

MASTER OF COMPUTER APPLICATIONS (MCA)

PROGRAMME OUTCOMES (PO)

At the completion of the Post graduate programme, the student will be able to accomplish the following outcomes

PO No	Graduate Programme Outcomes
PO 1	Communicate Effectively: Inculcate effective communication skills combined with professional & ethical attitude with the computing community and also the society by comprehending and writing effective reports and documentation, making effective presentations and providing and receiving clear instructions.
PO 2	Individual & Team Work: Function effectively in diverse teams as team leader and team member on multidisciplinary projects to demonstrate computing and management skills.
PO 3	Problem Analysis: Identify, critically analyze and formulate complex problems in multidisciplinary domains reaching substantiated conclusions using first principles of Mathematics, Sciences and Engineering.
PO 4	Computational Knowledge: Relate & apply fundamental knowledge of computing technology and relevant domains for the conceptualization of models from defined problems appropriate to the discipline.
PO 5	Design and Development of Solution: Design, implement and evaluate complex business scenarios and contemporary issues into desired needs based solutions with a passion for quality, competency and holistic approach.
PO 6	Solving Complex Computing Problems: Use problem solving skills including design of experiments, analysis and interpretation of information and synthesis of the knowledge to unravel multifaceted industrial problems.
PO 7	Modern Tool Usage: Create, select and apply appropriate skills, techniques,

	resources and modern engineering tools to solve social, cultural and industrial issues with global standards.
PO 8	Research and Lifelong Learning: Engage in continuous learning as an expert by applying research based knowledge and methodologies to design, analyze and interpret data for finding the solutions for complex problems by applying modern technological tools.
PO 9	Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles with computing skills to manage and estimate projects in multidisciplinary environments.
PO 10	Entrepreneurship: Find out the right opportunity for the utilization of innovative ideas and entrepreneurship to make value and wealth for the betterment of the individual and the society at large.
PO 11	Social, Cultural, Environmental, Legal and Ethical Concern(s): Recognize environmental, social, cultural, legal, ethical and cyber issues involved in the use of technology and other consequential responsibilities relevant to professional practice with an understanding of green environment initiative.

PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO No	Intended Programme Specific Outcomes.
PSO 1	Solidify foundation of mathematics, computer science and problem solving methodologies for effective implementation in real life applications
PSO 2	Familiarize students about principles of Software Engineering and Project Management with appropriate data modeling concepts and latest technologies.
PSO 3	Use of recent technologies, skills and knowledge for the design and development of applications in the computing discipline.

PSO 4	Inculcate employability and entrepreneurship skills among students who can contribute innovative and advanced solutions for the important life problems.
PSO 5	Understand the concepts of network and communication technologies, social network and other related aspects.

Semester 1

Name of the Course	Course Outcomes
Mathematical & Statistical foundation for Computer Applications	<p>CO1 Explain the underlying concepts and tools in Discrete Mathematics with emphasis on their applications to Computer Science.</p> <p>CO2 Familiarize the students with the scope and applications of Statistical theory in Computer Applications.</p> <p>CO3 Impart insights about the concepts of Probability, Tests of significance, and Tests of the hypothesis as the basis of Inferential Statistics.</p>
Digital Logic & Computer Organization	<p>CO1 To introduce the concepts of binary arithmetic, complements of binary number system and computer codes</p> <p>CO2 To understand the basics of Boolean algebra and familiarize the design and operations of digital circuits</p> <p>CO3 To impart knowledge in basics of computer organisation</p> <p>CO4 To familiarize the concepts of memory and input-output organization</p> <p>CO5 To introduce the concepts of advanced computer architecture</p>
Structured programming in C	<p>CO1 Enhance the logical and problem solving skills of the students by focusing on the features of C programming language.</p> <p>CO2 Build interest and confidence among them to design programs for real world problems.</p>
Software Engineering and Object Oriented Modeling	<p>CO1 To Familiarize students with the need and importance of software engineering.</p>

	<p>CO2 To impart basic insights to students about various activities in different phases of software engineering To provide knowledge in modeling tools.</p>
<p>Database Technology and NoSql</p>	<p>CO1 Introduces the basic concepts of a database system and query language.</p> <p>CO2 Emphasizes the understanding of the fundamentals of relational database systems including data models, database architectures, database manipulations and normalization.</p> <p>CO3 Provides an understanding of new developments and trends such as distributed database, replication, fragmentation and NoSQL.</p>
<p>Database Technology Lab (Mysql & Mongodb)</p>	<p>CO1 Provide an introduction to MySQL and MongoDB, with an emphasis on how to organize, maintain and retrieve - efficiently, and effectively - information from a DBMS.</p> <p>CO2 Introduces queries to insert data, update, delete and fetch the data from the tables.</p> <p>CO3 Describe merging of tables using aggregate functions, nested queries, clauses to filter and sort the data, has been covered in detail.</p>
<p>Employability Skill Training-Phase 1</p>	<p>CO1 Enable students to identify their strengths and weaknesses.</p> <p>CO2 Measure each student's numerical ability, problem solving and mathematical skills.</p> <p>CO3 Enhance aptitude and reasoning ability of students that will make them capable of securing a job with any recruiter.</p> <p>CO4 Guide students in Resume making.</p>

