2.6.1   PO's and CO's of All Programs

PO's and CO's

DEPARTMENT OF BCA (CBCS)

DEPARTMENT OF BACHELOR OF COMPUTER APPLICATIONS -BCA

INSTITUTION

Vision

"Be One Among the Top Reflective and Active Learning Institutions."

Mission

"Nurturing an Institutional Environment for Excellence in Education and Positive Transformation in Students & Society."

DEPARTMENT

Vision

To pursue teaching-learning environment for providing best opportunity for the students to become skilled professionals and to strive the requirements of emerging IT skills.

Mission

"To strive for teaching students about computing with a focus on ethics, professional skills and technical knowledge to get them ready for jobs according to industry standards."

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PROGRAM EDUCATIONAL OBJECTIVE

PEO 1: To acquire in-depth knowledge and expertise in their specialized area, allowing them to make significant contributions in their profession.

PEO 2: The Program will adhere to high ethical standards and demonstrate professionalism in their interactions with colleagues, clients, and the community, establishing themselves as trusted and respected professionals.

PEO 3: Students will apply current tools, technologies, and research methodologies to develop innovative systems that effectively solve industry-specific problems.

PEO 4: Graduates will make positive contributions to society by leveraging their skills and knowledge, improve quality of life, and promote sustainable development.

PROGRAM OUTCOME (PO'S)

<u>**PO1: Critical thinking**</u>: Students will be able to identify problems within a given context, break them down into smaller components, and develop creative and innovative solutions.

<u>**PO2:EffectiveCommunication**</u>:Graduates will demonstrate effective communication and presentation skills, enabling them to articulate technical concepts, document software projects, and collaborate with stakeholders effectively.

<u>**PO3: Ethics**</u>: Graduates will adhere to ethical standards and professional codes of conduct, demonstrating integrity, responsibility, and respect for privacy and security considerations in computing practice.

<u>**PO4: Skilled training and Lifelong Learning:**</u> Graduates will recognize the importance of lifelong learning and professional development, staying updated with emerging technologies, industry trends, and best practices to adapt with evolving demands in the field of computer applications.

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PROGRAM SPECIFIC OUTCOME (PSO's)

PSO-1: Analyze their abilities in systematic planning, developing, testing and executing complex computing applications in field of Social Media and Analytics, Web Application Development and Data Interpretations.

PSO-2: Apprise in-depth expertise and sustainable learning that contributes to multi-disciplinary creativity, permutation, modernization and study to address global interest.

PSO-3: Focus on preparing students for roles pertaining to computer applications and IT industry.

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Curriculum as per CHOICE BASED CREDIT SYSTEM (CBCS) 2020-2023

SEMESTER	COURSE NAME	COURSE CODE
I	Problem Solving Techniques using C	BCA103T
I	Digital Electronics	BCA104T
I	Discrete Mathematics	BCA105T
II	Data structures	BCA203T
II	Database Management System	BCA204T
III	Object Oriented Programming using C++	BCA303T
III	Financial Accounting and Management	BCA304T
III	Operating System	BCA305T
IV	Visual Programming	BCA403T
IV	Unix Shell programming	BCA404T
IV	Operation Research	BCA405T
V	Data Communication and Networks	BCA501T
V	Software Engineering	BCA502T
V	Computer Architecture	BCA503T

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V	Java Programming	BCA504T
V	Microprocessor and Assembly Language	BCA505T
VI	Theory of Computation	BCA601T
VI	System Programming	BCA602T
VI	Cryptography and Network Security	BCA603T
VI	Web Programming	BCA604T

COURSE OUTCOME

SEMESTER–I

Name of the Course: Problem Solving Techniques using C   **Subject Code:** BCA103T

On successful completion of the course, the student will demonstrate

1. Understand the fundamentals of programming concepts
2. Implement the programming concepts in the form of control statements and functions.
3. Demonstrate a simple C program using arrays and strings
4. Implement C program using structures and pointers
5. Describe the concepts of file and pre-processors

Name of the Course: Digital Electronics   **Subject Code:** BCA104T

At the end of this course, students will be able to

1. To understand the network theorem and AC and DC fundamentals.
2. To Analys half way and full way rectifiers, diodes, registers, semiconductors, ICs, pn junction.
3. To Understand the number system, logical gates, sop and pos equations and K-Maps
4. To examine half adder and full adder circuits and different ICs truth value.
5. To Implement RS flip flop, JK flip flop, m/s flip flop, T flip flop, different types of registers.

