DEPARTMENT OF COMPUTER APPLICATION

Bachelor of Computer Applications - B.C.A(Science)

Programme Outcomes:

Knowledge outcomes:

After completing B.C.A(Science) Programme students will be able to:

PO1: demonstrate and apply the fundamental techniques of programming, databases and different computing environments.

PO2: Apply mathematics and statistics knowledge for development of basic programming concepts.

PO3: Apply electronics knowledge for development of embedded system and Internet of Things (IoT) programming.

PO4: Effectively communicate scientific information, system management concepts and design both in oral and written form using appropriate supportive technologies

Skill outcomes:

After completing B.C.A(Science) Programme students will be able to:

PO5: Develop various real time applications using latest technologies and programming languages.

PO6: Become employable in various I.T. companies and government jobs

PO7: Develop customized solutions for small and medium Enterprises..

PO8: Develop knowledge required for planning, designing and building Complex Application Software Systems as well as provide support to automated systems or application

PO9: Possess strong foundation for their higher studies in I.T.

Generic outcomes:

Students will

PO10: Have developed their logical, programming and communication skills.

PO11: Augment the recent developments in I.T. field.

PO12: Enhance the scientific temper among the students so that to develop a research culture and Implementation the policies to tackle the burning issues at global and local level.

Programme Specific Outcomes

PSO1: Students get an ability to apply knowledge of mathematics, electronics, computer science and business communication in practice.

PSO2: The program prepares the students for a range of computer applications, computer organization, and techniques of computer networking, software engineering, Web Designing, Big Data, IoT, Python, Advance JAVA and Android.

PSO3: In order to enhance programming skills of the students, the program has introduced the concept of assignment /project development in each language/technology learnt during semester.

PSO4: Students will be able to enhance not only comprehensive understanding of the theory but its application in I.T. fields.

F. Y. B.C.A.(SCIENCE)

BCA111: Fundamentals of Computers

After successfully completing this course, students will be able to:

CO1: learn the fundamental concepts of computers with the present level of knowledge of the students.

CO2: Understanding binary, hexadecimal and octal number system and their arithmetic.

CO3: Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.

CO4: Understanding the use of all System and Software utilities in real life.

CO5: Troubleshoot the computer systems and use utility software

CO6: Choose commands and features of operating systems and application Software

CO7: Use open source software

BCA112: Problem Solving and C Programming

After successfully completing this course, students will be able to:

CO1: Building of Algorithm.

CO2: Building flowchart.

CO3: Learn Syntax of c programming

CO4:.Solving simple problems using c programming

BCA113: Applied Mathematics

After successfully completing this course, students will be able to:

CO1: Relate and apply techniques for constructing mathematical proofs and make use of appropriate set operations, propositional logic to solve problems

CO2: Use function or relation models to interpret associated relationships

CO3: Apply basic counting techniques and use principles of probability

CO4: Given a data, compute various statistical measures of central tendency

CO5: Use appropriate Sampling techniques.

BCA114: Business Communication

After successfully completing this course, students will be able to:

CO1: Effectively listen to lectures, public announcements and news on TV and radio.

CO2: Engage in telephonic conversation.

CO3: Communicate effectively and accurately in English

CO4: Use spoken language for various purposes

CO5: Demonstrate ability to prepare documents used in business correspondence.

BCA115: Fundamentals of Computers Laboratory

After successfully completing this course, students will be able to:

CO1: Install operating system and execute various commands.

CO2: Effectively use various features of application software.

CO3: Create and use spreadsheets effectively.

CO4: Prepare effective Presentation.

BCA116: C Programming Laboratory

After successfully completing this course, students will be able to:

        CO1: Learn how to build algorithm for problem.

        CO2: Learn how to create pictorial representations of the program.

        CO3: Learn how to apply logic for problems

        CO4: Enhance their programming skills

BCA117: Applied Mathematics Laboratory

After successfully completing this course, students will be able to:

        CO1: Apply mathematical and statistical concepts to solve problems

        CO2: Use R to perform statistical operations and data visualization.

BCA118: Business Communication Laboratory

After successfully completing this course, students will be able to:

        CO1: Apply business communication strategies and principles to prepare effective communication for domestic and international business situations

        CO2: Identify ethical, legal, cultural, and global issues affecting business communication.

        CO3: Participate in team activities using collaborative work skills.

        CO4: Communicate via electronic mail, Internet, and other technologies.

        CO5: Deliver an effective oral business presentation.

BCA121: Computer Organization

After successfully completing this course, students will be able to:

        CO1: Understand the functions of fundamental basic logic circuits.

        CO2: Understand the functions and designs of basic digital combinatorial circuits

        CO3: Understand the functions and designs of sequential circuits.

