

FATIMA MATA NATIONAL COLLEGE

AUTONOMOUS

(Reaccredited with 'A' Grade by NAAC)

Affiliated to University of Kerala



OUTCOME MAPPING

IQAC INTERNAL QUALITY ASSURANCE CELL

BCA

PROGRAMME OUTCOMES (POs)

P01	Nationalistic Outlook and Contribution to National development: Understand the distinct features of nationalistic outlook as enshrined in our Constitution and apply them towards national development, and nurture respect and love for the motherland, showing no discrimination based on gender, caste and creed.
P02	Fostering Global Competencies, and Technical and Intellectual proficiency: Apply intellectual and technical skill to compete in a global setting and demonstrate proficiency in creating and applying appropriate technique, resources and modern IT tools for ensuring greater personal growth and global outlook.
P03	Values and Social Commitment: Demonstrate the essence of human values through acts of social commitment, develop professional ethics and responsibilities; function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings; show respect for fellow beings by fair treatment, caring and concern; listen responsively, recognize the contributions of others, and engage in reflective practice; imbibe spirit of selfless service.
P04	Affective Skills and Integrity of Character: Receive affective skills and organize activities displaying integrity of character, foster qualities such as emotional self-awareness, emotional reasoning and emotional self-management for addressing workplace challenges, and develop personal integrity and character.
P05	Critical Thinking, Problem Solving and Research-related Skills: Develop critical thinking, and psycho-motor skills, create a sense of inquiry and research skills and take an analytical approach to learning for cutting edge areas.
P06	Environment and Sustainability: Design measures which meet the global agenda of environment protection and sustainable development, develop consciousness to preserve the earth's finite resources, and wisdom, to balance human needs and the environment, and to instill an environmental consciousness.
P07	Quest for Excellence: Receive skills towards holistic development and quest for excellence, recognize the need for, and have the preparation and ability to engage in an independent and life-long learning in the broadest context of technological change, develop healthy competition and setting parameters for excellence.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO 1	Develop linguistic skills and literary sensibility.
PSO 2	Demonstrate awareness on environment, disaster management and its associated problems.
PSO 3	Use design and develop algorithms and implement them as technically relevant programs, with analysis and interpretation of data.
PSO 4	Identify design solutions in Web Designing, Big Data, IOT, Python.
PSO 5	Apply various software engineering approaches for project management and enhance programming skills.
PSO 6	Demonstrate leadership, time management skills and team work ability.
PSO 7	Solve environmental issues using system concepts and methodologies.
PSO 8	Apply knowledge of mathematics, management, logic and Computer Science.

PSO – PO MAPPING

		POs						
		1	2	3	4	5	6	7
PSOs	1		*					*
	2		*					
	3					*		
	4		*			*		*
	5		*			*		*
	6		*		*			*
	7			*			*	
	8	*						

COURSE OUTCOMES (COs)

SEMESTER I

Course Code: 19UEN111.4

English I – LANGUAGE SKILLS

Upon completion of this course, the student will be able to:		PSO
CO 1	Apply language skills in daily life situations	1
CO 2	Analyze and Evaluate English literature	1
CO 3	Apply their knowledge in Writing Skills.	1

Course Code: 19UMM131.9

Complementary Course I – DISCRETE MATHEMATICS

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain the basics of set theory and to develop algorithms and recursions	2,4,7
CO 2	Apply algebra to develop hamming codes and error correction.	2
CO 3	Use graph theory to frame algorithms	2,4
CO 4	Apply formal languages and automata to provide link between mathematics and theoretical computer science	2,7

Course Code: 19UCP121

Foundation Course I – FUNDAMENTALS OF COMPUTER

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain basic electronics and software concepts	2,6
CO 2	Examine PC hardware, operations and concepts	2,4,6
CO 3	Use GUI Operating System	2
CO 4	Identify the role of CPU and its components.	2,4
CO 5	Use MS Word, MS Excel and MS PowerPoint	2,5

Course Code: 19UCP141

Core Course I – C PROGRAMMING

Upon completion of this course, the student will be able to:		PSO
CO 1	Develop logics which will help them to create programs	2,3,4
CO 2	Demonstrate basic elements and control structures in C	3,5
CO 3	Develop C programs using functions and pointers	4,5
CO 4	Use advanced features in C	8
CO 5	Explain advanced concepts of C language	2,3

