Programme: Masters in Computer Applications

Regulation: AR-19

Department of Masters in Computer Applications

Course Outcomes for all Programmes offered by the Institution are stated and displayed on website and communicated to teachers and students.

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List of courses for Masters in Computer Applications

S. No.	Semester	Course Code	Course Name
1	I	193MC1T01	Problem Solving With C
2	I	193MC1T02	Computer Organization
3	I	193MC1T03	Discrete Mathematical Structures
4	I	193MC1T04	Probability and Statistics
5	I	193MC1T05	AccountIng and Financial Management
6	I	193MC1L01	English Language Communication Skills Lab
7	I	193MC1L02	Problem Solving With C Lab
8	I	193MC1L03	It Workshop (Lab)
9	II	193MC1T01	Data Structures
10	II	193MC2T07	Operating Systems
11	II	193MC2T08	Software Engineering
12	II	193MC2T09	Oop Through Java
13	II	193MC2T10	Optimization Techniques
14	II	193MC2L04	Oop Through Java Lab
15	II	193MC2L05	Data Structures Lab
16	II	193MC2L06	Operating Systems And Linux Lab
17	III	193MC3T11	Database Management Systems
18	III	193MC3T12	Computer Networks
19	III	193MC3T13	Design And Analysis Of Algorithm
20	III	193MC3T14	Advanced Java Programming
21	III	193MC3T15	Object Oriented Analysis And Design
22	III	193MC3L07	Database Management Systems Lab
23	III	193MC3L08	Advanced Java Programming Lab
24	III	193MC3L09	Ooad Through Uml Lab
25	IV	193MC4T16	Data Warehousing And Data Mining
26	IV	193MC4T17	Full Stack Technologies
27	IV	193MC4T18	Python Programming
28	IV	193MC4E01	Embedded Computing
29	IV	193MC4E02	Artificial Intelligence
30	IV	193MC4E04	Cloud Computing
31	IV	193MC4E05	Multimedia Application Development
32	IV	193MC4L10	Full Stack Technologies Lab
33	IV	193MC4L11	Data Mining With R Lab

S. No.	Semester	Course Code	Course Name
34	IV	193MC4L12	Python Programming Lab
35	V	193MC5T19	Cryptography And Network Security
36	V	193MC5T20	Big Data Analytics
37	V	193MC5T21	Machine Learning
38	V	193MC5E05	Digital Marketing
39	V	193MC5E06	Natural Language Processing
40	V	193MC5E10	Internet Of Things
41	V	193MC5E11	Devops
42	V	193MC5L13	Crypotography And Network Security Lab
43	V	193MC5L14	Big Data Analytics Lab
44	V	193MC5L15	Machine Learning With Python Lab
45	VI	193MC6P01	Dissertation/Thesis

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Course Outcomes for the First Year (I & II Semester) courses of Masters in Computer Applications

S. No.	Course Code	Course Name	CO	Course Outcomes
1	193MC1T01	Problem Solving With C	CO1	Illustrate the Fundamental concepts of Computers and basics of computer Programming
			CO2	Make Use of Control Structures and Arrays In solving complex problems.
			CO3	Develop modular program aspects and Strings fundamentals.
			CO4	Demonstrate the ideas of poInters usage.
			CO5	Solve real world problems using the concept of Structures & Unions operations
2	193MC1T02	Computer Organization	CO1	Understand the basic organization of computer, different computer generations, performance and concept of pipelIning.
			CO2	Understand and analyze the concept of segment registers, different Instruction formats and addressIng modes.
			CO3	Understand and analyze various issues related to memory hierarchy.
			CO4	Evaluate various modes of data transfer between CPU and I/O devices.
			CO5	ExamIne various Inter connection structures of multi processors
3	193MC1T03	Discrete Mathematical Structures	CO1	Apply the principles of mathematical logic to statement calculus and predicate calculus.
			CO2	Apply the principles of set theory and group theory
			CO3	Apply the principles of BInomial theorem and set exclusion-inclusion principle.

