

B.C.A

PROGRAMME EDUCATIONAL OBJECTIVES (PEO'S)

PEO1: Graduates will be able to perform in technical/managerial roles ranging from design, development, problem solving to production support in software industries and R&D sectors.

PEO2: Graduates will be able to successfully pursue higher education in reputed institutions.

PEO3: Graduates will have the ability to adapt, contribute and innovate new technologies and systems in the key domains of Computer Science and Applications

PEO4: Applying research and entrepreneurial skills augmented with a rich set of communication, teamwork and leadership skills to excel in their profession.

PEO5: Graduates will be showing continuous improvement in their professional career through life-long learning, be ethically and socially responsible solution providers and entrepreneurs in computer Science and related other disciplines

PROGRAMME OUTCOMES (POS)

PO1. Problem analysis: Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and applied sciences.

PO2. Design/development of solutions: Design solutions for complex problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO3. Modern tools usage: Create, select, and apply appropriate techniques, resources, and modern computing and IT tools including prediction and modeling to complex scientific activities with an understanding of the limitations.

PO4. Environment and sustainability: Understand the impact of the professional software engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO5. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the scientific practice.

PO6. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO7. Communication: Communicate effectively on complex activities with the scientific community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO8. Project management: Demonstrate knowledge understanding of the scientific and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO9. Life-long learning: Recognize the need for, and have the preparation and ability to engage

in independent and life-long learning in the broadest context of technological change

MAPPING OF PROGRAMME OUTCOMES WITH GRADUATE ATTRIBUTES

Graduate Attributes

- 1 **Problem Analysis**
- 2 **Design/Development of Solution**
- 3 **Modern tool usages**
- 4 **Environment and Sustainability**
- 5 **Ethics**
- 6 **Individual and team work**
- 7 **Communication**
- 8 **Project Management and finance**
- 9 **Lifelong learning**

	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9
PO1	✓								
PO2		✓							
PO3			✓						
PO4				✓					
PO5					✓				
PO6						✓			
PO7							✓		
PO8								✓	
PO9									✓

Programme Specific Outcomes (PSOs)

Upon completion of B.Sc.in Computer Science, the students are expected to

PSO1:Deploy the knowledge of computing, mathematics, algorithmic fundamentals and domain knowledge appropriate to the discipline.

PSO2: Exploit the programming language and database management skills set to identify, formulate, design and develop solutions to computational challenges, database constructs and solve complex computing problems.

PSO3:Implement methodologies for the development, operation, and maintenance of efficient and reliable software products that meet specified design and performance requirements

PS04: Design, analyze and compare the alternative solutions to computing problems, extract the best solution and offer legitimate conclusions.

PS05: Communicate in an effective and precise manner both orally and in writing to share ideas and thoughts with diverse stakeholders.

PO6: Work efficiently as a member/leader of a team and possess good leadership qualities to manage teams and implement solutions to computational problems

PS07: Design and develop socially and ethically responsible solutions with proper understanding of its impact and appropriate consideration for public health, safety, cultural, societal, and environmental considerations.

PSO8:Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

Mapping of Department POs with Institutions Graduate Attributes.

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COURSE OUTCOMES AND MAPPING WITH BLOOMS TAXANOMY

COMPUTING FUNDAMENTALS AND C PROGRAMMING

CO No.	Course Outcome	Blooms Category
CO1	Describe about the about the fundamentals of computers, history and various types of software and hardware devices.	Remember
CO2	Interpret the concepts of Variables, Constant, Operators and various types of expressions	Understanding
CO3	Apply the concept of Decision making statements and looping constructs for solving basic programs	Apply
CO4	Use the concepts of files and pointers inside a C program	Apply
CO5	Develop programs incorporating all the C language constructs	Analyze
CO6	Test the correctness of the programs and identify logical and syntax errors.	Evaluate
CO7	Create and compile new programs in C and will be able to successfully execute them	Create

Mapping with Programme Outcome and Programme Educational Objectives

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-
CO6	S	S	S	S	-	-	-	L	L	S	S	M	-	-
CO7	S	S	S	S	-	-	-	M	M	S	S	M	-	-

S-STRONG

M-MEDIUM

L- LOW

C++ PROGRAMMING

CO No.	Course Outcome	Blooms Category
CO1	Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects	Remember
CO2	Demonstrate the various basic programming constructs like decision making statements. Looping statements and functions	Understand
CO3	Explain the object oriented concepts like overloading, inheritance, polymorphism, virtual functions , constructors and destructors	Apply
CO4	Explain the various file stream classes; file types, usage of templates and exception handling mechanisms.	Apply
CO5	Compare the pros and cons of procedure oriented language with the concepts of object oriented language	Evaluate
CO6	Develop programs incorporating the programming constructs of object oriented programming concepts	Create