Course Code: 19UCP142

Core Course II – ENVIRONMENTAL STUDIES

Upon completion of this course, the student will be able to:		PSO
CO 1	Define the scope of Environmental Science and identify the different types of natural resources.	2,6
CO 2	Define and identify the ecosystems and biodiversity around us.	2,6
CO 3	Analyze and assess the types of pollutions and social issues around us.	2,6
CO 4	Understand the impact of population on environment.	2,6

Course Code: 19UCP143

Core Course III – SOFTWARE LAB 1-C PROGRAMMING

Upon completion of this course, the student will be able to:		PSO
CO 1	Understand concepts in problem solving	3
CO 2	Reconstruct and trace the execution of programs written in C language	4,6
CO 3	Write diversified solutions using C language	3
CO 4	Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-processor.	5,6

Course Code: 19UCP144

Core Course IV – SOFTWARE LAB 2-PC SOFTWARE

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain the concept of system software	3
CO 2	Examine and trace the execution of programs	4,6
CO 3	Describe diversified solutions to the processor issues	3
CO 4	Implement Programs in the PC software	5,6

SEMESTER II

Course Code: 19UEN211.4

English II – ENGLISH GRAMMAR AND COMPOSITION

Upon completion of this course, the student will be able to:		PSO
CO 1	Define and identify the basis of grammar.	1
CO 2	Identify and explain the different types of sentences.	1
CO 3	Apply the rules of grammar in all situations of communication.	1
CO 4	Design written discourse.	1

Course Code: 19UMM231.9

Complementary Course II – COMPUTER ORIENTED NUMERICAL METHODS

Upon completion of this course, the student will be able to:		PSO
CO 1	Solve polynomial and transcendental equations using different numerical methods	4,7
CO 2	Describe linear algebraic equations and solve those problems using iteration method and exact methods	2,4,7
CO 3	Explain polynomial interpolation using difference formula	2,4
CO 4	Solve numerical integrations using different methods	7
CO 5	Demonstrate skill of writing programs for the different numerical methods	2,4

Course Code: 19UCP231

Complementary Course III – DIGITAL ELECTRONICS

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain Boolean algebraic expressions to digital designs	2
CO 2	Interpret logic gates and its operations	2
CO 3	Describe methods of systematic reduction of Boolean expression using K map	2,8
CO 4	Use the Integrated circuits	8

Course Code: 19UCP241

Core Course V – DATA STRUCTURES

Upon completion of this course, the student will be able to:		PSO
CO 1	Use data structures like array, structures, lists, stacks, queues, trees and graphs	2,3
CO 2	Implement the data structures in C program	5,8
CO 3	Use various searching and sorting strategies	2
CO 4	Categorise data structures for solving a given problem and apply algorithms of data structures.	2,4

Course Code: 19UCP242

Core Course VI – C++ PROGRAMMING

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain object-oriented concepts and describe how they are supported by C++ including identifying the features and peculiarities of the C++ programming language.	2,4,3
CO 2	Apply the major object-oriented concepts such as encapsulation, inheritance and polymorphism to implement object-oriented programs in C++.	4
CO 3	Describe the procedural and object-oriented paradigm with concepts of streams, classes, functions, data and object	2,5,8
CO 4	Categorise inheritance with the understanding of early and late binding, usage of exception handling, generic programming	2,4

Course Code: 19UCP243

Core Course VII – SOFTWARE LAB 3-C++ PROGRAMMING

Upon completion of this course, the student will be able to:		PSO
CO 1	Develop solutions for a range of problems using objects and classes	2
CO 2	Design Programs to demonstrate the implementation of constructors, destructors and operator overloading	4
CO 3	Apply fundamental algorithmic problems including typecasting, inheritance and polymorphism.	3
CO 4	Illustrate generic programming, template, file handling	4
CO 5	Illustrate basic data types and control structures in C++ and manages classes and objects in a variety of situations	5,8

Course Code: 19UCP244

Core Course VIII – SOFTWARE LAB 4-DATA STRUCTURES

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain data structures: array, structures, lists, stacks, queues, trees and graphs	2
CO 2	Implement the above data structures in C	2
CO 3	Write programmes on different trees, construction and traversal	2,3
CO 4	Judge appropriate data structures for solving a given problem	3,8
CO 5	Apply algorithms of data structures on data	4,5

