**Yadavindra Department of Engineering,
Punjabi University Guru Kashi Campus,
Damdama Sahib (Talwandi Sabo)**

**Master of Computer Applications
(M.C.A. - 2 years course)**

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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Program Specific Outcomes:**On completion of MCA degree, the graduates will be able to:* Apply the knowledge of mathematics and computing fundamentals to various real life applications for any given requirement
* Design and develop applications to analyze and solve all computer science related problems
* Design applications for any desired needs with appropriate considerations for any specific need on societal and environmental aspects
* Analyze and review literatures to invoke the research skills to design, interpret and make inferences from the resulting  data
* Integrate and apply efficiently the contemporary IT tools to all  computer applications
* Solve and work with a professional context pertaining to ethics, social, cultural and cyber regulations
* Involve in perennial learning for a continued career development and progress as a computer professional
* Function effectively both as a team leader and team member on multi disciplinary projects to demonstrate computing and management skills
* Communicate effectively and present technical information in oral and written reports
* Utilize the computing knowledge efficiently in projects with concern for societal, environmental, and cultural aspects
* Function competently as an individual and as a leader in multidisciplinary projects
* Create and design innovative methodologies to solve complex problems for the betterment of the society
* Apply the inherent skills with  absolute focus to function as an successful entrepreneur
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Computer Organization and Architecture** | **Course Code**:MCAM1101T |
| **Course Outcomes:** This course will introduce students to the fundamental concepts underlying modern computer organization and architecture. Main objective of the course is to familiarize students about hardware design including logic design, basic structure and behavior of the various functional modules of the computer and how they interact to provide the processing needs of the user. The emphasis is on studying and analyzing fundamental issues in architecture design and their impact on performance. By the end of this course, students should be able to:* understand the basics of computer hardware and how software interacts with computer hardware
* understand how computers represent and manipulate data
* understand computer arithmetic and convert between different number systems
* understand basics of Instruction Set Architecture
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Data Structures and Algorithms** | **Course Code**: MCAM1102T |
| **Course Outcomes:** Objective of this course is to introduce the concept of algorithm development, programming and program validation. It includes a special emphasis on the design and application of data and file structures. Upon completion of this course, students will:* Be familiar with basic techniques of algorithm analysis
* Be familiar with writing recursive methods
* Master the implementation of linked data structures such as linked lists and binary trees
* Be familiar with advanced data structures such as balanced search trees, hash tables, priority queues and the disjoint set union/find data structure
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Object Oriented Programming using C++** | **Course Code**: MCAM1103T |
| **Course Outcomes:** This module teaches the basic principles of object-oriented programming, design and testing. The main objective is to provide in-depth coverage of object-oriented programming principles and techniques using C++. Topics include classes, overloading, data abstraction, information hiding, encapsulation, inheritance, polymorphism, file processing, templates, exceptions, container classes, and low-level language features. On completion of course, Students should be able to: * Understand the basic components of an object-oriented program including methods and attributes.
* Perform object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O. and other standard language constructs.
* Demonstrate adeptness of object oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.
* Demonstrate ability to implement one or more patterns involving realization of an abstract interface and utilization of polymorphism in the solution of problems which can take advantage of dynamic dispatching.
* Learn syntax, features of, and how to utilize the Standard Template Library.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Business Intelligence** | **Course Code**: MCAM1104T |
| **Course Outcomes:** The objectives of this course are to provide comprehensive and in-depth knowledge of Business Intelligence (BI) principles and techniques by introducing the relationship between managerial and technological perspectives. The course will cover general concepts in the BI field (report authoring, ETL). The focus will be on how the techniques are to be used, and the details of the methodologies will be covered to the extent necessary to understand when and how each technique can be used. On successful completion of this course student will be able to:* Appraise and apply evidence practice (EBP) to formulate effective solutions to deal with contemporary performance problems and issues associated with the delivery of business information systems.
* Create a consultant report that critically evaluates important design principles and operations involving business intelligence and that offers effective recommendations aimed at enhancing business outcomes.
* Devise a framework to assess company/industry performance and to apply it to produce a performance report about a nominated entity.
* Evaluate the importance and implementation of learning theory to construct and apply practices that facilitate aspects of personal and institutional change.
* Demonstrate competence in oral, written, and visual communication in business reports and presentations.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Information Systems** | **Course Code**: MCAM1105E1 |
| **Course Outcomes:** This course will focus on what Information systems are, how they influence your current or prospective jobs, why they impose specific - and sometimes seemingly absurd - operational procedures, and how to use this knowledge to your advantage in your professional life. On completion of this course, students should be able to:* Understand the conceptual foundations of information systems in organizations
* Appreciate the salient peculiarities and differences among data, information, knowledge and other high-level concepts
* Become familiar with the theories of decision making and its related concepts
* Understand the treatment of quantitative decision problems
* Explain the elements and working of systems in general and information systems in particular
* Describe the different types of information systems and their relevance and functions in modern day organizations.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Mathematics for Machine Learning** | **Course Code**: MCAM1105E2 |
| **Course Outcomes:** The purpose of this course is to provide a mathematically rigorous introduction to these developments with emphasis on methods and their analysis. |

