Bachelor of Computer Applications (BCA)

Semester I - Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14100 - Fundamentals of Programming with C	**CO1**	List the fundamentals of computer programming vocabulary.
	CO2	Apply the concepts of Arrays and Strings in 'C' language for user defined problems. Develop software with decision structures, loops, and functions.
	CO3	Apply the concept of functions and pointers.
	CO4	Associate the programs with structure using 'C' language
	CO5	Discuss to read and write data from/to files in 'C' Programs.
BCAC14101 - Programming with C Lab	**CO1**	Define advanced C-language ideas to write programmed.
	CO2	Apply the concept of conditionals and loops in C programs Choose C to create graphical programmers.
	CO3	Develop the C programs with arrays and strings
	CO4	Classify different functions, unions and pointers
	CO5	Examine the use of sequential and random-access file processing
BCAC14102 - Mathematics- I	**CO1**	Demonstrate proficiency in the subjects that make up the mathematics major's core.
	CO2	Demonstrate an understanding of and ability to construct mathematical proofs.
	CO3	Solve mathematical issues using appropriate technology.
	CO4	Build relevant mathematical models to handle a number of actual situations.
	CO5	Explain common matrix operations such as addition, scalar multiplication, multiplication, and transposition
BCAC14103- Software	**CO1**	Relate the importance of the stages in the software life cycle.

Engineering	**CO2**	Infer the various process models.
	CO3	Develop the design software by applying the software engineering principles.
	CO4	Analyse new software models, techniques and technologies to bring out innovative and novelistic solutions for the growth of thesociety in all aspects and evolving into their
		continuous professional development.
	CO5	Enhances value and is valued by their professional teammates
GEC066001 - Business Communication	**CO1**	Explain historical background and the development of communication; Importance and role of communication in everyday life.
	CO2	Understand Mechanics behind the communication process, difficulties experienced in communication. Different types of communication, impedance due to extraneous factors called "barriers"
	CO3	Apply different types of communication, impedance due to extraneous factors called "barriers".
	CO4	Analyze the Important non-verbal parameters in communication. So, to make communication effective and attractive.
	CO5	Apply the appropriate body language for making presentation more effective
SEC077001 - Ability & Skill Enhancement– I	**CO1**	Understand the relevance and method of writing impactful and structured resume.
	CO2	Explain the need for right etiquettes to be followed in the professional world.
	CO3	Develop confidence in public speaking and expressing their opinions and ideas clearly and effectively.
	CO4	Build employability skills like critical thinking, team work, conflict management and leadership skills.
	CO5	Communicate effectively in English
VAC088001- Electoral Literacy	**CO1**	Demonstrate comprehensive knowledge of the Indian electoral system, including the Election Commission's structure, powers, and functions. Explain the process of voter registration, constituency delimitation, and the recognition of political parties.
	CO2	Explain the step-by-step electoral process, including nomination filing, security deposit, campaign regulations, and the Model Code of Conduct. Evaluate the role of election officials and the significance of EVM and VVPAT systems in ensuring fair elections.

	CO3	Identify key shortcomings in the electoral system and assess various reforms aimed at improving electoral transparency, voter participation, and accountability.
	CO4	Apply knowledge of SVEEP initiatives to promote informed voting. Engage with electoral literacy platforms such as ELC, Chunav Pathashala, and VAF to enhance public awareness of ethical voting practices.
	CO5	Implement voter registration drives, social media campaigns, and awareness programs to promote electoral participation. Lead initiatives like setting up Electoral Literacy Clubs, observing Voter Awareness Forums, and conducting surveys to encourage voter engagement and fair electoral practices.
AECH55002 – Hindi -I	**CO1**	हिंदी भाषा के मूल इतिहास और उसकी हलहि देवनागरी को समझाने में
	CO2	हिंदी शब्द की उत्पहि, अर्थ और प्रयोग समझाने में
	CO3	हिंदी हिहि के विकास को समझाने में सक्षम
	CO4	हिंदी भाषा की सभी प्रकार की बोलियों को सूचीबद्ध करने में
	CO5	देवनागरी की विशेषताएँ एिि ं हिहशष्टता समझाने में

