MAR ATHANASIUS COLLEGE OF ENGINEERING

KOTHAMANGALAM

DEPARTMENT OF COMPUTER APPLICATIONS

LIST OF COURSE OUTCOMES

2020 SCHEME

SEMESTER	SUBJECT CODE	SUBJECT NAME	CO NO:	CO DESCRIPTION
S1	20MCA101	MATHEMATICAL FOUNDATIONS FOR COMPUTING	1	Understand mathematical reasoning in order to read, comprehend and construct mathematical arguments
			2	Count or enumerate objects and solve counting problems and analyze algorithms
			3	Solve problems in almost every conceivable discipline using graph models
			4	Solve the linear system of equations and Calculate the eigen values and eigen vectors of matrices.
			5	Apply the principles of correlation and regression in practical problems.
S1	20MCA103	DIGITAL FUNDAMENTALS & COMPUTER ARCHITECTURE	1	Apply the basics of digital electronics to design and realize simple combinational logic circuits
			2	Apply the digital electronics principles to design sequential logic circuits.
			3	Understand the different design features of computer architecture, Five key components of a computer, processor and memory making technologies, addressing modes & instruction formats.
			4	Understand Processor logic design conventions and data path, pipelining and hazards, I/O organization, Interrupts and direct memory access
			5	Understand the concept of single board computers like Arduino, Raspberry Pi etc. and apply the same in practical applications.
S1	20MCA105	ADVANCED DATA STRUCTURES	1	Remember the Basic Data Structures and understand the Set Data Structure and its implementation.

			2	Understand Advanced Tree Structures for the design of efficient algorithms
			3	Understand Advanced Heap Structures suitable for solving Computational problems involving Optimisation and analysing these data structures using amortised analysis.
			4	Understand Advanced Graph algorithms suitable for solving advanced computational problems
			5	Understand the basic operation of Blockchaining along with the data structures used in it and the challenges in Blockchain data.
S1	20MCA107	ADVANCED SOFTWARE ENGINEERING	1	Get a full view of the Software life cycle
			2	Gain a deep knowledge of Software Planning, Analysis and Design and Software Engineering Models
			3	Have a great comprehension of Coding Practices, Version Control using ‘git’ and Software Quality
			4	Acquire ample grasp of Design Patterns
			5	Get deeply familiarised with Software Testing and its automation
S1	20MCA131	PROGRAMMING LAB	1	Understands basics of Python Programming language including input/output functions, operators, basic and collection data types
			2	Implement decision making, looping constructs and functions
			3	Design modules and packages - built in and user defined packages
			4	Implement object-oriented programming and exception handling.
			5	Create files and form regular expressions for effective search operations on strings and files.
S1	20MCA133	WEB PROGRAMMING LAB	1	Explore markup languages features and create interactive web pages using them.
			2	Learn and design client-side validation using scripting languages.
			3	Design front end web page and connect to the back-end databases.
			4	Do Client-side & Server-side scripting
			5	Develop Web Applications

S1	20MCA135	DATA STRUCTURES LAB	1	Use Debuggers, Profilers and advanced Compiler options.
			2	Implement the Set and Disjoint Set Data Structures.
			3	Understand the practical aspects of Advanced Tree Structures.
			4	Realise Modern Heap Structures for effectively solving advanced Computational problems.
			5	Implement Advanced Graph algorithms suitable for solving advanced computational problems.
S2	20MCA102	ADVANCED DATABASE MANAGEMENT YSTEMS	1	Understand the fundamentals of relational database systems including: data models, database architectures and ER features.
			2	Analyze and apply the different normalization techniques.
			3	Assess the basic issues of transaction processing and concurrency control.
			4	Understand the roles that databases play in organizations and familiarize with basic database storage, file organization, database accessing techniques.
			5	Understand the basics of query processing, object-oriented, distributed databases.
S2	20MCA104	ADVANCED COMPUTER NETWORKS	1	Comprehend the terminology and concepts of basic communication model, analyse the protocol layers and design application layer protocols.
			2	Understand and analyse the various transport layer protocols.
			3	Compare and contrast various routing algorithms in the network layer.
			4	Understand and analyse the concepts of link layer and physical layer.
			5	Understand how modern cellular and wireless networks work
S2	20MCA172	ADVANCED OPERATING SYSTEMS	1	Identify synchronization problems in operating systems and issues in distributed systems.
			2	Explain classification of mutual exclusion algorithms and security violations

