Ballari V. V. Sangha's

VIJAYANAGAR COLLEGE, HOSAPETE.

Department of Computer Science

Program: **Bachelor Of Computer Applications.**

Program Outcome, Program Specific Outcome, and Course Outcome for the Academic Year 2020-21

Program Outcome:

The graduates of the program can:

PO1: Perceive and be identified as a professional and active communicator in computers and computing technologies organizations.

PO2: Practice their learnings in a team-oriented, collaborative, or as an entrepreneur that embraces people with different disciplines and cultural environments.

PO3: Engross themself in lifelong learning helping their professional and personal development via higher education and participation in technological events.

PO4: Responsibly function as a member of society with a good understanding of ethics, their work's economic and social impact, and mentoring the same to fellow employees.

Program Specific Outcome:

Graduates shall be able

PSO1: To apply the programming skill and software engineering strategies in the development of software projects and tools that ease the developers in the SDLC process.

PSO2: To acquire the knowledge of current trends in the industry thereby finding novel solutions to existing problems.

PSO3: To grasp the concepts in depth by self-learning and research-oriented methods.

PSO4: To have comprehensive communications skills.

PSO5: To work effectively in teams, software projects need large groups of employees to work together.

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Course/ Sem	Course Code	Title of the paper	Course/ Sem	Code	Title of the paper
BCA I	BCA1.5	Computer Fundamentals & Office automation	BCA II	BCA 2.5	Database Management System
	BCA1.6	C Programming		BCA 2.6	OOPs with C++
	BCA1.5(Pr)	Office Automation Lab		BCA 2.5(Pr)	DBMS Lab
	BCA1.6(Pr)	C Programming Lab		BCA2.6(Pr)	OOPs Lab
BCA III	BCA 3.3	Computer Application	BCA IV	BCA 4.3	Data Warehousing &Data Mining
	BCA 3.4	Graph Theory		BCA 4.4	Numerical Methods
	BCA 3.5	Data Structures		BCA 4.5	Visual Basics
	BCA 3.6	Operating System		BCA 4.6	E-Commerce
	BCA 3.5 (Pr)	Data Structure Lab		BCA 4.4(Pr)	Numerical Methods Lab
	BCA 3.6 (Pr)	Operating System Lab		BCA 4.5(Pr)	Visual Basics Lab
BCA V	BCA 5.1	Software Engineering	BCA VI	BCA 6.1	Image Processing
	BCA 5.2	Computer Networks		BCA 6.2	System Programming
	BCA 5.3	Artificial Intelligence		BCA 6.3	Multimedia
	BCA 5.4	JAVA		BCA 6.4	C# & .Net framework
	BCA 5.5	Operational Research		BCA 6.5	Unix & Shell Programming
	BCA 5.6	Computer Graphics		BCA 6.6	Web Technology
	BCA 5.4 (Pr)	Java lab		BCA 6.4 (Pr)	C# Lab
	BCA 5.6 (Pr)	CG Lab		BCA 6.5 (Pr)	Unix Lab

BCA I Semester

BCA1.5: Computer Fundamentals & Office automation

Converse in basic computer terminology. Formulate opinions about the impact of computers on society. Possess the knowledge of basic hardware peripherals. Know and use different number systems and the basics of programming. Solve basic computational problems.

BCA1.5(Pr) Office Automation Lab

Students will be able to claim proficiency in Word and PowerPoint, create professional-looking documents and presentations, and be familiar with some advanced Word and PowerPoint functions.

BCA 1.6: C Programming

After completing this course, students will be able to understand the basics of programming concepts and build the logic for any given problem. In Unit 1, they learn the basic building blocks of the C language. Unit 2 covers the operators and expressions required to code the programs. Unit 3 discusses the decision-making and looping concepts. In unit 4 they learn the concepts of arrays, functions, structures, unions, and pointers.

BCA 1.6(Pr): C Programming Lab

Students will be to code the basic programs, implement mathematical formulae and build their logic. Able to trace the programs for different outputs and debug the syntactical and logical errors.

BCA II Semester

BCA 2.5: DBMS

Students should be able to understand the fundamental elements of relational database management systems, Explain the basic concepts of the relational data model, entity-relationship model, relational database design, relational algebra, and SQL, and Improve the database design by normalization.

BCA 2.5(pr): DBMS Lab

Students get practical knowledge on designing and creating relational database systems. Understand various advanced query execution such as relational constraints, joins, set operations, aggregate functions, triggers, views, and embedded SQL.