			CO4	Solve recurrence relations by various methods
			CO5	Apply the concepts of graph theory to fInd euler paths, hamiltonian paths, spannIng trees, mInimal spannIng trees and chromatic number
4	193MC1T04	Probability And Statistics	CO1	Compute mean, median, mode, standard deviation and variance..
			CO2	Apply various Probability distributions for both discrete and continuous random variables
			CO3	Compute mean and variance of sample means with replacement and without replacement.
			CO4	Apply various tests to test the hypothesis concernIng mean, Proportion, variance.
			CO5	Apply the concepts of correlation and regression to the given statistical data.
5	193MC1T05	AccountIng And FInancial Management	CO1	Understand the balance sheet preparation and perform analysis.
			CO2	Understand the budget preparation and control of a company.
			CO3	Decide about the state of affairs of a particular firm / company.
			CO4	Ensure the preparation of fiscal policies of the organization.
			CO5	Ensure the factors to be considered in Investment policies.
6	193MC1L01	English Language Communication Skills Lab	CO1	Ability to convert the understandIng of phonetics In everyday practice.
			CO2	Better understandIng of the nuances of language through audio-visual experience and group activities.
			CO3	SpeakIng with clarity and confidence thereby enhancIng employabilityskills of the students.
			CO4	Relines professional writIng and correspondence.
7	193MC1L02	Problem Solving With C Lab	CO1	Develop the basic programs in C.
			CO2	Make Use of Conditional and Iterative statements to solve real time scenarios in C

			CO3	Apply the concept of Arrays, Modularity and Strings to handle complex problems.
			CO4	Apply the Dynamic Memory Allocation functions using poInters.
			CO5	Develop programs using structures, and Files.
8	193MC1L03	It Workshop (Lab)	CO1	Illustrate computer assemblIng and software Installation.
			CO2	Solve hardware, software trouble shootIng problems.
			CO3	Develop Documents using Word processors.
			CO4	Build the computer using wired and wireless connections.
			CO5	Develop presentations using presentation tool and Perform computations using spreadsheet.
9	193MC1T01	Advanced Data Structures	CO1	Demonstrate the Dictionaries and HashIng Techniques.
			CO2	Illustrate the concepts of Trees and Priority queues..
			CO3	Demonstrate the operations of Efficient and Multiway Search Trees.
			CO4	Discuss the various TraversIng Techniques and spannIng trees..
			CO5	Apply Pattern MatchIng Techniques and Tries to real time applications..
10	193MC2T07	Operating Systems	CO1	Interpret the basics of structure, services, and generations of Operating Systems.
			CO2	Solve problems related to process schedulIng, synchronization In unit and multi-Processing systems
			CO3	Explain the deadlock handling Mechanism In the Processing System.
			CO4	Summarize the concepts of Memory Management, Virtual Memory Management and ThrashIng
			CO5	Describe the concepts of file system and mass storage structure..
11	193MC2T08	Software Engineering	CO1	Explain the key facts, concepts, principles, and theories of software & Software Engineering.

			CO2	Compare various software development process models with respective to advantages, disadvantages and applicability
			CO3	Describe the various responsibilities and activities of Software Project Management..
			CO4	Prepare SRS Document for any real time scenario.
			CO5	Apply various Design, CodIng and testIng Principles for developIng the software products
12	193MC2T09	Java Programming	CO1	Apply object oriented Programming features and concepts for solving given problem..
			CO2	Solve real time problems using the concepts of class, Inheritance, Interface and packages.
			CO3	Test for runtime exceptions arise In java applications.
			CO4	Develop real time applications using multithreadIng and I/O streams.
			CO5	Develop GUI applications using event handlers, adapter classes, AWT and SwIng components.
13	193MC2T10	Optimization Techniques	CO1	Describe clearly a problem, identify its parts and analyze the Individual functions.
			CO2	Feasibility study for solving an optimization problem.
			CO3	BecomIng a mathematical translation of the verbal formulation of an optimization problem.
			CO4	To design algorithms, the repetitive use of which will lead reliably to fIndIng an approximate solution.
			CO5	Discovery, study and solve optimization problems.
			CO6	Investigate, study, develop, organize and promote innovative solutions for various applications.

