

Institute of Management Studies (IMS), Noida

BACHELOR OF COMPUTER APPLICATIONS B.C.A.

Program Outcomes
Program Specific Outcomes
Course Outcomes



Bachelor of Computer Applications

Program Outcomes (PO)

PO1: Computational information: Appreciate and apply mathematical organization, computing and domain information for the conceptualization of computing models from clear harms.

PO2: Difficulty Analysis: Talent to classify, significantly evaluate and prepare complex computing problems using fundamentals of computer knowledge and request domains.

PO3: Drawing / Improvement of Solutions: Facility to transform composite production scenarios and present-day issues into problems, explore, recognize and propose included solutions using rising technologies.

PO4: Accomplish Investigations of Compound Computing Troubles: Ability to invent and ways experiments interpret data and present well up to date conclusions.

PO5: Current Implement Procedure: Skill to select recent computing tools, skills and techniques compulsory for original software solutions

PO6: Proficient Principles: Facility to apply and give expert principles and cyber systems in a universal monetary situation.

PO7: Ultimate Education: Identify the need for and enlarge the ability to appoint in permanent education as a Computing qualified.

PO8: Mission Administration: Skill to recognize administration and computing philosophy with computing acquaintance to supervise projects in multidisciplinary environments.

PO9: Announcement Usefulness: Converse successfully with the computing society as well as culture by being able to know successful documentations and presentations.

PO10: Public & Ecological Alarm: Ability to make out cost-effective, green, public, fitness, authorized, moral issues concerned in the use of processor expertise and other significant tasks applicable to qualified observers.

PO11: Personality & Group Job: Ability to job as a part or manager in various teams in multidisciplinary situations.

PO12: Modernization and Private Enterprise: Classify opportunities, private enterprise dream and use of original thoughts to build worth and means for the betterment of the human being and the world.



Program Specific Outcome (PSO)

PSO1: An ability to enhance the application of knowledge of theory subjects in diverse fields.

PSO2: Develop language proficiency to handle corporate communication demands.

PSO3: Preparing students in various disciplines of technologies such as computer applications, computer networking, software engineering, JAVA, database concepts and programming.

PSO4: In order to enhance programming skills of the young IT professionals, the concept of project development in using the technologies learnt during the semester has been introduced.

PSO5: To enhance knowledge in robotics, provide experimental hardware equipment for teaching the basics of robotics, robot dynamics and control, and robot system design and application.

PSO6: To enhance logical ability and programming concepts by implementing programming lab.

PSO7: Preparing students for future aspects by building and improving their creativity, social awareness, and general knowledge.

PSO8: Encouraging students to convert their start-up idea to reality by implementing.

PSO9: Ability to understand the changes or future trends in the field of computer application.

PSO10: Ability to identify, formulate, analyse and solve problems of programming using different languages.

Course Outcome (CO)

BCA Semester I

BCA-101 Mathematics I

CO1: Students will be able to demonstrate competency in the areas that comprise the core of the mathematics major.

CO2: They will be able to solve applied problems with the application of differentiation and integration.

CO3: They will be able to use appropriate technologies to solve mathematical problems.

CO4: They will be able to apply matrices in different industry problems.

CO5: They will be able to generate mathematical models to solve different types of practical problems.



BCA-102 Programming, Principle & Algorithm

CO-1: They will be able to understand basic terms used in programming.

CO-2: They will be able to design an algorithmic solution for a given problem.

CO3: They will be able to write a C programme for a given algorithm.

CO4: They will be able to use different data structures and update basic data files.

CO5: They will be able to trace out the error and resolve it using debugging and develop logical and analytical thinking.

BCA-103 Computer Fundamental and office automation

CO1: They can classify the computers in different categories based on their capabilities.

CO2: They will be able to discuss an understanding of the importance of algorithms in the development of computer applications.

CO3: They may identify computer hardware and peripheral devices.

CO4: They will be able to discuss the evolution of computers in different generations.

CO5: They will be able to manage the files.

BCA-104 Principle of Management

CO1: They will be able to identify various approaches in management in order to solve a problem.

CO2: To understand the roles and responsibilities associated with managerial functions.

CO3: They will be able to learn the strategies that can motivate our employee to give his best.

CO4: They can identify the key contributors and their contributions in the development of management decisions.

CO5: They will be able to know what a manager does and how they are integral to planning, organizing, leading, and controlling a modern organization.

BCA-105 Computer Fundamentals and Office Automation Lab

CO1: Students will learn about the four basic functions of the computer.

CO2: Students were made familiar with the need of computers in our daily lives.

CO3: Students will be made familiar with application software's.

CO4: With the help of labs, students became familiar with computers, and the various technologies related to them.

BCA-106 Business Communication

CO1: They will be able to identify key principles in business communication.

