

**Programme
Outcomes**

1. **Communication Efficacy:** Communicate effectively with the computing community as well as society by being able to comprehend effective documentations and presentations.
2. **Modern Tool Usage:** Design, analyse and develop the computing systems using modern tools by considering the limitations.
3. **Solutions to Complex Problems:** Explore and design solutions for complex computing problems and design system components or processes using computing algorithms.
4. **Computational Knowledge:** Apply mathematics, sciences and computing fundamental and domain concepts to find out the solution of defined problems and requirements.
5. **Individual and team work** Function effectively as an individual, and as a member or leader in diverse teams.
6. **Project management:** Establishing strategies in developing and implementing ideas in multidisciplinary environments using computing and management skills
7. **Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
8. **Ethics:** Recognize the different value systems including own, understand the moral dimensions of own decisions

PSO for BCA-MCA Dual Degree

Explore technical knowledge and enhance communication skills in varied areas of Computer Applications and experience a conducive environment in nurturing skills for blooming career and higher studies.

The ability to understand, analyse and develop computer programs in the areas related to algorithms, system software, multimedia, web design and networking for efficient design of computer-based systems.

To provide students with an academic environment that contributes to multi-disciplinary creativity, develops moral values, life-long learning, leadership and project management skills.

Mapping:

PO ->	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
BCA ->	PSO1	PSO2	PSO2	PSO2	PSO3	PSO3	PSO3	PSO3

**Programme
Specific
Outcomes**

CO (BCA-MCA Dual Degree)

Subject Code		CO
BMCAS1-101 Communicative English	CO1	Students should be comfortable with both verbal & written communications
BMCAS1—102 Introduction to Information Technology	CO1	Understand the basics of word processing and spreadsheet.
	CO2	Evaluate knowledge and professional development in the field of information technology
BMCAS1—103 Computer Organisation	CO1	Learn how to design Combinational & Sequential circuits
	CO2	Learn interfacing of various peripheral devices used with the system.
BMCAS1—104 Programming in C Language	CO1	Understand the logic building used in Programming.
	CO2	Convert the algorithms into computer programs using C language.
BHUMA0-003 Human Values and Professional Ethics	CO1	Discriminate between valuable and superficial life.
	CO2	Evaluate an ethical life and profession ahead.
BMCAS1—105 Lab on Introduction to Information Technology	CO1	Students can learn how to perform presentation skills.
BMCAS1—106 Lab Programming in C Language	CO1	Able to write algorithms for solving various real-life problems.
	CO2	Students should be able understand the logic building used in programming
BMCAS1—201 Database management System	CO1	Design ER-models to represent simple database application scenarios.
	CO2	Understand the basic concepts of databases and data models.
BMCAS1—202 Computer network	CO1	Understand different network technologies and their applications.
	CO2	Learn the advanced network technologies that can be used to connect different networks
BMCAS1—203 Management Information System	CO1	Evaluate the role of information systems in today's competitive business environment.
	CO2	Identify managerial risks related to information system organization processing and utilizing.
BMCAS1—204 Object Oriented Programming Using C++	CO1	To create computer based solutions to various real-world problems using C++.
	CO2	To learn various concepts of object oriented approach towards problem solving.
	CO1	Identify and define key terms related to operating systems.

BMCAS1—205 Operating System	CO2	Analyze the performance of different algorithms used in design of operating system components.
BMCAS1—206 DBMS Lab	CO1	Populate and query a database using SQL DML/DDDL commands
	CO2	Able to understand various queries and their execution
BMCAS1—207 C++ Lab	CO1	To learn programming from real world examples
	CO2	To create computer based solutions to various real-world problems using C++
BMCAS1—301 Software Engineering	CO1	Understand the phases and activities involved in the conventional software life cycle models
	CO2	Evaluate and Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
BMCAS1—302 Data Structures	CO1	Use appropriate data structures for problem solving and programming
	CO2	Applying algorithms and data structures in various real-life software problems.
BMCAS1—303 Fundamentals of Mathematics	CO1	Understand, analyze and create mathematical arguments.
	CO2	Understand sets, perform operations and algebra on sets, describe sequences and summations.
BMCAS1-304 Programming in Java	CO1	Understand and write, compile, run, and test simple object-oriented Java programs
	CO2	Create and handle files in Java
BHUMA0—004 Drug Abuse: Problem, Management and prevention	CO1	Determine the impact of drug use and SUDs on public health outcomes and clarify the impact of drug use and addiction on families and peers
	CO2	Measure the societal costs associated with drug use and addiction.
BMCAS1—305 Data Structures Lab	CO1	Able to design and analyze the time and space efficiency of the data structure
	CO2	Apply appropriate searching and/or sorting techniques for application development.
BMCAS1—306 Java Lab	CO1	Implement Core Java concepts.
	CO2	Identify and fix defects and common security issues in code
BMCAS1—401 Android Application Development	CO1	To understand the concepts and techniques used in creating applications and to learn how to create user interfaces for android application
	CO2	Create an android application from scratch and deploy self-developed applications on android devices.
BMCAS1—402	CO1	Understand the concept of Process Planning, effort estimation and quality planning

