Department of Master of Computer Applications

Program Outcomes and Course Outcomes

Program Outcomes (POs)
PO1: Apply knowledge of computing fundamentals, computing specialization, mathematics and domain knowledge to provide IT solutions.
PO2: Identify, analyse and solve IT problems using fundamental principles of mathematics and computing sciences.
PO3: Design, Develop and evaluate software solutions to meet societal and environmental concerns.
PO4: Conduct investigations of complex problems using research based knowledge and methods to provide valid conclusions.
PO5: Select and apply appropriate techniques and modern tools for complex computing activities.
PO6: Practice and follow professional ethics and cyber regulations.
PO7: Involve in life-long learning for continual development as an IT professional.
PO8: Apply and demonstrate computing and management principles to manage projects in multidisciplinary environments by involving in different roles.
PO9: Comprehend& write effective reports and make quality presentations.
PO10: Understand and assess the impact of IT solutions on socio-environmental issues.
PO11: Work collaboratively as a member or leader in multidisciplinary teams.
PO12: Identify potential business opportunities and innovate to create value to the society and seize that opportunity.
Program Specific Outcomes (PSOs)
PSO1: Understand and apply the computing techniques with mathematics and industrial concepts for solving the real time industrial problems.
PSO2: To prepare graduates who will contribute to societal growth through research in their chosen field.

Year/ Semester: 1st Year /1st Semester		Scheme of Study:20- Scheme
Course Name : Data Structures with Algorithms		**Course Code: 20MCA11**
CO1	Demonstrate different data structures, its operations using C programming.	
CO2	Analyze the performance of Stack, Queue, Lists, Trees, Hashing, Searching and Sorting techniques.	
CO3	Implement some applications of data structures in a high-level language such as C/C++.	
CO4	Design and apply appropriate data structures for solving computing problems.	
CO5	Compute the efficiency of algorithms in terms of asymptotic notations for the given problem.	

Year/Semester: 1st Year /1st Semester		Scheme of Study: 20-Scheme
Course Name : Operating System with UNIX		**Course Code: 20MCA12**
CO1	Analyze the basic Operating System Structure and concept of Process Management.	
CO2	Analyze the given Synchronization/ Deadlock problem to solve and arrive at valid conclusions.	
CO3	Analyze OS management techniques and identify the possible modifications for the given problem context.	
CO4	Demonstrate the working of basic commands of Unix environment including file processing.	
CO5	Demonstrate the usage of different shell commands, variable and AWK filtering to the given problem.	

Year/ Semester: 1st Year /1st Semester		Scheme of Study: 20-Scheme
Course Name : Computer Networks		**Course Code: 20MCA13**
CO1	Apply the basic concepts of networking and to analyze different parameters such as bandwidth, delay, throughput of the networks for the given problem.	
CO2	Apply different techniques to ensure the reliable and secured communication in wired and wireless communication.	
CO3	Analyze the networking concepts of TCP/IP for wired and wireless components.	
CO4	Identify the issues of Transport layer to analyze the congestion control mechanism.	
CO5	Design network topology with different protocols and analyze the performance using NS2.	

Year/ Semester: 1st Year /1st Semester		Scheme of Study: 20-Scheme
Course Name : Mathematical Foundation for Computer Applications		Course Code: 20MCA14
CO1	Apply the fundamentals of set theory and matrices for the given problem.	
CO2	Apply the types of distribution, evaluate the mean and variance for the given case study/ problem.	
CO3	Solve the given problem by applying the Mathematical logic concepts.	
CO4	Model the given problem by applying the concepts of graph theory.	
CO5	Design strategy using gaming theory concepts for the given problem.	
CO6	Identify and list the different applications of discrete mathematical concepts in computer science.	