CO2: They can discuss different processes and considerations involved in writing in business.

CO3: They can create various types of business reports.

CO4: They will be able to create a presentation using slides.

CO5: They will recruit and select new employees.

BCA-107 Programming Principles and Algorithms Lab

CO1: It helped us to know that to code is like learning how to read and write in a different medium, thus, enabling us with creative and expressive power.

CO2: Students will be made familiar with logic building and systematic programming.

CO3: Students will be made aware of and apply appropriate coding skills for different requirements or scenarios.

CO4: With the help of the lab, students will be able to practice and learn planning by thinking through the steps necessary to achieve our end goal.

CO5: It will help students to gain an ability to move past debugging, frustrations and continue to find solutions to help complete their projects.

BCA-008 Environmental Studies

CO1: This course will help students understand the importance of these resources and how to preserve these resources.

CO2: Environment studies will also help students to develop the knowledge and skills required to address challenging environmental issues.

CO3: It will help them understand how their decisions and actions affect the environment

CO4: Students will be made aware about the various types of pollution, and how to minimize them.

CO5: It will motivate them to keep our environment healthy and safe so that everyone can live a healthy life.

BCA Semester II

BCA-201: Mathematics II (MATHS)

CO1: Reason mathematically about basic discrete structures such as numbers, sets, used in computer science

CO2: Familiar with Determinant and Matrices.

CO3: Formulate Limit, Continuity and Differentiability.

CO4: Familiar with propositional calculus.

CO5: Master the basic set theory.

BCA-202: C Programming (C Prog.)

CO1: Understand the difference between object oriented programming and procedural oriented language and data types in C.

CO2: Program using C features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.

CO3: Simulate the problem in the subjects like Operating system, Computer networks and real world problems

BCA-203: Organizational Behaviour (OB)

CO1: To analyze and compare different models used to explain individual behaviour related to motivation and rewards.

CO2: To identify the processes used in developing communication and resolving conflicts.

CO3: To explain group dynamics and demonstrate skills required for working in groups (team building).

BCA-204: Digital Electronics & Computer Organization (DECO)

CO1: Have a thorough understanding of the fundamental concepts.

CO2: Techniques used in digital electronics.

CO3: To understand and examine the structure of various number systems and its application in digital design.

BCA-205: Financial Accounting & Management (FAM)

CO1: Apply oral and written communication skills.



CO2: Describe and explain the ethical and social responsibilities of accountants in ensuring the integrity of financial information.

CO3: Develop an understanding of internal control issues and the effects of the regulatory environment on financial reporting

CO4: Statements clearly describing the meaningful, observable and measurable knowledge, skills and/or dispositions students will learn in this course.

BCA-206: Computer Laboratory and Practical Work of C Programming (P)

CO1: To impart adequate knowledge on the need of programming languages and problem solving techniques.

CO2: To develop an in-depth understanding of functional and logical concepts of C Programming.

CO3: Acquire logical thinking, Implement the algorithms and analyze their complexity, Identify the correct and efficient ways of solving problems

CO4: Implement real time applications using the power of C language features.

BCA Semester III

BCA-301 Object oriented programming with C++

CO1: Understand the difference between the top-down and bottom-up approach.

CO2: Describe the object-oriented programming approach in connection with C++.

CO3: Apply the concepts of object-oriented programming.

CO4: Illustrate the process of data file manipulations using C++.

CO5: Apply virtual and pure virtual function & complex programming situations.

CO6: Ability to design and develop Object Oriented systems

BCA-302 Data Structure Using C & C++

CO1: Understanding the linear and non-linear data structures, sorting and searching operations, File structures.

CO2: Analyse the performance of - Stack, Queue, and Lists.

CO3: Analyse the performance of Trees, Graphs, Searching and Sorting techniques.

CO4: Implement all the applications of Data structures in a high-level language.



CO5: Design and apply appropriate data structures for solving computing problems

BCA-303 Computer Architecture & Assembly Language

CO1: Understand the theory and architecture of central processing unit.

CO2: Analyse some of the design issues in terms of speed, technology, cost, performance.

CO3: Design a simple CPU with applying the theory concepts.

CO4: Use appropriate tools to design verify and test the CPU architecture.

CO5: Learn the concepts of parallel processing, pipelining and inter processor communication.

CO6: Understand the architecture and functionality of central processing unit.

BCA-304 Business Economics

CO1: Develop an understanding of the applications of managerial economics.

CO2: Interpret regression analysis and discuss why it's employed in decision-making.

CO3: Discuss optimization and utility including consumer behaviour.

CO4: Assess the relationships between short-run and long-run costs.

CO5: Analyse perfectly competitive markets including substitution.

CO6: Explain uniform pricing and how it relates to price discrimination and total revenue.

