## CO/PO

DEPARTMENT	PROGRAMME SPECIFIC OUTCOME
B.Sc. Information technology (BSc IT)	<ul> <li>PSO1:Focuses on preparing students for roles pertaining to information Technology</li> <li>PSO2:Understand the concepts of system architecture, hardware, software and network configuration</li> <li>PSO3: Acquire logical thinking and problem-solving skills to find solutions in the software domain</li> <li>PSO4: Design, analyse and develop code-based solutions for the algorithms</li> <li>PSO5: Address the industry demands and assimilate technical, logical and ethical skills needed for the industry</li> <li>PSO6: Adapt to emerging trends and tackle the challenges in the software field.</li> <li>PSO7: Inculcate research inquisitiveness to solve prevalent issues</li> </ul>
	PROGRAMME OUTCOME
	PO1:Knowledge Acquisition:
	Demonstrate a profound understanding of knowledge trends and their impact on the chosen discipline of study.
	PO2:Communication, Collaboration, Inclusiveness, and Leadership:
	Become a team player who drives positive change through effective communication, collaborative acumen, transformative leadership, and a dedication to inclusivity.
	PO3:Professional Skills:
	Demonstrate professional skills to navigate diverse career paths with confidence and adaptability.
	PO4:Digital Intelligence:
	Demonstrate proficiency in varied digital and technological

tools to understand and interact with the digital world, thus effectively processing complex information.
PO5:Scientific Awareness and Critical Thinking:
Emerge as an innovative problem-solver and impactful mediator, applying scientific understanding and critical thinking to address challenges and advance sustainable solutions.
PO6:Human Values, Professional Ethics, and Societal and Environmental Responsibility:
Become a responsible leader, characterized by an unwavering commitment to human values, ethical conduct, and a fervent dedication to the well-being of society and the environment.
PO7:Research, Innovation, and Entrepreneurship:
Emerge as a researcher and entrepreneurial leader, forging collaborative partnerships with industry, academia, and communities to contribute enduring solutions for local, regional, and global development.

Programme : R Sc. Information technology (RSc IT)		
Trogramme . D.sc. miormation teenhology (DSe TT)		
COURSE CODE &	COURSE OUTCOME	COGNITIV
COURSE NAME	At the end of this BSc IT course the student will able to	E LEVEL
	At the end of this BSe IT course the student will able to	
Cognitive level- Remember –(	R), Understand –(U), Apply- (Ap), Evaluate- (E), Create- (C	)Analyse(An)
Semester 1		
ITY1CJ101/ITY1MN100 Fundamentals of IT and Computational Thinking	CO1Develop a foundational knowledge of computing systems, encompassing their historical development, evolutionary milestones, and the notable contributions of key figures in the field.	U
	CO2: Acquire familiarity with diverse hardware components constituting a computer system.	U
	CO3: Gain practical expertise by engaging in hands-on activities focused on the installation and configuration of diverse hardware components within a computer system.	Ар

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COURSE CODE & COURSE NAME	COURSE OUTCOME At the end of this BSc IT course the student will able to	COGNITIV E LEVEL
	CO4: Explore the spectrum of software types, and actively participate in the partitioning, installation, and configuration of operating systems to cultivate a comprehensive understanding of software systems.	Ар
	CO5: Develop a foundational understanding of IT as a discipline, examining problems through the lens of computational thinking and cultivating analytical skills to address challenges in the field.	An
	CO6: Represent complex problems using algorithmic approaches and enhance problem-solving skills by visualizing solutions through the utilization of various software tools.	Ар
	CO5: Able to apply differential and integral calculus to various functions encountered in computer applications such as polynomials, exponentials and logarithmic functions.	U
	CO6: Represent various mathematical problems using algorithmic approaches and enhance problem-solving skills by visualizing solutions through the utilization of software tools.	U, Ap
	Semester 2	
ITY2CJ101/ITY2MN100	CO1: Remember the program structure of C with its syntax and semantics.	U
Fundamentals of Programming (C Language)	CO2: Use the various constructs of a programming language viz. conditional, iteration and recursion.	Ар
	CO3: Implement the algorithms in C language.	Ар
	CO4: Use simple data structure like array in solving problems.	Ар
	CO5: Handling pointers and memory management functions in C.	Ар
	CO6: Develop efficient programs for solving a problem.	Ар
Semester 3		

