



# FATIMA COLLEGE

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*Affiliated to Madurai Kamaraj University*

*Re-Accredited with 'A++' by NAAC (Cycle - IV)*

Mary Land, Madurai - 625018, Tamil Nadu

## AQAR – QUALITATIVE METRIC

**2023 - 2024**

### 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)**

<b>PEO1</b>	Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and desirous for the “more” in all aspects.
<b>PEO 2</b>	They will be efficient individual and team performers who would deliver excellent professional service exhibiting progress, flexibility, transparency and accountability in their professional work.
<b>PEO 3</b>	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.
<b>PEO 4</b>	They will engage locally and globally evincing social and environmental stewardship



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demonstrating civic responsibilities and employing right skills at the right moment.

## Programme Specific Outcome:

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

<b>PSO1</b>	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.
<b>PSO2</b>	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.
<b>PSO3</b>	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
<b>PSO4</b>	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
<b>PSO5</b>	Through Digital Literacy, understand, assess and commit to professional and ethical



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	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
<b>PSO6</b>	Ability and willingness to embark on new ventures and initiatives with critical thinking and desire for more continuous learning focusing on life skills.
<b>PSO7</b>	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 Outcomes:

Course Code	Course Title	Nature of the Course (Local/ National/ Regional/ Global)	Course Description	Course Outcomes
23PG1B1	Analysis & Design of	National	This course explains many algorithms and how to solve various	CO1: Get knowledge about algorithms and determines their time complexity. Demonstrate specific search and sort



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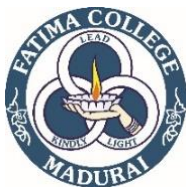
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	Algorithms		problems using same or different kind of algorithms with efficient manner.	algorithms using divide and conquer technique. CO 2: Gain good understanding of Greedy method and its algorithm. CO 3: Able to describe about graphs using dynamic programming technique. CO 4: Demonstrate the concept of back tracking & branch and bound technique. CO 5: Explore the traversal and searching technique and apply it for trees and graphs..
23PG1B2	Python Programming	National	Python is an interpreted, high-level, general-purpose programming language. it provides constructs that enable clear programming on both small and large scales	CO 1: Understand the basic concepts of Python Programming CO 2: Understand File operations, Classes and Objects CO 3: Acquire Object Oriented Skills in Python CO 4: Develop web applications using Python CO5: Develop Client Server Networking applications
23PG1B3	Python Programming	National	The objective of the course is to develop	CO1: To know the basics of algorithmic problem solving



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	Lab		knowledge and skills on python programming	CO 2: To execute Python programs CO3:To develop algorithmic solutions to simple computational problems CO 4: To represent compound data using Python lists, tuples, dictionaries CO 5: To implement input/output with files in Python
23PG1BE 1	Elective I: Advanced Software Engineering	National	Object Oriented software Engineering provides object oriented programming techniques. And explains various object oriented development cycles with appropriate testing methods.	CO 1: Understand about Software Engineering process CO 2: Understand about Software project management skills , design and quality management CO 3: Analyze on Software Requirements and Specification CO 4: Analyze on Software Testing, Maintenance and Software Re-Engineering CO 5: Design and conduct various types and levels of software quality for a software project
23PG1BE	Elective I: Advanced	National	To make the students familiar with techniques of	CO 1: Explain the basic concepts in computer graphics.



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2	Computer Graphics		clipping, three dimensional graphics and three dimensional transformations.	<p>CO 2: Analyze various algorithms and to convert the basic geometrical primitives.</p> <p>CO 3: Demonstrate the importance of viewing and clipping.</p> <p>CO 4: Discuss the fundamentals of animation</p> <p>CO 5: Describe Interpolation-Based Animation</p>
23PG1BE 3	Elective II: Advanced Database Systems	National	Advanced Database System Concepts provides in-depth level knowledge of SQL for design of relational Database and process the data using PL/SQL.	<p>CO 1: Demonstrate Database operations using SQL Procedures Functions and Triggers.</p> <p>CO 2: Identify approaches for accessing SQL from general purpose Programming Languages.</p> <p>CO 3: Analyse different types of Normalisation techniques.</p> <p>CO 4: Apply the concepts of Transaction Mechanism using PL/SQL</p> <p>CO 5: Understand the concept of Parallel and Distributed Databases.</p>
	Elective II:	National	This course helps to provide the	CO 1: Understand the concept of Object-Oriented development and modelling



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23PG1BE 4	Object Oriented Analysis and Design & C++		fundamental knowledge of a programming language and its features which enhances the user to write general purpose application programs.	techniques  CO 2: Gain knowledge about the various steps performed during object design  CO 3: Abstract object-based views for generic software systems  CO 4: Link OOAD with C++ language  CO 5: Apply the basic concept of OOPs and familiarize to write C++ program
23PG1BA E	Web Development	National	This Course introduces basic web design using Hypertext Markup Language (HTML) and Cascading Style Sheets (CSS). And this course provides knowledge to plan and design effective web pages with different text formatting and images to create websites.	  CO 1: Define various tags of HTML  CO 2: Design a web page with attractive display  CO 3: Create a Layout for a webpage using Block tags  CO 4: Explain how and where to apply CSS  CO 5: Analyze content to design website