BCA 2.6: OOPS with C++

In unit 1 students learn the basic concepts of object-oriented programming, the benefits of using OOPs, and the structure of C++ programs. Also, learn to create a source file, tokens, and symbolic constants. They understand the function prototypes and performance. In unit 2, they will be able to create classes, and objects, to define member functions.

BCA2.6(Pr) C++ LAB

Students will be able to create simple programs using classes and objects, Implement Object Oriented Programming Concepts, Develop applications using stream I/O and file I/O and Implement Object-Oriented Programs using templates and exceptional handling concepts.

BCA III Semester

BCA 3.3: Computer Applications

Students will be able to identify the importance of various number systems and convert from one base to other. Implement logic gates and complements. Learn different languages and translators. Learn fundamentals of networking, topologies, and data transmission. Gain knowledge on uses and applications of the internet, E-commerce applications. They will be able to create HTML web pages using various tags.

BCA 3.4: Graph Theory

The students will be able to apply principles and concepts of graph theory in practical situations To understand how graph theory has been. • To understand the concept of vertex connectivity and edge connectivity in graphs. • To develop the understanding of Geometric duals in Planar Graphs. • To understand Koenigsberg Seven Bridge Problem. • To understand the concept of matrices in graphs like Incidence matrix, Adjacency matrix, Cycle matrix, etc. • To understand the concept of digraphs, Euler digraphs, and Hamiltonian digraphs. • To understand the idea of tournaments in digraphs and study some characterizations about tournaments. • To have an idea of matching in graphs and study some applications of matching in day-to-day life problems. • To introduce the idea of coloring in graphs. • To have an idea of automorphism groups of graphs

BCA 3.5: Data Structures

Students will be able to implement various data structure and their algorithms. In unit 1 they learn about types of data structures. In unit 2 they learn about arrays, linked lists, and their types with implementation. In unit 4 they learn about non-linear data structures with algorithm and their implementation. After completing the course students will be able to design different algorithms.

BCA 3.5(Pr): Data Structure Lab

Students will able to Understand the concept of Dynamic memory management, data types, algorithms, Big O notation, basic data structures such as arrays, linked lists, stacks and queues, graphs, and trees, and solving problems like sorting, searching, insertion, and deletion of data

BCA 3.6: Operating System

Operating System provides common services to computer system like File search, Calculator, Various inbuilt apps, Word, PowerPoint, and Excel, etc., Due to this, it becomes easy to use a computer system. If we use a computer system without OS, then we will see Binary codes on our Screen. Operating System manages all software and hardware on the computer.

BCA 3.6(Pr): Operating System LAB

It controls all the schedules, and all processes and carries out all the functions of OS. Decides when one programs tops and another starts

BCA IV Semester

BCA 4.3: Data Mining and Data Warehouse

After the completion of this course, students will understand the concept of Data warehousing, OLAP, and implementing data pre-processing for mining applications. They will identify the concept and use of data mining in the business application and they also learn about the association rules and classification for mining data. In the last unit, they will get the concept of cluster analysis and the method for Deploying appropriate clustering techniques.

BCA 4.4: Numerical Methods

Students would be able to assess the approximation techniques to formulate and apply appropriate strategies to solve real-world problems and Understand numerical techniques to find the roots of non-linear equations and solutions to a system of linear equations. Understand the different operators and the use of interpolation. Understand numerical differentiation and integration and numerical solutions of ordinary and partial differential equations.

BCA 4.4(Pr): Numerical Methods Lab

Students will be able to Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations. Analyze and evaluate the accuracy of common numerical methods.

BCA 4.5: Visual Basic

Visual Basic, widely known as Visual Basic.net or VB.Net, is a very simple programming language to learn, mimic real-life situations and develop high-level applications in Microsoft's .Net platform; it is a popular language, as it is closer to plain English and resembles pseudo code.

BCA 4.5(Pr): Visual Basic LAB

Visual Basic programming lab course could learn to build user interfaces, manipulate and organize data, and manage the flow of programs, computer programming languages are also changing. Which is used to increase the knowledge of everyday tools.

BCA 4.6 E-Commerce

Helps students to gain knowledge of contemporary trends in e-commerce and business finance, Learners will be able to recognize features and roles of businessmen, entrepreneurs, managers, and consultants, which will help learners to possess the knowledge and other soft skills and to react aptly when confronted with critical decision making.

BCA V Semester

BCA 5.1: Software Engineering

Students will understand the basics of Software Engineering and the software development life cycle. Learn various SDLC models and their importance. In unit 2, they learn how to collect functional and non-functional requirements and write SRS documents. Unit 3 makes them understand design types, principles, patterns, methodologies, and notations. In unit 4, they learn how to increase the reliability of software and reuse the modules, and different ways to avoid errors and faults. By completing unit 5, students understand the ways to apply strategies and various ways of testing the software products and write new test cases.