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Name of the course: Discrete Mathematics   **Subject Code:** BCA105T

At the end of this course, students will be able to

1. Ability to apply mathematical logic to solve problems
2. Understand sets, relations, functions and discrete structures.
3. Solve and use logical notations to define and reason about fundamental mathematical concepts such as sets relations and functions
4. List and formulate problems to solve recurrence relations
5. Discuss model and solve real world problems using graphs and trees.

SEMESTER- II

Name of the course: Data Structures   **Subject Code:** BCA203T

At the end of this course, students will be able to

1. Understand basic data structures such as, arrays, strings, pattern matching algorithms.
2. Study the different techniques of searching and sorting
3. Understand the concept of linked lists & memory management.
4. Implement ADTs, stacks & queues.
5. Implement graph traversal algorithms.

Name of the course: Database Management System   **Subject Code:** BCA204T

On successful completion of the course, the student will demonstrate

1. Understand the basic concepts of database management systems
2. Identify and define database objects, enforce integrity constraints on a database using DBMS.
3. Analyze a given database application scenario to use ER model for conceptual design of the database
4. Formulate queries in Relational Algebra, Structured Query Language (SQL) for Database manipulation.
5. Describe the transaction processing and concurrency control techniques.

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SEMESTER–III

Name of the Course: Object Oriented Programming using C++   **Subject Code:** BCA303T

On successful completion of the course, the student will demonstrate

1. Describe OOPs concepts.
2. Use functions and pointers in your C++ program
3. Understand tokens, expressions, and control structures.
4. Explain arrays and strings and create programs using them.
5. Describe and use constructors and destructors

Name of the Course: Financial Accounting and Management   **Subject Code:** BCA304T

At the end of this course, students will be able to

1. Exemplify to prepare and analyse the financial statements
2. Acquire the basic concept of accounting terms.
3. Journalize the ability to rectify the errors in bank reconciliation statement
4. Exposed to various methods of depreciation and insurance accounting
5. Demonstrate insight into single and double entry system of accounting

Name of the Course: Operating System   **Subject Code:** BCA305T

At the end of this course, students will be able to

1. Understand the basic fundamentals of the operating system.
2. Comprehend multithreaded programming, process management, process Synchronization
3. Learn memory management and storage management.
4. Recognize & compare the performance of Scheduling Algorithms
5. Identify the features of I/O and File handling methods.

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SEMESTER – IV

Name of the Course: Visual Programming   **Subject Code:** BCA403T

At the end of this course, students will be able to

1. Gain the basic knowledge on Visual Basic Applications.
2. Understand the variables and data types used in program development
3. Explore Visual Basic's Integrated Development Environment (IDE).
4. Understanding how to handle events and implement event-driven programming using Visual C++.
5. To understand and Construct OLE and ODBC connections

Name of the Course: Unix Shell programming   **Subject Code:** BCA404T

On successful completion of the course, the student will demonstrate

1. Understand the basic concepts of UNIX Architecture and basic Commands.
2. Understand different types of Files, File system and basic file system commands
3. Understand the commands related to Shell basics, vi editor and regular expression commands
4. Understand the concepts of advance file concepts, commands related to Shell script and filter commands
5. Understand the concepts of process and commands related to Perl script.

Name of the Course: Operation Research   **Subject Code:** BCA405T

On successful completion of the course, the student will be able to

1. Formulate a real-world problem as a mathematical programming model.
2. Understand the theoretical workings of the simple method for linear programming and perform iterations of it by hand
3. Understand the relationship between a linear program and its dual, including strong duality and complementary slackness
4. Perform sensitivity analysis to determine the direction and magnitude of a model's optimal solution as the data change
5. Solve specialized linear programming problems like the transportation and assignment problems

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SEMESTER – V

Name of the Course: Data Communication and Networks   **Subject Code:** BCA501T

On successful completion of the course, the student will be able to

1. Explain the transmission technique of digital data between two or more computers
2. Understand how a computer network that allows computers to exchange data.
3. Apply the basics of data communication and various types of computer networks in real world applications.
4. Apply the basics of data communication and various types of computer networks in real world applications.
5. Compare the key networking protocols and their hierarchical relationship in the conceptual model like TCP/IP and OSI.