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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Programming Languages** | **Course Code**: MCAM1105E3 |
| **Course Outcomes:** The objective of the course is to develop a greater understanding of the issues involved in programming language design and implementation. It will help in developing an in-depth understanding of functional, logic, and object-oriented programming paradigms. On completion of this course, student will be able to:* Implement several programs in languages other than the one emphasized in the core curriculum
* Understand design/implementation issues involved with variable allocation and binding, control flow, types, subroutines, parameter passing
* Improve the background for choosing appropriate programming languages for certain classes of programming problems
* Increase the ability to learn new programming languages
* Increase the capacity to express programming concepts and choose among alternative ways to express things
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: E-Commerce** | **Course Code**: MCAM1105E4 |
| **Course Outcomes:** This course provides an overview of e-commerce from both technological and managerial perspectives. It introduces e-commerce frameworks, and technological foundations; and examines basic concepts such as strategic formulation for e-commerce enterprises, management of their capital structures and public policy. This course is designed to familiarize students with current and emerging electronic commerce technologies using the Internet.  Topics include Internet technology for business advantage, managing electronic commerce funds transfer, reinventing the future of business through electronic commerce, business opportunities in electronic commerce, electronic commerce Web site design, social, political and ethical issues associated with electronic commerce, and business plans for technology ventures. Upon successful completion, the student will be able to:* Demonstrate an understanding of the foundations and importance of E-commerce
* Analyze the impact of E-commerce on business models and strategy
* Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational.
* Describe the infrastructure for E-commerce
* Discuss legal issues and privacy in E-Commerce
* Recognize and discuss global E-commerce issues
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: System Software** | **Course Code**: MCAM1105E5 |
| **Course Outcomes:** This course demonstrates an in-depth understanding system software loader, linker, assembler, compiler, and parsing techniques. The students learn basic concepts of operating systems and system software’s. It also familiarizes students with the functioning of the principal parts of an operating system. After completion of this course the student will be able to:* Identify different system software
* Write macros as and when required to increase readability and productivity
* Design hand written lexical analyzer
* Design new language structures with the help of grammars
* Appreciate the role of Operating System functions such as memory
* Management as pertaining to run time storage management
* Appreciate role of Intermediate Code Generation in connection with language designing
* Apply optimization principles on given code
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Programming Lab-I (Data Structures and Algorithms)** | **Course Code**: MCAM1106L |
| **Course Outcomes:**This laboratory course will mainly comprise of exercises on the basis of the theory paper: MCA-112(Data Structures and Algorithms)  |

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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Programming Lab-II (OOP using C++)** | **Course Code**: MCAM1107L |
| **Course Outcomes:**This laboratory course will mainly comprise of exercises on the basis of the theory paper: MCA-113 (Object Oriented Programming using C++)  |

