1.1.1 Summary table of course objectives for curricular developed and implemented have relevance to the local, regional, national, and global developmental needs:

Sr. No.	Institute	Programme	No. of Course Objectives relevance to the local, regional developmental needs	No. of Course Objectives relevance to the national developmental needs	No. of Course Objectives relevance to the global developmental needs
1	Swarrnim scholl of Computing & IT	BCA	49	49	36
		BSC-IT	80	125	75

1.1 Curriculum Design and Devlopment
Metric No. 1.1.1

Curricula developed and implemented have relevance to the local, regional, national, and global developmental needs, which is reflected in the Programme outcomes (POs), and Course Outcomes (COs) of the Programmes offered by the University

Document: *List of CO's & PO's for Bachelor of Computer Application Programme*

Programme Outcomes (PO) of B.C.A.(H)

PO 1. Fundamental and Domain Knowledge - Acquire and apply fundamental knowledge of theories and principles of management in the field of computer applications.

PO 2. Innovative Thinking & Problem Solving – Foster innovative thinking and problem-solving skills by utilizing various problem-solving theories in the context of computer applications.

PO 3. Critical Thinking – Cultivate independent and critical thinking abilities to analyze assumptions and business problems using relevant data for effective solutions in the field of computer applications.

PO 4. Effective Communication - Develop effective communication skills and soft skills specific to the field of computer applications, encompassing different styles and types of communication.

PO 5. Leadership and Team Work – Comprehend the impact of leadership and teamwork in the functioning of an organization within the context of computer applications. Understand various leadership styles and their implications in a business environment, as well as the significance of teamwork and team building in the field.

PO 6. Global Orientation and Cross-Cultural Appreciation - Understand the challenges and global aspects prevalent within the field of computer applications. Appreciate cross-cultural dimensions of management in the global context.

PO 7. Entrepreneurship - Recognize entrepreneurial opportunities within the modern business landscape in the field of computer applications. Explore scalability of existing business avenues and foster an entrepreneurial mindset for potential start-ups.

PO 8. Environment and Sustainability – Learn about environmental protection and sustainable practices relevant to computer applications. Develop an understanding of techniques related to climate change, water

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crisis/management, greenwashing, pollution control, and other environmental concerns within the field.

PO 9. Social Responsiveness and Ethics - Recognize and address ethical issues and practices in organizations within the field of computer applications, understanding their impact on societal benefits.

PO 10. Life Long Learning – Recognize the importance of self-initiated learning in personal development and improving the quality of life, while also aligning with the objectives of the organization. Foster a mindset of continuous learning within the field of computer applications

COUESE OUTCOMES

SEMESTER 1

Subject Name	CO Code	Course Outcome Description	Local/Regional	National	Global
Fundamentals of Computers	CO 1	Understand the basic concepts of computer hardware and software.	✓		
	CO 2	Demonstrate problem solving skills		✓	
	CO 3	Understand the structure of operating system, its applications and commands.		✓	
	CO 4	To be familiar with network tools, concepts of protocols and network interfaces.			✓
	CO 5	Understands the concept of Computer's Input/output devices	✓		
Programming in C	CO 1	Analyze a given problem and develop an algorithm to solve the problem.		✓	
	CO 2	Design, develop and test programs written in 'C'.		✓	
	CO 3	Write, compile and debug programs in C language.			✓
	CO 4	Use different data types in a computer program.		✓	
	CO 5	Design programs involving decision structures, loops and functions.			✓
Web Development Using HTML, CSS & XML	CO 1	Understand web concepts, protocols, and client-server computing principles.			✓
	CO 2	Create structured web content using HTML, CSS, and apply formatting and styling techniques.		✓	
	CO 3	Apply CSS for designing layouts, navigation, forms, and enhance user experience.	✓		
	CO 4	Implement dynamic elements using JavaScript, VBScript, and enhance interactivity		✓	
	CO 5	Gain an introduction to XML, its manipulation, and basic server-side technologies for web applications.			✓

