FATIMA COLLEGE (AUTONOMOUS), MADURAI – 625018
2020 - 2021

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: M. SC COMPUTER SCIENCE **PROGRAMME CODE : PSCS**

PROGRAMME OUTCOMES:

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO1: Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and desirous for the "more" in all aspects.

PEO 2: They will be efficient individual and team performers who would deliver excellent professional service exhibiting progress, flexibility, transparency and accountability in their professional work.

PEO 3: The graduates will be effective managers of all sorts of real – life and professional circumstances, making ethical decisions, pursuing excellence within the time framework and demonstrating apt leadership skills.

PEO 4: They will engage locally and globally evincing social and environmental stewardship demonstrating civic responsibilities and employing right skills at the right moment.

PROGRAMME SPECIFIC OUTCOME (PSO)

On completion of M.Sc. Computer Science programme, the students are expected to

PSO1: To develop professionally competent citizens by applying the scientific knowledge of Computer Science with the ability to think clearly, rationally and creatively to support in evolving solutions to the social/public/scientific issues with responsible democratic participation.

PSO2: Enterprising resourcefulness to identify, plan, formulate, design and evaluate solutions for complex computing problems that address the specific needs with appropriate consideration for Societal, Cultural, Environmental and Industrial domains.

PSO3: Holistic development to ignite the lateral thinking ability in problem solving, acquisition of new skills, open-minded and organized way of facing problems with self awareness and evolving analytical solutions

PSO4: Create and initiate innovations effectively and communicate efficiently with the computing community and society at large to bridge the gap between computing industry and academia

PSO5: Through Digital Literacy, understand, assess and commit to professional and ethical principles, norms and responsibilities of the cyber world and the ability for work efficacy as a part of a team and engage effectively with diverse stakeholders

PSO6: Ability and willingness to embark on new ventures and initiatives with critical thinking and desire for more continuous learning focusing on life skills.

PSO 7: Use research-based knowledge and research methods to design, analyse, and interpret data and to synthesize information to provide valid findings to serve community.

COURSE CODE	COURSE TITLE	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/GLOBAL)	COURSE DESCRIPTION	COURSE OUTCOMES
19PG1B1	Advanced Programming in Java	National	To understand the Networking concept using TCP/IP and	**CO1:** Describe client/server applications, TCP/IP socket programming and distributed

			RMI. To design and develop java program using Swings Components.	applications using RMI. **CO2:** Analyze and design Window based applications using Swing Objects. **CO3:** Develop and design Java programs using Swing components. **CO4**: Discuss the various JDBC drivers and demonstrate J2EE application using JDBC connection and server side programs with Servlets. **CO5:** Write component-based Java programs using JavaBeans.
19PG1B2	Distributed	National	To understand the concept of design and	**CO1:** Discuss the core concepts of

	Operating Systems		implementation in the context of distributed operating systems.	distributed systems. **CO2:** Analyze various message passing mechanisms with its model. **CO3:** Identify the inherent difficulties that arise due to distribution of computing resources. **CO4:** Explain migration with the process management policies. **CO5:** Explain the basic concepts, design and structure of the LINUX operating system.
19PG1B3	Object Oriented Software Engineering	National	To understand a systematic discipline, quantifiable approach to the design development	**CO1:** Differentiate traditional and object oriented software engineering **CO2:** Explain various SDLC methods

			operation and maintenance of software using object oriented concept. To understand and apply different Object Oriented development models	of OOSE **CO3:** Describe techniques used in OOSE **CO4:** Explain OOSE testing methods **CO5:** Analyze and choose necessary method for a particular project
19PG1B4	Theory of Computation	National	To introduce the concept of automata theory, the theory of formal languages and grammars to understand the properties of physical machines	**CO1:** Demonstrate an in-depth understanding of theories, concepts and techniques in automata and their link to computation. **CO2:** Develop abstract machines that demonstrate the properties of physical machines and be able to

				specify the possible inputs, processes and outputs of these machines. **CO3:** Analyze the computational strengths and weaknesses of these machines. **CO4:** Explain Context-Free Grammar. **CO5:** Apply automata concepts and techniques in designing systems that address real world problems.
19PG1B5	Lab-I- Advanced Programming in Java	National	To implement Server Side Program with Servlets. To develop java	**CO1**: Implementation of java applications that illustrate professionally acceptable coding and performance standards. **CO2:** Develop distributed