BCA-305 Element of Statics

CO1: Describe and discuss the key terminology, concepts tools and techniques used in business statistical analysis.

CO2: Critically evaluate the underlying assumptions of analysis tools.

CO3: Understand and critically discuss the issues surrounding sampling and significance.

CO4: Discuss critically the uses and limitations of statistical analysis.

CO5: Solve a range of problems using the techniques covered.

CO6: Conduct basic statistical analysis of data.

BCA-306 Computer Laboratory and Practical Work of OOPS

CO1: Describe the procedural and object-oriented paradigm with concepts of streams, classes, functions, data and objects.

CO2: Understand dynamic memory management techniques using pointers, constructors, destructors, etc

CO3: Describe the concept of function overloading, operator overloading, virtual functions and polymorphism.

CO4: Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming.

CO5: Demonstrate the use of various OOPs concepts with the help of programs.

BCA-307 Computer Laboratory and Practical Work of DS

CO1: Understand the concept of Dynamic memory management, data types, algorithms, Big O notation.

CO2: Understand basic data structures such as arrays, linked lists, stacks and queues.

CO3: Describe the hash function and concepts of collision and its resolution methods.

CO4: Solve problem involving graphs, trees and heaps.

CO5: Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.

BCA Semester IV

BCA 401: Computer graphics and Multimedia Applications (CGMA)

CO1: Be able to identify computer Graphics and Tools.

CO2: Be familiar with Multimedia applications.

CO3: Understand Graphical formula in 3-D to 2-Dimensional objects.

CO4: To follow a series of stages collectively known as Graphics Pipeline.

CO5: Primary role is to render the digital content in a human comprehensible form on a computer screen.

BCA 402: Operating System (OS)

CO1: To understand the basic components of a computer operating system, and the interactions among the various components.

CO2: The course will cover an introduction on the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.

CO3: Responsible for allocating resources to users and processes

CO4: Some operating systems implement significant OS functionality in user-mode, e.g. User-mode such as Linux.



CO5: Program execution, Access to I/O devices – Display, disk, network, printer, keyboard, camera, etc. Controlled access to files – Access protection, System access – User authentication.

BCA 403: Software Engineering (SE)

CO1: Enables students to embrace problem solving and learning as a natural aspect of their work.

CO2: Enhances value and is valued by their professional teammates.

CO3: Gain to have broad and deep knowledge of the technical issues that they face.

CO4: Basic knowledge and understanding of the analysis and design of complex systems.

CO5: To develop methods and procedures for software development that can scale up for large systems and that can be used consistently to produce high-quality software at low cost and with a small cycle of time.

BCA 404: Optimization Techniques (OT)

CO1: Ability to apply the theory of optimization methods and algorithms to develop and for solving various types of optimization problems.

CO2: Ability to go in research by applying optimization techniques in problems of Engineering and Technology.

CO3: The purpose of optimization is to achieve the “best” design relative to a set of prioritized criteria or constraints (In equations).

CO4: Enrich about maximizing factors such as productivity, strength, reliability, longevity, efficiency, and utilization.

CO5: The decision making process about Information System, Industry-Engineering and Manufacturing Systems, Multi criteria Decision Making and Operations and Supply Chain Management.

BCA 406: Mathematics III

CO1: Understand and be able to apply basic definitions and concepts in set and function theory.

CO2: Understand the definitions of limits and convergence in the context of sequences and series of real numbers.

CO3: Be able to compute limits of sequences involving elementary functions.

CO4: Classify partial differential equations and transform into canonical form.



CO5: Solve linear partial differential equations of both first and second order and apply partial derivative equation techniques to predict the behaviour of certain phenomena.

BCA 405: CGMA Lab

CO1: Using OpenGL for Graphics.

CO2: Programming User-interface issues.

CO3: Concepts of 2D & 3D object representation.

CO4: Implementation of various scan & clipping algorithms .

CO5: Visibility detection & 3D viewing Implementation of a project based on learned concepts.

BCA Semester V

BCA-501: Introduction to DBMS

CO1: Identify the basic concepts and various data model used in database design ER modelling concepts and architecture use and design queries using SQL.

CO2: Apply relational database theory and be able to describe relational algebra expression, tuple and domain relation expression fro queries.

CO3: Recognize and identify the use of normalization and functional dependency, indexing and hashing technique used in database design.

CO4: Recognize/ identify the purpose of query processing and optimization and also demonstrate the basic of query evaluation.

CO5: apply and relate the concept of transaction, concurrency control and recovery in database.

BCA-502: Java Programming and Dynamic Webpage Design

CO1: Learn basic concepts Java Programming Language.

CO2: Acquire knowledge of control structures.

CO3: Familiarize in Java Programming.

CO4: Create wide range of Applications and Applets using Java.

CO5: Ability to work with I/O Streams.

