FATIMA COLLEGE

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Mary Land, Madurai - 625018, Tamil Nadu

AQAR – QUALITATIVE METRIC

2022 - 2023

Criterion 1 - Curricular Aspects

1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme specific outcomes (PSOs) and Course Outcomes (COs), of the Programmes offered by the Institution.

Name of the Programme: MCA

Programme Outcomes:

PO 1	Apply the knowledge of computing maths and science for the solution of problems and requirements
PO 2	Identify, critically analyze, formulate and develop computer applications using fundamental principles of relevant domain disciplines
PO 3	Design and evaluate solutions for computer based problems to meet the desired needs within realistic constraints such as safety, security and applicability
PO 4	Use research based knowledge to conduct experiments and interpret data to attain well-defined conclusions.
PO 5	Create, select and apply modern computing tools by understanding the limitations, with dexterity.

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PO6	Demonstrate the competency in programming skills as per industry expectations.
PO7	Understand the impact of system solutions in societal, environmental and cultural issues within local and global contexts for sustainable development
PO8	Commit to professional ethics and cyber regulations, responsibilities & norms.
PO9	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary environment to manage projects.
PO10	Communicate effectively with the society about computing technologies.
PO11	Demonstrate knowledge and understanding of the management principles and apply these to manage projects.
PO12	Appreciate the importance of goal setting and to recognize the need for life-long learning in the broadest context of technological change.

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Programme Specific Outcomes:

PSO 1	Ability to design and develop applications in the computing discipline to meet the customer's business objectives.
PSO 2	Ability to Integrate various system components to provide user interactive solutions for various challenges
PSO 3	Ability to test and maintain the software applications with latest computing tools and technologies.
PSO 4	Ability to understand the evolutionary changes in the practices and strategies in software project development.
PSO 5	Ability to enhance teamwork and leadership skills to solve time critical problems

Course Outcomes:

Course Code	Course Title	Nature of the Course (Local/National/Regional/Global)	Course Description	Course Outcomes

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20MCA101	Mathematical Foundation Of Computer Science	National	This course provides the logical, analytical and mathematical concepts that are fundamental for Computer Science.	CO 1: Perform Logical operations and predicate calculus needed for computing skill. CO2: Analyze and Compare the various techniques for solving numerical equations. CO3: Apply the techniques of statistics and numerical methods to unravel problems by computers. CO4: Explain the set theory logic. CO 5: Utilize the Knowledge of matrices for designing and solving problems

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22MCA102	Relational Database Management Systems	Global	This course provides knowledge on different issues involved in the design of a database system and it Provide strong foundation of database concepts and to introduce students to application development in DBMS.	CO 1: Understand the basic concepts of Relational Data Model, Entity Relationship Model and process of Normalization.. CO 2: Attain a good practical skill of managing and retrieving of data using Data Manipulation Language (DML) CO 3: Understand and construct database using Structured Query Language (SQL) in Oracle9i environment. CO 4 Learn basics of PL/SQL and develop Programs using Cursors, Exceptions, Procedures and Functions

20MCA103	Operating Systems	Global	This course provides knowledge on the concepts of abstraction, scheduling mechanisms, implementations and manages a computer's resources, especially the allocation of those resources among other programmes	CO 1: Identify the components and processes. CO 2: Analyze on scheduling algorithms and deadlocks. CO 3: Demonstrate the mapping between the physical memory and virtual memory. CO 4: Identify the secondary memory management techniques. CO 5: Analyze on the distributed systems and security issues.

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20MCA104	Progtramming In Python	Global	This course provides the basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. Extra emphasis is placed on features unique to Python, such as tuples, array slices, and output formatting	CO 1: Predict the basics of Python programming. CO 2: Solve problems requiring the writing of well-documented programs in the Python language, including use of the logical constructs of that language. CO 3: Use and manipulate Lists and python exception handling model to develop robust programs. CO 4: Formulate solutions for String, tuples and File operations. CO 5: Apply object-oriented programming concepts to

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20MCA105	Lab I – Python Programming	Global	This course provides the practical knowledge of implementing Python programs with loops, functions and represent compound data using lists, tuples and dictionaries.	CO 1: Implement Math functions, Strings, List and Tuple in Python programs. CO 2: Express different Decision Making statements and Functions. CO 3: Interpret Object oriented programming in Python & File handling operations

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20MCA106	Lab Ii – Rdbms	Global	This course provides practical knowledge in PL/SQL programming, utilizing the services provided by Oracle database in a stored procedure perspective. This also includes implementation of Subprograms, Triggers, and Cursors concepts in depth	CO 1: Enhance Programming skills and techniques. CO 2: Formulate complex queries using SQL CO 3: Use the PL/SQL code constructs of IF-THEN-ELSE and LOOP types as well as syntax and command functions.