Mathematical Foundation	CO 1	Understand sets and perform operations and algebra on sets.	✓		
	CO 2	Identify functions and determine their properties.	✓		
	CO 3	Develop basic knowledge of matrices and to solve equations using Cramer's rule.		✓	
	CO 4	Identify functions and determine their properties.		✓	
	CO 5	To develop the knowledge about derivatives and know various applications of differentiation.		✓	
Communication Skills	CO 1	Inculcation of different skills will be added in a student's career.	✓		
	CO 2	Students' employability skills will be enhanced.		✓	
	CO 3	Ability to speak in English will be improved through practice.			✓
	CO 4	Self-Analysis tool will help the students to identify their strengths and weaknesses to work upon.	✓		
	CO 5	Hesitation of speaking in public and in English will be reduced.		✓	
Foundation of Entrepreneurship	CO 1	To know various theories of entrepreneurship and trends.		✓	
	CO 2	To identify various issues and challenges in starting a new venture.	✓		
	CO 3	To understand innovation and its implications.		✓	
	CO 4	To create entrepreneurial mindset through understanding entrepreneurial personality.	✓		
Indian Science & Technology	CO 1	Gain an in-depth appreciation of India's technological heritage, including its contributions to metallurgy, textiles, ceramics, and more.	✓	✓	
	CO 2	Understand the historical evolution of water management systems and transportation methods in India, and their impact on society.	✓	✓	
	CO 3	Explore the intersection of mathematics and astronomy in India, from ancient mathematical texts to significant		✓	✓

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		astronomical discoveries.			
	CO 4	Examine India's ecological wisdom and environmental practices, including their applications in agriculture, architecture, and sustainable land management.	✓	✓	
	CO 5	Recognize India's role in shaping global technology and knowledge dissemination through its historical connections and contributions to various fields.			✓

SEMESTER 2

Subject Name	CO Code	Course Outcome Description	Local/Regional	National	Global
Data Structure Using C	CO 1	Apply arrays for varied applications, understand data structure classifications and operations.	✔		
	CO 2	Implement stacks and queues, perform infix-postfix conversion, and grasp recursion concepts.		✔	
	CO 3	Master linked lists, including insertion, deletion, sorting, and node counting.			✔
	CO 4	Gain expertise in binary trees, traversals, and tree expression manipulation.	✔		
	CO 5	Proficiently use sorting (bubble, insertion, quick) and searching (sequential, binary) techniques.		✔	
Object Oriented Concepts using C++	CO 1	Understand OOP fundamentals and C++ basics including operators, data types, and identifiers.	✔		
	CO 2	Master control flow, classes, encapsulation, constructors, and memory allocation.		✔	
	CO 3	Proficiency in arrays, strings, functions (overloading, inline), and operator overloading.			✔
	CO 4	Understand pointers, inheritance, class hierarchy, and abstract classes.	✔		
	CO 5	Gain knowledge of file handling, exception handling, namespaces, and		✔	

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		stream operations.			
Core Java	CO 1	Apply Java concepts like data types, control structures, arrays, strings, inheritance, packages, and exception handling.	✔		
	CO 2	Apply Java concepts of classes and multithreading.		✔	
	CO 3	Design interactive Java applets with AWT, layouts, and events, while mastering string handling.			✔
	CO 4	Expertise in networking with datagram, TCP/IP, JDBC connections, and connection pooling.	✔		
Foundation in Statistical Methods	CO 1	Organize data via tabulation, frequency distribution, and graphical representation.	✔		
	CO 2	Compute mean, median, mode, range, quartile deviation, and standard deviation.		✔	
	CO 3	Apply Karl Pearson's Skewness Coefficients in practical scenarios.			✔
	CO 4	Understand correlation types and methods including Karl Pearson's correlation.	✔		
Logical and Critical Thinking	CO 1	Understand logical and critical thinking and problem-solving.	✔		
	CO 2	Improve student analytical ability.		✔	
	CO 3	Aid placement in service, government, PSU, and higher studies.			✔
Identifying Entrepreneurial Opp.	CO 1	Explore market opportunities.	✔		
	CO 2	Check technical, market, financial and other feasibility of a business idea.		✔	
	CO 3	Develop business model for value creation and capture.			✔
	CO 4	Identify various business opportunities from the market.	✔		
Environmental Studies	CO 1	Understand the multidisciplinary nature of environment and human-environment relationships.	✔		
	CO 2	Understand relevance of natural resources, ecosystem, and biodiversity.		✔	

	CO 3	Correlate population growth with environmental degradation and suggest pollution control measures.			✔