Year/ Semester: 1st Year /1st Semester		Scheme of Study: 20-Scheme
Course Name : Research Methodology and IPR		Course Code: 20MCA15
CO1	Identify the suitable research methods and articulate the research steps in a proper sequence for the given problem.	
CO2	Carry out literature survey, define the problem statement and suggest suitable solution for the given problem and present in the format of the research paper (IEEE).	
CO3	analyze the problem and conduct experimental design with the samplings.	
CO4	Perform the data collection from various sources segregate the primary and secondary data.	
CO5	Apply some concepts/section of Copy Right Act /Patent Act /Cyber Law/Trademark to the given case and develop –conclusions.	

Year/ Semester: 1st Year /1st Semester		Scheme of Study: 20-Scheme
Course Name : Data Structures with Algorithms Lab		Course Code: 20MCA16
CO1	Implement sorting / searching techniques, and validate input/output for the given problem.	
CO2	Implement data structures (namely Stacks, Queues, Circular Queues, Linked Lists, and Trees), its operations and algorithms.	
CO3	Implement the algorithm to find whether the given graph is connected or not and conclude on the performance of the technique implemented.	
CO4	Design and apply appropriate data structures for solving computing problems.	
CO5	Implement the techniques for evaluating the given expression.	

Year/ Semester: 1st Year /1st Semester	Scheme of Study: 20-Scheme
Course Name : Unix Programming Lab	Course Code: 20MCA17

CO1	Demonstrate the working of basic commands of Unix environment including file processing.
CO2	Apply Regular expression to perform pattern matching using utilities like grep, sed and awk.
CO3	Implement unix commands/ system calls to demonstrate process management
CO4	Demonstrate the usage of different shell commands, variable and AWK filtering to the given problem.
CO5	Develop shell scripts for developing the simple applications to the given problem.

Year/ Semester: 1st Year /1st Semester	Scheme of Study: 20-Scheme
Course Name : Computer Networks Lab	Course Code: 20MCA18

CO1	Apply the basic concepts of networking and to analyze different parameters such as bandwidth, delay, throughput of the networks for the given problem.
CO2	Apply the basic concepts of networking and to analyze different parameters such as bandwidth, delay, throughput of the networks for the given problem.
CO3	Analyze the networking concepts of TCP/IP for wired and wireless components.
CO4	Identify the issues of Transport layer to analyze the congestion control mechanism.
CO5	Design network topology with different protocols and analyze the performance using any simulator.

Year/ Semester: 1st Year /2nd Semester	Scheme of Study: 20-Scheme
Course Name : Database Management System	Course Code: 20MCA21

CO1	Apply the basic concepts of database management in designing the database for the given problem.
CO2	Design entity-relationship diagrams to the given problem to develop database application with appropriate fields and validations.
CO3	Implement a database schema for the given problem domain.
CO4	Formulate and execute SQL queries to the given problem.
CO5	Apply normalization techniques to improve the database design to the given problem.

Year/ Semester: 1st Year /2nd Semester	Scheme of Study: 20-Scheme
Course Name : Object Oriented Programming with Java	Course Code: 20MCA22

CO1	Demonstrate the basic programming constructs of Java and OOP concepts to develop Java programs for a given scenario.
CO2	Illustrate the concepts of generalization and run time polymorphism applications to develop reusable components.

CO3	Demonstrate the usage of Packages, Interfaces, Exceptions and Multithreading in building given applications.
CO4	Apply Enumerations, Wrappers, Auto boxing, Collection framework and I/O operations for effective coding to the given problem.
CO5	Implement the concepts of Applets, and networking using Java network classes for developing the distributed applications to the given problem.

Year/ Semester: 1st Year /2nd Semester	Scheme of Study: 20-Scheme
Course Name : Web Technologies	Course Code: 20MCA23
CO1	Apply the features Query for the given web based problem.
CO2	Demonstrate the development of XHTML documents using JavaScript and CSS.
CO3	Illustrate the use of CGI and Perl programs for different types of server side applications.
CO4	Design and implement user interactive dynamic web based applications.
CO5	Demonstrate applications of Angular JS and J Query for the given problem.