        CO4: Understand the basic functional blocks of microprocessor.

        CO5: Understand the role of CPU and its components inside the microprocessor

BCA122: Advanced C Programming

After successfully completing this course, students will be able to:

        CO1: Learn Preprocessor directives

        CO2: Learn concept of pointer and dynamic memory allocation.

        CO3: Learn different string functions

        CO4: Learn concept of structure

        CO5: Learn concept of Union. Implementation of structure and union.

        CO6: Handling of file using C programming.

BCA123: Operating Systems Concepts

After successfully completing this course, students will be able to:

        CO1: Install Linux and Packages, configure environment.

        CO2: Use commands and Editors and use Documentation.

        CO3: Configure security and Network environment.

BCA124: Database Management Systems – I

After successfully completing this course, students will be able to:

        CO1: Know about file operation and understand the use of different file organization.

        CO2: Understand basic concepts of DBMS.

        CO3: Understand the basic concept in E-R diagram, how to draw it and its use in database.

CO4: Convert E-R to Relational Database.
CO5: Write simple and nested queries.
CO6: understand types of normalization and how to normalize tables in database.

BCA125: **Computer Organization Laboratory**
After successfully completing this course, students will be able to:
CO1: Learn how to build and verify the basic gates.
CO2: Learn how to design, build and implement basic combination circuits.
CO3: Learn how to design, build and implement sequential circuits.
CO4: Learn how to build and implement ALU circuits

BCA126: **Advanced C Programming Laboratory**
After successfully completing this course, students will be able to:
CO1: Implementation of preprocessor directives
CO2: Pointer and allocate memory dynamically.
CO3: Use of string functions
CO4: Implementation of structure, array of structure and passing structure to function.
CO5: Implementation of union.
CO6: Handling of file using C programming

BCA127: **Operating Systems Laboratory**
After successfully completing this course, students will be able to:
CO1: Learn basic concepts of operating system
CO2: use basic Linux commands and Linux documentation
CO3: To Use of editors and Networking commands.
CO4: To use Vi Editor Commands.
CO5: Learn to write Shell Programming and shell scripts

BCA128: **Database Management Systems - I Laboratory**
After successfully completing this course, students will be able to:
CO1: Draw E-R Diagrams.
CO2: Create tables and create relationship between tables.
CO3: Fire different queries on database for retrieving, inserting, updating data.

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BCA301: Data Structure

After successfully completing this course, students will be able to:

CO1: Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms

CO2: Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs

CO3: Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs

CO4: Demonstrate different methods for traversing trees

CO5: Compare alternative implementations of data structures with respect to performance .

CO6: Compare and contrast the benefits of dynamic and static data structures implementations.

BCA302: Advanced Relational Database Management System

After successfully completing this course, students will be able to:

CO1: learn in detail PL/SQL structure block.

CO2: learn in detail query processing and techniques involved in query optimization.

CO3: learn transaction concept and concurrency control.

CO4: learn the principles of recovery management.

CO5: learn database security concepts.

CO6: learn Client server technology used in database

BCA303: Software Engineering

After successfully completing this course, students will be able to:

CO1: Know about the Software product and process.

CO2: Know about the software Applications, Characteristics, tool

CO3: Understand the Software development paradigm

CO4: Know about the Software process lifecycle and Models.

BCA304: Introduction to Computer Network

After successfully completing this course, students will be able to:

CO1: Learn the need to create Network

CO2: Learn the different Layers and protocols present in OSI.

CO3: Learn to configure network devices.

CO4: Learn about IP -Addressing.

CO5: Learn the types of transmission media.

BCA305: Lab -I

After successfully completing this course, students will be able to:

CO1: Select appropriate data structures as applied to specified problem definition.

CO2: Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various data structures.

CO3: Students will be able to implement Linear and Non-Linear data structures.

CO4: Implement appropriate sorting/searching technique for given problem.

CO5: Design advance data structure using NonLinear data structure.

CO6: Determine and analyze the complexity of given Algorithms.

BCA306: Lab -II
After successfully completing this course, students will be able to:

        CO1: Design and implement a database scheme for a given problem-domain.
        CO2: Normalize a database.
        CO3: Populate and query a database using SQL commands.
        CO4: Declare and enforce integrity constraints on a database.
        CO5: Programming PL/SQL including stored procedure, function, cursor, trigger and views.

