Programme Specific Outcomes (PSO) and Course Outcomes (CO)

Department Name: PG Department of Computer Applications
Programme Name: MCA

Programme Specific Outcomes:

PSO1: Ability to incorporate standard practices and technological advancements in the software development life cycle

PSO2: Expertise in providing optimized algorithmic solutions

PSO3: Expertise in recent technologies like SMAC (Social, Mobile, Analytics and Cloud), Machine Learning and IOT

PSO4: Demonstrate skills in ideation, innovation and commercialization of IT products and service

Course Outcomes

Course Code	Course Name	Course Outcomes
PMC2201	**PROGRAMMING IN PYTHON**	• CO1: Do calculations, iterations and make decisions using python statements (Target 20, Modules : M1) • CO2: Perform operations on Python sequences using functions (Target 20, Modules : M2) • CO3: Design programs with Inheritance and polymorphism (Target 20, Modules : M3) • CO4: Develop Desktop applications using TKinter GUI framework (Target 20, Modules : M4) • CO5: Develop and deploy web based projects using Django Framework (Target 10, Modules : M5)
PMC2202	**DATABASE MANAGEMENT SYSTEMS**	• CO1: Create the Conceptual Design of a database system using design tools like ER Diagram (Target 60, Modules : M1) • CO2: Create physical database design, using query languages, from a conceptual design, based on relational model (Target 70, Modules : M2) • CO3: Implement Queries using DML to perform database management activities like Insertion, updation and retrieval of data (Target 60, Modules : M3) • CO4: Design a normalized database using database normalization concepts (Target 60, Modules : M4)

		• CO5: Analyse The need for Concurrency Control, DDBMS and other trends in data handling (Target 50, Modules : M5)
PMC2203	**SOFTWARE ENGINEERING**	•CO1: Describe software process models. (Target 50, Modules : M1) •CO2: Identify software requirements engineering activities and develop SRS. (Target 60, Modules : M2) •CO3: Develop the skills necessary for software design.Target 60, Modules : M3) •CO4: Develop test cases and scenarios for testing software. (Target 50, Modules : M4) •CO5: Enumerate different software estimation and performance techniques. (Target 60, Modules : M5)
PMC2204	**INTRODUCTION TO DATA SCIENCE**	• CO1: Illustrate the components and functionalities of data mining systems (Target 60, Modules : M1) • CO2: Draw a three tier data warehousing architecture (Target 65, Modules : M2) • CO3: Prepare a dataset for building models. (Target 70, Modules : M3) • CO4: Compare the various data mining algorithms. (Target 65, Modules : M4) • CO5: Create various visualizations (Target 60, Modules : M5)
PMC2205	**NETWORKING AND SYSTEM ADMINISTRATION**	• CO1: Describe basic network architecture and protocols. (Target 50, Modules : M1,M2) • CO2: Manage User accounts and files and practice basic backup and restore file system (Target 40, Modules : M3) • CO3: Configure SSH service (Target 40, Modules : M3) • CO4: Manage SELinux (Target 20, Modules : M4,M5) • CO5: Configure SELinux and Yum. (Target 40, Modules : M4,M5)
PMC2206	**PROGRAMMING LAB IN PYTHON**	• CO1: Solve general problems using arithmetic expressions and control structures. (Target 40) • CO2: Use Python Lists, Dictionaries, Sets and functions for problem solving (Target 40) • CO3: Incorporate OOPs design principles in problem solving (Target 40) • CO4: Apply exception handling techniques and File IO (Target 45)
PMC2207	**MINI PROJECT – I**	• CO1 Gather the requirements of the project (Target 60) • CO2 Model the solution using UML (Target 40) • CO3 Implement the solution using appropriate technology (Target 50) • CO4 Verify and validate the solution (Target 60)
PMC2208	**ENTREPRENEURSHIP AND INNOVATIONS**	• CO1: Describe the concept of Entrepreneurship (Target 30, Modules : M1)