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29MCA107	Skill Based Lab I – Linux	Global	This course provides focus on the fundamental tools and concepts of Linux and Unix OS. It gives practical exposure on topics such as LINUX environment, commands, file system, processes and utilities. Specific emphasis is given to the bash shell and user environment with several flavours of UNIX/Linux using a version of Red Hat Linux.	CO 1: Use Linux utilities and develop shell scripts to perform tasks. CO 2: Effectively use Linux environment to accomplish software development tasks. CO 3: Monitor system performance and network activities.

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20MCA108	Soft Skills I – Professional Communication	National	This course provides skills of oral and written communication to work in different environments, develop emotional sensitivity and an awareness of how to work and negotiate with people.	CO 1: Display competence in oral and written communication. CO 2: Use current technology related to the communication.

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20MCA201	Data Structures And Algorithms	Global	This course provides knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications.	CO 1: Select appropriate data structures as applied to specified problem definition. CO 2: Implement operations like searching, insertion, deletion and traversing in trees. CO 3: Compare the data structures of advanced search trees. CO 4: Implement appropriate heap operations, sorting, searching techniques for a given problem. CO 5: Determine and analyze the complexity of graph

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20MCA202	Web Technologies	Global	This course provides the student with foundational programming knowledge and skills for application development on the Internet.	CO 1: Use knowledge of HTML and CSS to create personal and/or business websites CO 2:Create effective scripts using JavaScript and jQuery to enhance the end user experience. CO 3:Write PHP scripts to handle HTML forms. CO 4:Test, debug, and deploy web pages containing PHP and MySQL. CO 5:Implement SQL language, JavaScript, Ajax, Jquery, PHP and CSS in the project.

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20MCA2 03	Programming In Java	Global	This course provides an exhaustive coverage of Core Java programming language features like OOPS and GUI programming.	CO 1: Apply the basic Java constructs to develop solutions to real time problems.
				CO 2: Analyze the hierarchy of java classes to develop object oriented programs.
				CO 3: Design software in Java using Packages and Threads.
				CO 4: Implement Concepts of AWT for creating GUI.
				CO 5: Design a Software using JDBC.

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20MCA204	Lab Iii – Web Technologies	Global	This course provides information about two powerful technologies. Together, these two technologies provide a powerful platform for building database-driven Web applications.	CO 1: Design WebPages using server side scripting. CO 2: Use PHP built-in functions and custom functions for processing. CO 3: Create various interactive and dynamic websites

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20MCA205	Lab Iv – Java Programming	Global	This course provides experiential learning in the implementation of Core Java Programming.	CO 1: Apply the basic Java constructs to develop solutions to real time problems. CO 2: Analyze the hierarchy of java classes to develop object oriented programs. CO 3: Design software in Java using Packages and Threads. CO 4: Implement Concepts of AWT for creating GUI. CO 5: Design a Software using JDBC.

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20MCA206	Skill Based Lab Ii – R Programming	Global	This course provides an in-depth knowledge on the basic constructs and statistical analysis in R.	CO 1: Demonstrate the practical application of R programming tool. CO 2: Emphasize the implementation of statistical operations in R

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0MCA2077	Soft Skills Ii – Numericalaptitude	National	This course provides gamut of skills which facilitate the students to enhance their employability quotient and to establish a stronger connect with the technical environment in which they operate. It makes them think critically and apply basic mathematics skills to interpret data, draw conclusions and solve problems.	CO1: Apply quantitative techniques to solve variety of problems. CO 2: Enhance the reasoning skills for employability.

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22MCA302	Software Engineering Principles	Global	This course provides the fundamental perception of Software Engineering which includes system requirements, finding the effective methods to analyze, design, code, test and implement the full application with appropriate tools	CO 1: Understand basic software engineering methods and practices CO 2: Analyse on software requirements and the SRS documents. CO 3: Identify the data, class and flow oriented modelling concepts. CO 4: Analyse on the design oriented concepts. CO 5: Identify the managerial aspects of Software development..