BCA401: C++
After successfully completing this course, students will be able to:

        CO1: Understand how C++ improves C with object-oriented features.
        CO2: learn how to write inline functions for efficiency and performance.
        CO3: learn the syntax and semantics of the C++ programming language.
        CO4: learn how to design C++ classes for code reuse.
        CO5: learn how to implement copy constructors and class member functions.
        CO6: understand the concept of data abstraction and encapsulation.
        CO7: learn how to overload functions and operators in C++.
        CO8: learn how containment and inheritance promote code reuse in C++.
        CO9: learn how inheritance and virtual functions implement dynamic binding with polymorphism.
        CO10: learn how to design and implement generic classes with C++ templates.
        CO11: learn how to use exception handling in C++ programs.

BCA402: Introduction Web Technology
After successfully completing this course, students will be able to:

        CO1: Understand the various steps in designing Creative and Dynamic website.
        CO2: Apply a structured approach to identifying needs, interests, and functionality of a website.
        CO3: Design dynamic websites that meet specified needs and interests.
        CO4: Write well-structured, easily maintained, standards-compliant, accessible HTML code.
        CO5: Write well-structured, easily maintained, standards-compliant CSS code to present HTML pages in different ways.
        CO6: Use JavaScript to add dynamic content to pages.
        CO7: Learn basic concept of array, string and its functions.

BCA403: Advanced Networking and Network Security
After successfully completing this course, students will be able to:

        CO1: Learn the Need for security, Principles of Security
        CO2: Network Security Firewalls and Virtual Private Networks
        CO3: Understanding Symmetric and Asymmetric Algorithm
        CO4: Basic concepts of internal security
        CO5: Learn intrusion, User Authentication and VPN

BCA404: OOSE

After successfully completing this course, students will be able to:

CO1: Understand basic concepts of Modeling and UML.
CO2: Understand Structural Modeling using classes, objects.
CO3: Be able to draw Class Diagrams and Object Diagrams
CO4: Understand Behavioral Modeling concepts.
CO5: Draw use case, activity, state chart diagrams.
CO6: Understand Architectural Modeling Concepts.
CO7: Draw Component and Deployment Diagrams.

BCA405: Lab –I (C++ Practical)

After successfully completing this course, students will be able to:

CO1: Solve real world problems logically.
CO2: Apply Object oriented concepts on real life programming applications.
CO3: Know different object oriented programming architecture environments in IT industry.
CO4: Be able to build C++classes using appropriate encapsulation and design principles.

BCA406: Lab –II(Introduction to Web Technology)

After successfully completing this course, students will be able to:

CO1: critique JavaScript code written by others, identifying examples of both good and bad practice.
CO2: Learn appropriate HTML, CSS, and JavaScript code for various applications.
CO3: modify existing HTML, CSS, and JavaScript code to extend and alter its functionality, and to correct errors and cases of poor practice.
CO4: write well-structured, easily maintained Array, String in PHP following accepted good practice.

BCA407: Grid and Cloud Computing

After successfully completing this course, students will be able to:

CO1: Comprehensive and in-depth knowledge of Grid and Cloud Computing concepts, technologies, architecture and applications.
CO2: Expose the characteristics of grid and cloud computing.
CO3: Explore the design principles of grid and cloud computing.
CO4: Illustrate security mechanisms in grid and cloud computing Applications.
CO5: Explore distributed computing applications.
CO6: Attempt to generate new ideas and innovations in cloud and grid computing.

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BCA501: Java Programming

After successfully completing this course, students will be able to:

   CO1: Able to understand the use of OOPs concepts.

   CO2: Able to solve real world problems using OOP techniques.

   CO3: Able to understand the use of abstraction.

   CO4: Able to understand the use of Packages and Interface in java.

   CO5: Able to develop and understand exception handling, multithreaded applications with synchronization.

   CO6: Able to understand the use of Collection Framework.

   CO7: Able to design GUI based applications and develop applets for web applications.

BCA502: Advanced Web Technology

After successfully completing this course, students will be able to:

   CO1: Understand OOPS concepts in PHP.

   CO2: Understand how to create sticky forms, Use of session and cookies.

   CO3: Understand different operations on file using PHP.

   CO4: How to connect with database using PHP how to make changes in database using PHP.

   CO5: Understand Concepts of XML and can create XML document using PHP.

   CO6: Handle XML document using PHP and AJAX.

   CO7: Understand different types of Web Services.

BCA503: Software Quality Assurance

After successfully completing this course, students will be able to:

   CO1: Learn Software Architecture and Components

   CO2: Learn Software Project Lifecycle.

   CO3: Know about Software Configuration Management

   CO4: Understanding Classification Of metrics

   CO5: Learn the Project Process Standards.

BCA504: Operating System

After successfully completing this course, students will be able to:

   CO1: Operating System Objectives and Functions

   CO2: Operating System Services and different system calls.

