ST. FRANCIS COLLEGE
Koramangala
Affiliated to Bengaluru City University

DEPARTMENT OF COMPUTER APPLICATIONS

B.C.A

2019-20 onwards (CBCS Scheme)

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1. To produce software professionals with a strong foundation in Computer Science concepts and programming skills.

PEO 2. To make the students confident in applying their computing skills for developing IT solutions.

PEO 3. To create professionally employable individuals with an attitude and ability to keep abreast with emerging technologies.

PROGRAMME OUTCOMES (POs):

The Student :

PO1 : Will acquire theoretical foundation in Computer Science and acquire practical programming skills as well.
PO2 : Will learn to develop efficient algorithms for given a software problem
PO3 : Will understand the software/application development process and develop software solutions.

PO4 : Learn visual programming skills and learn event driven programming.

PO5 : Acquire skills in web technologies and develop web applications and web portals.

PO6 : Acquires sound knowledge of mathematics, and other domains for building computing models for complex computing problems.

PO7 : Will understand the concepts of networking, data communication and network security.

PO8 : Obtain insights in niche technologies through elective courses.

PO9: Learn soft skills and become confident to compete in challenging work environment.

PO10 : Be conscious of his social responsibilities and take accountability.

PO11 : Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

PO12 : Identify a timely opportunity and using innovative IT solutions for the better of the society at large.

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COURSE OUTCOMES (COs)

I SEM B .C.A

BCA103T : PROGRAMMING TECHNIQUES USING C

CO1. Understand the fundamentals concepts like Software, types of software, Algorithms and learn to develop algorithms and draw flowcharts. Learn the fundamental concepts of C programming like data types, keywords, operators and expressions

CO2. Understand I/O functions in C and learn the different types of conditional statements and loops. Learn modular programming with functions.

CO3. Use single and multi-dimensional arrays and different storage classes

CO4. Learn structures and pointers and use them in programs. Use pointers with array

CO5. Perform File operations and learn dynamic memory allocation

BCA104T:COMPUTER ORGANIZATION

CO 1. Understand the general concepts in digital logic design, including logic elements,and their use in combinational and sequential logic circuit design.

CO 2. Identify, understand and apply different number systems and codes.

CO 3. Understand and design the basic computer organization.

CO 4. Understand the architecture and functionality of central processing unit.

CO 5. Understand the concept of memory hierarchy and a memory management

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BCA105T: DISCRETE MATHEMATICS

CO1. Demonstrate a working knowledge of set notation and elementary set theory, relations and functions, recognize the connection between set operations and logic.

CO2. Enhance the problem solving skills using matrices, applications of matrix operations.

CO3. Demonstrate ability to manipulate matrices and ability to solve systems of linear equations, and solution of Linear Equations by Determinants

CO3. Thorough understanding of concept of logarithms, permutation and combination and the difference between the two.

CO4. Understand the properties of groups and vectors.

CO5. Understand the properties of points, lines and equation of family of lines.

BCA103P : C LAB

CO1: Apply branch and bound method to solve problem.

CO2: Understand and apply the looping, sorting and allocation techniques and use of algorithms for dealing with variety of problems.

CO3: Formulate conditional and iterative statements to write C programs.

CO4: Analyze the concept of pointers and structures to write c programs

CO5: Conceive and Design the C programs that use arrays, strings, concept of modularization and user defined functions, structures and unions

BCA104P : OFFICE AUTOMATION LAB

CO1 : Hands-on introduction to the personal computer and application software

CO2 :Understanding of why computers are essential components in business, education and society.

CO3 : Provide hands-on use of Office applications Word, Excel, Access and PowerPoint. CO4: Understanding types of data, data cleaning, recoding and sorting, data visualization, summarizing data and an introduction to analysis of relationships between variables.

FOUNDATION COURSE : ENVIRONMENT SCIENCE

CO1. To understand the key environmental policies.

CO2. To study the core concepts of ecology and physical science.

CO3. To understand environmental issues and solutions.

CO4. To apply policies to analyse the interactions between social and environmental pro- cess.

II SEM B .C.A

BCA203T : DATA STRUCTURES

CO1. To understand the concept of Data Structures, ADT, Algorithms and their Complex- ity.

CO2. To work with simple data structures like Strings and Arrays and implement the String and Array operations.

CO3. To obtain insights about the ADT and data structures like linked lists. Understand and implement the different types of Linked Lists.

CO4. To understand the concept of Stack, implement the stack operations and implement the stack applications. Understand the different type so queues and perform queue op- erations

CO5. To understand the tree data structures, construct and traverse binary trees. Understand the graph terminologies and perform graph traversals.

BCA204T:DATABASE MANAGEMENT SYSTEMS

CO1. Explain the features of database management system

CO2. Design conceptual models of a database using ER modelling for real life applications and analyse an information storage problem.