14	193MC2L04	Object Oriented Programming Through Java Lab	CO1	Make use of class, inheritance, Interface and packages to develop solutions for complex problems
			CO2	Develop error-handling techniques using exception handlIng..
			CO3	Build java applications using Threads.
			CO4	Apply event handling to create Interactive applications.
			CO5	Design GUI using AWT and SwIng Components.
15	193MC2L05	Data Structures Lab	CO1	Develop recursive and non-recursive approaches to design an algorithm.
			CO2	Apply sorting and searchIng algorithms to given numbers
			CO3	Develop various basic data structures and its operations.
			CO4	Demonstrate various tree operations.
			CO5	Build various graphs algorithms.
16	193MC2L06	Operating Systems AndLinux Lab	CO1	Summarize various process schedulIng algorithms..
			CO2	Experiment with various system calls.
			CO3	Develop algorithm to implement deadlocks avoidance and memory management algorithms
			CO4	Summarize various Framing method
			CO5	Make use of various routing algorithms for effective data transmission.

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Course Outcomes for the Second Year (III & IV Semester) courses of Masters in Computer Applications

S. No.	Course Code	Course Name	CO	Course Outcomes
1	193MC3T11	Database Management Systems	CO1	Identify various database characteristics and architectures.
			CO2	Analyze relational database using SQL.
			CO3	Make use of modelIng techniques for database design.
			CO4	Make use of normalization techniques to build good database.
			CO5	Apply the mechanisms of transaction management.
			CO6	ExamIne issues In data storage and query Processing for appropriate solutions.
2	193MC3T12	Computer Networks	CO1	Explain the computer network fundamentals and various topologies..
			CO2	Compare the OSI with TCP/IP reference model.
			CO3	Classify MAC layer protocols and LAN technologies..
			CO4	Analyze various routing algorithms and Congestion control techniques.
			CO5	Utilize the services provided by the transport layer and application layer.
3	193MC3T13	Design And Analysis Of Algorithm	CO1	Develop algorithms for various computational problems.
			CO2	Apply important algorithmic design paradigms and methods of analysis.
			CO3	Construct sorting and searchIng algorithms using Divide and Conquer approach.
			CO4	Compare the benefits of using Dynamic Programming over Greedy method.
			CO5	Solve problems using Backtracking and Branch & Bound techniques.

4	193MC3T14	Java Programming	CO1	Apply object oriented Programming features and concepts for solving given problem..
			CO2	Solve real time problems using the concepts of class, inheritance, interface and packages.
			CO3	Test for runtime exceptions arise in java applications
			CO4	Develop real time applications using multithreadIng and I/O streams.
			CO5	Develop GUI applications using event handlers, adapter classes, AWT and SwIng components.
5	193MC3T15	Object Oriented Analysis And Design	CO1	Develop software projects with management perspective.
			CO2	Explain the object-oriented software development process and methodologies.
			CO3	Compare various object relationships like Inheritance, association, whole- part and dependency relationships.
			CO4	Apply rational software suite for the construction of UML models by using appropriate notations.
			CO5	Analyze and model software specifications.
6	193MC3L07	Database Management Systems Lab	CO1	Make use of the concepts of relational model techniques for database design.
			CO2	Construct a database schema for a given problem-domaIn.
			CO3	Apply Normalization techniques on a database to avoid anomalies
			CO4	Build queries on a database using SQL DML/DDL commands.
			CO5	Apply Integrity constraInts on a database using RDBMS.
			CO6	Develop PL/SQL stored procedures, stored functions, cursors and packages.
7	193MC3L08	Advanced Java Programming Lab	CO1	Develop Client Server applications using TCP-IP and UDP sockets.
			CO2	Develop a web application using Servlets.

			CO3	Make use of different properties of Java Beans.
			CO4	Develop enterprise applications using Entity Bean, Entity-Session Bean and Message-Driven Beans.
			CO5	Construct stand-alone applications using JDBC concepts
8	193MC3L09	Ooad Through Uml Lab	CO1	Explain the syntax of different UML diagrams.
			CO2	Create use case documents that capture requirements for a software system.
			CO3	Develop class diagrams that model both the domaIn model and design model of a software system.
			CO4	Create Interaction diagrams that model the dynamic aspects of a software system.
			CO5	Construct code that builds a software system.
			CO6	Develop simple applications.
9	193MC4T16	Data Warehousing And Data Mining	CO1	Make use of data pre Processing techniques In data mining.
			CO2	Identify appropriate data mining algorithms to solve real world problems
			CO3	Analyze classification, prediction problems and Association rule discovery.
			CO4	Apply appropriate clustering algorithm on data.
			CO5	Explain the spatial data and web mining techniques.
10	193MC4T17	Full Stack Technologies	CO1	Illustrate the Basic Concepts of Web & Markup Languages
			CO2	Develop web Applications using ScriptIng Languages & Frameworks
			CO3	Build Applications using JSP libraries
			CO4	Make use of Angular JS and Nested Forms with ng-from to develop Our First Controller and form validations.
			CO5	WorkIng with the Files in React JS and ConstructIng Elements with Data
11	193MC4T18	Python Programming	CO1	Develop programs using fundamental concepts In python.