Mapping with Programme Outcome and Programme Educational Objective

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-
CO6	S	S	S	S	-	-	-	L	L	S	S	M	-	-
CO7	S	S	S	S	-	-	-	M	M	S	S	M	-	-

S-STRONG

M-MEDIUM

L- LOW

DATA STRUCTURES

CO No.	Course Outcome	Blooms Category
CO1	Define the concept of Data structure and list the various classifications of datastructures.	Remember
CO2	Demonstrate how arrays, stacks, queues, linked lists, trees, heaps, Graphs and Hash Tables are represented in the main memory and various operations are performed on those data structures.	Understand
CO3	Illustrate the various file organizations like Sequential, Random and Linked organizations.	Understand
CO4	Discover the real time applications of the various data structures	Apply
CO5	Design algorithms for various sorting and searching techniques	Analyze
CO6	Compare the pros and cons of implementing various types of data structures in developing programs.	Evaluate
CO7	Develop programs implementing the data structures to solve application problems.	Create

Mapping with Programme Outcome and Programme Educational Objectives

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-
CO6	S	S	S	S	-	-	-	L	L	S	S	M	-	-
CO7	S	S	S	S	-	-	-	M	M	S	S	M	-	-

S-STRONG

M-MEDIUM

L- LOW

JAVA PROGRAMMING

CO No.	Course Outcome	Blooms Category
CO1	Recite the history of JAVA and its evolution	Remember
CO2	Explain the various programming language constructs, object oriented concepts like overloading, inheritance, polymorphism, Interfaces, threads, exception handling and packages	Understand
CO3	Illustrate the concepts of Applets, files and the concept of stream classes.	Understand
CO4	Outline the benefits and applications of objects oriented programming concepts and defend how JAVA differs from other programming languages	Understand
CO5	Judge the pros and cons of other object oriented language with the concepts of JAVA	Evaluate
CO6	Develop programs incorporating the programming constructs of object oriented programming concepts in JAVA	Create

Mapping with Programme Outcome and Programme Educational Objectives

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-
CO6	S	S	S	S	-	-	-	L	L	S	S	M	-	-

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OPERATING SYSTEMS

CO No.	Course Outcome	Blooms Category
CO1	Describe about the concepts and features of system software like Loaders, Linkers and Compilers.	Remember
CO2	Explain the machine dependent and machine independent features of loaders and compilers	Understand
CO3	Demonstrate the concept of process, interrupts and storage management strategies in operating systems	Understand
CO4	Explain the various virtual storage management strategies, like Paging and Demand Paging.	Apply
CO5	Analyze the various disk and processor scheduling mechanisms and their pros and cons	Analyze
CO6	Compare the various management strategies available for efficiently managing the memory and processor.	Evaluate
CO7	Construct solutions for problems related to secondary storage management with an understanding of file systems and disk scheduling	Create

Mapping with Programme Outcome and Programme Educational Objectives

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-
CO6	S	S	S	S	-	-	-	L	L	S	S	M	-	-
CO7	S	S	S	S	-	-	-	M	M	S	S	M	-	-

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RDBMS

CO No.	Course Outcome	Blooms
CO1	Describe about the concepts Database Management systems and its related concepts like data modeling and normalization, de-normalization and Integrity rules	Remember
CO2	Discuss the concept of RDMS including creation, deletion, updation, retrieving and grouping of data.	Understand
CO3	Apply the concepts of Control Structures , Data Manipulation Cursors and Exceptions in PL/SQL programming for working with tables	Apply
CO4	Create tables and will be able to perform operations like insertion deletion, updation, retrieving and grouping of data.	Create
CO5	Develop programs in PL/SQL incorporating all the basic programming constructs.	Create
CO6	Design code in PL/SQL incorporating composite data types like records, tables, arrays, named blocks, procedures, Functions, Packages and Triggers –Data Dictionary Views.	Create

Mapping with Programme Outcome and Programme Educational Objectives

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-
CO6	S	S	S	S	-	-	-	L	L	S	S	M	-	-

S-STRONG

M-MEDIUM

L- LOW

VISUAL PROGRAMMING

CO No.	Course Outcome	Blooms Category
CO1	Explain the Visual Basic working environment and working with forms	Understand
CO2	Apply the concepts of variables, data types, modules, procedures, control structures and arrays in programming.	Apply
CO3	Demonstrate menu creation, mouse events, dialog boxes, flex grid, Object Linking and Embedding and additional controls in Visual Basic.	Apply
CO4	Develop programs in Visual Basic incorporating all the basic programming constructs.	Create
CO5	Design a form using common dialog control, MDI and be able to develop a menu driven program.	Create
CO5	Design code in PL/SQL incorporating ODBC and Data access objects, OLE data automation objects, additional controls like sstab control, setting properties at runtime, adding controls to tab, list control, tabstrip control and MSFlexgrid control.	Create