Year/ Semester: 1st Year /2nd Semester	Scheme of Study: 20-Scheme
Course Name : Software Engineering	Course Code: 20MCA24
CO1	Identify and define different requirements for the given problem and present in the IEEE format.
CO2	Use modern tool to create dynamic diagrams to represent the design for the given problem.
CO3	Draw class diagram, analyze the different types of association that exists as per the given problem and represent them using UML notations.
CO4	Analyze the given system to identify actors, use cases to design use case diagrams for the given problem using RSA/open source tool.
CO5	Design the static/dynamic models to meet application requirements of the given system and generate code (skeleton) using the modern tool.

Year/ Semester: 1st Year /2nd Semester	Scheme of Study: 20-Scheme
Course Name : Enterprise Resource Planning	Course Code: 20MCA253
CO1	Analyze the essentials of supply chain management in ERP.
CO2	analyse the implementation of ERP in the context of business of the different organization.
CO3	Analyse and apply ERP for different business modules for the given problem.
CO4	Analyse the given case study of ERP marketing.
CO5	Analyse the design of ERP with future E-commerce and internet.

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 20-Scheme
Course Name : Mobile Applications Development		**Course Code: 20MCA263**
CO1	Develop effective user interfaces that leverage evolving mobile devices.	
CO2	Develop applications using software development kits (SDKs), frameworks and toolkits.	
CO3	Implement suitable methods to integrate database and server-side technologies.	
CO4	Design and develop open source software based mobile application to the given problem.	
CO5	Build and deploy competent mobile application to solve the societal/industrial problems.	

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 20-Scheme
Course Name : Database Management Systems Laboratory		**Course Code: 20MCA27**
CO1	Design entity-relationship diagrams to solve given database applications.	
CO2	Implement a database schema for a given problem.	
CO3	Formulate SQL queries in Oracle for the given problem.	
CO4	Apply normalization techniques to improve the database design for the given problem.	
CO5	Build database and verify for its appropriate normalization for any given problem.	

Year/ Semester: 1st Year /2nd Semester		Scheme of Study: 20-Scheme
Course Name : Java Programming Lab		**Course Code: 20MCA28**
CO1	Demonstrate the fundamental data types and constructs of Java Programming by writing executable/interpretable programs.	
CO2	Illustrate the object oriented principles with the help of java programs.	
CO3	Develop reusable and efficient applications using inheritance and multi-threading concepts of java.	
CO4	Apply client-side programming and networking concepts to develop distributed applications.	
CO5	Write java programs to demonstrate the concepts of interfaces, inner classes and I/O streams.	

Year/ Semester: 1st Year /2nd Semester	Scheme of Study: 20-Scheme
Course Name : Web Technologies Laboratory	Course Code: 20MCA29

CO1	Apply the concept and usages web based programming techniques.
CO2	Learning and Developing XHTML documents using JavaScript and CSS.
CO3	To be familiar in the use of CGI and Perl programs for different types of server side applications.
CO4	Design and implement user interactive dynamic web based applications.
CO5	Evaluate the given wed application and enhance it using latest web technologies.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 20-Scheme
Course Name : Data Analytics using Python	Course Code: 20MCA31

CO1	Demonstrate basic data analytics principles and techniques.
CO2	Apply control structures the concepts of inheritance and overloading for a given problem.
CO3	Perform essential operations using Numpy and Pandas.
CO4	Structuring the data in the dataset for a given problem.
CO5	Demonstrate the concepts of data visualization.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 20-Scheme
Course Name : Internet of Things	Course Code: 20MCA32

CO1	Analyse the IoT architecture and design along with functional/compute stack and data management.
CO2	Apply IOT architecture for a given problem.
CO3	Analyse the application protocol, transport layer methods for the given business case.
CO4	Analyse the application of data analytics for IOT for a given.
CO5	Analyse the architecture and develop programming using modern tools for the given use case.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 20-Scheme
Course Name : Advances in Java	Course Code: 20MCA33

CO1	Apply the concept of Servlet and its life cycle to create web application.
CO2	Apply JSP tags and its services to web application.
CO3	Create packages and interfaces in the web application context.
CO4	Build Database connection for the web applications.