SEMSTER 3

Subject Name	CO Code	Course Outcome Description	Local/Regional	National	Global
Relational Database Management System	CO 1	Understand the fundamental concepts of database systems and their architecture.	✔		
	CO 2	Design and model databases using ER diagrams and normalization techniques.		✔	
	CO 3	Gain proficiency in SQL for managing and manipulating relational databases.			✔
	CO 4	Understand transaction management, concurrency control, and recovery techniques.	✔		
	CO 5	Explore emerging database technologies.		✔	
C# and DOT NET Framework	CO 1	Master fundamentals of C# including syntax, data types, and control structures.	✔		
	CO 2	Develop and deploy .NET applications using .NET Framework libraries and tools.		✔	
	CO 3	Use OOP concepts in C# to design reusable and maintainable code.			✔
	CO 4	Implement data access solutions with ADO.NET and LINQ.	✔		
	CO 5	Apply advanced C# features like async programming and reflection.		✔	
	CO 6	Develop ASP.NET MVC web apps and understand basics of APIs and web services.			✔
Computer Communication and Networks	CO 1	Understand basics of networking: topologies, protocols, architectures.	✔		
	CO 2	Master data communication: media, encoding, signaling.		✔	

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	CO 3	Proficiency in Internet Protocol suite: IP addressing, subnetting, routing.			✔
	CO 4	Implement services like DNS, DHCP, FTP, and email protocols.	✔		
	CO 5	Analyze network security: cryptography, protocols, vulnerabilities.		✔	
	CO 6	Design and simulate small-to-medium networks using simulation tools.			✔
Digital Marketing	CO 1	Understand fundamentals of digital marketing and its role today.	✔		
	CO 2	Master the use of social media platforms for marketing and brand building.		✔	
	CO 3	Create, manage, and optimize advertising campaigns across various channels.			✔
	CO 4	Gain proficiency in SEO techniques and content marketing strategies.	✔		
	CO 5	Understand principles of email marketing and affiliate marketing.		✔	
	CO 6	Analyze and use web analytics to improve marketing strategies.			✔
Financial Literacy	CO 1	Increasing familiarities with financial literacy and its different aspects.	✔		
	CO 2	Leading them towards financial wellbeing by teaching to manage their money.		✔	
	CO 3	Making them literate about the personal tax structure of India.			✔
	CO 4	Enable them to understand the process of tax e-filing.	✔		
Marketing Strategies for Startups	CO 1	Exploration of Marketing basics in real world.	✔		
	CO 2	Understanding customer behavior and different customer types.		✔	
	CO 3	Understand brand importance and integrated marketing techniques.			✔
	CO 4	Explore new-age social marketing basics.	✔		
Understanding India	CO 1	Understand the meaning and importance of Indian Knowledge	✔		

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		System.			
	CO 2	Identify foundational concepts of science and technology in Indian context.		✔	
	CO 3	Understand the values of humanities and social sciences.			✔

SEMSTER 4

Subject Name	CO Code	Course Outcome Description	Local/Regional	National	Global
Python Programming	CO1	Grasp the basics of Python syntax, data types, and control structures to solve problems.	✔		
	CO2	Utilize Python's extensive library set to develop various applications.		✔	
	CO3	Apply object-oriented programming principles in Python for reusable code.			✔
	CO4	Implement data handling with file operations and understand database connectivity.	✔		
	CO5	Develop web applications using Flask/Django and explore REST API development.		✔	
	CO6	Understand Python's role in data analysis, ML, and AI.			✔
Computer Multimedia and Animation	CO1	Understand fundamentals of computer graphics, multimedia, and animation.	✔		
	CO2	Master multimedia and animation tools and software.		✔	
	CO3	Create and manipulate digital images and videos.			✔
	CO4	Design multimedia presentations with text, images, audio, and video.	✔		
	CO5	Develop basic animations using animation principles and software.		✔	
	CO6	Explore multimedia applications in			✔