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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Data Communication and Computer Networks** | **Course Code**: MCAM1201T |
| **Course Outcomes:**This course serves as a general introduction for students seeking to acquire a foundation in current network technologies for local area networks (LANs), wide area networks (WANs) and the Internet. The course provides an introduction to hardware, software, terminology, components, design, and connections of a network. Network concepts such as the OSI model, topologies, and major protocols, as well as the basic functions of system administration and operation are also included. Upon completion of this course, students will:* Learn how computer network hardware and software operate
* Investigate the fundamental issues driving network design
* Learn about dominant network technologies
* Understand and be able to describe for common services, system services, such as name and address lookups, and communications applications.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Operating Systems** | **Course Code**: MCAM1202T |
| **Course Outcomes:** The student will be taught principles of modern operating systems. In particular, the course will cover details of concurrent processes, multi-threads, CPU scheduling, memory management; file system, storage subsystem, and input/output management. Upon completion of this course, students will:* Learn the principles operating systems
* Understand relationship between subsystems of a modern operating system
* Evaluate the efficiency aspect of using system resources (processor, memory, disk).
* Understand what a process is and how processes are synchronized and scheduled.
* Understand different approaches to memory management.
* Be able to use system calls for managing processes, memory and the file system.
* Understand the data structures and algorithms used to implement an OS.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Relational Database Management System** | **Course Code**: MCAM1203T |
| **Course Outcomes:** The course aims to introduce relational database management concepts to the students. On completion of this course, the students will be able to * Analyze the Information Systems as socio-technical systems, its need and advantages as compared to traditional file based systems.
* Comprehend architecture of DBMS, conceptual data modelling, logical database design and physical database design.
* Analyze Database design using E-R data model by identifying entities, attributes, relationships, generalization and specialization along with relational algebra.
* Apply and create Relational Database Design process with Normalization and De-normalization of data.
* Demonstrate use of SQL and PL/SQL to implementation database applications with usage of DDL aspect of SQL, DML aspect of SQL, aggregate functions, group by clause, sub query, joins, co-related sub query and indexes, cursor, stored function and procedure, triggers etc.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Data Science using Python** | **Course Code**: MCAM1204T |
| **Course Outcomes:** This Course will help students gain data scientist skillset by learning data science using analytical tools and also enables them to master analytical techniques like data exploration, data visualization and various predictive analytic techniques. On completion of this course, the students will be able: * To analyze the need and usage of various facets of data and data science process.
* To understand and apply various visualization techniques.
* To understand and perform Exploratory Data Analysis.
* To implement how to manage, manipulate, cleanse and analyze data.
* To understand the steps in model fitting and parameters fine-tuning.
* To apply model validation techniques.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Ethical Hacking** | **Course Code**: MCAM1205E1 |
| **Course Outcomes:**Ethical Hacker is a skilled professional who understands and knows how to look for weaknesses and vulnerabilities in target systems and uses the same knowledge and tools as a malicious hacker, but in a lawful and legitimate manner to assess the security posture of a target system(s). Ethical Hacking course objective is to educate, introduce and demonstrate hacking tools used by hackers to compromise the security of enterprise networks and information systems. Upon completion of this course, the students will be able to: * Apply knowledge into an interactive environment where they are shown how to scan, test, hack and secure their own systems.
* Remember in-depth knowledge and practical experience with the current essential security systems.
* Understand how perimeter defenses work and then be led into scanning and attacking their own networks, no real network is harmed.
* Evaluate how intruders escalate privileges and what steps can be taken to secure a system.
* Analyze Intrusion Detection, Policy Creation, Social Engineering, DDoS Attacks, Buffer Overflows and Virus Creation.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Computer Based Optimization Techniques** | **Course Code**: MCAM1205E2 |
| **Course Outcomes:**The objective of the course is to introduce various optimization techniques and their computer implementation. This course aims towards learning of linear programming. The course also teaches students about job sequencing, Inventory problem and network analysis using CPM, PERT. The general objectives of the course is* to introduce the fundamental concepts of Optimization Techniques;
* to make the learners aware of the importance of optimizations in real scenarios;
* to provide the concepts of various classical and modern methods of for constrained and unconstrained problems in both single and multivariable.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Object Oriented Modelling and Design using UML** | **Course Code**: MCAM1205E3 |
| **Course Outcomes:** This Object-Oriented Analysis and Design Using UML teaches how to effectively use object-oriented technologies and software modelling as applied to a software development process. This course starts with object oriented concepts and moves towards the preparation of standard UML diagrams using an UML modeling tool. After completing this class, student will be able to:* Describe the three pillars of object-orientation and explain the benefits of each.
* Create use case documents that capture requirements for a software system.
* Create class diagrams that model both the domain model and design model of a software system.
* Create interaction diagrams that model the dynamic aspects of a software system.
* Explain the facets of the Unified Process approach to designing and building a software system.
* Describe how design patterns facilitate development and list several of the most popular patterns.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: ERP Systems and Processes** | **Course Code**: MCAM1205E4 |
| **Course Outcomes:** This course will explore the concepts, principles, and state-of-the-art methods in successfully integrating Enterprise Resource Planning (ERP) systems into extant enterprise architectures. At the completion of the course, students will be able to* Describe the role of an ERP in carrying out business processes in a company
* Explain how ‘best business practices’ are incorporated in an ERP
* Strategize pricing, production and sales in a competitive commodity market
* Analyze sales data in an ERP to dynamically respond to changing market conditions to maximize profits
* Expedite production planning and control using tools provided in an ERP (e.g. MRP)
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Software Project Management** | **Course Code**: MCAM1205E5 |
| **Course Outcomes:** Project Management is generally seen as a key component of successful software projects. Together with software techniques it can produce software of high quality. This course aims to cover the basics* Deliver successful software projects that support organization's strategic goals
* Match organizational needs to the most effective software development model
* Plan and manage projects at each stage of the software development life cycle (SDLC)
* Create project plans that address real-world management challenges
* Develop the skills for tracking and controlling software deliverables
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Programming Lab-III (RDBMS and Minor Project)** | **Course Code**: MCAM1206L |
| **Course Outcomes:** This laboratory course will mainly comprise of exercises on what is learnt under the paper MCA-123: Relational Database Management System. For the minor projects in a team of maximum size two will be allowed and the team will submit joint project report.  |