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20MCA303	Mobile Application Development	Global	This course introduces students to programming technologies, design and development related to mobile applications. Students will learn application development on the Android platform.	CO 1: Understand the capabilities and limitations of mobile platforms that affect application development and deployment. CO 2: Compare and analyze various technology and business trends impacting mobile application development. CO 3: Demonstrate the characterisation and architecture of mobile applications CO 4: Assess the way how to send messages through android phones. CO 5: Design and develop

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20MCA304	Enterprise Application Development	Global	This course provides exposure to different frameworks namely, Struts, Hibernate, Spring and Django. This collective information supports the learner for developing advanced enterprise applications	CO 1: Develop dynamic web applications using MVC. CO 2: Use dependency injection & inversion of control in developing Spring project. CO 3: Create the Struts classes and use MVC design pattern for creating large web applications CO 4: Map Java classes and object associations to relational database tables with Hibernate mapping files Map Java classes and object associations to relational database tables with Hibernate mapping files CO 5: Use Django for rapid

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20MCA305	Lab V - Mobile Application Development	Global	This course provides knowledge of developing applications for mobiles using native and hybrid frameworks	CO 1: Install and configure Android application development tools.
				CO 2: Design and develop user Interfaces for the Android platform.
				CO 3: Apply Java programming concepts to Android application development
				CO 4: Familiar with technology and business trends impacting mobile applications
				CO 5: Include database and maps in apps to facilitate societal centric applications.

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| 20MCA306 | Lab Vi –Enterprise Application Development | Global | This lab course provides the experience in creating, debugging, testing & deploying dynamic web applications. It also gives thorough coverage of the use of MVC for creating web applications | CO 1: Perform Database operations for web applications using MVC.

CO 2: Develop database application using Spring JDBC/Struts with CURD functionality.

CO 3: Enable multilingual websites by using its built-in internationalization system |

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20MCA307	Skill Based Lab Iii – Computer Aided Software Engineering (Case) Tools	Global	This course provides automation of the entire information systems development life cycle process using a set of integrated software tools	CO 1: Planning project using open source planning tools. CO 2: Designing project using designing tools CO 3: Testing projects using testing tools

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20MCA308	Soft Skills Iii –Technical Aptitude	Global	This course provides gamut of skills which facilitate the students to enhance their employability quotient and to establish a stronger connect with the technical environment in which they operate. It makes them think critically and apply basic mathematics skills to interpret data, draw conclusions and solve problems.	CO1: Recall and make thorough the basic concepts of computer science. CO2: Enhance the technical aptitude skills in the interview perspective.

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22MCA401	Uix Design Programming	Global	This course provides an overview of client-side web UI frameworks of Bootstrap 4. It focuses on grids and responsive design using CSS pre-processors, Less and Sass and the basics of Node.js. It takes the students to move to the next level by building data-driven web apps using React.	CO1: Analyze React Components, the building blocks and its interaction with other web applications CO2 Design websites using various Angular features including directives, components and services CO3: Compute and build applications using Node.JS along with the combination of Bootstrap CO4: Apply the concepts of MongoDB & MySQL, the back-end databases. CO5: Utilize the conceptual and practical aspects of CSS Pre-

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| 20MCAAAD01 | Data Mining Techniques | Global | This course provides the basic concepts, principles, methods, implementation techniques and applications of data mining. | CO 1: Identify the functionalities of Data Mining and various techniques to extractknowledge.

CO 2: Analyze the methods to discover Association Rules

CO 3: Design & deploy the appropriate Clustering techniques.

CO 4: Outline web mining, temporal and spatial data mining

CO 5: Examine and Explore weka techniques |

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20MCAD A02	Data Analytics And Visualization Using Spreadsheets	Global	This course provides knowledge to perform data analysis using Excel's most popular features.	CO 1: Ability to analyze data is a powerful skill that helps you make better decisions CO 2: Identify the basic principles of a Pivot Table CO 3: Recognize how to use Pivot Table and Pivot chart CO 4: Use Excel's powerful functions to efficiently transform mountains of raw data into clear insights CO 5: Use your new-found Excel skills like Descriptive Statistics and Inferential Statistics to analyze what makes a successful project.