CO3. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database and construct queries in Relational Algebra.

CO4. Create and populate a RDBMS for a real life application, with constraints and keys, using SQL and apply the basic principles of PL/SQL .

CO5. Apply and relate the concept of transaction, concurrency and recovery in database.

BCA205 :NUMERICAL & STATISTICAL METHODS

CO1: Apply numerical methods to find our solution of algebraic equations using different methods under different conditions, and numerical solution of system of algebraic equations.

CO2: Apply various interpolation methods and finite difference concepts. Work out numerical differentiation and integration whenever and wherever routine methods are not applicable.

CO3: Work numerically on the ordinary differential equations using different methods.

CO4: Aims at teaching students the idea of basic statistics, discrete and continuous random variables.

CO5: The student should understand: The theory of probability, concept of random variable, some special distributions.

BCA203P : DATA STRUCTURES LAB

CO 1: Implement different techniques related to sorting and searching.

CO 2: Create different data structures and perform different operations on it.

BCA204T:DBMS LAB

CO1. Understanding and Applying Database Structures (Remembering, Understanding CO2. Execution and Evaluation of SQL Queries(Analyzing, Designing, and Evaluating Realworld Database Scenarios)

FOUNDATION COURSE : INDIAN CONSTITUTION

CO1. Able to understand historical background of the Constitutional making and its importance for building a democratic India, the structure of Indian government, the structure of state government, the local Administration, Knowledge/Understand

CO2. Able to apply the knowledge on directive principle of state policy, the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.

CO3. Able to analyze the History, features of Indian constitution, the role Governor and Chief Minister, role of state election commission, the decentralization of power between central, state and local self-government.

CO4. Able to evaluate Preamble, Fundamental Rights and Duties, Zilla Panchayat, block level organization, various commissions

III SEM B .C.A

BCA303T:OBJECT ORIENTED PROGRMMING USING C ++

CO1 : Understand the fundamental concepts of Object Oriented Programming like abstractions, encapsulation, polymorphism and inheritance. Learn I/O in C++ and write functions

CO2 : Learn to define classes and create objects. Perform function overloading, operator overloading and write constructors.

CO3 : Learn and apply the concept of inheritance and function overriding.

CO4 : Create Virtual functions, friend functions and learn to define class templates. Handle Exceptions

CO5 : Perform file handling by defining different types of streams.

BCA304T: FINANCIAL ACCOUNTING AND MANAGEMENT

CO1 : Understand the role of accounting and its limitations

CO2 : Demonstrate knowledge of each step in the accounting cycle

CO3 : Enables students to get acquainted with concepts relating bills of exchange and trail balances

CO4 : Suport at a basic level the recording and reporting of financial information for business

CO5 : Enable learners to understand ,Impact of Natural environment on business.

BCA305T:OPERATING SYSTEMS

CO1 : Understand the different types of Operating Systems, OS structures, Processes and Process management, Threads and Scheduling

CO2 : Appreciate the need and process of synchronization. Understand the different methods of synchronization, deadlocks – their prevention, detection and recovery

CO3 : Understand memory management concepts like segmentation, paging, virtual management, thrashing and page replacement algorithms

CO4 : Understand the file management concepts, directory structure, file systems, disk management, disk structure and scheduling

CO5 : Understand the protection and security aspects, authentication and threats. Undertake a case study of Windows and Linux Oss.

BCA 304P :TALLY LAB

CO1 : Understand the concepts of Accounting and tally accounting package

CO2 : Capable of creating a company ,entering accounting and inventory vouchers and generate financial statementsw.

CO3 : Analyse the tally software integrated with GST and helps to understand the importance of it in today's computerized era

CO4 : Scope to enhance knowledge in accounting ,inventory ad taxation

CO5 : Students will possess required skills and can be employed as a tally data entry operator

BCA303P: C ++ LAB

CO1 : Implement theconcepts of OOPs in real world

CO2 : apply basic concepts of OOPs and relate with real world examples

CO3 : Analyse and trace the working of OOPs and solve the real world problems.

CO4 : Eva;luate the solutions using OOPs concept selected to solve the problem

FC: CULTURE DIVERSITY AND SOCIETY

CO1: Understand the geographical, cultural and religious diversity of India and to communicate different cultural views and values

CO2: Understand the way in which race, ethnicity, caste and family structure are socially constructed and to recognize that social system developed out of adaptation to environmental circumstances.

CO3: Understand the contemporary challenges before the Indian society and having awareness of ethical problems, social rights, values & responsibilities of individuals.