			CO2	Develop programs using control statements in python.
			CO3	Utilize data structures in Python to solve various problems.
			CO4	Develop programs using functions
			CO5	Apply Object Oriented Programming concepts, exceptions and testing in building real time applications.
			CO6	Develop programs using Standard libraries like math, turtle, tkInter, re etc. In building real time applications
12	193MC4E01	Embedded Computing	CO1	Understand the differences between the general computing system and the embedded system, also recognize the classification of embedded systems.
			CO2	Analyze the characteristics of different computing elements and select the most appropriate one for an embedded system.
			CO3	Model the operation of a given embedded system
			CO4	Understand different software modules In the development of an embedded system.
			CO5	Illustrate simple tasks to run on an RTOS and examIne the latest trends prevalent In embedded system design.
13	193MC4E02	Artificial Intelligence	CO1	Demonstrate knowledge of the building blocks of AI as presented in terms of Intelligent agents.
			CO2	Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them
			CO3	Develop Intelligent algorithms for constraint satisfaction problems and also design Intelligent systems for Game Playing
			CO4	Attain the capability to represent various real life problem domaIns using logic based techniques and use this to perform Inference or planning.
			CO5	Solve problems with uncertain Information using Bayesian approaches.

14	193MC4E04	Cloud Computing	CO1	Explain the key dimensions of Cloud Computing and Parallel & Distributed Systems.
			CO2	Analyze the Cloud infrastructures and cloud computing for own organization.
			CO3	Demonstrate the basic concepts of virtualization, Resource Management and Scheduling.
			CO4	Illustrate the Cloud Storage Systems and Security Risks.
			CO5	Apply the Cloud Programming on any real Cloud Development Platforms.
15	193MC4E05	Multimedia Application Development	CO1	Explain the fundamental concepts In Text and image
			CO2	Illustrate the concept of video and digital audio.
			CO3	Develop the real world application frame work
			CO4	Analyze the multimedia Data compression and basic video compression techniques
			CO5	Make use of different multimedia networks
16	193MC4L10	Full Stack Technologies Lab	CO1	Develop web Applications using HTML, CSS, ScriptIng Languages & Frameworks
			CO2	CreatIng & RunnIng Applications using JSP libraries
			CO3	CreatIng Our First Controller WorkIng with and DisPlaying In Angular Js and Nested Forms with ng-form
			CO4	WorkIng with the Files In React JS and ConstructIng Elements with Data
17	193MC4L11	Data Mining With R Lab	CO1	DetermIne different steps for pre-Processing In Data mining
			CO2	Use data mining software system for solving data mining problems.
			CO3	Experiment with real data sets In data mining tool R.
			CO4	Apply algorithms for Association rule mining.
			CO5	Apply Classification methods for data mining.

			CO6	Demonstrate Clustering approaches in data mining.
18	193MC4L12	Python Programming Lab	CO1	Develop programs using conditional and iterative statements.
			CO2	Make use of different data structures in solving complex problems.
			CO3	Apply standard libraries in building real time applications.
			CO4	Implement the Object Oriented concepts in Python for solving problems.
			CO5	Design an application using database connectivity.