Semester 2

Course	Course Outcomes
Optimization Techniques for Computer Applications	<p>CO1 To Familiarize participants with the scope and applications of Operations Research</p> <p>CO2 To impart basic insights to students about use of various Scientific Tools and Models in Operations Research</p> <p>CO3 To provide basic insights into different applications in Operations Research</p>
Data structures and Algorithm Analysis	<p>CO1 To impart the basic concepts of data structures, algorithms and the analysis phase of algorithms.</p> <p>CO2 To Understand basic concepts, implementation and applications of stacks, queues, lists, trees and graphs</p> <p>CO3 To understand concepts about searching and sorting techniques.</p> <p>CO4 To be familiarized with various algorithm design strategies.</p> <p>CO5 To choose the appropriate data structure and algorithm design method for a specified application.</p>
Computer Networking with TCP/IP	<p>CO1 To understand the functionality of a reference model for data communication.</p> <p>CO2 To understand the various protocols of different layers.</p> <p>CO3 Allow the student to gain expertise in some specific areas of networking such as the design and maintenance of individual networks.</p> <p>CO4 Introduce the student to advanced networking concepts, preparing the student for entry to Advanced courses in computer networking</p> <p>CO5 To understand the basic concept of socket programming and client server model.</p>
Data Science & Big Data Analysis	<p>CO1 To familiarize participants with the scope and applications of Big Data.</p>

	<p>CO2 To impart basic insights to students about use of various Scientific Models in Data Science.</p> <p>CO3 To provide basic insights into Big Data analysis through Data Mining.</p>
<p>Object oriented Lab(Java Lab)</p>	<p>CO1 Familiarize students with the scope and applications of object oriented concepts and techniques.</p> <p>CO2 Create Java application programs using exceptions, threads and interfaces.</p> <p>CO3 Learn the database connectivity through API programming.</p> <p>CO4 Develop GUI applications to analyze the real world problems.</p>
<p>Software development lab-II (PHP)</p>	<p>CO1 To understand the general concepts of PHP scripting language for the development of Internet Websites.</p> <p>CO2 To understand the basic functions of MySQL database program.</p> <p>CO3 To learn the relationship between the client side and the server side scripts.</p> <p>CO4 To develop a basic understanding about software development framework.</p> <p>CO5 To understand the concepts of semantic web and web hosting.</p>
<p>Data structures Lab using C</p>	<p>CO1 Develop skills to design simple linear and nonlinear data structures</p> <p>CO2 Be capable to identify the appropriate data structure for a given problem</p> <p>CO3 Have practical knowledge on the applications of data structure</p>

Semester 3

Course	Course Outcomes
Machine Learning Techniques	<p>CO1 To introduce students to the basic concepts and techniques of Machine Learning.</p> <p>CO2 To develop skills of using recent machine learning software for solving practical problems.</p> <p>CO3 To gain experience of doing independent study and research.</p>
Cyber Forensics	<p>CO1 To provide an understanding of computer forensics fundamentals.</p> <p>CO2 To analyze various computer forensics technologies.</p> <p>CO3 Enable students to understand, explore and acquire a critical understanding in Cyber crimes and Cyber Law.</p>
Artificial Intelligence	<p>CO1 Get insights into the basic knowledge of Artificial Intelligence, AI application along with its importance.</p> <p>CO2 Be familiar with problem representation in symbolic notation.</p> <p>CO3 Able to understand the algorithmic approach in machine learning and automation.</p> <p>CO4 Analyze the matching techniques for organizing and manipulating knowledge. Predict pattern based on Reasoning.</p> <p>CO5 Acquire basic knowledge in various fields of AI.</p>
Enterprise Resource Planning	<p>CO1 To build an understanding of the fundamental concepts of ERP systems and their architecture.</p> <p>CO2 To familiarize the working of different modules, technologies and implementation and post implementation activities in ERP.</p> <p>CO3 To understand the present trends and future developments in the field of Enterprise resource planning.</p>