IV SEM B .C.A

BCA403T: VISUAL PROGRAMMING.NET

CO 1. Understand the features of .NET framework (Understand)

CO 2. Create Windows Forms Applications with applications with strong object-oriented principles (Create)

CO 3. Build web applications using various ASP.NET controls (Apply)

CO 4. Manage connectivity between user interface and the database

CO 5. Create enhanced backend/data layer quickly using LINQ (Create)

BCA404T: UNIX PROGRAMMING (BCA)

CO1 : Acquire the knowledge of Unix Operating system, Unix System communication, Unix file management and its applications.

CO2 : Identify and describe the importance of Unix operating system and different components involved in the system structure of Unix.**CO3 :** Demonstrate Unix shell Commands for file handling and process control.

CO4 : Apply skills to write programs in Unix scripting language and to execute various system based, file based, communication based and process based shell commands.

CO5 : Appreciate the design and implementation of applications on Unix operating system.

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BCA405T: SOFTWARE ENGINEERING

CO1 :Understand the importance of the stages in the software life cycle and various process models.

CO2 :Be able to design software by applying the software engineering principles and various design strategies.

CO3 :Able to elicit, analyze and specify software requirement process.

CO4 :Define the basic concepts and importance of Software project management concepts like cost estimation, scheduling and reviewing the progress.

CO5 :Apply different testing and debugging techniques and analyzing their effectiveness.

BCA403P: VB.NET LAB

CO1 : Use the different elements of a visual programming language as building blocks to develop correct, coherent programs.

CO2 :Analyse problems, develop conceptual designs that solve those problems, and transform those designs to Visual Programs with VB.Net.

BCA404P: UNIX AND SHELL PROGRAMMING LAB

CO1 : Acquire skills of using Unix shell based commands, the principles of the process management, file management and communication management.

CO2 :Implement and construct various shell scripts for simple applications. Use and examine various file commands and network commands.

FC – PERSONALITY DEVELOPMENT

CO 1. Evaluate self to know their strength and weakness & understanding the importance of goal setting and creativity to be successful.

CO 2. Develop Interpersonal skills and Stress management ability.

CO 3. Apply time management techniques & develop leadership ability.

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V SEM B .C.A

BCA501T: DATA COMMUNICATION AND NETWORKS

CO 1. Understand basic computer network technology.

CO 2. Identify the different types of network topologies and protocols of network devices and their functions within a network.

CO 3. Enumerate the OSI model and TCP/IP layers.

CO 4. Understand and build the skills of subnetting and routing mechanisms.

CO 5. Familiarize with the basic protocols of computer networks

BCA502T: ARTIFICIAL INTELLIGENCE

CO 1. Learn Heuristics algorithmic topics of Artificial Intelligence and mathematically deep enough to introduce the required theory.

CO 2. Understand Knowledge representation using predicate logic.

CO 3. Illustrate and Identify Planning Problem.

CO 4. Develop an appreciation for what is involved in learning from data.

CO 5. Analyse and Understanding of Natural Language and Neural Network

BCA503T: JAVA PROGRAMMING

CO 1. Use the syntax and semantics of java programming language and basic concepts of OOP.

CO 2. Develop reusable programs using the concepts of inheritance, polymorphism. interfaces and packages.

CO 3. Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.

CO 4. Design event driven GUI and web related applications which mimic the real world scenarios

CO 5. Write programs using Java collection API as well as the java standard class library.

CO 6. Apply the garbage collection for saving the resources automatically

BCA504T: ANALYSIS AND DESIGN OF ALGORITHMS

CO 1. Appreciate the need of algorithms, different problem-solving techniques and the need for optimization of algorithms.

CO 2. Ability to understand solving of searching, sorting and various optimization problems using different problem-solving techniques in linear data structures.

CO 3. Ability to calculate and measure efficiency of various algorithms in solving problems using different problem-solving techniques using linear data structures.

CO 4. Able to understand non-linear data structures and the different traversal algorithms for non-linear data structures.

BCA505T: ELECTIVE-1: DATA MINING

CO 1. Understand and applythe concept of Data Warehouse and Data Preprocessing.

CO 2. Appreciate the relevance of Data mining and data mining techniques and tools.

CO 3. Gain practical intuition about how to apply these techniques on datasets of realistic sizes using modern data analysis frameworks.

CO 4. Appreciate and apply the supervised and unsupervised learning algorithms

BCA503P: JAVA PROGRAMMING LAB

CO 1. Write Java application programs using OOP principles and proper program structuring.

CO 2. Develop Java programs using packages, inheritance and interface.

CO 3. Create Multithreaded programs.

CO 4. Write Java programs to implement error handling techniques using Exception handling and developing programs using class and inputs from keyboard.

CO 5. Develop graphical User Interface using AWT.

CO 6. Demonstrate event handling mechanism.