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		web, gaming, and VR.			
Operating System	CO1	Understand fundamental OS concepts and architecture.	✔		
	CO2	Learn process management: scheduling, synchronization, communication.		✔	
	CO3	Master memory management and virtual memory concepts.			✔
	CO4	Explore file systems, file and I/O management.	✔		
	CO5	Study system security: authentication, malware, security policies.		✔	
	CO6	Analyze Windows, Linux, and UNIX through case studies.			✔
E-Commerce	CO1	Understand e-commerce concepts, technologies, and business models.	✔		
	CO2	Analyze e-commerce's impact on business strategies.		✔	
	CO3	Design and manage e-commerce platforms.			✔
	CO4	Explore digital marketing tools for e-commerce.	✔		
	CO5	Understand legal, ethical, and security issues in e-commerce.		✔	
	CO6	Develop data-driven decisions using e-commerce analytics.			✔
Soft Skills	CO1	Understand workplace communication nuances.	✔		
	CO2	Create various forms of business letters.		✔	
	CO3	Create various forms of business reports.			✔
Finance and Funding for Start-Up	CO1	Understand finance and its real-world importance.	✔		
	CO2	Learn methods to develop company finance.		✔	
	CO3	Understand accounting and its impact.			✔
	CO4	Understand ratio analysis and its effect on balance sheet.	✔		
Emerging Technologies	CO1	Understand the concept and application of emerging technologies.	✔		
	CO2	Apply basic tools and functions in Power BI and Tableau.		✔	

	CO3	Create beginner-level dashboards.			✔

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1.1 Curriculum Design and Devlopment

Metric No. 1.1.1

Curricula developed and implemented have relevance to the local, regional, national, and global developmental needs, which is reflected in the Programme outcomes (POs), and Course Outcomes (COs) of the Programmes offered by the University

Document: *List of CO's & PO's for Bachelor of Computer Application Programme*

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PROGRAM OUTCOMES (PO)

PO 1. Fundamental and Domain Knowledge - Acquire and apply fundamental knowledge of theories and principles of management in the field of Information Technology.

PO 2. Innovative Thinking & Problem Solving – Foster innovative thinking and problem-solving skills by utilizing various problem-solving theories in the context of Information Technology.

PO 3. Critical Thinking – Cultivate independent and critical thinking abilities to analyze assumptions and business problems using relevant data for effective solutions in the field of Information Technology.

PO 4. Effective Communication - Develop effective communication skills and soft skills specific to the field of Information Technology, encompassing different styles and types of communication.

PO 5. Leadership and Team Work – Comprehend the impact of leadership and teamwork in the functioning of an organization within the context of Information Technology. Understand various leadership styles and their implications in a business environment, as well as the significance of teamwork and team building in the field.

PO 6. Global Orientation and Cross-Cultural Appreciation - Understand the challenges and global aspects prevalent within the field of Information Technology. Appreciate cross-cultural dimensions of management in the global context.

PO 7. Entrepreneurship - Recognize entrepreneurial opportunities within the modern business landscape in the field of Information Technology. Explore scalability of existing business avenues and foster an entrepreneurial mindset for potential start-ups.

PO 8. Environment and Sustainability – Learn about environmental protection and sustainable practices relevant to Information Technology. Develop an understanding of techniques related to climate change, water

crisis/management, greenwashing, pollution control, and other environmental concerns within the field.

PO 9. Social Responsiveness and Ethics - Recognize and address ethical issues and practices in organizations within the field of Information Technology, understanding their impact on societal benefits.

PO 10. Life Long Learning – Recognize the importance of self-initiated learning in personal development and improving the quality of life, while also aligning with the objectives of the organization. Foster a mindset of continuous learning within the field of Information Technology.

Course Outcomes					
Academic Year 2024-25					
Subject	Name of CO	Description	Relevance to the		
			Local/ Regional	National	Global
BSCIT230101 Fundamentals of Computers	CO 1	Understand the basic concepts of computer hardware and software.	✓	✓	✓
	CO 2	Demonstrate problem solving skills.	✓	✓	✓
	CO 3	Understand the structure of operating system, its applications and commands.	✓	✓	
	CO 4	To be familiar with network tools, concepts of protocols and network interfaces.		✓	✓

	CO 5	Understands the concept of Computer's Input/output devices.	✓	✓	
BSCIT230102 PROGRAMMING IN C	CO 1	Analyze a given problem and develop an algorithm to solve the problem.	✓	✓	✓
	CO 2	Design, develop and test programs written in 'C'.	✓	✓	✓
	CO 3	Write, compile and debug programs in C language.	✓	✓	✓
	CO 4	Use different data types in a computer program.	✓	✓	
	CO 5	Design programs involving decision structures, loops and functions.	✓	✓	
BSCIT230103 Web Development Using HTML, CSS & XML	CO 1	Understand web concepts, protocols, and client-server computing principles.		✓	✓
	CO 2	Create structured web content using HTML, CSS, and apply formatting and styling techniques.	✓	✓	