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20MCAD A03	Big Data Analytics	Global	This course provides familiarization to the important information technologies used in manipulating, storing and analyzing big data	CO 1: Understand the fundamentals of various big data analysis techniques CO 2: Analyze the big data analytic techniques for useful business applications CO3: Examine the HADOOP and Map Reduce technologies associated with big data analytics CO 4: Scrutinize the various storage architecture using HDFS and Map reducing techniques CO5: Understand, Explore and deploy Hbase

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20MCADA04	Data Analytics Tools & Techniques	Global	This course provides knowledge on creating applications to analyze big data.	CO 1: Examine the programming constructs of Pig and database management using HiveQL CO 2: Write scripts using Pig latin and perform various HiveQL queries by applying RDBMS concepts CO 3: Apply the concepts of Pig and Hive in simple tasks CO 4: Formulate and analyse different databases for different situations CO 5: Create real time applications

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| 20MCAD A05 | Business Analytics Using R | Global | This course provides a comprehensive study on business analytics that can be applied to many business settings and its practical implementation using a tool | CO 1: Examine the concepts around Business analytics

CO 2: Evaluate the process of analysing a business descriptively using the tool

CO 3: Explore data and business analytic process

CO 4: Apply various supervised and un supervised Machine learning techniques

CO 5: Learn to apply different algorithms of regression for business problems |

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| 20MCAD A06 | Big Data Security | Global | This course provides an overview of the cutting edge and new technologies in the area of big data security | CO 1: Identify the need for security and best practices in a big data environment

CO 2: Analyze the steps to secure big data

CO 3: Build security in hadoop eco system

CO 4: Assess the sensitivity of data in Hadoop

CO 5: Outline data security and event logging |

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20MCAD S01	Data Communication & Networking	Global	This course provides the basic concepts, design principles and underlying technologies of networking.	CO 1: Identify the functionalities of Networking layers of both OSI and TCP/IP reference models. CO 2: Analyze the design issues of Datalink layer and techniques to resolve it. CO 3: Compare the principles of Switching and Routing algorithm. CO 4: Predict the TCP and UDP related procedures. CO 5: Outline the Application layer protocols.

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20MCADS02	Wireless Communication & Security	Global	This course provides knowledge on key mobile system and wireless communication.	CO 1: Identify, Predict and Evaluate MAC, SDMA, TDMA, FDMA, CDMA CO 2: Demonstrate the architectures, challenges and solutions of Wireless communication CO 3: Assess the role of Wireless Networks in shaping the future internet. CO 4: Design Mobile IP to support seamless and continuous Internet connectivity CO 5: Design SIP to create, modify, and terminate a multimedia session over the Internet Protocol

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20MCAD S03	Cryptography & Network Security	Global	This course provides basic understanding of previous attacks on cryptosystems with the aim of preventing future attacks and to provide security using various cryptographic tools	CO 1 Evaluate the fundamentals of networks security, security architecture, threats and vulnerabilities CO 2 Compare Stream ciphers and block ciphers. CO 3 Apply the different cryptographic operations of public key cryptography. CO 4 Pertain the various Authentication schemes to simulate different applications. CO 5 Applying CrypTool 2 to encrypt and decrypt texts using different ciphers.

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| 20MCADS04 | Cyber Forensics | National | This course provides the investigation of computer-related crimes with the goal of obtaining evidence to be presented in a court of law. | CO 1 Predict the forensics fundamentals and the various technologies used to avoid computer crimes

CO 2 Illustrate different methods to collect and preserve digital evidence and Digital Crime Scene.

CO 3 Identify and Analyze Forensic Technical Surveillance Devices.

CO 4 Evaluate the Various tools and tactics followed in military.

CO 5 Demonstrate the Usage of surveillance tools for tracking cyber criminals |

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20MCADS05	Cloud Security	Global	This course provides a comprehensive study on the unique security challenges and opportunities in cloud platforms and guides through the security best practices for multivendor cloud environments	CO 1 Examine the security threats in cloud platforms CO 2 Evaluate Data Asset and Identity Access Management CO 3 Manage the vulnerable cloud environment CO 4 Understand the security issues that arises over a Network CO 5 Explore the security incidents by detecting, responding and recovering

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20MCAD S06	High Speed Networks	Global	This course covers the basics, architectures, protocols and technologies for high-speed networks. It includes LANs, Protocols, TCP/IP Suite, Data Networks, high speed LANs, link level flow and error control, transport level traffic control, routing, MPLS switching and Network security	CO 1 Work Identify the building blocks and operation of high speed networking and ATM. CO 2 Analyze the cause of congestion, traffic slow down and related factors for Quality of Service Identify. CO 3 Apply the concepts learnt in this course to optimize performance of high-speed networks using Flow Control. CO 4 Compare the different architectures used for HSN. CO 5 Describe the protocols that are used to design high speed networks.