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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Programming Lab-IV (Data Science using Python Lab)** | **Course Code**: MCAM1207L |
| **Course Outcomes:**This laboratory course will mainly comprise of exercises on what is learnt under the paper MCA-124: Data Science using Pythion. |

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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Artificial Intelligence** | **Course Code**: MCAM2101T |
| **Course Outcomes:** This course will introduce the basic principles in artificial intelligence research. It will cover simple representation schemes, problem solving paradigms, constraint propagation, and search strategies. Areas of application such as knowledge representation, natural language processing, expert systems, vision and robotics will be explored. Upon successful completion of this course student will:* be able to design a knowledge based system,
* be familiar with terminology used in this topical area,
* have read and analyzed important historical and current trends addressing artificial intelligence.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name:Theory of Computation** | **Course Code**: MCAM2102T |
| **Course Outcomes:** In this course, students will learn several formal mathematical models of computation along with their relationships with formal languages. In particular, they will learn regular languages and context free languages which are crucial to understand how compilers and programming languages are built. Also students will learn that not all problems are solvable by computers, and some problems do not admit efficient algorithms. At the end of this course, students will be able to do the following: * Acquire a full understanding and mentality of Automata Theory as the basis of all computer science languages design
* Have a clear understanding of the Automata theory concepts such as RE's, DFA's, NFA's, Stack's, Turing machines, and Grammars
* Be able to design FAs, NFAs, Grammars, languages modeling, small compilers basics
* Be able to design sample automata
* Be able to minimize FA's and Grammars of Context Free Languages
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name:Programming in Java** | **Course Code**: MCAM2103T |
| **Course Outcomes:** Java is a multi platform programming language. Objective of this course is to enable students to implement OOPs concepts with Java. Students learn to create robust console and GUI applications and store and retrieve data from relational databases. Upon completion of this course, students will:* Write, compile and execute Java programs
* Build robust applications using Java's object-oriented features
* Develop platform-independent GUIs
* Read and write data using Java streams
* Retrieve data from a relational database with JDBC
* Write network programs.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name:Computer Graphics** | **Course Code**: MCAM2104T |
| **Course Outcomes:** The main objective of this module is to introduce to the students the concepts of computer graphics. It starts with an overview of interactive computer graphics, two dimensional system and mapping, then it presents the most important drawing algorithm, two-dimensional transformation; Clipping, filling and an introduction to 3-D graphics. After completing this course, students will be able to:* Identify and explain the core concepts of computer graphics.
* Apply graphics programming techniques to design, and create computer graphics scenes.
* Understand the basic principles of implementing computer graphics primitives
* Familiarity with key algorithms for modeling and rendering graphical data
* Develop design and problem solving skills with application to computer graphics
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Mobile Application Development** | **Course Code**: MCAM2105E1 |
| **Course Outcomes:** In this course, students will learn about mobile application development. In particular, they will learn about Android operating system and understand how to build apps for mobile devices running Android. Also students will learn the complete cycle from planning and developing an application to deploying the same on Google Play Store. On completion of this course, the students will be able to:* Apply knowledge into an interactive environment where they are shown how to develop, test and deploy Android Apps
* Learn the various aspects of Android Apps building blocks and Development.
* Understand how inter and intra process communication can be implemented.
* Learn to use GUI based controls for developing highly interactive and user friendly Apps.
* Learn to use different types of sensors available in the devices
* Learn to test and publish the Apps on Google Play Store.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Machine Learning** | **Course Code**: MCAM2105E2 |
| **Course Outcomes:** This main objective of this course is to provide students with an in-depth introduction to two main areas of Machine Learning: supervised and unsupervised. We will cover some of the main models and algorithms for regression, classification, and clustering. Topics will include simple linear regression and multiple linear regression, Decision tree, kNN, and dimensionality reduction. After completing this class, student will be able to:* Analyze methods and theories in the field of machine learning and provide an introduction to the basic principles, techniques, and applications of machine learning, classification tasks, decision tree learning.