			program using JSP.	applications using RMI. **CO3**: Design and develop event-driven programming and graphical user interfaces using Swing-based GUI. **CO4:** Design and develop Java programs using JDBC connection for data access and also Develop server side programs with Servlets. **CO5**: Design and develop component-based Java programs using JavaBeans.
19PG1B6	Lab-II- Operating System	National	To introduce the students to LINUX kernel programming	CO1: Utilize basic LINUX Utilities. CO2: Write different LINUX shell scripts and execute various shell

			To make the students aware of the features and capabilities of Linux so that they can utilize its improved functionalities	programs. **CO3:** Apply LINUX system calls. **CO4:** Compute various file permissions and have a basic understanding of system security. **CO5:** Demonstrate the basic knowledge of Linux commands and file handling utilities by using Linux shell environment.
19PGBEDC	Web Development	National	To enhance the knowledge of the students in effective webpage designing. To provide skills to sharply focus on needed information to	**CO1:** Define various tags of HTML **CO2:** Design a web page with attractive display **CO3:** Create a Layout for a webpage using Block tags **CO4:** Explain how and where to apply

			be presented in a website.	CSS **CO5:** Design own website
19PG2B7	Extreme Programming – Asp.Net	National	To understand the Architecture of ASP.NET To acquire a working knowledge of the .NET programming model	**CO1:** Explain the important facts of ASP.NET 3.5, analyse and evaluate Web Form processing stages. **CO2:** Demonstrate web application using different types of Server Controls with input validation. Analysis and Identify state management techniques. **CO3:** Discuss Data Access Technology using ADO.NET architecture. **CO4:** Formulate Data Sources using SQL Data Source , Object Data

				Source and process data with rich data controls. **CO5:** Discuss and demonstrate Themes and Master pages of Web site .
19PG2B8	Mobile application Development using android studio	National	Develop a grasp of the android OS architecture. Understand the application development lifecycle.	**CO1:** Design scripts to meet given interface and media control requirements **CO2**: Utilize variables, properties and other code elements appropriately to implement the code design **CO3:** Implement and evaluate techniques for the installation of mobile applications **CO4**: Explain the principles of

				technologies which support media production and delivery on a variety of platforms **CO5:** Evaluate alternative mobile frameworks, and contrast different programming platforms
19PG2B9	DESIGN AND ANALYSIS OF ALGORITHMS	National	Develop your ability to articulate processes for solving problems and to implement those processes efficiently within software.	**CO1:** Analyze the time and space complexity of given Algorithms. **CO2:** Demonstrate operations like searching, insertion, and deletion on various data structures. **CO3:** Identify appropriate sorting/searching technique for given problem. **CO4:** Apply the dynamic programming

				technique to solve the problems. **CO5:** Discuss advanced tree and graph applications.
19PG2B10	Lab-III - Extreme Programming - Asp.Net	National	To design and develop dynamic Control and validate the inputs by validation controls To design and develop different State Management Techniques	**CO1**: Design and develop web applications using different Server Controls. **CO2**: Implement web applications with different state managements. **CO3:** Create Data Access Technology using ADO.NET architecture. **CO4:** Design and utilize Data Sources using SQL Data Source , Object Data Source for data manipulation operation. **CO5:** Design and develop web sites.

19PG2B11	Lab-IV – Mobile Application Development using Android Studio	National	Identify ,analyze and choose tools for android development including device emulator, profiling tools and IDE	**CO1:** Develop enterprise-level mobile solutions. **CO2:** Install and configure Android application development tools. **CO3:** Demonstrate Save State information across important operating system events. **CO4:** Develop advanced application programs using Android **CO5:** Design and develop mobile applications.
19PG2BE1	Computational Intelligence	National	Throws light on all categories of Evolutionary Computing	**CO1:** Demonstrate the fundamental concepts of soft computing and its applications. **CO2:** Explain the concepts of fuzzy