Name of the Course: Software Engineering   **Subject Code:** BCA502T

On successful completion of the course, the student will be able to

1. Discuss Software engineering development Life Cycles
2. Recognizing to work on different applications domains
3. Demonstrate software engineering concepts
4. Implement models and techniques
5. Examine tools and techniques

Name of the Course: Computer Architecture   **Subject Code:** BCA503T

On successful completion of the course, the student will be able to

1. Understand and learn digital Logic circuits, Integrated Circuits and digital functions
2. Learn to represent data and perform various data transfer operations
3. Identify Basic computer organization and design
4. Understand the central processor organization
5. Develop Learn Input output organization and memory organization

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Name of the Course: Java Programming   `   **Subject Code:** BCA504T

On successful completion of the course, the student will be able to

1. Understand the concepts related to Java Technology
2. Explore and understand use of Java Server Programming.
3. Identify the procedures and exploring the programming concepts of oops
4. Learn skills to develop real time applications
5. Develop advanced skills for programming in Java

Name of the Course: Microprocessor and Assembly Language   **Subject Code:** BCA505T

On successful completion of the course, the student will be able to

1. Understand the Architecture and operations of 8085 Microprocessor
2. Explore the programming model of and instruction classification and instruction format of 8085 Microprocessor
3. Identify the different programming techniques of 8085 Processor
4. Understand the Memory interface of Microprocessor
5. Develop and Identify Interfacing of peripherals and its applications

SEMESTER – VI

Name of the Course: Theory of Computation   **Subject Code:** BCA601T

On successful completion of the course, the student will be able to

1. To Understand concept of finite automata
2. To Implement regular Expression application
3. To understand context free grammars
4. To Interpret properties of CFL
5. To implement programming technique for truing machines.

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Name of the Course: System Programming   **Subject Code:** BCA602T

On successful completion of the course, the student will be able to

1. To understand the fundamentals of machine structure and programming structure.
2. To implement the different searching and sorting technique.
3. To Demonstrate micro and macro processor
4. To Implement absolute loader and data structure
5. To describe phases of compiler.

Name of the Course: Cryptography and Network Security   **Subject Code:** BCA603T

On successful completion of the course, the student will be able to

1. To Understand matrices and integer mathematics
2. To Analyze DES and AES structure.
3. To Understand the use of modern block ciphers
4. To examine MD hash family, digital signature and Key management
5. To Implement PGP, Email, SSL, TLS architecture.

Name of the Course: Web Programming   **Subject Code:** BCA604T

On successful completion of the course, the student will be able to

1. To understand concept of WEB browser and WEB server
2. To Implement HTML and CSS
3. To Interpret JS environment and DOM2
4. To understand concept of java script.
5. To Implement xml document with CSS

2.6.1   PO's and CO's of All Programs

PO's and CO's

DEPARTMENT OF BCA (NEP)

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✉@ director@kgi.edu.in   ☎ +91 81472 15707   🌐 www.kimsbengaluru.edu.in

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Curriculum as per National Educational Policy (NEP 2020) 2021-22 Onwards

SEMESTER	COURSE NAME	COURSE CODE
I	Fundamentals of Computers	CAC01
I	Programming in C	CAC02
I	Mathematical Foundation	CAC03(a)
II	Data Structures using C	CAC04
II	Object Oriented Concepts using JAVA	CAC05
II	Discrete Mathematical Structures	CAC06
III	Data Base Management Systems	CAC07
III	C# and DOT NET Framework	CAC08
III	Computer Communication and Networks	CAC09
IV	Python Programming	CAC10
IV	Computer Multimedia and Animation	CAC11
IV	Operating System Concepts	CAC12
V	Statistical Computing and R Programming	CAC14
V	Software Engineering	CAC15

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V	Analysis and Design of Algorithms	CAC18
VI	PHP and MySQL	CAC16
VI	Artificial Intelligence and Applications	CAC17

COURSE OUTCOME

SEMESTER - I

Name of the Course: Fundamentals of Computers   **Subject Code:** CAC01

At the end of this course, students will be able to

1. Understand Introduction to computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers

2. Analyse Operating systems, functions of operating systems, classification of operating systems, kernel, shell, basics of Unix, shell programming, booting

3. Understand Databases, why databases are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where, and or in not in

4. To examine Internet basics, features, applications, services, internet service providers, domain name system, browsing, email, searching