BCA 5.2: Computer Networks

Upon successful completion, students will have the knowledge and skills to a) Understand and describe the layered protocol model. b)Describe, analyze and evaluate a number of data links, network, and transport layer protocols. c)Program network communication services for client/server and other application layouts.d)Describe, analyze and evaluate various related technical, administrative, and social aspects of specific computer network protocols from standards documents and other primary materials found through research. e)Design, analyse, and evaluate networks and services for homes, data centres, IoT/IoE, LANs and WANs.

BCA 5.3: Artificial intelligence

Students can understand general issues and overview of AI, AI Techniques, importance & areas of AI, Problem-solving state-space search-DFS, BFS Production system, Problem characteristics, Heuristic search techniques, knowledge representation and mapping, Logic programming, AI Programming language- Prolog.

BCA 5.4: JAVA

In unit 1, students learn the basic features of JAVA and Java Development Kit and use them to develop the Java Program and applications. In unit 2 they learn to code java programs using data types, operators, classes, inheritance, exceptions, and applets. In unit 3 they will understand the concepts of multi-thread programming, event handling, and AWT, which helps develop java applications.

BCA 5.4(Pr): JAVA Lab

Students will be able to Identify classes, objects, members of a class, and Design, develop, test, and debug Java programs using object-oriented principles in Conjunction with development tools including integrated development environments

BCA 5.5: Operational Research

In unit 1 Students will learn where it is actually applied :Operation Research is applied to a lot of real-world use cases like Assignment which is used for assigning uber drives to customers. They learn about the LPP problems ,Scheduling which is used for scheduling multiple TV shows together to achieve the maximum views possible. Financial Engineering which is used for asset allocation, risk management, derivatives pricing. Unit 2: They learn about the Artificial variables techniques like Two phase methods, Big M method, Duality formulations. Unit3: They learn about the transportation problems like NWC method, LCM method, Vogel`s method which is used to find the basic feasible solution to the given problem with minimum cost, assignment problems which is used to assign the right job to the right person to equalise the given problem to find the optimum solution .

BCA 5.6: Computer Graphics

The main aim of this subject is to learn the realistic implementation procedure and the technique of Graphics in real-world scenarios using the OpenGL Tool in the C++ Programming platform. They learn the transformation of realistic images into a virtual graphical platform with different visual projection implementations with special editing features. This helps them to expand the boundaries of imagination into graphical representations and animations.

BCA 5.6(Pr): Computer Graphics Lab

Students learn the implementation of the real-world images into the graphical and animated representations using C++ with Open GL tools on Visual Studio.

BCA VI Semester

BCA 6.1: Image Processing

After the completion of this course, students will understand image processing and image analysis techniques and concepts. In unit 1 they learned about digitized images and their properties, image brightness, and geometric transformation and segmentation. In unit 2 they learned about image enhancement- i.e. histogram processing, and homomorphism filtering. In unit 3 they learned about image compression. In unit 4 they learned about shape representation and description. In unit 5 they learned about morphology, morphology principles, and morphology segmentation.

BCA 6.2: System Programming

Students understand the architecture of SIC & SIC/XE machines. Learn the concepts of various System Software like Assemblers, Loaders, Linkers, Editors, Debugging systems, Macro processors, and Compilers. They will be able to write programs, use data structures, modify the addresses, relocate the programs, and optimize the code.

BCA 6.3: Multimedia

At the end of this course, students will know and understand the fundamentals of multimedia, basic elements of m multimedia elements, including key properties, transmission mode, and audio representation on computers. Learn about Graphics and images, Video Technology, and Computer-based Animation, and get to know in detail about optical storage media. Understand content analysis, data, and file format standards.

BCA 6.4: C# & .Net Framework

This is one of the Flexible and general-purpose languages where they learn the total lifecycle, storage processing of the system, the programming structure of C# w.r.t Dot Net, and how it can be used and implemented with different languages how to use it with multiple platforms.

BCA 6.4(Pr): C# & .Net Lab

Students learn the programming structure of .Net with C# on Visual Studio and the Windows platform. Concerning the knowledge, they can merge up with the database and front-end application to design the web portal. They even learn to implement the code in the different platforms in various programming languages.

BCA 6.5: UNIX Operating System

UNIX is an Operating System. It supports multitasking and multi-user functionality. UNIX is most widely used in all forms of computing systems. UNIX is a graphical user interface. Unix OS is a command prompt tool that is much superior to its Windows counterpart.