<p>Computer Graphics and Multimedia</p>	<p>CO1 To introduce the use of the components of a graphics system and become familiar with building the approach of graphics system components and algorithms related with them.</p> <p>CO2 To learn the basic principles of 3-dimensional computer graphics.</p> <p>CO3 Provide an understanding of how to scan convert the basic geometrical primitives</p> <p>CO4 Provide an understanding of mapping from a world coordinates to device coordinates, clipping, and projections</p> <p>CO5 To be able to discuss the application of computer graphics and Multimedia</p> <p>CO6 To comprehend and analyze the fundamentals of animation, virtual reality, underlying technologies, principles.</p>
<p>Digital Image Processing</p>	<p>CO1 To familiarize students with an overview of the basic concepts of Digital Image Processing</p> <p>CO2 To understand the processes of improving the quality of an image</p> <p>CO3 To familiarize the students about the concept of slicing a digital image</p> <p>CO4 To expose the students towards real-world applications of image processing</p>
<p>Cloud Computing</p>	<p>CO1 To Understand the fundamental concepts of cloud computing</p> <p>CO2 To impart basic insights cloud computing architecture and virtualization in the cloud.</p> <p>CO3 To understand data storage and different cloud computing services</p> <p>CO4 To Understand cloud security and tools and technologies used for cloud computing</p>

	<p>CO5 To provide basic insights into various cloud platforms used in industry, cloud computing applications future directions and trends.</p>
<p>Cryptography and Network Security</p>	<p>CO1 Provide an understanding of data security using various cryptographic algorithms.</p> <p>CO2 Enable students to identify the underlying network data security.</p> <p>CO3 Identify the implementation of cryptographic methods to provide email and web security.</p>
<p>Business Management And Information System</p>	<p>CO1 To understand the concepts of managerial functions and practices and to introduce organization structure</p> <p>CO2 To Familiarize participants with the different kinds of Information Systems in Business</p> <p>CO3 To make the participants familiarize with the Information Technologies and Methods used for effective Decision making in an organization</p> <p>CO4 To provide basic insights into the concepts of global business systems.</p> <p>CO5 To familiarize the software project management environment.</p>
<p>Internet of Things (IoT)</p>	<p>CO1 To understand the concepts of Internet of Things and be able to build IoT applications.</p> <p>CO2 To understand various building blocks and working of state-of-the-art IoT systems.</p> <p>CO3 To get insights to conceive and build IoT systems on their own.</p>
<p>Python Programming for Data Science</p>	<p>CO1 To provide knowledge of different data types, basic data structures and other programming constructs of Python programming language.</p> <p>CO2 To provide the student with an adequate understanding of python programming concepts and principles to enable them to design efficient programs.</p>

	<p>CO3 To impart knowledge to develop web-based applications using the Django framework.</p> <p>CO4 To equip the students to prepare, analyze and visualize the data from the large quantity of data given and also to implement the machine learning algorithms</p>
<p>Advance Operating System Lab using Linux</p>	<p>CO1 To introduce the student to the Linux Operating system with particular emphasis on command line tools and utilities</p> <p>CO2 To learn and apply the various commands and utilities related to file system management, process • management, program development and data processing.</p> <p>CO2 To apply the above-mentioned utilities and concepts in the writing of shell scripts</p>
<p>Mini Project</p>	<p>CO1 To demonstrate a wide range of skills and knowledge learned</p> <p>CO2 To encourage the integration of knowledge gained in the previous course units.</p> <p>CO3 To demonstrate the application of students programming and research skills</p> <p>CO4 To apply the knowledge to complex computing problems</p> <p>CO5 To make the student able to specialize in specific areas of computer science</p>
<p>Employability Skill Training-Phase 2</p>	<p>CO1 Develop ways to extend and improve interpersonal skills, negotiating skills, leadership skills, creativity and conflict management skills.</p> <p>CO2 Enable students to appreciate the role of body language and voice tone in effective communication.</p> <p>CO3 Evaluate students thinking skills and how he/she controls the conversation through listening attentively and then having the perseverance to mould it towards his/her own direction.</p>

	<p>CO4 Equip students to effectively tackle the interview process, leaving a positive impression with the prospective employer.</p> <p>CO5 Familiarize students with interview questions and interview etiquette.</p> <p>CO6 Help students enhance their Technical skills on an interview basis.</p>
--	---

Semester 4

Course	Course Outcomes
Seminar	<p>CO1 To make students aware of the Current / Future trends related to Information Technology/Computer Science Computer Application.</p> <p>CO2 To improve the presentation skills of the students.</p> <p>CO3 To develop the ability to seek clarification and defend the ideas of other research works effectively.</p> <p>CO4 To acquire skills to raise queries and to answer the queries in an effective manner.</p>
Main Project	<p>CO1 To demonstrate a wide range of skills and knowledge acquired during the course.</p> <p>CO2 To encourage the integration of knowledge gained in the previous course units.</p> <p>CO3 To demonstrate & implement students programming and research skills.</p> <p>CO4 To apply the knowledge to solve complex computing problems.</p> <p>CO5 To make the students capable of specialising in specific areas of Computer Science.</p>
Course Viva	<p>CO1 To ensure the subject knowledge acquired by the students.</p>



DE PAUL INSTITUTE OF SCIENCE & TECHNOLOGY

APPROVED BY AICTE & AFFILIATED TO MG UNIVERSITY

	<p>CO2 To verify the depth of knowledge gained through online courses.</p> <p>CO3 To assess the overall knowledge gained during the course of study.</p>
--	--