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Course Outcomes for the Third Year Courses (V & VI Semester) courses of Masters in Computer Applications

S. No	Course Code	Course Name	CO	Course Outcomes
1	193MC5T19	Cryptography And Network Security	CO1	Explain the network security fundamentals and various public key cryptographic algorithms.
			CO2	Compare various symmetric encryption techniques.
			CO3	Summarize the concepts of asymmetric encryption techniques.
			CO4	Discuss the functionIng of digital signature standards and data Integrity.
			CO5	Utilize the services provided by the PGP,S/MIME & SSL,TLS.
			CO6	Describe the concept of IPSecurity.
2	193MC5T20	Big Data Analytics	CO1	Develop various data structures using java collection framework.
			CO2	Demonstrate Building blocks of Hadoop
			CO3	Choose map reduce approach to solve big data Problems.
			CO4	Make use of Hadoop I/O to perform Input, Output Operations.
			CO5	Utilize Hive to Structure the Data.
3	193MC5T21	Machine Learning	CO1	Explain the models, classification, scorIng and rankIng estimations.
			CO2	Apply supervised, unsupervised and concept Learning in solving real time problems.
			CO3	Make use of Tree based and Rule based models in classification and regression problems.

			CO4	Experiment with linear and distance based models in solving classification, regression and clustering problems.
			CO5	Utilize probabilistic models, to predict probability distribution over a set of classes on a given observation.
4	193MC5E05	Digital Marketing	CO1	Explain about web pages with basic HTML5, DHTML tags using CSS and XML, the overview of W3C DOM.
			CO2	Discuss the key elements of a digital Java Scripts.
			CO3	Apply search engine optimization techniques to a website
			CO4	Illustrate how the effectiveness of a digital Marketing campaign can be measured.
			CO5	Demonstrate advanced practical skills in common digital Marketing tools such as SEO, SEM, Social media and Blogs.
5	193MC5E06	Natural Language Processing	CO1	Understand key concepts from NLP are used to describe and analyze language
			CO2	Explain POS taggIng and context free grammar for English language.
			CO3	Make use of the rule based system to tackle morphology/syntax of a language.
			CO4	Demonstrate semantics and pragmatics of English language for Processing.
			CO5	Compare and contrast the use of different statistical approaches for different types of NLP applications.
6	193MC5E10	Internet Of Things	CO1	Explain the usage of the term 'the Internet of Things' In different contexts.
			CO2	Illustrate diversified layered architectures and design principles for IoT/M2M.
			CO3	Discover the various network protocols used in IoT.
			CO4	Design a solution for a given IoT application.

			CO5	Define the role of big data, cloud computing and data analytics in a typical IoT system.
7	193MC5E11	Devops	CO1	Understand the principles of continuous development and deployment, automation of configuration management, Inter-team collaboration, and IT service agility.
			CO2	Describe Devops & DevSecOps methodologies and their key concepts
			CO3	Explain the types of version control systems, continuous Integration tools, continuous monitoring tools, and cloud models.
			CO4	Set up complete private Infrastructure using version control systems and CI/CD tools.
8	193MC5L13	Cryptography And Network Security Lab	CO1	Explain the basics of strIng operations Involved In Cryptography.
			CO2	Summarize different encryption & decryption algorithms.
			CO3	Discuss the various Cryptographic cipherIng techniques.
			CO4	Apply different algorithms for improvIng the security for real time applications.
			CO5	Describe the key exchange techniques for improvIng the security.
9	193MC5L14	Big Data Analytics Lab	CO1	Develop linear and nonlinear data structures using Java Collection framework.
			CO2	Build the Hadoop Cluster using various Installation modes.
			CO3	Apply hadoop commands to Interact with HDFS.
			CO4	Solve Big Data Problems using Map Reduce approach.
			CO5	Analyse the big data using Pig LatIn.
			CO6	Build queries using Hive Query Language.

10	193MC5L15	Machine Learning With Python Lab	CO1	Apply basic Machine Learning algorithms to different types of data sets.
			CO2	Implement suitable algorithms to build decision trees for the given data sets.
			CO3	Apply suitable algorithms to build ANN.
			CO4	Implement Bayesian models on appropriate data sets.
			CO5	Implement distance based methods in clustering applications.
11	193MC6P01	Dissertation/Thesis	CO1	Demonstrate technical skills of data collection and data analysis adhering to professional ethics.
			CO2	Design the solutions for the critical problem areas marked in data analysis in the light of environmental and societal adherence.
			CO3	Build a team of people to work together and communicate well in the critical stages of project progress.
			CO4	Use modern tools to derive conclusions ofthe project work effectively.
			CO5	Demonstrate the results of the project workas a functional product Prototype / application / analytical solution fora specified operation .