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COURSE CODE & COURSE NAME	COURSE OUTCOME At the end of this BSc IT course the student will able to	COGNITIV E LEVEL
ITY3CJ201 Digital	CO1: Explain the fundamentals of number systems.	U
Liectronics	CO2: Develop digital circuits using logic gates	Ap
	CO3: Use the principles of Boolean algebra for simplifying logical expressions.	Ар
	CO4: Construct various combinational digital circuits	Ap
	CO1: Differentiate basic data structures (arrays, linked lists, stacks, queues) based on their characteristics, operations, and real-world applications.	U
ITY3CJ202/ ITY3MN200 Data Structures and Algorithm	CO2: Perform basic operations (e.g., insertion, deletion, search) on fundamental data structures using a chosen programming language.	Ар
	CO3: Identify the properties and applications of advanced data structures (trees, graphs).	Ар
	CO4: Investigate the properties of various searching and sorting Techniques	U
	CO5: Demonstrate critical thinking and problem-solving skills by applying data structures and algorithms to address complex computational challenges.	Ар
	CO6: Implement and analyse different data structure algorithms (to solve practical problems.	Ap
	Semester 4	
	CO1: A comprehensive understanding of fundamental concepts in database management systems and its application	U
TTY4CJ203 Database Management System	CO2: Understand concepts of Relational Data Model and Normalization Techniques	U

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	CO3: Apply principles of entity-relationship modelling and normalization techniques to design efficient and well-structured databases that meet specified requirements.	Ар
	CO4: Acquire expertise in crafting and executing SQL queries for the retrieval, updating, and manipulation of data, showcasing adept skills in database querying and data manipulation	Ap
	CO5: Comprehend and apply strategies for managing transactions and implementing mechanisms for controlling concurrency, ensuring the database's consistency and reliability in environments with multiple users.	Ар
	CO6: Explore and analyze recent trends in database management systems, with a focus on unstructured databases, NoSQL technologies	An
	CO1: Understand the basic concepts of Python programming language.	U
ITY4CJ204	CO2: Apply problem-solving skills using the basic constructs in Python programming	Ар
Python Programming	CO3:Apply modular programming using functions in Python	Ар
	CO4: Analyse the various data structures and operations on it using Python	An
	CO5: Apply various packages available in Python	Ap
	CO6: Apply visualization tools in Python	Ap
	CO1: Summarize the History, Objectives and Functions of an operating system	U
ITY4CJ205 Operating		

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System	CO2: Understand process management concepts: Process Control Block, States, Scheduling, Operations, Inter process Communication	U
	CO3: Evaluate various processor scheduling strategies, algorithms	E
	CO4: Apply process synchronisation concepts for effective process management	Ap
	CO5: Analyse conditions for deadlock occurrence and methods of resolving.	An
	CO6: Describe various memory management techniques, including paging, segmentation and virtual memory	U
	CO7: Develop Shell Scripts using Linux	С
	Semester 5	
ITY5CJ301 Numerical Analysis and Optimization Techniques	CO1: Develop a solid foundation in numerical methods, acquiring the skills to analyse and solve algebraic and transcendental equations, and gaining a practical understanding of the sources and management of errors in numerical computations.	Ap
	CO2: Cultivate both a comprehensive grasp and practical proficiency in polynomial interpolation techniques, alongside acquiring expertise in numerical methods for the solution of definite integrals.	Ар
	CO3: Establish a robust groundwork in Operations Research, nurturing a discerning capability to critically evaluate its applications across diverse problem-solving scenarios.	Ар
	CO4: Develop expertise in Linear Programming, mastering the art of employing sophisticated optimization techniques for the effective resolution of Linear Programming problems.	Ар