Software Management	Project	CO2	Understand the principal tasks of software project managers, and basic concepts in software projects
BMCAS1—403 Linux Operating System		CO1	Learn to operate Linux Operating System.
		CO2	Understanding various services on Linux operating system.
BMCAS1—404 Discrete Mathematics		CO1	Understand the basic principles of sets and operations in sets.
		CO2	Model problems in Computer Science using graphs and trees.
BMCAS1—405 Android Application Development Lab		CO1	Students will be able to do work on Android OS.
		CO2	Students will be able to design User Interface and develop activity for android app.
BMCAS1—406 Linux Operating System Lab		CO1	Installation & administration of Linux operating system
		CO2	Implementing various services on Linux operating system.
BMCAS1—501 Latest Trends in IT		CO1	Recognize the concepts of emerging technologies
		CO2	Critically analyze case studies to derive the best practice model to apply when developing and deploying parallel, distributed, cloud and IoT based applications
BMCAS1—502 Artificial Intelligence		CO1	Understand important concepts like Expert Systems, AI applications
		CO2	Learn the practical applications of intelligent systems,.
BMCAS1—503 Object Oriented Analysis and Design using UML		CO1	Learn the basis of OO analysis and design skills
		CO2	Learn the UML design diagrams
BMCAS1—504 Web Application Development		CO1	Understand the skills in client-side web application development using HTML.
		CO2	Create a web application using web programming patterns based on data analytics to enhance the front end user experience.
BMCAS1—505 UML Lab		CO1	Understand the Case studies and design the Model..
		CO2	Understand how design patterns solve design problems.
BMCAS1—506 Web Application Development Lab		CO1	Analyze a web page and identify its elements and attributes.
		CO2	Create web pages using Cascading Style Sheets
BMCAS1—601 Computer Graphics		CO1	To list the basic concepts used in computer graphics.
		CO2	To implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping

BMCAS1—602 Network Security	CO1	Understand the issues involved in the field of information security
	CO2	Able to develop the understating about information security.
BMCAS1-603 Soft Computing	CO1	Gain a basic understanding of neural network theory and fuzzy logic theory.
	CO2	Understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications
BMCAS1—604 Computer Graphics Lab	CO1	Practical applications of graphics, Program development and basic animations without using graphical software.
BMCAS1—605 Soft computing lab	CO1	Describe human intelligence and AI
BMCAS1-606 Project Implementation	CO1	Understand project characteristics and various stages of a project.
	CO2	Understand the conceptual clarity about project organization and feasibility analyses.

Mapping (PSO and CO)

PSO □		PSO 1	PSO 2	PSO 3	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	Po 7	PO 8
Subject Code	CO											
BMCAS1-101	CO1	3	1	2	3	-	-	-	-	-	-	-
BMCAS1—102	CO1	1	3	2	2	-	-	3	-	2	-	-
	CO2	2	3	1	2	2	-	3	-	1	-	-
BMCAS1—103	CO1	1	3	1	-	-	3	2	-	-	-	-
	CO2	1	3	1	-	-	3	2	-	-	-	-
BMCAS1—104	CO1	2	3	1	-	1	2	3	-	-	-	-
	CO2	1	3	1	-	1	2	3	-	-	-	-
BHUMA0-003	CO1	2	1	3	-	-	-	-	-	-	3	2
	CO2	2	1	3	-	-	-	-	-	-	2	3
BMCAS1—105		3	1	2	3	2	-	2	-	-	-	-
BMCAS1—106	CO1	2	3	1	-	1	3	2	-	-	-	-
	CO2	2	3	1	-	-	3	2	-	-	-	-
BMCAS1—201	CO1	2	3	1	-	3	2	2	-	-	-	-
	CO2	2	3	1	-	-	2	3	-	-	-	-
BMCAS1—202	CO1	1	3	1	-	-	1	3	-	-	-	-
	CO2	1	3	1	-	2	1	3	-	-	-	-
BMCAS1—203	CO1	1	3	1	-	1	1	3	-	-	-	-
	CO2	1	3	2	-	2	2	3	-	1	-	-
BMCAS1—204	CO1	2	3	1	-	1	3	2	-	-	-	-
	CO2	1	3	1	-	1	3	2	-	-	-	-
BMCAS1—205	CO1	1	3	1	-	-	1	3	-	-	-	-