5. Implement Web Programming basics, Introduction of HTML and CSS programming.

Name of the Course: Programming in C   **Subject Code:** CAC02

On successful completion of the course, the student will demonstrate

1. Understand the fundamentals of programming concepts
2. Implement the programming concepts in the form of control statements and functions.
3. Demonstrate a simple C program using arrays and strings
4. Implement C program using structures and pointers
5. Describe the concepts of file and pre-processors

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Name of the course: Mathematical Foundation   **Subject Code:** CAC03 (a)

At the end of this course, students will be able to

1. Understand concept of sets, relations and functions and mathematical logic.
2. Implement linear matrices and to solve linear equations
3. Determine permutation and combination problems
4. Interpret groups, subgroups, vectors and their applications
5. Categorize and solve two-dimensional geometry and problem solving.

SEMESTER - II

Name of the course: Data Structures using C   **Subject Code:** CAC04

At the end of this course, students will be able to

1. Understand basic data structures such as arrays, strings, and linked lists.
2. Study linear data structures such as stacks and queues and understand their difference.
3. Describe the hash function and concepts of collision and its resolution methods.
4. Understand the concept of memory management.
5. Study different techniques for solving problems like sorting and searching

Name of the course: OOPS With Java   **Subject Code:** CAC05

On successful completion of the course, the student will demonstrate

1. Understand the concepts related to Java Technology
2. Explore and understand use of Java Server Programming.
3. Identify the procedures and exploring the programming concepts of oops
4. learn skills to develop real time applications
5. Develop advanced skills for programming in Java

Name of the Course: Discrete Mathematical Structures   **Subject Code:** CAC06

On successful completion of the course, the student will demonstrate

1. Ability to apply mathematical logic to solve problems
2. Understand sets, relations, functions and discrete structures.
3. Solve and use logical notations to define and reason about fundamental mathematical concepts such as sets relations and functions
4. List and formulate problems to solve recurrence relations
5. Discuss model and solve real world problems using graphs and trees.

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SEMESTER - III

Name of the Course: Data Base Management Systems   **Subject Code:** CAC07

At the end of this course, students will be able to

1. Understand the basic concepts of database management systems
2. Identify and define database objects, enforce integrity constraints on a database using DBMS.
3. Analyze a given database application scenario to use ER model for conceptual design of the database
4. Formulate queries in Relational Algebra, Structured Query Language (SQL) for Database manipulation.
5. Describe the transaction processing and concurrency control techniques.

Name of the Course: C# and DOT NET   **Subject Code:** CAC08

At the end of this course, students will be able to

1. Understand the basics of C# concepts for programming
2. Learn Object Oriented Programming concepts like Inheritance and Polymorphism in C# programming language.
3. Identify the procedures and exploring the programming concepts of C#.
4. Understand the concept of .Net Framework and tools.
5. Connection with ADO object in C#.

Name of the Course: Computer Communication and Networks   **Subject Code:** CAC09

At the end of this course, students will be able to

1. Explain the transmission technique of digital data between two or more computers
2. Understand how a computer network that allows computers to exchange data.
3. Apply the basics of data communication and various types of computer networks in real world applications.
4. Learn and Compare the different layers of protocols.
5. Compare the key networking protocols and their hierarchical relationship in the Conceptual model like TCP/IP and OSI.

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SEMESTER – IV

Name of the Course: Python Programming   **Subject Code:** CAC10

On successful completion of the course, the student will demonstrate

1. Understand the basic concepts of Python Programming.
2. Identify the methods to create and manipulate lists, tuples and dictionaries.
3. Discover the commonly used operations involving file handling.
4. Interpret the concepts of Object-Oriented Programming as used in Python.
5. Develop the emerging applications of relevant fields using Python.

Name of the Course: Computer Multimedia and Animation   **Subject Code:** CAC11

On successful completion of the course, the student will be able to

1. Explain the basic concepts of Programming and Multimedia. .
2. Understand basic elements using in web development
3. Discuss and develop animations using CSS
4. Describe and develop HTML5-SVG animation
5. Categorize and develop HTML5-CANVAS animations

Name of the Course: Operating System concepts   **Subject Code:** CAC12

On successful completion of the course, the student will be able to

1. Understand the basic fundamentals of the operating system.
2. Comprehend multithreaded programming, process management, process synchronization
3. Learn memory management and storage management.
4. Recognize & Compare the performance of Scheduling Algorithms
5. Identify the features of I/O and File handling methods.