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23PG2B4	Advanced Java Programming	National	Advanced Programming in Java consists of Networking concepts, GUI Programming with Swing and Swing Menus, JDBC and JSP.	<p>CO 1: Describe client/server applications, TCP/IP socket programming and distributed applications using RMI.</p> <p>CO 2: Analyze and design Window based applications using Swing Objects.</p> <p>CO 3: Develop and design Java programs using Swing components</p> <p>CO 4: Discuss the various JDBC drivers and demonstrate J2EE application using JDBC connection and server side programs with Servlets.</p> <p>CO 5: Write component-based Java programs using. Java Beans.</p>
23PG2B5	Data Mining and Warehousing	National	Data Mining and Data Warehousing consists of introduction about data mining, data pre-processing, mining frequent pattern, association, classification and cluster analysis and applications of data	<p>CO 1: Explain the fundamental concept of Data Mining and analyze and evaluate the data cleaning, integration, transformation and reduction techniques</p> <p>CO 2: Design multidimensional data using Data Warehouse architecture.</p> <p>CO 3: Design and evaluate Classification algorithms</p> <p>CO 4: Identify the types of data in</p>



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			mining.	Cluster Analysis and categorize the Cluster Methods  CO 5: Utilize the Data Mining techniques in various real applications and in major issues
23PG2B6	Advanced Java Programming Lab	National	Advanced Programming in Java consists of Networking concepts, GUI Programming with Swing and Swing Menus, JDBC and JSP.	CO 1: Implementation of java applications that illustrate professionally acceptable coding and performance standards.  CO 2: Develop distributed applications using RMI.  CO 3: Design and development-driven programming and graphical user interfaces using Swing-based GUI.  CO 4: Design and develop Java programs using JDBC connection for data access and also Develop server side programs with Servlets.  CO 5: Design and develop component-based Java programs using Java Beans.
23PG2BE	Elective - III : Data Mining	National	Data Mining and Data Warehousing consists of	CO 1: Utilize Weka tool to evaluate Data Mining algorithms.



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5	Lab using R		introduction about data mining, data warehousing, data pre-Processing,mining frequent pattern, association, classification and cluster analysis and applications of data mining.	CO 2: Demonstrate pre-processing steps involved in different datasets. CO 3: Develop the decision tree algorithm using different datasets CO 4: Demonstrate the classification and clusters algorithms using large datasets. CO 5: Analyse Data Mining techniques for realistic data.
23PG2BE 6	Elective - III : Operating System Lab	National	In this lab students are able to describe and use the fundamental LINUX system tools and utilities.	CO 1: Utilize basic LINUX Utilities. CO 2: Write different LINUX shell scripts and execute various shell programs. CO 3: Apply LINUX system calls. CO 4: Compute various file permissions and have a basic understanding of system security. CO 5: Demonstrate the basic knowledge of Linux commands and file handling utilities by using Linux shell environment.
23PG2BE	Elective –IV : Advanced	National	To understand the concept of design and	CO 1: Understand the design issues associated with operating systems



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7	Operating System		implementation in the context of distributed operating systems.	<p>CO 2: Master various process management concepts including scheduling, deadlocks and distributed file systems</p> <p>CO 3: Prepare Real Time Task Scheduling</p> <p>CO 4: Analyze Operating Systems for Handheld Systems</p> <p>CO 5: Analyze Operating Systems like LINUX and iOS</p>
23PG2BE 8	Elective –IV : Multimedia Technologies	National	This course explains the multimedia concepts, that is, image, text, sound, animation and the also it's applications.	<p>CO 1: Understand the basic concept of multimedia.</p> <p>CO 2: Understand the concept behind the text and images, sound.</p> <p>CO 3: Understand the concept behind the animation and video.</p> <p>CO 4: Understand the concept behind the creation of multimedia applications</p> <p>CO 5: Understand the applications of multimedia in media</p>
23PG2BA E	WEB Designing using CSS &	National	This Course introduces basic web design using	<p>CO 1: Define various tags of HTML</p> <p>CO 2: Design a web page with attractive</p>



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	JavaScript		Hypertext Markup Language (HTML), Java script and Cascading Style Sheets (CSS).	display CO 3: Create a Layout for a web page using Block tags and java script CO 4: Explain how and where to apply CSS CO 5: Analyze content to design website
22PG3B1 2	Machine Learning	National	To introduce the fundamentals of Machine Learning and algorithms. To impart the knowledge on supervised and unsupervised learning algorithms used for classification, prediction and clustering.	CO1: Explain the fundamental concept of Machine Learning. CO2: Analyse the decision tree and explain the Bayesian learning. CO3: Discuss the genetic algorithms CO4: Apply the learning set of rules and discuss the learning features CO5: Explain the Reinforcement learning and analyse the relationships to dynamic programming.
19PG3B1 3	Data Mining And Data Warehousing	National	To interpret the contribution of data mining and data warehousing to the	CO1: Explain the fundamental concept of Data Mining and analyze and evaluate the data cleaning, integration , transformation and reduction techniques.