SEMESTER III

Course Code: 19UCP331

Complementary Course IV – COMPUTER ORGANIZATION & ARCHITECTURE

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain the functional units of PC	2
CO 2	Describe about instructions, parallel processing and pipelining	2
CO 3	Explain organization of Processors	8
CO 4	Describe about various input-output operations, transfer modes	2

Course Code: 19UCP342

Core Course IX – COMPUTER NETWORKS

Upon completion of this course, the student will be able to:		PSO
CO 1	Develop computer networks and transmission technologies	2,8
CO 2	Enumerate the layers of OSI model and TCP/IP model and explain the functions and responsibilities of each layer	7
CO 3	Analyse the various access control protocols	2
CO 4	Classify the different routing protocols and describe the principles of congestion control in networks.	2
CO 5	Identify the areas of networks where different application layer protocols can be used.	8

Course Code: 19UCP343

Core Course X – JAVA PROGRAMMING

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain the basic oops concept, Java evaluation and implementation overview of java	3,4,5
CO 2	Describe operators and expressions, decision making and branching, Decision making and looping	3
CO 3	Use classes and methods, array strings and vectors, interface concept instead of multiple inheritances	3,4,5
CO 4	Describe packages of java, multithreaded programming contains synchronization, managing errors and exceptions handling	3,8
CO 5	Perform applet programming designing HTML, graphic programming.	3,5,8

Course Code: 19UCP344

Core Course XI – DATABASE MANAGEMENT SYSTEMS

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain the fundamental concepts of a relational database system and how data models can be classified by level of abstraction.	3,5
CO 2	Apply relational database theory and be able to describe relational algebra expression, tuple and domain relation expression for queries.	4
CO 3	Recognize the purpose of query processing and the basic commands and functions of SQL.	5,8
CO 4	Identify the use of normalization and functional dependency and the role it plays in database design process.	4
CO 5	Identify the basic concepts of ER modelling and the different types of entities and relationship between them.	5

Course Code: 19UCP345

Core Course XII – SOFTWARE LAB 5-DBMS LAB

Upon completion of this course, the student will be able to:		PSO
CO 1	Implement Basic DDL, DML and DCL commands	5
CO 2	Perform Data selection and update operators used in queries and restrict data retrieval and control the display order	5
CO 3	Explain sub queries and their purpose	4
CO 4	Use Aggregate and group functions to summarize data	3
CO 5	Carry out multiple tables using different types of joints	5

Course Code: 19UCP346

Core Course XIII – SOFTWARE LAB 6-LINUX AND JAVA PROGRAMMING

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain operators and expressions, decision making and branching, Decision making and looping	3
CO 2	Apply object-oriented concepts in problem solving through java.	3,4,8
CO 3	Identify classes, objects, members of class and relationship among them needed for a specific problem	3,8
CO 4	Describe Packages of java, multithreaded programming contains synchronization, managing errors and exceptions handling	4,8
CO 5	Design and implement applet and event handling mechanisms, graphic programming in Java	5

SEMESTER IV

Course Code: 19UCP441

Core Course XIV – SOFTWARE ENGINEERING

Upon completion of this course, the student will be able to:		PSO
CO 1	Describe software process, software matrices.	2
CO 2	Explain various software lifecycle models.	7
CO 3	Analyze software requirements, various software cost estimation models	2,5
CO 4	Describe about various design strategies, software quality models	7
CO 5	Implement various software testing strategies.	2

Course Code: 19UCP442

Core Course XV – OPERATING SYSTEM

Upon completion of this course, the student will be able to:		PSO
CO 1	Describe principles and modules of operating system	2,
CO 2	Explain the key mechanism in design of operating system modules	3
CO 3	Discuss the process management, concurrent processes and threads, memory management, virtual memory concepts, deadlocks	2
CO 4	Compare performance of processor scheduling algorithms- produce algorithmic solution to process synchronization problems.	3
CO 5	Use modern operating system calls such as Linux process and practise with operating system concept	3

Course Code: 19UCP443

Core Course XVI – DESIGN AND ANALYSIS OF ALGORITHMS

Upon completion of this course, the student will be able to:		PSO
CO 1	Define the basic concepts of algorithms and analyse the performance of algorithms	3,8
CO 2	Discuss various algorithm design techniques for developing algorithms	3,4,8
CO 3	Apply important algorithmic design paradigms and methods of analysis	3
CO 4	Discuss various searching and sorting and traversal algorithms	3
CO 5	Describe NP completeness and identify different NP complete problems	3,8