CO5	Develop enterprise applications using Java Beans concepts for the given problem.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 20-Scheme
Course Name : Software Testing	Course Code: 20MCA344
CO1	Acquire knowledge of basic principles and knowledge of software testing and debugging and test cases.
CO2	Will be able to understand the perceptions on testing like levels of testing, generalized pseudo code and with related examples.
CO3	To study the various types of testing.
CO4	Differentiate between functional testing and structural testing.
CO5	Analyze the performance of fault based testing, planning and Monitoring the process, Documentation testing.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 20-Scheme
Course Name : Software Project Management	Course Code: 20MCA354
CO1	Apply the practices and methods for successful software project management.
CO2	Identify techniques for requirements, policies and decision making for effective resource management.
CO3	Illustrate the evaluation techniques for estimating cost, benefits, schedule and risk.
CO4	Device a framework for software project management plan for activities, risk, monitoring and control.
CO5	Design a frame work to manage people.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 20-Scheme
Course Name : Data Analytics Lab	Course Code: 20MCA36
CO1	Develop python program to perform search/sort on a given data set.
CO2	Demonstrate object oriented principles.
CO3	Demonstrate data visualization using Numpy for a given problem.
CO4	Demonstrate regression model for a given problem.
CO5	Deign and develop an application for the given problem.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 20-Scheme
Course Name : Mini project with IOT Lab	Course Code: 20MCA37
CO1	Demonstrate the IoT architecture design for a given problem.
CO2	Apply IOT techniques for a given problem.

CO3	Analyse the application protocol, transport layer methods for the given business case.
CO4	Design and develop an application for the given problem for the societal/industrial problems.
CO5	Develop python program by applying suitable feature for the given problem and verify the output.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 20-Scheme
Course Name : Advances in Java Lab	**Course Code: 20MCA38**
CO1	Apply the concept of Servlet and its life cycle to create web application.
CO2	Apply JSP tags and its services to web application.
CO3	Create packages and interfaces in the web application context.
CO4	Build Database connection for the web applications.
CO5	Develop application programs using beans concept.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 20-Scheme
Course Name : Advances in Web Technologies	**Course Code: 20MCA41**
CO1	Build the Web Applications using JQuery, PHP, XML for the given problem.
CO2	Design the Web Pages using AJAX for the given problem.
CO3	Analyse the advances in Web2.0 and demonstrate its usage for the problem considered.
CO4	Analyse the web services and demonstrate its usage for the problem considered.
CO5	Design responsive web applications using Bootstrap for the given problem.

Year/ Semester: 2nd Year /3rd Semester	Scheme of Study: 20-Scheme
Course Name : Programming using C#	**Course Code: 20MCA42**
CO1	Analyze C#andclient-server concepts using.Net Frame Work Components.
CO2	Apply delegates, event and exception handling to incorporate with ASP, Win Form, ADO.NET.
CO3	Analyze the use of.Net Components depending on the problem statement.
CO4	Implement & develop a web based and Console based application with Database connectivity.
CO5	Implement & develop a web based application with Data base connectivity.

Year/ Semester: 2nd Year /3rd Semester		Scheme of Study: 20-Scheme
Course Name : Industry Internship		**Course Code: 20MCA43**
CO1	Analyze the real-time industry/research work environment with emphasis on organizational structure/job process/different departments and functions / tools /technology.	
CO2	Develop applications using modern tools and technologies.	
CO3	Demonstrate self-learning capabilities with an effective report and detailed presentation.	

Year/ Semester: 2nd Year /3rd Semester		Scheme of Study: 20-Scheme
Course Name : Project Work		**Course Code: 20MCA44**
CO1	Identify a suitable problem making use of the technical and engineering knowledge gained from previous courses with the awareness of impact of technology on the society and their ethical responsibilities.	
CO2	Work as an individual and team to segregate work and execute/implement projects using appropriate tools.	
CO3	Develop skills to disseminate technical and general information by means of oral as well as written presentation and professional skills.	
CO4	To conduct testing of application using appropriate techniques and tools.	
CO5	To enhance interpersonal skills and group cohesion among the peers during the project work.	