   CO3: Concept of process, process scheduling and process synchronization

   CO4: learn deadlock handling

   CO5: learn memory management concepts.

   CO6: Explain different file systems.

   CO7: learn I/O system and Disk Management

BCA505: Lab I (Java Programming)

After successfully completing this course, students will be able to:

      CO1: Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.

      CO2: Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem

      CO3: Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.

      CO4: Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.

      CO5: Identify and describe common abstract user interface components to design GUI in Java using Applet & AWT along with response to events

      CO6: Identify, Design & develop complex Graphical user interfaces using principal Java Swing classes based on MVC architecture.

BCA506: Lab II (Advanced Web Technology)

After successfully completing this course, students will be able to:

      CO1: implement small programs OOPS concepts in PHP.

      CO2: Implement sticky forms using session and cookies.

      CO3: Understand different operations on file using PHP.

      CO4: Implement web site using AJAX, DATABASE, XML concepts.

BCA507: Soft Computing

After successfully completing this course, students will be able to:

      CO1: To learn the concept of soft computing.

      CO2: Understand different soft computing techniques like Genetic Algorithms, Fuzzy Logic , Neural Networks and their combination.

BCA601: Android Programming

After successfully completing this course, students will be able to:

      CO1: Describe Android platform, Architecture and features.

      CO2: Design User Interface and develop activity for Android App.

      CO3: Use Intent, Broadcast receivers and Internet services in Android App.

      CO4: Design and implement Database Application and Content providers.

      CO5: Use multimedia, camera and Location based services in Android App.

      CO6: Discuss various security issues in Android platform

      CO7: Understand the purpose different development tools for Android

      CO8: Develop applications using Google's Android open-source platform.

      CO9: To understand the Android Operating System

BCA602: Python Programming

After successfully completing this course, students will be able to:

CO1: To understand why Python is a useful scripting language for developers.
CO2: To learn how to design and program Python applications.
CO3: To learn how to use lists, tuples, and dictionaries in Python programs.
CO4: To learn how to identify Python object types.
CO5: To learn how to use indexing and slicing to access data in Python programs.
CO6: To define the structure and components of a Python program.

BCA603: Recent Trends in IT (Internet of Things)

After successfully completing this course, students will be able to:

CO1: Enable learners to understand System On Chip Architectures.
CO2: Introduction and preparing Raspberry Pi with hardware and installation.
CO3: Learn the physical interfaces with Raspberry Pi and program
   them using programming languages.
CO4: Learn how to design IoT based prototypes and protocols.

BCA604: Data Analytics

After successfully completing this course, students will be able to:

CO1: Create effective mathematical solutions to analytical
   problems.
CO2: Use appropriate models of analysis, assess the quality of
   input, derive insight from results, and investigate
   potential issues
CO3: Apply computing theory, languages, and algorithms, as
   well as mathematical and statistical models, and the
   principles of optimization to appropriately formulate and use
   data analyses
CO4: Formulate and use appropriate models of data analysis
   to solve hidden solutions to business-related challenges
CO5: Develops the ability to build and assess
   data-based models.
CO6: Apply machine learning concepts and
   methods to solve problems in real-world contexts and
   will communicate these solutions effectively.
CO7: Carry out standard data visualization and formal inference
   procedures and can comment on the results.
CO8: Create effective solutions to computing challenges in
   analytical projects.

BCA605: Lab I (Android Programming)

After successfully completing this course, students will be able to:

CO1: Experiment on Integrated Development Environment for Android
   Application Development.
CO2: Design and Implement User Interfaces and Layouts of Android App.
CO3: Use Intents for activity and broadcasting data in Android App.

CO4: Design and Implement Database Application and Content Providers.
CO5: Experiment with Location Based service.
CO6: Develop Android App with Security features.
CO7: Develop App for sending SMS

BCA606: Lab II (Python Programming)
After successfully completing this course, students will be able to:

CO1: To learn how to write loops and decision statements in Python.
CO2: To learn how to write functions and pass arguments in Python.
CO3: To learn how to build and package Python modules for reusability.
CO4: To learn how to read and write files in Python.
CO5: To learn how to design object-oriented programs with Python classes.
CO6: To learn how to use class inheritance in Python for reusability.
CO7: To learn how to use exception handling in Python applications for error handling.
CO8: To learn how to write script in python.
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BCA607: Green Computing
After successfully completing this course, students will be able to:
CO1: Understand basic concepts of Green Computing.
CO2: Teach the causes of Energy Crisis and suggest solutions.
CO3:Understand different ways to reduce IT footprint.
CO4: Learn computing technology for Energy Efficiency.
CO5: Learn the importance of carbon footprint.
CO6: Learn effective Green Initiatives for offsetting Green House Gases