* Apply decision tree learning, Instance based learning and feature selection in real world problems.
* Understand the use of clustering and clustering techniques.
* Apply inductive and analytical learning with perfect domain theories.
* Critically evaluate and compare different learning models and learning algorithms and be able to evaluate the performance of learning algorithms.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Big Data Analytics** | **Course Code**: MCAM2105E3 |
| **Course Outcomes:** The objectives of this subject are to introduce students the concept and challenge of big data and teach students in applying skills and tools to manage and analyze the big data. Upon completion of the subject, students will be able to:* understand the concept and challenge of big data and why
* existing technology is inadequate to analyze the big data;
* collect, manage, store, query, and analyze various form of big data
* gain hands-on experience on large-scale analytics tools to solve some open big data problems
* understand the impact of big data for business decisions and strategy
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Cloud Computing** | **Course Code**: MCAM2105E4 |
| **Course Outcomes:** Cloud Computing is a large-scale distributed computing paradigm which has become a driving force for information technology over the past several years. In this course, the student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet, cloud concepts capabilities across the various cloud service models including Iaas, Paas, Saas, and developing cloud based software applications on top of cloud platforms. Upon successful completion of this course you should be able to:* Develop and deploy cloud application using popular cloud platforms,
* Design and develop highly scalable cloud-based applications by creating and configuring virtual machines on the cloud and building private cloud.
* Explain and identify the techniques of big data analysis in cloud.
* Compare, contrast, and evaluate the key trade-offs between multiple approaches to cloud system design, and Identify appropriate design choices when solving real-world cloud computing problems.
* Write comprehensive case studies analyzing and contrasting different cloud computing solutions.
* Make recommendations on cloud computing solutions for an enterprise.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: Cryptography and Network Security** | **Course Code**: MCAM2105E5 |
| **Course Outcomes:** This course is meant to provide a broad overview of the field of computer security. Students will learn the basic concepts in computer security including software vulnerability analysis and defence, networking and wireless security, applied cryptography, as well as ethical, legal, social and economic facets of security. Students will also learn the fundamental methodology for how to design and analyze security critical systems. After studying this course, student should be able to:* identify some of the factors driving the need for network security
* identify and classify particular examples of attacks
* define the terms vulnerability, threat and attack
* identify physical points of vulnerability in simple networks
* Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of hybrid systems.
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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name:Programming Lab-V (Java Programming and Minor Project)** | **Course Code**: MCAM2106L |
| **Course Outcomes:**This course will mainly comprise of developing a minor project using any of the different technologies learnt during the course.  |

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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name:Programming Lab-VI (Computer Graphics)** | **Course Code**: MCAM2107L |
| **Course Outcomes:**This laboratory course will mainly comprise of exercises based on paper MCA-214: Computer Graphics |

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| **Program Name: M.C.A.(2 Years)** | **Program Code**:MCAM2PUP |
| **Course Name: PROJECT** | **Course Code**: MCAM2201V |
| * **Course Outcomes:** The students are required to undergo full-semesters software development project training during the sixth semester of MCA and should work on a software development project during the training period.
* The students must prefer doing Industrial Training and try to avoid the training in computer institutes/centreswhere there is no software development work and mere training is provided. In case students are not able to find training in any industry, they may opt for doing this project training in the Department on some live project related to the automation of any University Department functionality or any Project given by the concerned teacher of the Department.
* Joint projects will be allowed and joint project reports will also be accepted. However the students shouldhighlight their individual contributions in a joint project. The quantum of individual contribution of particularstudents in joint projects should be such which can be accepted as equivalent to full-semester project. The same must also be reflected in joint reports.
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