Semester II - Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14150 - Digital Electronics	**CO1**	Define different types of codes and number systems which are used in digital transmission and computer systems.
	CO2	Demonstrate the codes and number systems converting circuits and compare different types of logic families which are the basicunit of different types of logic gates in the domain of economy, performance and efficiency.
	CO3	Apply different types of digital electronic circuit various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.
	CO4	Categorize different types of with and without memory element digital electronic circuits for particular operation, within the real time of economic, performance, efficiency, user friendly andenvironmental constraints.
	CO5	Justify the nomenclature and technology in the area of various memory devices used and apply the memory devices in different types of digital circuits for real world application.
BCAC14151- Digital Electronics Lab	**CO1**	Define the basics of gates.
	CO2	Contrast basic combinational circuits and verify the functionalities
	CO3	Apply the design procedures to design basic sequential circuits
	CO4	Examine about counters
	CO5	Explain about Shift registers
GEC066007- Principles of Management	**CO1**	Understand the Nature of Management
	CO2	Understand the Planning and Decision Making
	CO3	Apply the concept of management in Organizing.
	CO4	Apply Directing, Leadership, Co-ordination and Controlling
	CO5	Compile isolate issues and formulate best control methods
BCAC14154 - Operating System	**CO1**	Label about operating systems, functions of operating systems,system calls.
		Explain about process coordination and process

	CO2	scheduling algorithms
	CO3	Construct memory management, critical section and deadlock handling algorithms.
	CO4	Classify about file management
	CO5	Determine disk scheduling algorithms
BCAC14155 - Operating System Lab	**CO1**	Define the advantages of Unix OS
	CO2	Explain and debug, C programs created on UNIX platforms
	CO3	Develop and if necessary, install standard libraries
	CO4	Distinguish between different platforms
	CO5	Evaluate knowledge of file system and Android OS
BCAC14152 - Data Structure using C	**CO1**	What is able to walk through insert and delete for different data structures.
	CO2	Compare to calculate and measure efficiency of code
	CO3	Apply some interesting algorithms like Huffman, Quick Sort, and Shortest Path etc.
	CO4	Analyze to walkthrough algorithm.
	CO5	Build programming skills
BCAC14153– Data Structure using C Lab	**CO1**	Define how to design and analyze the time and space efficiency of the data structure
	CO2	Explain capable to identity the appropriate data structure for given problem
	CO3	Make use of practical knowledge on the applications of data structures
	CO4	Analyze programming skills
	CO5	Evaluate various Design Techniques of Algorithms and understand the real implementation of Sorting, Greedy Method and Dynamic Programming.
SEC077002 - Ability & Skill Enhancement – II	**CO1**	Select the correct phonetic symbols for improving language
	CO2	Operate reading and writing skills in English
	CO3	Prepare listening and speaking skills in English
	CO4	Focus in understanding the ethics, virtues and values
	C05	Aware about etiquettes and personal branding
AECE55001 -	**CO1**	Understand theoretical & Practical aspect of environment

Study of Ecosystem and Natural Resources		studies. About various conservation strategies and problems with environment.
	CO2	Define the importance of Environmental education and ecosystem & acquire the knowledge about environmental pollution sources, effects and control measures of environmental pollution.
	CO3	Apply basic Environmental Concepts
	CO4	Analyze causes of Environment degradation & apply innovations in business- an environmental Perspective
	CO5	Explain different Environmental laws and policies.
VAC088003 – Introduction to Computers and IT	**CO1**	Identify and recall the fundamental concepts of computer systems, including hardware, software
	CO2	Explain the working principles of input, output, processing, and storage units in a computer system
	CO3	Demonstrate the ability to operate basic computer applications such as word processors
	CO4	Examine different types of networks and their architectures, and evaluate the significance of cyber security in IT systems
	CO5	Assess the impact of Information Technology on business, education, and society, considering ethical and environmental aspects.