BCA 6.5: UNIX Operating System LAB

Unix Operating System lab will be able to run various Unix commands on a standard Unix Operating System. Which we can run C/C++ programs on Unix. We can do shell programming on Unix operating system. We can understand and handle Unix System calls.

BCA 6.6: Web Technology

Student understand fundamentals of WEB, XHTML, basic tags, CSS(cascading style sheets),conflict resolution, overview of JavaScript, HTML Documents, Dynamic Documents with JavaScript, Document object model(1&2), Brief introduction to XML,PERL,CGI Programming.

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Program:

Bachelor Of Science (BSc) –Computer Science

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Program Outcome:

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PO1: Perceive and be identified as a professional and active communicator in computers and computing technologies organizations.

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Semester No.	Course No.	Subject Name
I (w.e.f. from 2014-15 onwards)	CS1T	Computer Fundamentals and Programming in 'C'
	CS1P	C Programming Lab
II (w.e.f. from 2014-15 onwards)	CS2T	Advance 'C' Programming & office automation
	CS2P	Advance 'C' Programming Lab
III (w.e.f. from 2015-16 onwards)	CS3T	OOPs using C++
	CS3P	C++ Lab
IV (w.e.f. from 2015-16 onwards)	CS4T	Data structures
	CS4P	Data structures Lab using c/c++
V (w.e.f. from 2016-17 onwards)	CS5T1	DBMS
	CS5P1	DBMS Lab
	CS5T2	Visual Basic Programming
	CS5P2	VB Programming Lab
VI (w.e.f. from 2016-17 onwards)	CS6T1	Computer Graphics
	CS6P1	Computer Graphics lab
	CS6T2	Java Programming
	CS6P2	Java Programming lab

BSc I Semester

CS1T: Computer Fundamentals and Programming in C

Students will be able to apply various number systems, convert from one base to another, and apply Boolean algebra. Implement logic gates and complements. Learn different languages and translators. They will be able to understand the basics of programming concepts and build the logic for any given problem. They learn the basic building blocks of the C language. Able to understand operators and expressions required to code the programs, the decision-making, looping concepts, and arrays.

CS1P: C Programming Lab

Students will be to code the basic programs, implement mathematical formulae and build their logic. Able to trace the programs for different outputs and debug the syntactical and logical errors.

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BSc IISemester

CS2T: Advanced C Programming and Office automation.

Students continue learning the C language in the 2nd semester, they will be able to apply various programming concepts like functions, structure, unions, and pointers. Along with that, they also learn basic Microsoft office automation tools like Word, Excel, and PowerPoint. The tools help them create their documents.

CS2P: Advanced C Programming Lab

Students will be to code the advanced programs on various C concepts such as functions, structure, unions, and pointers. Able to trace the programs for different outputs and debug the syntactical and logical errors.

BSc III Semester

CS2T: OOPs using C++

In unit 1 students learn the basic concepts of object-oriented programming, the benefits of using OOPs, and the structure of C++ programs. Also, learn to create a source file, tokens, and symbolic constants. They understand the function prototypes and performance. In unit 2, they will be able to create classes, and objects, to define member functions. They will be able to write the code for C++ programs using operators, functions, manipulators, inheritance, and its types.

CS2P: C++ Lab

Students will be able to create simple programs using classes and objects, Implement Object Oriented Programming Concepts, Develop applications using stream I/O and file I/O and Implement Object-Oriented Programs using templates and exceptional handling concepts.

CS: Computer Applications

Students will be able to identify the importance of various number systems and convert from one base to other. Implement logic gates and complements. Learn different languages and translators. Learn fundamentals of networking, topologies, and data transmission. Gain knowledge on uses and applications of the internet, E-commerce applications. They will be able to create HTML web pages using various tags.

CS4T: Data Structures

Students will be able to implement various data structure and their algorithms. In unit 1 they learn about types of data structures. In unit 2 they learn about arrays, linked lists, and their types with implementation. In unit 4 they learn about non-linear data structures with algorithm and their implementation. After completing the course students will be able to design different algorithms.

CS4P: Data Structures Lab

Students will able to Understand the concept of Dynamic memory management, data types, algorithms, Big O notation, basic data structures such as arrays, linked lists, stacks and queues, graphs, and trees, and solving problems like sorting, searching, insertion, and deletion of data

CS: E-Commerce

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CS5T1: DBMS

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CS5P1: DBMS Lab

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CS5T2: Visual Basic Programming

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CS5P2: VB Programming Lab

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CS6T1: Computer Graphics

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CS6P1: Computer Graphics Lab

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CS6T2: Java Programming

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CS6P1: Java Programming Lab

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