			To motivate to pursue research	sets, knowledge representation using fuzzy rules, and other machine intelligence applications of fuzzy logic. **CO3:** Discuss the basics of an evolutionary computing **CO4:** Explain genetic algorithms for practical problems. **CO5:** Discuss the performance of granular computing in solving specific problems.
19PG2BE2	Neural Networks	National	To understand the fundamentals of Neural Networks To apply various models and learning	**CO1:** Explain the basic concepts of Neural Networks. **CO2:** Describe the various Neural Network models.

			algorithms for the real world scenario	**CO3:** Explain Learning Rules of Neural Network **CO4:** Distinguish Feedback and Feed forward networks **CO5:** Compare Special networks and discuss the applications of Neural Network.
19PG2BE3	Software Testing	National	To give strong foundation in software quality assurance by teaching standards, models and measurement techniques. To enhance the	**CO1**: Discuss various software application domains and different process model used in software development. **CO2:** Demonstrate the basics of software quality assurance and defect prevention. **CO3:** Compare different testing

			knowledge of the students to provide innovative solutions to various quality assurances related problems.	strategies and tactics. **CO4:** Describe the software testing techniques in different environments. **CO5:** Explain high performance testing using Jmeter.
19PG2BE4	Embedded Systems	National	To create interest in low level system programming To help students venture in to embedded designing concepts	**CO1:** Explain the concepts of embedded systems **CO2:** Analyze the architecture of embedded systems **CO3:** Describe about the processors and memory organization **CO4:** Distinguish when and where to apply embedded concepts CO5: Describe different embedded

				system design technologies
19PGBEDC	Web Development	National	To enhance the knowledge of the students in effective webpage designing. To provide skills to sharply focus on needed information to be presented in a website.	**CO1:** Define various tags of HTML **CO2:** Analyze information to provide attractive display **CO3:** Create clear webpage for given data **CO4:** Explain how and where to apply CSS **CO5**: Design own website
19PG3B12	Digital image processing	National	Design and implement algorithms for advanced image analysis Assess the performance of image	CO1: Explain the representation of digital image and its manipulations CO2: Analyze image sampling and quantization requirements and

			processing algorithms and systems.	implications CO3: Describe various Transformation and Filtering Techniques CO4: Demonstrate Restoration And Reconstruction models CO5: Utilize Image Compression And Segmentation for efficient storage.
19PG3B13	Data Mining and data warehousing	National	To interpret the contribution of data mining and data warehousing to the decision support level of organizations To understand different models used	CO1: Explain the fundamental concept of Data Mining and analyze and evaluate the data cleaning, integration , transformation and reduction techniques. CO2: Design multidimensional data using Data Warehouse

			for OLAP and data pre-processing	architecture. CO3: Design and evaluate Classification algorithms. CO4: Identify the types of data in Cluster Analysis and categorize the Cluster Methods. CO5: Utilize the Data Mining techniques in various real applications and in major issues
19PG3B14	Lab-V- digital Image Processing	National	design and implement algorithms that perform basic image processing	CO1: Demonstrate Fundamental Steps involved in Digital Image Processing CO2: Analyze and use Mathematical Tools for Digital Image Processing.

				CO3: Apply Intensity Transformation functions and Spatial filtering methods CO4: Utilise Color Image Processing with different Color Models CO5: Implement Image Segmentation Techniques and Image Compression Techniques using Huffman , Golomb and Arithmetic coding algorithms
19PG3B15	Lab V1- data mining and data Warehousing	National	Apply the association rules for mining the data Design and deploy appropriate classification	CO1: Utilize Weka tool to evaluate Data Mining algorithms. CO2: Demonstrate pre-processing steps involved in different datasets. CO3: Analyze Data Mining techniques

			techniques	for realistic data. CO4: Develop the decision tree algorithm using different datasets. CO5: Demonstrate the classification and clusters algorithms using large datasets
19PG3BSI	Summer Internship/ Training/ Online Certification	National	Acquire knowledge of the industry in which the internship is done. Identify areas for future knowledge and skill development.	CO1: Identify employment contacts leading directly to a full-time job following course completion CO2: Create communication, interpersonal and other soft skills essential for the job interview process. CO3: Analyse the project requirements and engages in continuing