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20MCAAM01	Artificial Intelligence & Expert Systems	Global	This course provides the basic principles of artificial intelligence. It will cover problem solving paradigms, constraint propagation and search strategies in the areas of applications including knowledge representation, natural language processing, expert systems, vision and robotics.	CO 1: Identify problems that are amenable to solution by AI methods. CO 2: Formulate search problems and implement search algorithms using admissible heuristics. CO 3: Design and carry out an empirical evaluation of different algorithms on a predicate logic and state the conclusions that the evaluation supports. CO 4: Analyze games playing as adversarial search problems and implement optimal and efficient solutions.

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20MCAAM02	Soft Computing	Global	This course provides the principal constituents of soft computing that is fuzzy logic, neural network theory and probabilistic reasoning. The course explores the features that are employed in various associated techniques.	CO 1: Explore the functional components of artificial neural networks.. CO 2: Examine the principles of back propagation networks. CO 3: Expose the students to the concepts of predicting the functionalities of ART. CO 4: Analyze the logic principle of classical sets and fuzzy set operations in fuzzy set theory. CO 5: Identify the concept of fuzzification and defuzzification involved in various systems.

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20MCAAM03	Machine Learning	Global	This course provides an introduction to learn Machine Intelligence and Machine Learning Applications algorithms to solve real world problems	CO 1 Identify the concepts of machine learning CO 2 Demonstrate Decision Tree learning and Bayesian Learning for classification. CO 3 Analyze the logic behind Genetic Algorithms. CO 4 Compare various set of rules available for Learning. CO 5 Propose solution for real world problems based on Inductive and Analytical Learning.

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20MCAAM04	Neural Networks	Global	This course provides the basic principles of Neural Networks. It will cover Neuro computing, Layer Perceptron, Pattern Association, HopFiled Net, Back Propagation Network, Probabilistic Neural Network and Application of Neural Networks	CO 1 Identify problems that are amenable to solution by Neural networks methods. CO 2 Formulate searching rules and implement Single Layer Perceptron and Multilayer Perceptron Networks. CO 3 Design and carry out an empirical evaluation of different algorithms on Pattern Association CO 4 Analyze Feedback and Feed forward Network and implement optimal and efficient solutions. CO 5 Apply the application of Neural Networks in Arts,

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20MCAA M05	Human Computer Interaction	Global	This course introduces the fundamental theories and concepts of human computer interaction. It provides knowledge on analyzing interaction problems from a technical, cognitive and functional perspective	CO 1 Design effective dialog for HCI CO 2 Design effective HCI for individuals and persons with disabilities CO 3 Assess the importance of user feedback CO 4 Explain the HCI implications for designing websites CO 5 Develop meaningful user interface

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| 20MCAAM06 | Deep Learning | Global | The course aims to provide an understanding of different types of Deep Architectures, including Convolutional Networks and Recurrent Networks. | CO 1 Identify problems that are amenable to solution by deep networks

CO 2 Formulate convolutional networks and sequence modelling for problem solving

CO 3 Design and carry out an empirical evaluation of autoencoders and representation learning

CO 4 Analyze structured probabilistic and Monte Carlo Methods

CO 5 Apply the applications of deep learning. |

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20MCAG E01	Office Automation Tools	Global	This course enable the students in crafting professional word documents, excel spread sheets, power point presentations using the Microsoft suite of office tools and also preparation of documents and presentations with office automation tools.	CO 1: Identify current and emerging word processing technologies to produce organizational documents CO 2: Develop, open and explore the Microsoft Office Excel environment CO 3: Design and edit charts and graphs with the use of functions and formulas. CO 4: Implement and query a database using different methods CO 5: Generate slide presentations that include text, graphics, animation, and transitions.

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20MCAG E02	Financial Management And Accounting	National	This course provides an overview of financial concepts, process and operations from a managerial perspective.	CO 1: Preparation and analysis of balance sheet. CO 2: Predict the Classification of Costing. CO 3: Decide the budget preparation and control of a company. CO 4: Analyze the flow of funds. CO 5: Use Tally to implement the needs of financial accounting

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| 20MCA GE03 | Organizational Behaviour | | This course provides solution to learn challenges and opportunities in organizations from a behavioural perspective | CO 1: Develop an Organisational Behaviour model for any type of Organization

CO 2: Understand the Ethics in Decision Making

CO 3: Develop and improve the quality of Leadership.

CO 4: Evaluate the Common biases and eradication in Decision Making Process.