Semester III - Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14200 - Python	**CO1:**	Discuss the logical solutions through Flowcharts, Algorithms and Pseudo code
	CO2:	Explain the syntax for python programming constructs
	CO3:	Demonstrate proficiency in handling Strings and File Systems
	CO4:	Develop, run and manipulate Python programs using Core data structures like Lists, Dictionaries, and use of Strings Handling methods.
	CO5:	Develop, run and manipulate Python programs using Data structures and searching pattern using regular expressions.
BCAC14201- Python Lab	**CO1:**	Write, test, and debug simple Python programs.
	CO2:	Apply the concept of conditionals and loops in Python programs
	CO3:	Develop the Python programs step-wise by defining functions and calling them
	CO4:	Use Python lists, tuples, dictionaries for representing compound data
	CO5:	Develop, run data structures searching and sorting pattern using regular expression
BCAC14202 - Database Management System	**CO1:**	Define, appreciate and effectively explain the underlying concepts of database Technologies.
	CO2:	Demonstrate and implement a database schema for a given problem-domain
	CO3:	Construct a database and Populate and query a database using SQL DML/DDL commands
	CO4:	Examine and enforce integrity constraints on a database
	CO5:	Determine an understanding of Procedures and Functions
BCAC14203 - Database Management System Lab	**CO1:**	Relate an understanding of the relational data model.
	CO2:	Demonstrate an information model into a relational database schema and to use a data definition language and/or utility to implement the schema using a DBMS
	CO3:	Organize using relational algebra, solutions to a broad range of query problems.
	CO4:	Compare using SQL, solutions to a broad range of query and data update problems
	CO5:	Decide the concept of Indexing, Views, Rollback, Commit, Grant and Revoke Permission

BCAE14001 - Computer Architecture	**CO1:**	List the fundamentals of different instruction set architectures and their relationship to the CPU design.
	CO2:	Classify the principles and the implementation of computer arithmetic
	CO3:	Identify about Primary and Secondary storage System
	CO4:	Distinguish about parallel computer structure and Pipelining
	CO5:	Evaluate the concepts of parallel processing, pipelining and inter processor communication
BCAC14204 - Object Oriented Programming with C/C++	**CO1:**	Identify the difference between structured program and procedure oriented program Compare these features to program design and implementation
	CO2:	Demonstrate the use of constructors, destructors and also the behaviour of inheritance and its implementation. Examine some practical experience of C++
	CO3:	Apply the I/O operations and choose the facilities offered by C++ for Object-Oriented Programming
	CO4:	Define Loops, Array, Function and pointers
	CO5:	Apply object-oriented concepts and implement Encapsulation of data in virtual functions
BCAC14205 - Object Oriented Programming with C/C++ Lab	**CO1:**	Label key features of the object-oriented programming language such as encapsulation (abstraction), inheritance, and polymorphism
	CO2:	Explain and implement object-oriented applications
	CO3:	Apply the facilities offered by C++ for Object-Oriented Programming
	CO4:	Analyze problems and implement simple C++ applications using an object-oriented software engineering approach
	CO5:	Design and develop Object Oriented systems
VAC088005 - Principles of Accounting - I (VAC)	**CO1:**	Define the basic concepts of accounting and financial statements
	CO2:	Remember the execution of the accounting process- Recording- Classifying and Summarizing
	CO3:	Apply the principles and concepts of accounting in preparing the financial statements
	CO4:	Apply the use of accounting software
	CO5:	Determine software in preparation of Financial Statements
AECH55003 - Hindi-II	**CO1:**	हिंदी भाषा के मूल इतिहास और उसकी लिपि देवनागरी को समझाने में
	CO2:	हिंदी शब्द की उत्पत्ति, अर्थ और प्रयोग समझाने में

	CO3:	हिंदी लिपि के विकास को समझाने में सक्षम
	CO4:	हिंदी भाषा की सभी प्रकार की बोलियों को सूचीबद्ध करने में
	CO5:	देवनागरी की विशेषताएँ एवं विशिष्टता समझाने में

