Information Security	To know the legal, ethical and professional issues in Information Security.			✓	✓					
В	,	To become aware of various standards in this area.				✓					
		To know the technological aspects of Information Security.				✓	✓				
		To introduce the ideas of Neural networks, fuzzy logic and use of heuristics base on human experience.	✓	✓							
19250E32 C	Soft Computing	To have a general understanding of soft computing methodologies, including artificial neural networks, fuzzy sets, fuzzy logic, fuzzy clustering techniques and genetic algorithms;		✓	✓						
		To Design and development of certain scientific and commercial application using computational neural network models, fuzzy models, fuzzy clustering applications and genetic algorithms in specified applications			√	√	✓				
		Know the operations of parallel and distributed databases.	✓	✓							
19250E33 A	Advanced Database Technology	Understand the structure s and standards of object relational databases.		✓	✓	✓					
		Get familiar with the concepts of XML, Mobile and Multimedia Databases			✓	✓	✓				
19250E33 B		Learning the basics of Wireless voice and data communications technologies.	✓	✓	✓	✓					

	Mobile	Enhancing working knowledge on various telephone and satellite networks.			✓	✓	✓					
	Communication and Computing	Studying the working principles of wireless LAN and its standards.	✓		✓	✓	✓					
		Studying various wireless operating systems				✓	✓					
		Understanding scientific and social environment.	✓	✓								
		Minimizing energy consumption from the IT estate.		✓	✓							
19250E33 C	Green Computing	Purchasing green energy and using green suppliers.						✓				
		Reducing the paper and other consumables used.						✓	✓	✓		
		Minimizing equipment disposal requirements										
19250E34	Software Quality	To introduce an integrated approach to software development incorporating quality management methodologies.	✓	✓								
A A	Assurance	To study about the quality improvements in software			✓	✓	✓					
		To understand the Software Quality software standards					✓	✓				
10250524		Build a solid foundation and acquire the vocabulary you need to supervise or to communicate with others who use these tools.	✓	✓								
19250E34	Bio-Informatics	To have ability to design drugs.		✓	✓	✓						
В		To understand Evolutionary Trees and Phylogeny.				✓	✓		✓		 	
		Learn the key methods and tools used in bioinformatics							✓	✓		
19250E34 C	Wireless Application Protocols	Be able to discuss current and emerging technology in Wireless technology.	✓	√	✓							

		Understand fundamental trends of technological evolution of Wireless technology.			✓	✓							
		Have hands-on knowledge in developing simple and comprehensive WAP contents.				✓	✓						
		Be able to create simple Wireless applications					✓						
19250P35	Project Work- Phase	To independently carry out research /investigation to identify and solve practical problems	✓				✓			✓			✓
19200100	I	To write and present a report											
		To write and present a report	✓			✓			✓				
19250CSR	Design/Socio Technical Project	To identify the problem in the existing power system and to develop software / hardware solution by doing research.	√		✓			✓			√		✓
		To write and present a substantial technical report	✓			✓			✓	✓		✓	
		To independently carry out research /investigation to identify and solve			✓	✓							
		practical problems		✓							√		√
19250P41	Project Work- Phase	To write and present a report	✓	✓	✓	✓	✓				✓	✓	✓
	II	To identify the problem in the existing power system and to develop software / hardware solution by doing research.	✓	✓	✓	✓	✓	✓			✓	✓	✓

To write and present a substantial technical report	✓	/	✓	✓	✓	✓			✓		✓	✓
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HOD

Head of the Department
Department of Computer Science
and Engineering
Ponnalyah Ramajayam Institute of
Science & Tenedon PRIST)
(Institute of Department of University
THANJAVUR - 813403, TAMIL NADU.

School of Engineering and Technology, Fonnaiyah Ramajayam Institute of Science and Technology (FRIST) be University Vallam, Thanjavur-613-403.



COMPUTER SCIENCE AND ENGINEERING

M.TECH (PT)- 2019R

Mapping of COs and POs

Course Code	Title of the	Course Objectives						I	POS					
	Course		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
19248S11AP	Higher Mathematics	Have knowledge of the concepts needed to test the logic of a program	✓		√	✓								

		Have gained knowledge which has application in expert system, in data base and a basic for the prolog language Have an understanding in identifying patterns on many	√	✓ ✓	✓	✓ ✓ ✓	✓	✓	✓	✓	✓			
	A 11 1	A broad overview of the state of wireless and ad hoc networking.	√			✓	✓				✓	✓		
19250H12P	Adhoc and Sensor Network	The overview of the physical, networking and architectural issues of ad hoc networks	 	✓	~		✓		✓	✓				
	Advanced Data	The Different Heap Structures, Search Structures and Multimedia Structures.	✓	✓			~			✓		✓		
19250H13P	Structures and Algorithms	The various coding scheduling and algorithms.	✓	✓	✓		✓							
	<i>G</i>	The various multimedia structures.	✓	✓	✓	✓	✓	✓	✓		✓	✓		
19250L14P	Advanced Web Technologies Lab	On completion of this course, a student will be familiar with client server architecture and able to develop a web application using java technologies To create fully functional website/web application with MVC architecture	√	✓	~	✓	1	✓	√					
10250HDCD	Research Led	Exposure to various research domains	✓	/	\		✓	✓		✓	✓			✓
19250HRSP	Seminar	Acquaintance with languages of research	✓	✓	~	✓		✓		✓		✓	√	✓