CO 5: Understand how to manage the Stress during a job |

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20MCAG E04	E-Commerce	Global	This course provides information on the combination of Internet with E-Commerce, options available for doing business on the Internet, features that helps to build E-Commerce web sites, marketing issues, payment options, security issues and customer service.	CO 1: Gain a comprehensive understanding of the E-Commerce landscape, current and emerging technology and infrastructure underpinnings of the business. CO 2: Analyze the impact of E-commerce on business models and strategy. CO 3: Develop an understanding on how internet can help business grow/ Describe the infrastructure for E-commerce CO 4: Assess electronic payment systems CO 5: Gain an

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20MCAGE05	Ethics In Computing	Global	This course provides the basis for ethical decision-making and the methodology for reaching ethical decisions concerning computing matters	CO 1: Predict the relationship between the law, ethics and computer technology.
				CO 2: Outline the philosophical and ethical debates with the ideas and the nature of intellectual creativity.
				CO 3: Design the impact of computer technology on free speech.
				CO 4: Formulate the ethical and legal issues of the impact that computing technologies had on workplace.
				CO 5: Develop a personal standpoint in relation to DataBase society and the usage

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20MCAG E06	Resource Management Techniques	Global	This course provides solution to problems in different environment that needs decision making using optimization techniques.	CO 1: Identify the applications of Operations Research and methods to solve business problems. CO 2: Apply linear programming to solve operational problem with constraints. CO 3: Apply transportation and assignment models to find optimal solution in warehousing and Travelling, CO 4: Prepare project scheduling using PERT and CPM. CO 5: Use optimization concepts in real world problems

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| 20MCAG E07 | Entrepreneurship Development | Global | This course provides the skills necessary to succeed as an entrepreneur. It includes the fundamentals of starting and operating a business, developing a business plan, obtaining financing, marketing a product or service and developing an effective accounting system | CO1: Highlight the salient characteristics of successful entrepreneur

CO2: Enumerate the competencies relevant for Entrepreneurial development.

CO3: Delineate the growth of women Entrepreneurship in India.

CO4: Identify the major problems faced in conducting EDPs.

CO5: Discuss the methods of project appraisal used for small scale enterprises |

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| 20MCAGE08 | Wireless Sensor Networks | Global | This course provides knowledge on the architectures, functions and performances of wireless sensor systems and platforms. It also describes and analyze the specific requirements for applications in wireless sensor networks regarding energy supply, memory, processing and transmission capacity | CO 1: Formulate the basic standardization of wireless networks.

CO 2: Analyze the implementation of technologies related to WSN.

CO 3: Identify and understand the security issues in ad hoc and sensor networks.

CO 4: Compare the protocols and to promote the research work in this area.

CO 5: Apply and solve problems in the applications of Wireless Networking Area. |

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20MCAG E09	Research Methodology	Global	This course provides an overview of various methods employed in quantitative and qualitative research.	CO 1: Predict the different stages of research process. CO 2: Apply methods to collect best data. CO 3: Assess the suitable research design & work. CO 4: Compare categorical and continuous measures. CO 5: Analyze the process of various reports writing.

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| 20MCAGE10 | Digital Image Processing | Global | This course provides an introduction to the basic concepts, methodologies and algorithms of digital image processing focusing image enhancement, image analysis and object recognition | CO 1: To review the fundamental concepts of a digital image processing system.

CO 2: To examine various types of images, their intensity transformations and spatial filtering.

CO 3: To analyze the different types of noises and the filters used to restore and reconstructthe images.

CO 4: To create color images and pseudo images with smoothening and sharpening techniques.

CO 5: To compare the various lossy and lossless |

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20MCAGE11	Cloud Computing	Global	This course provides comprehensive study of cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS).	CO 1: Compare the strengths and limitations of cloud computing. CO 2: Identify the architecture, infrastructure and delivery models of cloud computing. CO 3: Apply suitable virtualization concept. CO 4: Choose the appropriate Cloud player, Programming Models and approach. CO 5: Address the core issues of cloud computing such as security, privacy and interoperability

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20MCAGE12	Agile Software Engineering	Global	This course provides an immersive experience in the technical, cultural and social aspects of Agile and DevOps.	CO 1 Explain the fundamental principles and practices of the agile development methods. CO 2 Analyze the planning and execution of the agile manifesto CO 3 Monitor the management to achieve complete product development. CO 4 Practice the integration of development and operations in software projects. CO 5 Present the software project by following the principles that best fit the technical and market demands.