BCA504P: ANALYSIS AND DESIGN OF ALGORITHMS LAB

CO 1. Understand the need for optimized algorithm by calculating and comparing the efficiency of similar algorithms.

CO 2. Able to walk through searching andsorting algorithms using different techniques in linear data structures.

CO 3. Understand the need of algorithms using different techniques for finding Shortest Path, minimum spanning tree and traversal algorithm for non-linear data structures.

CO 4. Improve programming skills with hands on implementing experience

BCA506P: PROJECT

CO1: Conceptualize, design and implement solutions for specific problems

CO2: Communicate the solutions through presentations and technical reports

CO3: Apply resource management skills for projects

CO4: Synthesize self-learning, team work and ethic

SKILL DEVELOPMENT COURSE-BANKING AND FINANCE

CO1. The students will be able to Understand the operation of financial system.

CO2. Analyse the mechanism of banking system and other financial institutions.

CO 3. The students will be able to understand the power and significance of money.

CO 4. Understand the functions and applications of finance in trade and commerce.

CO 5. Evaluate the recent investment methods in Indian financial system.

VI SEM B .C.A

BCA601T: SYSTEM PROGRAMMING

CO 1. Understand the basic concepts in systems programming.

CO 2. Describe the working of different components of system software and its control.

CO 3. Design the program of different problems used in modules of system software.

CO 4. Apply the programming concept of different modules of system software.

BCA602T: PROFESSIONAL AND BUSINESS COMMUNICATION

CO1 : Effective Written Communication: Students will create clear and well-organized business documents, such as emails, reports, and proposals, using appropriate terminology and formatting.

CO2 : Oral Communication and Presentation Skills: Students will deliver engaging presentations, using effective verbal and non-verbal techniques, and handle audience interactions confidently.

CO3 :Professional Interpersonal Communication: Students will engage in active listening and articulate ideas clearly in team settings and professional interactions.

CO4 : Strategic Business Communication: Students will apply communication strategies for business contexts, including conflict resolution and stakeholder management.

BCA603T: WEB PROGRAMMING (BCA)

CO 1. Describe fundamentals of web

CO 2. Create static webpage using HTML

CO 3. Describe the importance of CSS in web development

CO 4. Describe the function of JavaScript as a dynamic webpage creating tool

CO 5. Prepare XML parse tree

BCA604T: ELECTIVE-2: MACHINE LEARNING

CO 1. Understand the function of various learning techniques in addition of various machine learning methods of corresponding performance measurement terms with the latest advances in technology and it support applications.

CO 2. Apply machine or deep learning techniques to develop efficient computer-aided models to resolve real-time problems.

CO 3. Explain the fundamental concept of probability theory and build probabilistic models for outcomes of stochastic processes.

CO 4. Learn and apply the concept of various rule mining techniques to identify the associations between the sets by evaluating the distance of the data points.

CO 5. Design and evaluate genetic algorithms for optimizing engineering problems

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BCA604T: ELECTIVE-2: SOFTWARE TESTING

CO 1. Describe fundamentals, basic principles, activities of Test & Analysis and distinguish validation & verification process.

CO 2. Understand the purpose of defining test adequacy criteria, functional and structural testing.

CO 3. Describe and discuss data flow testing criteria and testing object-oriented software.

CO 4. Describe the testing processes such as planning and monitoring, integration, system, acceptance, and regression testing.

CO 5. Understand model-based testing, the process of automating and documenting analysis & test.

BCA605P: WEB PROGRAMMING LAB

CO 1. Analyse a web page and identify its elements and attributes.

CO 2. Create web pages using XHTML and Cascading Style Sheets.

CO 3. Design dynamic web pages using JavaScript (Client side programming).

CO 4. Construct using DOM (Document Object Model) interface for web documents

CO 5. Create XML documents and Schemas.

BCA606P: PROJECT WORK

CO 1. Conceptualize, design and implement solutions for specific problem defined

CO 2. Communicate the solutions through presentations and documentation

CO 3. Apply software engineering skills, project management skills, professional ethics and societal concerns

CO 4. Exhibit self-learning, lifelong learning skills towards sustainable solutions

SKILL DEVELOPMENT COURSE – COMPUTER APPLICATION AND INFORMATION TECHNOLOGY

CO 1. Explain concept of database and manipulate the data by executing queries, understand and have working skills with productivity tools and Internet.

CO 2. Summarize and Explain taxonomy of Information system, ERP, Cloud Computing and how it is important for business.

CO 3. Classify and discuss cyber frauds and importance of IT-GRC.

CO 4. Define and explain electronic commerce (EC), its various categories, E-banking, Encryption techniques.

CO 5. Explain objective of IT ACT 2000 and demonstrate a critical understanding of the Cyber law with respect to Indian IT/Act.

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