			3	Explain the design of distributed shared memory and issues in load distribution
			4	Explain design issues and synchronization in multiprocessor systems.
			5	Explain synchronization and concurrency control in database systems.
S2	20MCA182	BUSINESS MANAGEMEN	1	Understand management as a process.
			2	Critically analyse and evaluate management theories and practices
			3	Perform planning and organising for an organisation
			4	Do staffing and related human resource development function
			5	Take proper decisions to get competitive advantage
S2	20MCA132	OBJECT ORIENTED PROGRAMMING LAB	1	Understand object-oriented concepts and design classes and objects to solve problems
			2	Implement arrays and strings.
			3	Implement object-oriented concepts like inheritance, overloading and interfaces
			4	Implement packages, exception handling, multithreading and generic programming. Use java.util package and Collection framework
			5	Develop applications to handle events using applets
S2	20MCA134	ADVANCED DBMS LAB	1	Design and build a simple relational database system and demonstrate competence with the fundamentals tasks involved with modelling, designing and implementing a database.
			2	Apply PL/SQL for processing databases
			3	Comparison between relational and non-relational (NoSQL) databases and the configuration of NoSQL Databases.
			4	Apply CRUD operations and retrieve data in a NoSQL environment.
			5	Design and deployment of NoSQL databases with real time requirements.
S2	20MCA136	NETWORKING & SYSTEM	1	Install and configure common operating systems.

		ADMINISTRATION LAB	2	Perform system administration tasks.
			3	Install and manage servers for web applications.
			4	Write shell scripts required for system administration.
			5	Acquire skill sets required for a DevOps.
S3	20MCA201	DATA SCIENCE & MACHINE LEARNING	1	Discuss the fundamental concepts of data science and data visualization techniques.
			2	Explain the basics of machine learning and use lazy learning and probabilistic learning algorithms to solve data science problems.
			3	Describe decision trees, classification rules & regression methods and how these algorithms can be applied to solve data science problems.
			4	Solve data science problems using neural networks and support vector machines.
			5	Discuss clustering using k-means algorithm and evaluate & improve the performance of machine learning classification models.
S3	20MCA203	DESIGN & ANALYSIS OF ALGORITHMS	1	Discuss the basic concepts in computer algorithms and their analysis & design using Divide and Conquer.
			2	Explain the concepts of Greedy Strategy and Dynamic Programming to use it in solving real world problems.
			3	Explain the Branch & Bound technique, Backtracking technique and Lower bounds.
			4	Describe the fundamental concepts of Computational Complexity and Network Flows.
			5	Discuss the concepts of Approximation and Randomised Algorithms.
S3	20MCA265	Cloud Computing	1	Understand the basic concepts in cloud computing and OpenStack logical architecture
			2	Discuss OpenStack cloud controller and common services

			3	Compare different OpenStack compute service components and storage types
			4	Describe the OpenStack Networking-Connection types and networking services
			5	Discuss orchestration, HA and failover in OpenStack
S3	20MCA283	DEEP LEARNING	1	Explain the basic concepts of deep learning.
			2	Design neural networks using TensorFlow
			3	Solve real world problems with CNN
			4	Solve real world problems with RNN.
			5	Describe the concepts of GAN
S3	20MCA243	MOBILE APPLICATION DEVELOPMENT LAB	1	Design and develop user interfaces for mobile apps using basic building blocks, UI components and application structure using Emulator
			2	Write simple programs and develop small applications using the concepts of UI design, layouts and preferences
			3	Develop applications with multiple activities using intents, array adapter, exceptions and options menu.
			4	Implement activities with dialogs, spinner, fragments and navigation drawer by applying themes
			5	Develop mobile applications using SQLite.
S3	20MCA245	MINI PROJECT	1	Identify a real-life project which is useful to society / industry
			2	Interact with people to identify the project requirements
			3	Apply suitable development methodology for the development of the product / project
			4	Analyse and design a software product / project
			5	Test the modules at various stages of project development
S3	20MCA241	DATA SCIENCE LAB	1	Use different python packages to perform numerical calculations, statistical computations and data visualization
			2	Use different packages and frameworks to implement regression and classification algorithms.

			3	Use different packages and frameworks to implement text classification using SVM and clustering using k-means
			4	Implement convolutional neural network algorithm using Keras framework.
			5	Implement programs for web data mining and natural language processing using NLTK