Semester IV - Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14250 - Java Programming Language	**CO1:**	Define the features of Java Programming Language with Syntax and structure of Java Programs and how to use various operatorsin Java.
	CO2:	Explain how to implement the Object-oriented features by writing Java programs.
	CO3:	Solve Arrays, Strings, Vectors, Packages etc. in Java and implementing the Exception handling Mechanism in Java.
	CO4:	Analyse different concepts to create and use Threads and Packages in Java.
	CO5:	Determine the different concepts of applets and adding them to a HTML File.
BCAC14251 - Java Programming Language Lab	**CO1:**	How to write programs for solving real world problems using java collection frame work.
	CO2:	Demonstrate programs using abstract classes.
	CO3:	Develop multithreaded programs.
	CO4:	Examine GUI programs using swing controls in Java
	CO5:	Create Java programs to implement error handling techniques using exception handling
BCAC14252 - Computer Networks	**CO1:**	How communication works in computer networks and to understand the basic terminology of computer networks
	CO2:	Explain the role of protocols in networking and to analyze the services and features of the various layers in the protocol stack
	CO3:	Develop design issues in Network Security and to understand security threats, security services and mechanisms to counter.
	CO4:	Classify basic devices like repeaters, bridges, gateways andquality of service
	CO5:	Interpret the network security, common threats, firewalls, and cryptography
BCAC14253 - Computer Networks Lab	**CO1:**	Name the structure and organization of computer networks; including the division into network layers, role of each layer, and relationships between the layers.
	CO2:	Explain the basic concepts of application layer protocol design; including client/server models, peer to peer models, and network naming.
	CO3:	Identify understanding of transport layer concepts and protocol design; including connection oriented and connection-less models, techniques to provide reliable data delivery and algorithms for

		congestion control and flow control.
	CO4:	Examine the network security, common threats, firewalls, and cryptography
	CO5:	Create algorithms for congestion control and flow control
BCAC14254 - Computer Graphics	**CO1:**	Show comprehensive introduction about computer graphics system
	CO2:	Interpret algorithms to generate the basic primitives
	CO3:	Identify 2d transformations
	CO4:	Compare with techniques of clipping, three-dimensional graphics and three-dimensional transformations
	CO5:	Familiar with animations
BCAC14255 - Computer Graphics Lab	**CO1:**	Define Geometric primitives using OpenGL
	CO2:	Explain scan line polygon filling using OpenGL
	CO3:	Identify basic transformations on objects using OpenGL
	CO4:	Classify clipping algorithm on lines using OpenGL
	CO5:	Design algorithm
BCAE14002 - Web Technology	**CO1:**	Define, analyze and create web pages using HTML, DHTML and Cascading Styles Sheets
	CO2:	Illustrate, analyze and build dynamic web pages using JavaScript and VB Script (client side programming).
	CO3:	Identify, analyze and build interactive web applications
	CO4:	Discover, analyze and build web applications using PHP
	CO5:	Assess, analyze and create XML documents and XML Schema
BCAE14003 - Web Technology Lab	**CO1:**	Select, understand, and analyze any suitable real time web application
	CO2:	Interpret java and server-side scripting languages to develop web applications
	CO3:	Develop and deploy real time web applications in web servers and in the cloud
	CO4:	Analyze this knowledge to .Net platforms
	CO5:	Determine real life examples
BCAC14256 - Cyber Security	**CO1:**	Define and evaluate the cyber security needs of an organization
	CO2:	Extend and analyze software vulnerabilities and security solutions to reduce the risk of exploitation
	CO3:	Identify the performance of cyber security systems
	CO4:	Analyze cyber security solutions and use of cyber security,

		information assurance, and cyber/computer forensics software/tools
	CO5:	Determine troubleshoot cyber security systems
VAC088026 - Principle of Accounting – 2	**CO1:**	Define the basic concepts of accounting and financial statements
	CO2:	Remember the execution of the accounting process- Recording Classifying and Summarizing
	CO3:	Apply the principles and concepts of accounting in preparing the financial statements
	CO4:	Apply the use of accounting software
	CO5:	Determine software in preparation of Financial Statements
AECE55002 - Biodiversity & Environmental Conservation (EVS-II)	**CO1:**	Understand theoretical & Practical aspects of environment studies.
	CO2:	Acquire knowledge about environmental pollution sources, effects, and control measures of environmental pollution.
	CO3:	Analyzing causes of environmental degradation
	CO4:	Apply innovations in business- an environmental Perspective
	CO5:	Explain different Environmental laws and policies