Mapping with Programme Outcome and Programme Educational Objective

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-

S-STRONG**M-MEDIUM****L-****LOW****MULTIMEDIA**

CO No.	Course Outcome	Blooms Category
CO1	Demonstrate the algorithms for drawing basic shapes like lines, circles, ellipse and curves.	Understand
CO2	Explain the concepts of text formats, Image types and processing, Acoustics and video, terminologies of acoustics and videos.	Apply
CO3	Illustrate the techniques of editing, animation, incorporating special effects on Images and Videos.	Analyze
CO4	Categorize the various types of file formats as well as audio and video formats,	Evaluate
CO5	Develop programs for drawing basic shapes like lines, circles, ellipses and be able to perform operations like scaling and rotation on the images.	Create
CO6	Design, process and animate an image or photo using Photoshop	Create

Mapping with Programme Outcome and Programme Educational Objectives

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-
CO6	S	S	S	S	-	-	-	L	L	S	S	M	-	-

S-STRONG**M-MEDIUM****L- LOW****SOFTWARE ENGINEERING**

CO No.	Course Outcomes	Blooms Taxonomy
CO-1	Define software, explain the nature of software , software process and software engineering practice, explain and compare the various models.	understand
CO-2	Discuss the requirements, analyze and design the various requirement models.	Apply
CO-3	Explain the design concepts, analyze and apply the concepts to design architectural, component level & User interface models, list the golden rules.	Analyze
CO-4	Explain the quality concepts, Software Quality Assurance tasks, discuss the strategies of testing, explain the types of testing.	Create
CO-5	Explain the Product, process & project metrics, discuss the estimation modeling, understand the emerging trends, Prepare a Product.	Create

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-

S-STRONG**M-MEDIUM****L- LOW**

WEB TECHNOLOGIES

CO No.	Course Outcomes	Blooms Taxonomy
CO1	Describe the concepts of markup languages, un order list, table, formatting, liking and frames.	understand
CO2.	Discuss about the creation of cascading style sheets, backgrounds, media types and building a dropdown menu.	Apply
CO3	Explain the JavaScript, control structure, if structure, switch, do-while and logical operators.	Analyze
CO4.	Describe the javascript functions, javascript arrays and javascript objects.	Create
CO5.	Discuss the DOM, javascript events and XML.	Create

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-

S-STRONG

M-MEDIUM

L- LOW

DATA MINING AND WAREHOUSING

CO No.	Course Outcomes	Blooms Taxonomy
CO1	The fundamental concepts of data warehouse, delivery process, system process and process architecture.	understand
CO2.	Explain the the system and data warehouse, process managers, capacity planning, tuning and testing.	Apply
CO3	Describe the the basics of data mining, data mining metrics and social implications of data mining	Analyze
CO4.	Discuss about the implementation of data ware housing techniques	Create
CO5.	Explain the association rules, basic algorithms, advanced association rules techniques and measuring the quality of rules.	Create

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-

S-STRONG

M-MEDIUM

L- LOW

COMPUTER NETWORK

CO No.	Course Outcomes	Blooms Taxonomy
CO1	Explain the local, metropolitan and wide area networks using the Standard OSI reference model.	understand
CO2.	Discussion of various networking technologies.	Apply
CO3	Explain the concepts of protocols, network interfaces and design of performance issues in local area networks and wide area networks.	Analyze
CO4.	Describe about wireless networking concepts, contemporary issues in networking technologies, network tools and network programming.	Create
CO5.	Explain the analysis of different types of protocol and the comparison of number of data link, network and transport layer protocols.	Create

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PEO1	PEO2	PEO3	PEO4	PEO5
CO1	M	M	-	-	-	-	-	-	-	L	-	-	-	-
CO2	M	M	L	-	-	-	-	-	-	L	-	-	-	-
CO3	S	S	M	L	-	-	-	-	-	M	-	-	-	-
CO4	S	S	S	M	-	-	-	-	-	M	M	L	-	-
CO5	S	S	S	S	-	-	-	-	-	S	S	M	-	-

S-STRONG

M-MEDIUM

L- LOW

BACHELOR OF COMPUTER APPLICATIONS

PROGRAM SPECIFIC OUTCOMES (PSOS)

PSO1. Explore technical comprehension in varied areas of Computer Applications and experience a conducive environment in cultivating skills for thriving career and higher studies.

PSO2. Comprehend, explore and build up computer programs in the allied areas like Algorithms, System Software, Multimedia, Web Design and Data Analytics for efficient design of computer-based systems of varying complexity.

PSO3. To engage in professional development and to pursue post graduate education in the fields of Computer Applications.

PSO4. Analyze and synthesis computing systems through quantitative and qualitative techniques.

PSO5. Accept cross cultural, social, professional, legal and ethical issues prevailing in local and global industry.