		Development of research aptitude	✓	✓		✓						✓	✓	✓
		To study the set of services that a middleware system constitutes of.	√	√	✓	✓	✓			✓	√			
19250H21P	Middleware Technologies	To understand how middleware facilitates the development of distributed applications in heterogeneous environments.	✓	✓			✓	✓		✓	✓	✓		
		To study how it helps to incorporate application portability, distributed application component interoperability and integration.	✓	✓		✓	✓	~		~	✓			
		To study the image fundamentals and mathematical transforms necessary for image processing.	√	√	✓		√		√		√	✓ .		
	D' '/ 1 I	To study the image enhancement techniques		✓		✓			✓	✓		✓		
19250H22P	Digital Image Processing	To study image restoration procedures.		✓	✓									
		To study the image compression procedures.	✓		✓	✓								
		To study the image segmentation and representation techniques												
	Advanced	processing, distributed systems, operating system issues.	✓	✓		✓		✓						
19250E23AP	Distributed	learn about distributed transaction	✓	✓	✓		✓	✓	✓					
	Computing	study about the distributed databases	✓	✓	✓	✓								
19250E23BP	Data Warehousing & Data Mining	To introduce the concept of data mining with in detail coverage of basic tasks, metrics, issues, and implication. Core topics like	√	✓	✓									

		classification, clustering and association rules are exhaustively dealt with.												
		To introduce the concept of data warehousing with special emphasis on architecture and design			✓	✓								
19250E23CP	Artificial Neural	To introduce the concepts of artificial neural networks such as biological neural networks, clustering and structures	✓	~	✓									
1723012301	Networks	To study the linear models for regression, classification, kernel methods and feed forward neural networks			✓	✓	✓							
	.NET	Create Simple application using web controls	✓	√	✓	✓	√				✓	√	✓	✓
19250L24P	Technologies Lab	Work with States of ASP.NET Pages & Adrotator Control Use of calendar control, Treeview control & Validation controls	√	√	√	*	√				√	√	√	V
192TECWRP	Technical Writing /Seminars	Understand professional writing by studying management communication	√	√	√	*	√				√	√	√	√
	 	Understanding research questions and tools	✓	√	✓	✓	√		✓					
19250CRMP	Research Methodology	Experience in scientific writings	✓	✓	✓	✓	✓	✓	✓					
		Inculcation of research ethics	✓	✓	!	✓	✓	!		✓		✓		
19250CBRP	Participation in Bounded Research	Knowledge and awareness of basic principles and concepts of biology, computer science and mathematics	✓	✓	✓	✓			✓	✓	✓	✓		

	Modern	To have an overview of different types of operating systems.	✓		✓								I	
19250H31P	Operating	To know the components of an operating system.	✓	✓	✓	✓		✓		✓		✓		
	System	To have a thorough knowledge of process management.	✓	✓	✓	✓		✓		✓	✓			
19250E32P	Parallel and High Performance	To understand the models and parameters used.	✓		✓	✓	✓				✓			
172301321	Computing	To understand the Matrix Algorithms and Design Issues		✓	✓	✓		✓	✓			✓		
19250E33AP	Multimedia	To study the graphics techniques and algorithms.	✓	✓	✓		✓							
1)230L33AI	Systems	To study the multimedia concepts and various I/O technologies				✓	✓		✓		✓	✓		
		Understand and be able to apply fundamental GA theory	✓	✓	✓				✓			✓		
19250E33BP	Genetic Algorithms	be able to implement or modify simple genetic algorithms.	✓				✓	✓		✓				
	-	be able to apply GAs to problems in the student's field.					✓	✓			✓	✓		
19250E33CP	Software	To introduce an integrated approach to software development incorporating quality management methodologies.	✓	✓	✓		✓							
	Metrics	To study about the quality improvements in software					✓				✓	✓		
		To understand the Software Quality software standards	✓	✓			✓		✓			✓		
19250CSRP	Design/Socio Technical Project	To identify the problem in the existing power system and to develop software / hardware solution by doing research.	✓	√			✓		✓			✓		
	Troject	To write and present a substantial technical report	✓			✓	✓			✓	✓			✓
19250H41P		To learn about software prototyping, analysis and design.	✓	✓		✓	✓			✓		✓		