Semester V - Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14300 - Analysis and Design of Algorithm	**CO1:**	Match the principles and tools of systems analysis and design
	CO2:	Classify the application of computing in different context
	CO3:	Identify the professional and ethical responsibilities of practicing the computer professional including understanding the need for quality
	CO4:	Analysis and Design of systems of small sizes
	CO5:	Assess a wide range of problems related to the analysis, design and construction of information systems
BCAC14301 - Analysis and Design of Algorithm Lab	**CO1:**	Recall the various process models
	CO2:	Relate to build software using software development concepts
	CO3:	Apply current techniques, skills, and tools necessary for computing practice
	CO4:	Distinguish various design and development principles in the construction of software systems of varying complexity
	CO5:	Develop importance of the stages in the software life cycle
BCAC14302 - Data Warehousing and Data Mining	**CO1:**	Relate a deeper understanding of database systems and their underlying theory to be able to improve the decision-making process
	CO2:	Interpret the technology of data warehousing
	CO3:	Organize data mining concepts and techniques
	CO4:	Examine different methodologies used in data mining and data ware housing
	CO5:	Estimate the decision-making process
BCAC14352 - Cloud Computing	**CO1:**	Infer the core concepts of the cloud computing paradigm
	CO2:	Apply fundamental concepts in cloud infrastructures tounderstand the tradeoffs in power, efficiency and cost, and then study how to leverage and manage single and multiple data centers to build and deploy cloud applications that are resilient, elastic and cost-efficient.
	CO3:	Contrast system, network and storage virtualization and outline their role in enabling the cloud computing system model
	CO4:	Illustrate the fundamental concepts of cloud storage and demonstrate their use in storage systems such as Amazon S3 and HDFS
	CO5:	Justify how to leverage and manage single and multipledatacenters

GEC066010 - Artificial Intelligence	**CO1:**	Familiar basic principles of artificial intelligence
	CO2:	Able to use logic and structured concepts in knowledge representation
	CO3:	To discuss the applications of artificial intelligence
	CO4:	To implement heuristic search algorithms
	CO5:	To design a natural language processor and implement a simple expert system
BCAE14004 - PHP & My SQL	**CO1:**	Explain the differences between typical scripting languages and typical system
	CO2:	Apply your knowledge of the strengths and weaknesses of scripting languages to select an implementation language
	CO3:	Analyze basic PHP syntax for variable use, and standard language constructs, such as conditionals and loops
	CO4:	Construct the syntax and use of PHP object-oriented classes
	CO5:	Assess application programming languages
BCAE14005 - PHP & My SQL Lab	**CO1:**	Define PHP programming language
	CO2:	Demonstrate the basics of PHP object-oriented programming concepts
	CO3:	Build of Array concepts
	CO4:	Create some real time software modules
	CO5:	Create logical based system programs

Semester VI - Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14350 – Software Testing and Quality Assurance	**CO1:**	Show modern software testing processes in relation to software development and project management.
	CO2:	Illustrate test strategies and plans, design test cases, prioritize and execute them.
	CO3:	Organize incidents and risks within a project.
	CO4:	Discover various automation tools
	CO5:	Create test strategies
BCAC14351 - Theory of Computation	**CO1:**	Define are the concepts of formal languages of finite automata techniques
	CO2:	Illustrate Finite Automata's for different Regular Expressions and Languages
	CO3:	Construct context free grammar for various languages
	CO4:	Distinguish various problems of applying normal for techniques, push down automata and Turing Machines
	CO5:	Support in participation in GATE, PGECET and other competitive examinations
BCAE14006 - Unix & Shell Programming	**CO1:**	How to describe and use the UNIX operating system
	CO2:	Demonstrate and use the fundamental UNIX system tools and utilities
	CO3:	Identify and write shell scripts in order to perform basic shell programming
	CO4:	Examine and understand the UNIX file system.
	CO5:	Explain the UNIX file system with its practical use
BCAE14007 - Unix & Shell Programming Lab	**CO1:**	Recall UNIX structure, commands, and utilities
	CO2:	Explain and understand the UNIX file system
	CO3:	Construct shell scripts in order to perform shell programming
	CO4:	Classify knowledge about text processing utilities, process management and system operation of UNIX
	CO5:	Justify physical points of vulnerability
BCAC14352– Mobile Computing	**CO1:**	Infer the core concepts of the cloud computing paradigm
	CO2:	Apply fundamental concepts in cloud infrastructures to understand the tradeoffs in power, efficiency and cost, and then study how to leverage and manage single and multiple data centers to build and deploy cloud applications that are resilient, elastic and cost-efficient.
	CO3:	Contrast system, network and storage virtualization and outline