		• CO2: Identify and develop Entrepreneurship talents (Target 10, Modules : M1) • CO3: Identify Innovation and generate innovative business ideas in IT (Target 20, Modules : M2) • CO4: Recognize Digital Marketing techniques (Target 20, Modules : M2) • CO5: Demonstrate Presentation Skills (Target 20, Modules : M3) • CO6: Demonstrate effective communication Skills with special preference to Business communication (Target 20, Modules : M3)
PMC2209	**COMPETENCY ENHANCEMENT TRAINING – I**	• CO1: Develop Logical thinking using web tools like Code.org (Target 70) • CO2: Develop simple programs to demonstrate the use of Loops and Other Programming constructs (Target 80) • CO3: Demonstrate OOPS concepts using C++ (Target 70)
PMC2210	**DOMAIN EXPERTISE WORKSHOP – I**	• CO1: Build expertise in a particular domain like tourism, hospital etc (Target 90) • CO2: Interact with clients in their location (Target 50) • CO3: Gather and document requirements in a professional manner (Target 40)
PMC2211	**GRAPH THEORY AND OPERATIONS RESEARCH**	• CO1: Demonstrate the ability to use graphs and related discrete structures, and relate these to practical examples. (Target 50, Module: M1) • CO2: Describe the use of graphs as models and apply graphs and trees in Computer Science. (Target 50, Module: M2) • CO3: Formulate and solve real-world problems as a linear programming model / specialized linear programming problem, namely transportation, assignment, travelling salesman and solve the model by appropriate methods. (Target 50, Module: M3) • CO4: Apply project management tools like CPM/PERT to ensure successful completion of the projects. (Target 50, Module: M4) • CO5: Demonstrate the ability to use Queuing Theory and Simulation in real life problems for optimum solutions. (Target 50, Module: M5) • CO6: Demonstrate the ability to use graphs and related discrete structures, and relate these to practical examples. (Target 50, Module: M1)
PMC2212	**DATA STRUCTURES AND ANALYSIS OF ALGORITHMS**	• CO1: Design algorithms to perform operations with Stack and Queue (Target 60, Modules : M1) • CO2: Design algorithms to perform operations with Linked List (Target 60, Modules : M2) • CO3: Design algorithms to perform operations with Nonlinear data structures (Target 60, Modules : M3)

		• CO4: Illustrate various techniques for Sorting, hashing, and collision handling (Target 60, Modules : M4) • CO5: Choose an appropriate algorithm design strategy to solve real-world problems efficiently. (Target 60, Modules : M5)
PMC2213	**MACHINE LEARNING**	• CO1: Analyse the basic concept of Machine Learning (Target 75, Modules : M1) • CO2: Implement Data Pre-processing in Python (Target 50, Modules : M2) • CO3: Implement various classification algorithms in Python (Target 40, Modules : M3) • CO4: Implement various regression methods in ML (Target 40, Modules : M4) • CO5: Demonstrate ANN and CNN architectures (Target 50, Modules : M5)
PMC2214	**CLOUD COMPUTING**	• CO1: Analyse the basic concepts of cloud computing (Target 50, Modules : M1, M5) • CO2: Compare the various cloud implementations and deployment techniques (Target 50, Modules : M2, M5) • CO3: Evaluate the various cloud security and migration techniques cloud computing (Target 50, Modules : M3, M5) • CO4: Analyze the basic concepts of AWS (Target 50, Modules : M4, M5) • CO5: Demonstrate live case studies and implement private cloud (Target 60, Modules : M1, M2, M3, M4)
PMC2215	**DATABASE LAB FOR SQL**	• CO1: Students will be able to understand the working of DBMS. (Target 50) • CO2: Students will be able to Create and alter table structures (Target 50) • CO3: Students will be able to Build subqueries to extract rows from processed data (Target 50) • CO4: Students will be able to formulate queries to perform Insert, update and delete, select and rollback operations in a database. (Target 50) • CO5: Students will be able to create and manipulate collections and perform various operations. (Target 50)
PMC2216	**MINI PROJECT - II AND PROJECT PRESENTATION**	• CO1: Write a Software Requirement Specification (Target 50) • CO2: Design classes for the required specifications (Target 20) • CO3: Implement solutions for the required specification. (Target 10) • CO4: Test the software. (Target 10) • CO5: Present the project work in front of an audience. (Target 30)