	CO2	2	3	1	-	1	2	3	-	-	-	-
BMCAS1—206	CO1	1	3	1	-	2	1	3	-	-	-	-
	CO2	1	2	1	-	1	2	3	-	-	-	-
BMCAS1—207	CO1	2	3	1	-	2	3	2	-	-	-	-
	CO2	2	3	1	-	2	3	2	-	-	-	-
BMCAS1—301	CO1	1	3	1	-	1	-	2	-	3	-	-
	CO2	2	3	2	-	-	-	2	-	3	2	2
BMCAS1—302	CO1	2	3	1	-	2	3	2	-	-	-	-
	CO2	1	3	1	-	2	3	2	-	-	-	-
BMCAS1—303	CO1	1	2	1	-	1	2	3	-	-	-	-
	CO2	1	1	1	-	1	2	3	-	-	-	-
BMCAS1-304	CO1	2	3	1	-	-	2	3	-	-	-	-
	CO2	1	3	1	-	-	2	3	-	-	-	-
BHUMA0—004	CO1	1	1	1	-	-	-	-	-	-	3	2
	CO2	1	1	2	-	-	-	-	-	-	3	2
BMCAS1—305	CO1	2	3	1	-	2	3	2	-	-	-	-
	CO2	2	2	1	-	2	3	2	-	-	-	-
BMCAS1—306	CO1	2	3	1	-	-	2	3	-	-	-	-
	CO2	1	2	1	-	-	2	3	-	-	-	-
BMCAS1—401	CO1	2	3	1	-	2	2	3	-	-	-	-
	CO2	2	3	1	-	2	2	3	-	-	-	-
BMCAS1—402	CO1	1	3	1	-	-	-	2	-	3	-	-
	CO2	2	3	1	-	-	-	2	-	3	-	-
BMCAS1—403	CO1	2	3	1	-	2	1	3	-	-	-	-
	CO2	2	3	1	-	-	1	2	-	-	-	-
BMCAS1—404	CO1	1	2	1	-	-	1	3	-	-	-	-
	CO2	2	2	1	-	-	1	3	-	-	-	-
BMCAS1—405	CO1	2	3	1	-	2	3	2	-	-	-	-
	CO2	2	3	1	-	2	3	2	-	-	-	-
BMCAS1—406	CO1	1	3	1	-	-	2	3	-	-	-	-
	CO2	2	3	1	-	-	2	3	-	-	-	-
BMCAS1—501	CO1	1	3	1	-	3	2	2	-	-	-	-
	CO2	2	3	1	-	3	2	2	-	-	-	-
BMCAS1—502	CO1	2	3	1	-	3	1	2	-	-	-	-
	CO2	2	3	1	-	3	1	2	-	-	-	-
BMCAS1—503	CO1	2	3	1	-	2	3	2	-	-	-	-
	CO2	2	3	1	-	2	3	2	-	-	-	-
BMCAS1—504	CO1	2	3	1	-	1	3	2	-	-	-	-
	CO2	2	3	2	-	1	3	2	-	2	-	-
BMCAS1—505	CO1	1	3	1	-	1	3	2	-	-	-	-
	CO2	2	2	2	-	1	3	2	-	-	-	-
BMCAS1—506	CO1	1	3	1	-	1	2	3	-	-	-	-
	CO2	1	3	1	-	1	2	3	-	2	-	-
BMCAS1—601	CO1	2	3	1	-	1	1	3	-	-	-	-
	CO2	2	3	1	-	2	1	3	-	-	-	-

BMCAS1—602	CO1	1	3	1	-	3	3	3	-	-	-	-
	CO2	1	3	1	-	3	3	3	-	-	-	-
BMCAS1--603	CO1	1	2	1	1	2	2	3	-	-	-	-
	CO2	1	2	1	1	2	2	3	-	-	-	-
BMCAS1—604	CO1	2	3	1	-	2	2	3	-	-	-	-
BMCAS1—605	CO1	1	2	1	-	3	2	2	-	-	-	-
BMCAS1-606	CO1	1	2	3	-	-	2	2	-	3	-	-
	CO2	1	2	3	-	-	2	2	-	3	-	-