		their role in enabling the cloud computing system model
	CO4:	Illustrate the fundamental concepts of cloud storage and demonstrate their use in storage systems such as Amazon S3 and HDFS
	CO5:	Justify how to leverage and manage single and multipledatacenters
GEC066019 - Machine Learning	**CO1:**	Able to categorize the problems as supervised or unsupervised and to apply regression algorithm for prediction problems
	CO2:	Select and apply supervised algorithms like Naïve bayes algorithm, decision tree and analyze the models using different evaluation parameter
	CO3:	To build ML models using KNN, SVM classifiers and to perform feature engineering and selection using PCA and LDA.
	CO4:	To Apply different clustering algorithms for the unlabeled data and interpret the results
	CO5:	Understand the fundamental concepts of deep learning
IAPC99399 - Major Project	**CO1:**	Choose the alternative solutions, compare them, and select the optimum one.
	CO2:	Classify the various skills and perform well in teams.
	CO3:	Determine the practical problems of the society and find the better solution.
	CO4:	Design and develop hardware and/or software for their project specific problem.
	CO5:	Students will be able to prepare a SRS report

Semester VII - Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14400 - Internet of Things (IOT)	**CO1:**	Understand the drivers and enablers of Industry 4.0
	CO2:	Appreciate the smartness in Smart Factories, Smart cities, smart products and smart services.
	CO3:	Able to outline the various systems used in a manufacturing plant and their role in an Industry 4.0 world.
	CO4:	Appreciate the power of Cloud Computing in a networked economy
	CO5:	Understand the opportunities, challenges brought about by Industry 4.0 and how organizations and individuals should prepare to reap the benefits
BCAE14008- Cyber Laws	**CO1:**	Understand the legal frameworks and regulations governing cyberspace
	CO2:	Identify and analyse legal issues related to information technology
	CO3:	Evaluate the ethical implications of information technology practices
	CO4:	Apply security measures to protect information systems and data.
	CO5:	Develop an understanding of the legal rights and responsibilities of individuals and organizations in cyberspace
GEC066002- E-Commerce	**CO1:**	Business Models
	CO2:	Identify and analyse Technology Infrastructure
	CO3:	Evaluate the ethical implications Security & Privacy
	CO4:	Apply Digital Marketing
	CO5:	Develop an understanding of Payment & Logistics Integration
BCAE14009 - Advance development technologies	**CO1:**	Enables scalable, on-demand computing resources and services over the internet
	CO2:	Mimics human intelligence for decision-making, automation, and predictive analytics
	CO3:	Ensures secure, transparent, and decentralized data transactions
	CO4:	Apply security measures to protect information systems and data
	CO5:	Connects physical devices for real-time data exchange and automation
GEC066005– Research Problem, Interpretation and Report	**CO1:**	Define what constitutes a research problem and identify its significance in the research process.
	CO2:	Frame a hypothesis that is testable and aligns with the defined research problem
	CO3:	Recognize the limitations of various hypothesis tests and develop strategies to address them