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			<p>decision support level of organizations</p> <p>To understand different models used for OLAP and data pre-processing</p>	<p>CO2: Design multidimensional data using Data Warehouse architecture.</p> <p>CO3: Design and evaluate Classification algorithms.</p> <p>CO4: Identify the types of data in Cluster Analysis and categorize the Cluster Methods.</p> <p>CO5: Utilize the Data Mining techniques in various real applications and in major issues</p>
22PG3B14	Lab V- Machine Learning With Python	National	<p>To Acquire knowledge and Skills for creation of Web applications.</p> <p>To implement regression and Classification using Python</p>	<p>CO1: Design web applications using python programming</p> <p>CO2: Manipulate data using different queries.</p> <p>CO3: Extract features from the data set</p> <p>CO4: Implement Machine learning Algorithms</p> <p>CO5: Build data pipeline using machine learning in python.</p>
19PG3B15	Lab-VI- Data Mining And Data	National	<p>Apply the association rules for mining the data</p>	<p>CO1: Utilize Weka tool to evaluate Data Mining algorithms.</p> <p>CO2: Demonstrate preprocessing steps</p>



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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.
19PG3BE	Python	National	To introduce the concept of mobile	CO1: Determine solutions using problem solving principles, logic and systematic



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5	Programming		computing and provide a foundation for research.	<p>methodologies.</p> <p>CO2: Evaluate the architecture and principles of operation of computer systems and networks.</p> <p>CO3: Synthesize principles and theories of computer science and software engineering for application to different computing paradigms.</p> <p>CO4: Design and develop software systems for various application domains.</p> <p>CO5: Manage the development of software systems through a variety of development processes and methodologies.</p>
19PG3BE 6	Cryptography And Network Security	National	Understand the most common type of cryptographic algorithm	<p>CO1: Explain the various symmetric encryption techniques and demonstrate the functionalities of DES algorithm.</p> <p>CO2: Analyze public key algorithms.</p> <p>CO3: Evaluate the authentication concept and hash algorithms.</p> <p>CO4: Apply the concepts of key management techniques.</p> <p>CO5: Analyze the vulnerabilities in data</p>



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				communication through networks.
19PG3BE 7	Distributed Database Management System	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.
19PG3BE 8	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



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				techniques.
19PG3BE 9	Cloud Computing	National	Main focus is on parallel programming techniques for cloud computing and large scale distributed systems which form the cloud infrastructure.	CO1: Identify and use different cloud 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.
19PG3BE 10	Advanced Computer Graphics & Animation	National	The goal of the course is to provide a strong foundation for computer graphics principles, and provide a hands-on introduction to recent advanced topics.	CO1: Explain the basic concepts in computer graphics. 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



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				CO5: Describe Interpolation-Based Animation
19PG3BE 11	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 MAP REDUCE Programming CO5: Describe types of Recommendation Systems using Big Data Analytics.
22PG3BE 12	Cyber Forensics	National	Analyze various computer forensics systems. Learn to duplicate and preserve digital evidence.	CO1: Predict the forensics fundamentals and the various technologies used to avoid computer crimes CO2: Illustrate different methods to collect and preserve digital evidence and Digital Crime Scene. CO3: Identify and Analyze Forensic Technical Surveillance Devices. CO4: Evaluate the Various tools and tactics followed in military.



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				CO5: Demonstrate the Usage of surveillance tools for tracking cyber criminals
22PG3BE 13	Mobile Communication	National	<p>To have an exposure about GSM and Satellites.</p> <p>To be acquainted with the Mobile Internet Protocol.</p>	<p>CO1: Identify, Predict and Evaluate MAC, SDMA, TDMA, FDMA, CDMA</p> <p>CO2: Demonstrate the architectures, challenges and solutions of Wireless communication</p> <p>CO3: Assess the role of Wireless Networks in shaping the future internet.</p> <p>CO4: Design Mobile IP to support seamless and continuous Internet connectivity</p> <p>CO5: Design SIP to create, modify, and terminate a multimedia session over the Internet Protocol.</p>
19PG4B1 6	Principles Of Internet Of Things (Self Study)	National	<p>To understand the fundamentals of Internet of Things.</p> <p>To apply the concept of fundamentals of Internet of Things in the real world scenario</p>	<p>CO1: Explain the basic concepts of IoT.</p> <p>CO2: Discuss physical and logical design of IoT enabled technologies.</p> <p>CO3: Analyze how and where IoT can be applied.</p> <p>CO4: Compare M2M and IoT.</p> <p>CO5: Describe the features of Python used</p>



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				for IoT implementation.
19PG4BP R	Project	National	Implement project management knowledge, processes, life cycle and the embodied concepts, tools and techniques in order to achieve project success.	CO1: Discuss project development and the associated business processes.  CO2: Analyse problems and formulate solutions.  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.