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	CO5: Impart a comprehensive understanding of transportation problems and cultivate an appreciation for the methods used in finding basic feasible solutions.	Ар
	CO6: Develop proficiency in addressing assignment problems and employ the method to attain optimal solutions, providing a holistic skill set for logistical optimization.	Ap
ITY5CJ302 Object	CO1: To understand the concepts and features of Object-Oriented Programming (OOPs)	U
(Java)	CO2: To practice programming in Java	
		Ар
	CO3: To learn java's exception handling mechanism, I/O operations and multithreading.	Ар
	CO4: To learn java's O operations and multithreading.	
		Ар
	CO5: Implement programs using Java Database Connectivity	Ар
	CO6: Students will be capable of developing Graphical User Interface (GUI) applications using Swing, understanding layout management, and implementing basic event	Ар
	CO1: Understand the concepts to create responsive web pages using HTML and CSS	U
ITY5CJ303 Full Stack Web Development	CO2: Familiarization of development environment and react js	U
	CO3: Understand Node.JS and equip learners with a Comprehensive understanding of NodeJS and its functionalities.	U
	CO4: Familiarization with SQL and NoSQL	
		Ар

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	CO5: Explore MongoDB and Develop real-world web applications using various technologies learned in the course	Ар
	Semester 6	
ITY6CJ304/ITY8MN304 Software Project Management	CO1: Define and explain the fundamental concepts, principles, and terminologies related to software project management. Differentiate between various software engineering process models. Understand the agile principle and methodologies and appreciate the need for iterative approaches to software development	U
	CO2: Master various design concepts used during project development life cycle.	U
	CO3: Master various SPM techniques	U
	CO4: Develop project plans, Create project schedules using tools like Gantt charts and network diagrams	Ар
	CO5: Understand the importance of quality in software development by mastering quality assurance processes, methodologies, and testing strategies.	U
	CO6: Prepare and deliver effective project presentations.	Ар
ITY6CJ305/ITY8MN305 Computer Networks	CO1: To understand the fundamentals of computer networks including concepts like data communication, network topologies and the reference models	U
Ĩ	CO2: Proficiency in Transmission Media and Multiplexing Techniques:	А
	CO3: To familiarise with the common networking protocols and standards	U
	CO4: Describe, analyse and compare different data link, network and transport layer protocols	A, E
	CO5: Design/implement data link and network layer protocols in simulated networking environment	

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		Ар
	CO6: To understand the need of various Application layer protocols	U
	CO1: Differentiate various knowledge representation methods, AI operations, Machine learning approaches and real-world applications.	U
ITY6CJ306/ITY8MN306 Introduction to AI and ML	CO2: Master Problem-Solving Techniques (search algorithms, heuristic approaches, and informed search strategies). Analyse and evaluate its efficiency.	U
	CO3: Investigate the properties and applications of various machine learning techniques	Ар
	CO4: Evaluate Artificial Intelligence Search algorithms and Machine learning approaches' efficiency.	U
	CO5: Implement and analyse Machine learning algorithms to solve practical problems.	Ap
	CO6: Apply Concepts in Real-World Projects	Ap
	Semester 7	
ITY7CJ401 Data	CO1: Understand the fundamental concepts of data communication and transmission media.	U
Communication and Fiber optics	CO2: Analyse and evaluate mobile communication systems, including GSM.	An
	CO3: Design and analyse data link protocols for reliable data transmission.	Ар
	CO4: Design and optimize optical fiber communication systems for specific applications	Ар
	CO1: Understand the different types of securities in information and computer systems, security goals and confidentiality, integrity, availability	U