				professional development. CO4: Analyze a problem and identify the computing requirements appropriate to its solution. CO5: Utilizing a new software tool.
19PG3BE5	Mobile Computing	National	To introduce the concept of mobile computing and provide a foundation for research.	CO1: Determine solutions using problem solving principles, logic and systematic methodologies. CO2: Evaluate the architecture and principles of operation of computer systems and networks. CO3: Synthesize principles and theories of computer science and software engineering for application to different

				computing paradigms. CO4: Design and develop software systems for various application domains. CO5: Manage the development of software systems through a variety of development processes and methodologies.
19PG3BE6	Cryptography and Network Security	National	Understand the most common type of cryptographic algorithm	CO1: Explain the various symmetric encryption techniques and demonstrate the functionalities of DES algorithm. CO2: Analyze public key algorithms. CO3: Evaluate the authentication concept and hash algorithms.

				CO4: Apply the concepts of key management techniques. CO5: Analyze the vulnerabilities in data communication through networks.
19PG3BE7	Distributed Database	National	Aware of the main techniques for managing a distributed database management system and be able to design a simple distributed database system	CO1: Compare normal and distributed DBMS and to explain various approaches of DDBMS. CO2: Formulate various kinds of retrieving statements to retrieve information from DDB. CO3: Explain multiple processes dealing with distributed database system without clash CO4: Describe the set of protocols used in DDBMS to make effective

				communication. CO5: Discuss object concepts and object models.
19PG3BE8	Compiler Design	National	Introduce the theory and tools that can be employed in order to perform syntax-directed translation of a high-level programming language into an executable code.	CO1: Describe the phases of Compiler. CO2: Explain the role and type of Parser CO3: Analyze and use Intermediate languages CO4: Describe the design of code generation with register utilization. CO5: Demonstrate code optimization techniques.
19PG3BE9	Cloud Computing	National	Main focus is on parallel programming	CO1: Identify and use different cloud

			techniques for cloud computing and large scale distributed systems which form the cloud infrastructure.	computing services. CO2: Explain the basic principles of cloud virtualization. CO3: Prepare the appropriate cloud computing solutions to meet the requirement of specific applications. CO4: Design application by utilizing cloud platforms such as Google app Engine and Amazon Web Services. CO5: Analyze different cloud programming models.
19PG3BE10	Advanced Computer Graphics &	National	The goal of the course is to provide a strong foundation for	CO1: Explain the basic concepts in computer graphics.

	Animation		computer graphics principles, and provide a hands-on introduction to recent advanced topics.	CO2: Analyze various algorithms and to convert the basic geometrical primitives. CO3: Demonstrate the importance of viewing and clipping. CO4: Discuss the fundamentals of animation CO5: Describe Interpolation-Based Animation
19PG3BE11	Big data analytics	National	Understand the main Big Data tools and the use of predictive analytics on big data.	CO1: Explain Characteristics and challenges of Big Data CO2: Describe Big Data Analytics CO3: Utilize Hadoop for Big Data Technologies CO4: Demonstrate MAPREDUCE

				Programming CO5: Describe types of Recommendation Systems using Big Data Analytics.
19PG3BE12	Deep Learning	National	Deep learning algorithms extract layered high-level presentations of data in a way that maximizes performance on a given task.	CO1: Explain Deep learning CO2: Analyze different methods used for modelling CO3: Choose appropriate model according to application CO4: Compare various learning methods CO5: Explain Applications in Object Recognition and Computer Vision

19PG4B16	Principles of Internet of things	National	To understand the fundamentals of Internet of Things. To apply the concept of fundamentals of Internet of Things in the real world scenario	CO1: Explain the basic concepts of IoT. CO2: Discuss physical and logical design of IoT enabled technologies. CO3: Analyze how and where IoT can be applied. CO4: Compare M2M and IoT. CO5: Describe the features of Python used for IoT implementation.
19PG4BPR	Project	National	Implement project management knowledge, processes, lifecycle and the embodied concepts,	CO1: Discuss project development and the associated business processes. CO2: Analyse problems and formulate solutions.

			tools and techniques in order to achieve project success.	CO3: Communicate with engineers and the community at large in written and oral forms. CO4: Create effective communication skills for presentation. CO5: Plan as an individual or in a team in development of technical projects.