PMC2217	**COMPETENCY ENHANCEMENT TRAINING – II**	• CO1: Demonstrate Group Discussions and Debating Skills (Target 60, Modules : M1) • CO2: Analyse and solve various mathematical problems and thereby improve their problem solving skills. (Target 60, Modules : M2)
PMC2218	**SOCIAL INITIATIVES**	• CO1: Identify an area of intervention in the local community (Target 50) • CO2: Plan, organize and conduct supporting activities needed for intervention (Target 50) • CO3: Develop skills required to work in a team (Target 50)
PMC2219	**PROGRAMMING IN JAVA**	• CO1: Demonstrate software development using popular IDE (IntelliJIDEA) features (Target 50, Modules : M1) • CO2: Write simple Java programs containing iterative and decision making statements (Target 50, Modules : M2) • CO3: Design programs featuring inheritance and polymorphism (Target 50, Modules: M3) • CO4: Perform I/O operations while taking care of exceptions and concurrent access (Target 50, Modules : M4) • CO5: Build applications using frameworks like Collection, JavaFX and Spring (Target 50, Modules : M5)
PMC2220	**ARTIFICIAL INTELLIGENCE**	• CO1: Formulate an AI problem by listing its environment tasks (Target 50, Modules: M1) • CO2: Choose a learning method for a given situation (Target 30, Modules : M2) • CO3: Analyze the Deep Learning Model based on the situation (Target 40, Modules: M3) • CO4: Describe the working principle of Natural Language Processing (Target 30, Modules : M4) • CO5: Implement Computer vision Library in different situations (Target 30, Modules : M5)
PMC2221A	**BIG DATA ANALYTICS**	• CO1: Understand the functioning of web sites by being able to differentiate between normal data and big data and to understand the behaviour and benefits of web data. Apply the necessary tools, methods and processes while working with big data. (target 50, Modules: M1) • CO2: Choose the components of Hadoop ecosystem and devise algorithms to work with data streams in websites (target 50, Modules: M2) • CO3: Able to pre-process and index web pages for information retrieval and mine the web for useful information (target 50, Modules: M3) • CO4: Ability and knowledge to mine frequent patterns from large datasets and streams using memory effectively and able to perform clustering for big data (target 50, Modules: M4)

		• CO5: Ability to implement various data visualization techniques. (target 50, Modules: M5)
PMC2221B	**CONFIGURATION MANAGEMENT AUTOMATION**	• CO1: Describe Configuration Management (Target 50, Modules : M1) • CO2: Describe different types of automation tools (Target 30, Modules: M2 ,M4) • CO3: Implement Ansible Playbooks (Target 40, Modules : M3) • CO4: Automate System Administration tasks (Target 60, Modules : M4,M5)
PMC2222	**PROGRAMMING LAB IN JAVA**	• CO1: Develop simple Java Programs with arrays, operators and control statements. (Target 50) • CO2: Construct programs featuring Classes, Methods, Object creation and initialization. (Target 50) • CO3: Implement Object oriented features like Abstraction, Inheritance & Polymorphism (Target 50) • CO4: Handle Exceptions and perform IO operations (Target 50) • CO5: Develop GUIs using frameworks like AWT, SWING and JAVAFX (Target 50) • CO6: Develop programs with multiple threads and address concurrency issues (Target 50)
PMC2223	**MINI PROJECT- III**	• CO1: Gather the requirements of the project (Target 60) • CO2: Model the solution using UML (Target 40) • CO3: Implement the solution using appropriate technology (Target 50) • CO4: Verify and validate the solution (Target 60)
PMC2224	**COMPETENCY ENHANCEMENT TRAINING – III**	• CO1: Understand, analyze and solve various mathematical problems and thereby improve their problem solving skills. (Target 60, Modules : M1) • CO2: Demonstrate verbal and non-verbal reasoning problem solving skills. (Target 60, Modules : M2) • CO3: Improve technical aptitude on C, C++, Data structures, etc. (Target 60, Modules : M3) • CO4: Demonstrate entrepreneurship skills. (Target 60, Modules : M4)
PMC2225	**DOMAIN EXPERTISE WORKSHOP II**	• CO1: Build expertise in a particular domain like tourism, hospital etc (Target 60) • CO2: Interact with clients in their location (Target 40) • CO3: Gather and document requirements in a professional manner (Target 50)
PMC2226	**INNOVATIVE INITIATIVES**	• CO1: Integrate the technological and industrial knowledge into the curriculum (Target 50) • CO2: Reflect on experiences of creativity and innovation at work (Target 60) • CO3: Experience the ethical side of paper publishing and international certification (Target 50)