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ITY7CJ402 System Security	CO2: Outline computer system threats and various types of system attacks	U
	CO3: Identify different issues associated with system attacks and how attacking occurs and various types of attackers	U
	CO4: Provide knowledge in operating system security, file protections, security assurance	U
	CO5: Understand important elements of Database security	U
	CO6: Define security planning, various types of security policies and risk analysis	U
	CO1: Understand the concepts of advanced data structures like tree, graphs, heaps.	U
ITY7CJ403 Advanced Data Structures and algorithms	CO2: Understand familiarity with algorithmic techniques such as brute force, greedy, and divide and conquer.	U
	CO3: Understand Asymptotic analysis (big-O notation, time and space complexity).	U
	CO4: Application of advanced abstract data type (ADT) and data structures in solving real world problems.	Ap
	CO5: Effectively combine fundamental data structures and algorithmic techniques in building a complete algorithmic solution to a given problem	Ap
	CO6: Apply Concepts of data structures in real world problem solving	Ар
	CO1: Understand the basics of cryptographic building blocks in blockchain technology.	U
ITY7CJ404		

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BLOCKCHAIN TECHNOLOGY	CO2: Explain the fundamental concepts of blockchain technology.	U
	CO3: Summarize the classification of consensus algorithms	U
	CO4: Explain the concepts of first decentralized crypto currency bit coin	U
	CO5: Describe the use of smart contracts and its use cases	U
	CO6: Develop simple block chain applications	U
	CO1: To understand the concept of web development principles, including client-server architecture, HTTP protocol, and web application lifecycle.	U
ITY7CJ405 Mastering Java Web Development	CO2: Acquire proficiency in Java web technologies as Java Server Page.	Ар
	CO3: Understand the Model-View- Controller (MVC) architecture pattern and its implementation in Java web applications using frameworks like Spring MVC.	Ар
	CO4: Gain knowledge of web services concepts, including RESTful web services and SOAP-based web services, and learn to develop and consume web services using Java technologies.	Ар
	CO5: Gain a deep understanding of the principles behind AJAX, including asynchronous communication.	Ap
	CO6: Understand how to handle AJAX requests on the server-side using technologies such as JSP and Spring MVC.	Ар
	Semester 8	
	CO1: To identify different phases in compilation process and model a lexical analyser.	Ар

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ITY8CJ406 Compiler Design	CO2: To model language syntax using Context Free Grammar and develop parse tree representation using leftmost and rightmost derivations.	Ар	
	CO3: To compare different types of parsers and construct parser for a given grammar.	Ap	
	CO4: To build Syntax Directed Translation for a context free grammar, compare various storage allocation strategies and classify intermediate representations.	Ар	
	CO5: Students will demonstrate the ability to design and implement lexical analysers to recognize tokens in source programs.	Ap	
	CO6: Illustrate code optimization and code generation techniques in compilation	Ар	
	CO1: Understand fundamentals of cloud Computing	U	
ITY8CJ407 Cloud Computing	CO2: Describe and compare Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS)	U	
	CO3: Analyze various deployment models such as public, private, and hybrid clouds.	U	
	CO4: Understand the principles of virtualization and its role in cloud computing.	U	
	CO5: Compare and contrast different virtualization technologies, including hypervisors and containerization.	U	
	CO6: Explore various cloud platforms in industry	U	
	CO1: Understand the basic concepts, benefits, and architecture of ERP systems.	U	
ITY8CJ408 Enterprise			

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<b>Resource Planning</b>	CO2: Analyse ERP Modules and gain insights into various ERP modules and their functionalities	An	
	CO3: Analyse real-world ERP implementation case studies to understand practical challenges and solutions	А	
	CO4: Understand the relationship between ERP and related technologies like DBMS, data warehousing	U	
ITY8CJ489 Research Methodology	CO1: Understand the psychology of research which includes different perspectives and necessity of research.	U	
	CO2: Apply the research knowledge to formulate a suitable problem statement by adopting different research methods and models	U	
	CO3: Understand different methods of Collection, Validation and Testing of Data	U	
	CO4: To understand the data processing and analysis techniques	U	
	CO5: Analyse the research outcome by using suitable statistical tool.	U	
	CO6: To write or present a scientific report and research proposal	U	

Add enough rows for subjects