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	CO 3	Apply CSS for designing layouts, navigation, forms, and enhance user experience.	✓	✓	
	CO 4	Implement dynamic elements using JavaScript, VBScript, and enhance interactivity.		✓	✓
	CO 5	Gain an introduction to XML, its manipulation, and basic server-side technologies for web applications.		✓	✓
BSCIT230104 Mathematical Foundation	CO 1	Understand sets and perform operations and algebra on sets.	✓	✓	
	CO 2	Identify functions and determine their properties.	✓	✓	
	CO 3	Develop basic knowledge of matrices and to solve equations using Cramer's rule.		✓	✓
	CO 4	Identify functions and determine their properties.	✓	✓	
	CO 5	To develop the knowledge about derivatives and know various applications of		✓	✓

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		differentiation.			
AEC230101 Communication Skills	CO 1	Inculcation of different skills will be added in a student's career.	✓	✓	
	CO 2	Students' employability skills will be enhanced.	✓	✓	✓
	CO 3	Ability to speak in English will be improved through practice.		✓	✓
	CO 4	Self-Analysis tool will help the students to identify their strengths and weaknesses to work upon.	✓	✓	
	CO 5	Hesitation of speaking in public and in English will be reduced.	✓	✓	
SEC230101 Foundation of Entrepreneurship	CO 1	To know various theories of entrepreneurship and trends.	✓	✓	✓
	CO 2	To identify various issues and challenges in starting a new venture.	✓	✓	

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	CO 3	To understand innovation and its implications.		✓	✓
	CO 4	To create entrepreneurial mindset through understanding entrepreneurial personality.	✓	✓	
IKS230101 Indian Science & Technology	CO 1	Gain an in-depth appreciation of India's technological heritage, including its contributions to metallurgy, textiles, ceramics, and more.	✓	✓	
	CO 2	Understand the historical evolution of water management systems and transportation methods in India, and their impact on society.	✓	✓	
	CO 3	Explore the intersection of mathematics and astronomy in India, from ancient mathematical texts to significant astronomical discoveries.		✓	✓

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	CO 4	Examine India's ecological wisdom and environmental practices, including their applications in agriculture, architecture, and sustainable land management.	✓	✓	
	CO 5	Recognize India's role in shaping global technology and knowledge dissemination through its historical connections and contributions to various fields.		✓	✓
Semester – 2					
BSCIT230201 Data Structure Using C	CO 1	Apply arrays for varied applications, understand data structure classifications and operations.	✓	✓	
	CO 2	Implement stacks and queues, perform infix-postfix conversion, and grasp recursion concepts.	✓	✓	
	CO 3	Master linked lists, including insertion, deletion, sorting, and node counting.		✓	✓

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	CO 4	Gain expertise in binary trees, traversals, and tree expression manipulation.		✓	✓
	CO 5	Proficiently use sorting (bubble, insertion, quick) and searching (sequential, binary) techniques.	✓	✓	✓
BSCIT230202 Database Management System	CO 1	Analyze data models and explain DBMS architecture for effective data management.		✓	✓
	CO 2	Design and represent complex data using E-R and object modeling techniques.		✓	✓
	CO 3	Implement file organization methods including indexing and hashing.	✓	✓	
	CO 4	Apply relational concepts and SQL for querying and programming databases.	✓	✓	✓
	CO 5	Convert EER and ER models into relational schemas.		✓	✓
	CO 6	Normalize data and ensure data security through recovery and		✓	✓

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		authorization techniques.			
BSCIT230203 Mobile Application Development	CO 1	Design user-friendly mobile interfaces and layouts.	✓	✓	✓
	CO 2	Develop functional mobile applications using relevant programming languages.	✓	✓	✓
	CO 3	Employ effective testing and debugging techniques for app quality assurance.	✓	✓	✓
	CO 4	Deploy mobile apps in compliance with security and distribution guidelines.		✓	✓
	CO 5	Stay informed about emerging trends and technologies in the mobile development landscape.		✓	✓
BSCIT230204 Foundation in Statistical Methods	CO 1	Develop proficiency in organizing data through tabulation, frequency distribution, and graphical representation.	✓	✓	