	Object Oriented	To learn UML and its usage.	✓	✓	✓	✓		✓		✓			
	Software Engineering	Case studies to apply the principles											
	Software	Understand Project planning and management.	✓	✓									
19250H42P	Project	Identify Client management and project definition.		✓	✓								
	Management	Understand testing based approach to development.				✓	✓						
	Service	Understand SOA, service orientation and web services	✓	✓	✓								
19250E43AP	Oriented Architecture	Analyzing and designing business based on SOA principles.			✓	✓							
		Learning the concepts of XML		<u> </u>	<u></u>	✓	✓	✓		<u> </u>	Ι		
		Describe and interpret the basics of high speed networking technologies.	✓	✓									
19250E43BP	High Speed Networks	Apply the concept learnt in this course to optimize and troubleshoot high-speed network.		~	~	✓							
		Demonstrate the knowledge of network planning and optimization				√	✓	✓		√			
		To introduce students to the embedded systems, its hardware and software.	✓	✓									
		To introduce devices and buses used for embedded networking.		✓	✓	✓							
19250E43CP	Embedded Systems	To explain programming concepts and embedded programming in C and C++.			✓	√	✓	✓	✓	√			
		To explain real time operating systems, inter-task communication and an exemplary case of MUCOS – IIRTOS			✓	✓	✓	✓					

19250P44P	Project Work- Phase I	To independently carry out research /investigation to identify and solve practical problems	✓				✓		✓		✓
		Identify cloud computing models, characteristics, and technologies.	✓	✓							
19250E51AP	Cloud Computing	Get knowledge about the different architectures in cloud.			✓	✓					
	Computing	Identify the information about service management and cloud securities				✓	✓	✓			
		To understand the basics of Information Security.	✓	✓							
19250E51BP	Information	To know the legal, ethical and professional issues in Information Security.			✓	✓					
	Security	To become aware of various standards in this area.				✓					
		To know the technological aspects of Information Security.				✓	✓				
		To introduce the ideas of Neural networks, fuzzy logic and use of heuristics base on human experience.	✓	✓							
19250E51CP	Soft Computing	To have a general understanding of soft computing methodologies, including artificial neural networks, fuzzy sets, fuzzy logic, fuzzy clustering techniques and genetic algorithms;		✓	✓						
		To Design and development of certain scientific and commercial application using computational neural network models, fuzzy models, fuzzy clustering applications and genetic algorithms in specified applications			√	√	✓				

19250E52AP	Advanced Database Technology	Know the operations of parallel and distributed databases.	✓	✓								
		Understand the structure s and standards of object relational databases.		√	√	✓						
		Get familiar with the concepts of XML, Mobile and Multimedia Databases			✓	√	✓					
19250E52BP	Mobile Communication and Computing	Learning the basics of Wireless voice and data communications technologies.	✓	✓		✓						
		Enhancing working knowledge on various telephone and satellite networks.			✓	✓	✓					
		Studying the working principles of wireless LAN and its standards.	✓		✓	✓	~					
		Studying various wireless operating systems				✓	✓					
19250E52CP	Green Computing	Understanding scientific and social environment.	✓	✓								
		Minimizing energy consumption from the IT estate.		✓	✓							
		Purchasing green energy and using green suppliers.						✓				
		Reducing the paper and other consumables used.						✓	✓	✓		
		Minimizing equipment disposal requirements										
17250E53AP	Software Quality Assurance	To introduce an integrated approach to software development incorporating quality management methodologies.	✓	✓								
		To study about the quality improvements in software			✓	✓	✓					
		To understand the Software Quality software standards					✓					

19250E53BP	Bio-Informatics	Build a solid foundation and acquire the vocabulary you need to supervise or to communicate with others who use these tools.	√	✓									
		To have ability to design drugs.	1	✓	✓	✓							
		To understand Evolutionary Trees and Phylogeny.				✓	✓		✓				
		Learn the key methods and tools used in bioinformatics							✓	✓			
19250E53CP	Wireless Application Protocols	Be able to discuss current and emerging technology in Wireless technology.	✓	✓	✓								
		Understand fundamental trends of technological evolution of Wireless technology.			√	✓							
		Have hands-on knowledge in developing simple and comprehensive WAP contents.				✓	✓						
		Be able to create simple Wireless applications					✓						
	Project Work- Phase II	To write and present a report	√	✓	✓	✓	✓				✓	✓	✓
19250P61P		To identify the problem in the existing power system and to develop software / hardware solution by doing research.	√	✓	√	√	√	√			✓	~	✓
		To write and present a substantial technical report	√	✓	✓	✓	✓	✓			✓	✓	✓

KITL

Head of the Department
Department of Computer Science
and Engineering
Ponnalyah Ramajayam Incitiute of
Science & Francisco PRIST)
(Incitius of Computer of University
THANJAVUR - 813403, TAMIL NADU.

Burney

School of Engineering and Technology, Ponnailysh Ramajayam Institute of Science and Technology (PRIST)

Speed to be University Vallam, Thanjavur-613 403,