PMC2227A	**WEB PROGRAMMING USING PHP**	• CO1: Analyze the basic concepts of internet technology (Target 50, Modules : M1) • CO2: Develop a website using html, JavaScript and CSS (Target 50, Modules : M1,M2) • CO3: Read, write and execute PHP programs (Target 50, Modules : M3) • CO4: Develop PHP programs with database connectivity (Target 50, Modules : M4) • CO5: Develop PHP application using a framework (Target 50, Modules : M5)
PMC2227B	**HIGH PERFORMANCE CODING WITH .NET**	• CO1: Adding a Project into GIT (Target 80, Modules : M1) • CO2: Understand MVC Architecture of .net (Target 60, Modules : M2) • CO3: Understand How to work with data (Target 55, Modules : M3) • CO4: Learn How to Build Front End (Target 40, Modules : M4)
PMC**2227C**	**MOBILE APP DEVELOPMENT**	• CO1 Build a basic Android Project (Target 100, Modules : M1) • CO2 Develop a basic android application with different Layouts and controls (Target 80, Modules : M2)
PMC2227D	**JAVASCRIPT**	• CO1 Write Simple Scripts (Target 100, Modules : M1) • CO2 Write scripts containing functions (Target 80, Modules : M1)
PMC2227E	**DJANGO FRAMEWORK**	• CO1: Develop web applications using Django framework (Target 80, Modules : M1)
PMC2227F	**CLOUD COMPUTING WITH AZURE AND GCP**	• CO1: Analyze the basic concepts of GCP (Target 50, Modules : M1) • CO2: Evaluate the basic concepts of Azure (Target 50, Modules : M2)
PMC2227G	**DEEP LEARNING FUNDAMENTALS**	• CO1: Analyze the basic concepts of deep learning (Target 50, Modules : M1) • CO2: Compare the various deep learning architectures (Target 50, Modules : M2) • CO3: Evaluate the various neural network concepts (Target 50, Modules : M3)
PMC2227H	**INTERNET OF THINGS**	• CO1: Analyze the components of IoT products and services develop skills and experiences required to design a novel system using IoT. (Target 50, Modules : M1) • CO2: Development and use of emerging Sensors for IoT Technology (Target 50, Modules : M2)
PMC2227I	**OPENSHIFT**	• CO1: Deploy and update applications in an OpenShift 4 cluster • CO2: Build, deploy, troubleshoot, and scale applications

PMC2228	**INTERNSHIP**	• CO1: Obtain experience working as a professional Developer. (Target 50) • CO2: Apply your technical knowledge to a real-life situation (Target 50) • CO3: Work with other professionals related to your industry (Target 50) • CO4: Increase your technical, interpersonal and communication skills (Target 50) • CO5: Observe interactions of engineers with other professional groups (Target 50)
PMC2229	**MAIN PROJECT**	• CO1: Gather and document (SRS) the requirement of use case (Target 40) • CO2: Model the application using UML (Target 40) • CO3: Design the data store layout (Target 40) • CO4: Implement solution using suitable tools and technologies (Target 40) • CO5: Validate and verify the solution (Target 40)
PMC2230	**VIVA VOCE**	• CO1: Assess themselves regarding knowledge gained during programme (Target 60) • CO2: Face a prospective technical interview (Target 100)
PMC2231	**DOMAIN EXPERTISE WORKSHOP III**	• CO1: Build expertise in a particular domain like tourism, hospital etc (Target 60) • CO2: Interact with clients in their location (Target 60) • CO3: Gather and document requirements in a professional manner (Target 60)
PMCB2201	**BRIDGE COURSE IN COMPUTER SCIENCE**	• CO1: Appreciate the working of a computer system and working of its components. • CO2: Attain enough knowledge in HTML and CSS so as to develop a website • CO3: Appreciate the working of digital systems and machine readable code. • CO4: Possess a background knowledge of operating systems.
PMCB2202	**BRIDGE COURSE IN MATHEMATI**	• CO1: Demonstrate the ability to use Sets and Functions, and relate these to practical examples. (Target 50, Module: M1) • CO2: Describe the use Mathematical logic and Boolean Algebra in Computer Science. (Target 50, Module: M2) • CO3: Understand the concepts of Graph theory and its Applications (Target 50, Module: M3) • CO4: Explain the concepts of Statistics like measures of Central Tendency, Correlation and Regression. (Target 50, Module: M4) • CO5: Demonstrate the ability to use Probability Distributions (Target 50, Module: M5)