Course Code: 19UCP444

Core Course XVII – WEB PROGRAMMING USING PHP

Upon completion of this course, the student will be able to:		PSO
CO 1	Design and create a dynamic website	3
CO 2	Describe the hierarchies of oops	4
CO 3	Write HTML, JavaScript and PHP codes	4
CO 4	Develop web pages using HTML and CSS	5
CO 5		

Course Code: 19UCP445

Core Course XVIII – SYSTEM SOFTWARE

Upon completion of this course, the student will be able to:		PSO
CO 1	Differentiate between system software and application software.	3
CO 2	Describe the difference between assembler and interpreter	2
CO 3	Explain object codes and mnemonic codes	3,4
CO 4	Analyse the need for multi passes.	3,5
CO 5	Use hardware for linking and relocation	4

Course Code: 19UCP446

Core Course XIX – SOFTWARE LAB 7-PHP

Upon completion of this course, the student will be able to:		PSO
CO 1	Create graphics in web pages	3
CO 2	Create a link, table within a web page	4,5
CO 3	Create, validate and publish a website	4
CO 4	Create effective scripts using Java Script	8
CO 5	Demonstrate the knowledge of introductory programming concepts.	5

Course Code: 19UCP447

Core Course XX – MINI PROJECT

Upon completion of this course, the student will be able to:		PSO
CO 1	Describe the potential research areas in the field of IT	4
CO 2	Compare and contrast the several existing solutions for research challenge	4
CO 3	Demonstrate an ability to work in teams and manage the conduct of the research study	5,6
CO 4	Communicate findings of the study conducted in the preferred domain	5

SEMESTER V

Course Code: 19UCP541

Core Course XXI – PYTHON PROGRAMMING

Upon completion of this course, the student will be able to:		PSO
CO 1	Implement OOP concepts in python.	6,8
CO 2	Judge appropriate applications for solving a given problem	2,5,8
CO 3	Apply python in the real-world scenarios.	3,5
CO 4	Write structured programmes as their own.	3,5,6

Course Code: 19UCP542

Core Course XXII – OBJECT ORIENTED ANALYSIS AND DESIGN

Upon completion of this course, the student will be able to:		PSO
CO 1	Create models using UML class notations	2,4,6,8
CO 2	Generate OO design of systems in high-level and low-level models of structural organization	2,3,6
CO 3	Validate abstract object-based views for generic software systems.	2,3,4
CO 4	Evaluate a design for applicability, reasonableness, and relation to other design criteria	2,8
CO 5	Analyze and model software specifications.	2,5

Course Code: 19UCP543

Core Course XXIII – C# AND .NET PROGRAMMING

Upon completion of this course, the student will be able to:		PSO
CO 1	Describe the .NET framework	2,4
CO 2	Discuss C# .NET with the concept of class	3,6
CO 3	Explain OOPs concept	4,8
CO 4	Examine GUI with windows	2,7
CO 5	Implement Software through database	3,8

Course Code: 19UCP551.1

Open Course I – MANAGEMENT INFORMATION SYSTEM

Upon completion of this course, the student will be able to:		PSO
CO 1	Analyze and synthesize business information and systems to facilitate evaluation of strategic alternatives.	2,4
CO 2	Describe strategic alternatives to facilitate decision making.	3,5,6
CO 3	Evaluate basic concepts and technologies used in the field of management information systems	2,4,6
CO 4	Translate the role of information systems in organizations, the strategic management processes, with the implications for the management	2,4
CO 5	Justify the role of the ethical, social, and security issues of information systems	2,5,8

Course Code: 19UCP544

Core Course XXIV – Software Lab 8-PYTHON

Upon completion of this course, the student will be able to:		PSO
CO 1	Execute Python programs	2,6
CO 2	Use functions for structuring Python programs	2,3,6
CO 3	Describe concept of Object Oriented Programming (OOP) applied in Python.	2,3,8
CO 4	Compound data using Python lists, tuples, dictionaries	2,4,5
CO 5	Compile Python programs with database	2,4,8