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	CO 2	Understand and compute measures like mean, median, mode, range, quartile deviation, mean deviation, and standard deviation for assessing data patterns.	✓	✓	
	CO 3	The concept of skewness and apply Karl Pearson's Coefficients of Skewness in practical scenarios.		✓	✓
	CO 4	Gain insight into correlation types and methods, including Karl Pearson's correlation coefficient, to assess relationships between variables in datasets.		✓	✓
AEC230202 Logical and Critical Thinking	CO 1	Students are able to understand the basic concept of Logical and Critical Thinking and are able to solve problems.	✓	✓	
	CO 2	Student analytical ability increased.	✓	✓	

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	CO 3	Student can be placed in service based company, government sector, PSU and it will also help in higher study	✓	✓	
SEC230202 Identifying Entrepreneurial Opportunities	CO 1	Exploration of opportunities from the market.	✓	✓	
	CO 2	Check technical, market, financial and other types of Feasibility of a business idea.	✓	✓	✓
	CO 3	Develop business model to describe the rationale of how an organization creates, delivers, and captures value.		✓	✓
	CO 4	Identification of various Business Opportunities from the market.	✓	✓	
VAC230202 Environmental Studies	CO 1	Enabling students to understand and realize the multi-disciplinary nature of the environment, its components, and inter-relationship between man and environment.	✓	✓	✓

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	CO 2	Understanding the relevance and importance of natural resources in the sustenance of life on earth and living standard. the importance of ecosystem, biodiversity, and nature.	✓	✓	✓
	CO 3	Correlating the human population growth and its trend to the environmental degradation and developing the awareness about his/her role towards environmental protection. Identifying different types of environmental pollution and control measures.	✓	✓	✓
Semester III					
BSCIT230301 RELATIONAL DATABASE MANAGEMENT SYSTEM	CO 1	Understand the fundamental concepts of database systems, including data models, database architecture, and data independence.		✓	✓

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	CO 2	Gain proficiency in SQL for data definition, manipulation, and query operations in a relational database.	✓	✓	✓
	CO 3	Design database schemas using normalization principles and ER modeling.		✓	✓
	CO 4	Implement transaction processing, concurrency control mechanisms, and ensure database security.		✓	✓
	CO 5	Analyze performance tuning concepts and apply optimization techniques for efficient query processing.		✓	✓
BSCIT230302 OPERATING SYSTEM	CO 1	Understand the core concepts and functionalities of operating systems including processes, threads, and memory management.	✓	✓	
	CO 2	Analyze different scheduling algorithms and their application in managing processes and		✓	✓

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		system resources.			
	CO 3	Master the implementation and management of memory, including virtual memory and paging mechanisms.		✓	✓
	CO 4	Explore file system architecture, management, and disk scheduling algorithms.		✓	✓
	CO 5	Evaluate different operating systems such as Windows, UNIX, and Linux, understanding their internal operations and design principles		✓	✓
BSCIT230303 Python Programming	CO 1	Acquire comprehensive knowledge of Python syntax, semantics, and its application in solving real-world problems.	✓	✓	✓
	CO 2	Develop proficiency in using Python's data structures, functions, and modules to create efficient programs.	✓	✓	✓

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	CO 3	Apply object-oriented programming principles in Python to design robust and reusable software.	✓	✓	✓
	CO 4	Utilize Python libraries and frameworks for web development, data analysis, and machine learning.		✓	✓
	CO 5	Implement error handling and debugging techniques to develop reliable and error-free code.	✓	✓	✓
BSCIT230304 Computer Organization	CO 1	Understand the basic structure and operation of modern computers.	✓	✓	
	CO 2	Grasp the function and design of the central processing unit (CPU) and memory hierarchy.		✓	✓
	CO 3	Explain the concepts of input/output (I/O) systems and data communication between system components.		✓	✓