Writing	**CO4:**	Understand and be able to create the appropriate layout for a research report
	CO5:	Write and present a thesis, including text setting, footnotes, conclusions, and suggestions
DAPE99449-Academic Project	**CO1:**	Design and conduct independent research, including formulating research questions, developing hypotheses, and selecting appropriate methodologies.
	CO2:	Develop expertise in data collection, management, and analysis using advanced statistical or qualitative analysis software
	CO3:	Develop critical thinking and problem-solving abilities by identifying research gaps, synthesizing information from various sources, and developing innovative solutions or approaches to address research challenges
	CO4:	Communicate research findings effectively through written reports and oral presentations
	CO5:	Contribute to the chosen field of study by producing research that advances knowledge, addresses significant questions, or solves practical problems
BCAE14010 - Intelligent System	**CO1:**	Understand the fundamentals of Intelligent Systems, including AI and expert systems
	CO2:	Implement search techniques for problem-solving in AI.
	CO3:	Apply machine learning algorithms for real-world problem-solving.
	CO4:	Analyze fuzzy logic and neural network models for decision-making.
	CO5:	Evaluate the role of robotics and natural language processing (NLP) in Intelligent Systems.

Semester VIII - Course Outcomes		
Course Codes & Course Names	**After completion of these courses' students should be able to**	
BCAC14450 - Block-Chain Technologies	**CO1:**	Understand the Fundamentals of Blockchain Technology
	CO2:	Analyze Cryptography and Blockchain Security Mechanisms.
	CO3:	Demonstrate Knowledge of Consensus Mechanisms and Blockchain Platforms
	CO4:	Design and Implement Smart Contracts and Decentralized Applications (DApps)
	CO5:	Analyze and Apply Blockchain in Real-World Use Cases
BCAE14011 - Digital image Processing	**CO1:**	Understand the legal frameworks and regulations governing cyberspace.
	CO2:	Identify and analyze legal issues related to information technology.
	CO3:	Evaluate the ethical implications of information technology practices.
	CO4:	Apply security measures to protect information systems and data.
	CO5:	Apply segmentation and representation techniques for image analysis.
GEC066013- Entrepreneurship	**CO1:**	Understand the fundamental concepts and significance of entrepreneurship in economic development**.**
	CO2:	Identify and evaluate opportunities for creating and sustaining successful business ventures.
	CO3:	Develop a comprehensive business plan integrating financial, marketing, and operational strategies
	CO4:	Apply innovative thinking and problem-solving skills to address entrepreneurial challenges.
	CO5:	Demonstrate ethical and sustainable practices in entrepreneurial decision-making and leadership.
BCAE14012 - Advanced internet programming	**CO1:**	Understand the fundamentals of advanced web technologies and internet programming languages.
	CO2:	Develop dynamic web applications using server-side and client-side technologies**.**
	CO3:	Implement web services and RESTful APIs for communication between web systems.
	CO4:	Apply security protocols and techniques to secure web applications and data
	CO5:	Analyze and optimize the performance of web applications for better scalability and efficiency.

GEC066018-Research Methodology	**CO1:**	Understand the fundamental concepts and importance of research methodology in addressing real-world problems**.**
	CO2:	Develop skills to design and conduct research using appropriate methodologies and tools.
	CO3:	Analyze and interpret data to derive meaningful conclusions and insights.
	CO4:	Apply ethical considerations and best practices in research processes.
	CO5:	Developing innovative solutions or approaches to address research challenges.
BCAE14013 - TCP / IP	**CO1:**	Understand the fundamentals of computer networking
	CO2:	Learn about IP addressing and subnetting
	CO3:	Implement web services and RESTful APIs for communication between web systems
	CO4:	Understand transport layer protocols (TCP and UDP)
	CO5:	Learn about application layer protocols and network management
DAPE99499 – Dissertation	**CO1:**	Design and conduct independent research, including formulating research questions, developing hypotheses, and selecting appropriate methodologies
	CO2:	Develop expertise in data collection, management, and analysis using advanced statistical or qualitative analysis software.
	CO3:	Develop critical thinking and problem-solving abilities by identifying research gaps, synthesizing information from various sources
	CO4:	Communicate research findings effectively through written reports and oral presentations
	CO5:	Contribute to the chosen field of study by producing research that advances knowledge, addresses significant questions, or solves practical problems