BCA-503: Computer Network



CO1: Understand the overview of networks OSI model and Physical Layer.

CO2: Obtain the knowledge about error deduction and correction in Data Link Layer.

CO3: Obtain the knowledge about packet switching network and addressing in Network Layer.

CO4: Acquire the knowledge about TCP in Transport Layer.

CO5: Ability to understand client/Server programming, WWW and Email using Application Layer.

BCA-504: Numerical Methods

CO1: This course is an introduction to a broad range of numerical methods for solving mathematical problems that arise in Science and Engineering.

CO2: The goal is to provide a basic understanding of the derivation, analysis, and use of these numerical methods, along with a rudimentary understanding of finite precision arithmetic and the conditioning and stability of the various problems and methods.

CO3: This will help you choose, develop and apply the appropriate numerical techniques for your problem, interpret the results, and assess accuracy.

CO4: The problems cover (i) systems of linear equations, linear least squares problems, and eigenvalue calculation; (ii) interpolation, approximation, and integration of functions; (iii) initial values problems governed by ordinary differential equations; (iv) nonlinear scalar equations.

CO5: Such methods include techniques for simple optimisation, interpolation from the known to the unknown, linear algebra underlying systems of equations, ordinary differential equations to simulate systems, and stochastic simulation under random influences.

BCA-505: Minor Project

CO1: Understanding of how practices impact on different selected groups of students (potential withdrawers; actual withdrawers; disabled students; low participation and ethnic minority groups).

CO2: Recommendations and model of practice for institution and sector.

CO3: Student tool to aid identification, articulation and measurement of activities that contribute to Belonging and Intimacy.

CO4: Longitudinal view of the student experience from 1st to final year including key decision-making episodes.

CO5: Integrated data set related to retention and methodology for continued analysis.



BCA-506: Viva-Voice on Summer Training

CO1: To offer the opportunity for the young students to acquire on job the skills, knowledge, attitudes, and perceptions along with the experience needed to constitute a professional identity.

CO2: To provide means to immerse students in actual supervised professional experiences.

CO3: To give an insight into the working of the real organizations.

CO4: To appreciate the linkages among different functions and departments.

CO5: To develop perspective about business organizations in their totality.

BCA-507: Computer Laboratory and Practical Work of DBMS

CO1: Design and implement a database schema for given problem.

CO2: Capable to design and build a GUI application.

CO3: Apply the normalization techniques for development of application software to realistic problems.

CO4: Formulate queries using SQL DML/DDDL/DCL commands.

CO5: To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modelling, designing, and implementing a DBMS.

BCA-508: Computer Laboratory and Practical Work of Java Programming & Dynamic Webpage Design

CO1: Identify classes, objects, members of a class and relationships among them needed for a specific problem.

CO2: Write Java application programs using OOP principles and proper program structuring.

CO3: Demonstrate the concepts of polymorphism and inheritance .

CO4: Write Java programs to implement error handling techniques using exception handling.

CO5: Gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc.



BCA Semester VI

BCA-601-Computer Network Security

CO1: Students will be able to identify some of the factors driving the need for network security.

CO2: Students can identify and classify particular examples of attacks.

CO3: Students will be able to define the terms vulnerability, threat and attack.

CO4: They may identify physical points of vulnerability in simple networks.

CO5: Students can compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of hybrid systems.

BCA-602-ISAD

CO1: Students will be able to understand basic terms used in information system.

CO2: To write a C Programme for a given algorithm.

CO3: To use different data structures and update basic data files.

CO4: To trace out the error and resolve it using debugging and develop logical and analytical thinking.

BCA-603-E- Commerce

CO1: To understand the Concept of E-commerce and Business Strategy in Electronic Age and different models of E-Commerce.

CO2: Administer and Maintain B2B E-Business sites.

CO3: Understand the Internet Architecture and Electronic Payment System.

CO4: Demonstrate the knowledge of Legal and Regulatory policy issues in E-commerce.

CO5: Determine the protection methods from public policy issues.

CO6: Evaluate E-commerce models and identify the requirements for starting up and operating E-business sites.

BCA-604-Knowledge Management

CO1: Remember different knowledge management concepts.

CO2: Create an understanding of data mining and knowledge discovery.



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CO3: Understand the use of one of the approaches of MIS i.e. Executive information system for developing the strategic information in an organization.

CO4: Evaluate different approaches of MIS and take business decisions for different organizations.

CO5: Analyze the relationship between information, tacit knowledge, explicit knowledge and organizational knowledge.

BCA-605P Major Project

CO1: It makes the student confident in designing an Online Project with advanced technologies of their choice.

CO2: Students are trained to meet the requirements of the industry.

CO3: students will be able to develop a project professionally.

CO4: students will be able to prepare a SRS report.

CO5: To be able to develop good presentation skills.