Course Code: 19UCP545

Core Course XXV – SOFTWARE LAB 9-C# AND .NET

Upon completion of this course, the student will be able to:		PSO
CO 1	Write simple C# console applications	4
CO 2	Explain Object oriented programming	2,6
CO 3	Develop windows-based applications	3,5
CO 4	Develop different applications using DATAGRID view	4,8
CO 5	Describe establishment of database connection for applications	5

SEMESTER VI

Course Code: 19UCP641

Core Course XXVI –INFORMATION SECURITY

Upon completion of this course, the student will be able to:		PSO
CO 1	Identify some of the factors driving the need for network security	5
CO 2	Apply cryptographic encryption techniques	5
CO 3	Visualize the security measures in authentication	2,3
CO 4	Identify traps and malicious softwares and the measures to handle it.	2,4
CO 5	Judge the crimes, laws, and security in IT	3,6

Course Code: 19UCP642

Core Course XXVII –COMPUTER GRAPHICS

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain the basics of computer graphics, different display devices and applications of computer graphics	2,8
CO 2	Describe algorithmic development of graphic primitives	2,3
CO 3	Explain 2 D and 3D transformation on graphic objects	8
CO 4	Describe 2D viewing and different clipping methods	8
CO 5	Elucidate projection, illumination models and animation	3,8

Course Code: 19UCP643

Core Course XXVIII – INTERNET OF THINGS

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain IoT network engineering, data analytics and security	2,6
CO 2	Describe bigdata analytics	3
CO 3	Analyse smart objects and Communication criteria IoT access technologies	4,6
CO 4	Discuss generic and web-based protocols through common application protocols.	2,8

Course Code: 19UCP644

Core Course XXIX – SOFTWARE TESTING

Upon completion of this course, the student will be able to:		PSO
CO 1	Explain the seven principles of testing	4
CO 2	Investigate the reason for bugs and analyze the principles in software testing to prevent and remove bugs.	4
CO 3	Implement various test processes for quality improvement	5
CO 4	Design test planning.	4
CO 5	Manage the test process	8

Course Code: 19UCP645

Core Course XXX – MAJOR PROJECT

Upon completion of this course, the student will be able to:		PSO
CO 1	Judge potential research areas in the field of IT	4
CO 2	Compare several existing solutions for research challenge	4
CO 3	Demonstrate ability to work in teams and manage the conduct of the research study	5,6
CO 4	Describe the findings of the study conducted in the preferred domain	5

Course Code: 19UCP661.1

Elective Course I – DATA MINING AND WAREHOUSING

Upon completion of this course, the student will be able to:		PSO
CO 1	Demonstrate the importance of data mining and the principles of business intelligence.	4
CO 2	Organize and prepare the data needed for data mining using pre-processing techniques.	5
CO 3	Compare and contrast OLAP and data mining techniques	8
CO 4	Implement the appropriate datamining methods like classification and clustering.	7
CO 5	Implement data mining techniques like clustering, association rule, and decision tree on the real data set.	7

COURSE – PSO MAPPING

COURSE CODE	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9
19UEN111.4	*								
19UMM131.9		*		*			*		
19UCP121		*		*	*	*			
19UCP141		*	*	*	*			*	
19UCP142							*		
19UCP143			*	*	*	*			
19UCP144		*				*			
19UEN211.4	*								
19UMM231.9		*		*			*		
19UCP231		*						*	
19UCP241		*	*	*	*			*	
19UCP242		*	*	*	*			*	
19UCP243		*	*	*	*			*	
19UCP244		*	*	*	*			*	
19UCP331		*						*	
19UCP342		*					*	*	
19UCP343			*	*	*			*	
19UCP344			*	*	*			*	
19UCP345			*	*	*				
19UCP346			*	*	*			*	
19UCP441		*			*		*		
19UCP442		*	*						
19UCP443			*	*				*	
19UCP444			*	*	*			*	
19UCP445		*	*	*				*	
19UCP446			*	*	*			*	
19UCP447				*	*	*			
19UCP541		*	*	*	*	*		*	
19UCP542		*	*	*	*	*		*	
19UCP543		*	*	*	*	*		*	
19UCP551.1		*	*	*	*	*		*	
19UCP544		*	*		*	*		*	
19UCP545		*	*	*	*	*		*	
19UCP641		*	*	*	*	*			
19UCP642		*	*					*	
19UCP643		*	*	*		*		*	
19UCP661.1				*	*	*	*	*	
19UCP644				*	*			*	
19UCP645				*	*	*			