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	CO 4	Analyze and design simple digital circuits and understand how they form the building blocks of computer systems.	✓	✓	
	CO 5	Develop assembly level programs and comprehend the interface between hardware and software.		✓	✓
AEC230303 Financial Literacy	CO 1	Increasing familiarities with financial literacy and its different aspects.	✓	✓	
	CO 2	Leading them towards financial wellbeing by teaching to manage their money.	✓	✓	
	CO 3	Making them literate about the personal tax structure of India	✓	✓	
	CO 4	Enable them to understand the process of tax e filing	✓	✓	
SEC230303 Marketing Strategies for Start Ups	CO 1	Exploration of Marketing basics in real world	✓	✓	

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	CO 2	Understanding customer ways of reacting to marketing and various types of customers.	✓	✓	
	CO 3	Understanding Brand and its importance as well as various techniques of Integrated marketing		✓	✓
	CO 4	Exploration of the new buzz social marketing basics	✓	✓	✓
IKS230303 Understanding India	CO 1	To understand the meaning and important of Indian Knowledge System	✓	✓	
	CO 2	To identify the Actual foundational concepts for science and technology.	✓	✓	
	CO 3	To understand the values of Humanities and Social Science.	✓	✓	

Semester – IV

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BSCIT230401 Cloud Computing	CO 1	Understand the basic concepts and architecture of cloud computing including different service models (IaaS, PaaS, SaaS) and deployment models (public, private, hybrid, community).	✓	✓	✓
	CO 2	Analyze the benefits and challenges of cloud computing including scalability, reliability, and security concerns.		✓	✓
	CO 3	Gain practical experience in using major cloud platforms such as AWS, Azure, and Google Cloud for deploying applications.		✓	✓
	CO 4	Understand and apply cloud storage, computing, and networking services in real-world applications.		✓	✓
	CO 5	Evaluate the impact of cloud computing on business transformation and IT infrastructure.		✓	✓

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BSCIT230402 Information Security	CO 1	Understand the fundamental principles of information security including confidentiality, integrity, and availability.	✓	✓	✓
	CO 2	Identify security threats, vulnerabilities, and countermeasures.	✓	✓	✓
	CO 3	Implement cryptographic techniques for securing data both at rest and in transit.		✓	✓
	CO 4	Design and enforce security policies and procedures to protect information assets.	✓	✓	✓
	CO 5	Evaluate the impact of ethical, legal, and regulatory issues on information security.	✓	✓	✓
BSCIT230403 Software Testing	CO 1	Understand the principles and methodologies of software testing, including static and dynamic testing techniques.	✓	✓	
	CO 2	Develop test cases and test plans for software applications to ensure functionality,	✓	✓	

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		reliability, and robustness.			
	CO 3	Apply various testing tools and environments to perform unit testing, integration testing, system testing, and acceptance testing.		✓	✓
	CO 4	Analyze software testing automation, learn scripting for automated tests, and use of automation tools.		✓	✓
	CO 5	Evaluate software quality and the effectiveness of testing through metrics and software quality assurance practices.	✓	✓	✓
BSCIT230404 Data Science	CO 1	Understand the foundational concepts of data science and its significance in extracting meaningful insights from data.	✓	✓	✓
	CO 2	Develop skills in data manipulation, cleaning, and visualization using tools like Python, R, and SQL.	✓	✓	✓

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	CO 3	Apply statistical methods and machine learning algorithms to solve predictive modeling problems.		✓	✓
	CO 4	Master the use of big data technologies for handling large datasets efficiently.		✓	✓
	CO 5	Evaluate ethical, legal, and social implications of data science in various sectors.		✓	✓
AEC230401 Soft Skills	CO 1	Learners should understand the nuance of communication at workplace	✓	✓	
	CO 2	The learners will be able to create various forms of business letters	✓	✓	
	CO 3	The learners will be able to create various forms of business reports	✓	✓	
SEC230401 Finance and Funding for Start Up	CO 1	Finance and its importance in the real world	✓	✓	
	CO 2	Various ways of development of finance for the company	✓	✓	

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	CO 3	Understanding the importance of accounting and its impact	✓	✓	
	CO 4	Importance of ratio and how its effects the balance sheet of the company	✓	✓	
VAC230402 Emerging Technologies	CO 1	Learners should be able to understand the concept and application..	✓	✓	
	CO 2	Learners should be able to apply the tools, functions in Power BI and Tableau at the beginners level	✓	✓	
	CO 3	Learners should be able to create a dashboard.	✓	✓	

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