University of Science & Technology, Meghalaya

Department of Computer Science & Electronics

Programme Outcomes, Programme Specific Outcomes and Course Outcomes POs, PSOs and COs of MCA

PROGRAMME OUTCOMES (POs):

At the end of the two year MCA programme the students will be able to:

PO1: Design applications for any desired needs with appropriate considerations for any specific need on societal and environmental aspects.

PO2: Analyze and review literatures to invoke the research skills to design, interpret and make inferences from the resulting data.

PO3: Integrate and apply efficiently the contemporary IT tools to all computer applications.

PO4: Solve and work with a professional context pertaining to ethics, social, cultural and cyber regulations.

PO5: Involve in perennial learning for a continued career development and progress as a computer professional.

PO6: Function effectively both as a team leader and team member on multi disciplinary projects to demonstrate computing and management skills.

PO7: Utilize the computing knowledge efficiently in projects with concern for societal, environmental, and cultural aspects.

PO8: Function competently as an individual and as a leader in multidisciplinary projects.

PO9: Apply the inherent skills with absolute focus to function as a successful entrepreneur.

PO10: Create and design innovative methodologies to solve complex problems for the betterment of the society.

PO11: Apply the knowledge of mathematics and computing fundamentals to various real life applications for any given requirement.

PO12: Design and develop applications to analyze and solve all computer science related problems.

PROGRAM SPECIFIC OUTCOMES (PSOs):

A Master of Computer Science should be able to develop:

PSO1: To produce knowledgeable and skilled human resources who are employable in industry, government, academic institutions, research and development, entrepreneurial pursuit and software firms.

PSO2: To produce professional who will impart knowledge required for planning, designing and developing software systems and interfaces.

PSO3: To develop human skills who will achieve long-term sustainability, having decision making and good analytical capability.

PSO4: To develop professional who can compete globally and impart ethical values and professional skills towards society.

COURSE OUTCOMES (COs):
Computer Organization & Architecture   (MCA101)
CO1.   Understand the theory of digital design and computer organization to provide an insight of how basic computer components are specified.

CO2.   Come to know about the functions of various hardware component and their building blocks.

CO3.   Able to understand Boolean algebraic expression to digital design.

CO4.   Able to understand the realization of different combinational/ sequential circuits.

CO5.   Acquire the knowledge of memory hierarchy and primary memory.

Programming Concepts & Methodology   (MCA 102)
CO1.   To have knowledge about C language.

CO2.   Have knowledge about different program structure.

CO3.   Able to apply pointer concept.

CO4.   To be able to develop logic by which it will be possible to create program/applications.

CO5.   After learning C language students can easily switch to other programming languages.

Mathematical Foundation of Computer Science (MCA 103)

CO1.   To be able apply mathematical logic to solve problem.

CO2.   To have the concept of relations and sets.

CO3.   Understand functions and discrete structure.

CO4.   To be able to formulate problem and to solve recurrence problems.

CO5.   Understand different operation on matrix.

Accounting and Financial Management (MCA 104)

CO1.   To have a conceptual knowledge of basics of accounting.

CO2.   To develop a skill for recording financial transaction and to generate a financial report.

CO3.   To be familiar with accounting process and preparation of final accounts of any organization.

CO4.   To be able to handle cash book.

CO5.   Apply management accounting tools for cost allocation, budgetary control, performance evaluation, pricing and cost management.

Data Structure (MCA 105)

CO1.   Use different kind of data structures which are suited for different applications.

CO2.   Understand the space and time complexity and according to the complexity can select appropriate data structure.

CO3.   Able to use efficient data structures which are keys of designing efficient algorithm.

CO4.   Understand the use of linear and non linear data structures.

CO5.   Store and retrieve data from main and secondary memory.

Database Management Systems (MCA 201)

CO1.   To analyze the database design methodology.

CO2.   Acquire the knowledge in fundamental of database management system.

CO3.   Be able to analyze the difference between traditional file system and DBMS.

CO4.   Draw various data models for database and can write different queries.

CO5.   Be able to handle different database languages.

Concepts of OOPs (MCA 202)

CO1.   Know the principles of OOPs concept and structure.

CO2.   Analyze the concept of classes and object, array, functions, constructor and destructor.

CO3. Come to know the concept of inheritance and classification, pointers, virtual function and polymorphism.

CO4. To learn how to extend java classes with inheritance and dynamic binding

CO5. Understand the concept of templates and exception handling.

Operating Systems (MCA 203)

CO1. To understand the underlying principles, techniques and approaches which constitute a coherent body of knowledge in operating system.

CO2. To classify about the communication and concurrency control among the concurrent processes in operating system.

CO3. To analyze the concept of process and its management which includes process scheduling, process synchronization, deadlock, communication.

CO4. To provide basic knowledge on how memory management is implemented by the operating system, including concepts of paging, segmentation, paged segmentation etc.

CO5. To gain insight on file management, disk management etc and to become familiar with the protection and security mechanisms taken by operating system.

Theory of Computation (MCA 204)

CO1. Discuss key notions of computation, such as algorithm, computability, decidability, reducibility, and complexity, through problem solving.

CO2. Explain the models of computation, including formal languages, grammars and automata, and their connections

CO3. Solve computational problems regarding their computability and complexity and prove the basic results of the theory of computation.

CO4. Analyze and design finite automata, pushdown automata, Turing machines, formal languages, and grammars.

CO5. State and explain the Turing Machine and its significant.

Data Communication and Computer Networks (MCA 205)

CO1. To be able to understand the basic concepts and principles in Networking.

CO2. To be able to understand the concept of Wireless LANs, PAN, Mobile network.

CO3: To understand and analyze different Network Layer Routing, Congestion and deadlock control algorithms.

CO4. To provide throughout knowledge on Network security-issues and threats

CO5. To understand and analyze the concept of Cryptography.

Software Engineering & Project Management (MCA 302)

CO1. To know how to develop the software project

CO2. To learn developing methodology of software project

CO3. Understanding tools and techniques of software engineering

CO4. Verify and validate the problems of software programming & perform software testing

CO5. Maintaining the quality of software project.

Cryptography and Network Security (MCA 303)

CO1. To provide basic knowledge about different methods of conventional encryption

CO2. To provide knowledge about public and private key security, concept of keys and number theory

CO3. To learn about authentication functions, hash functions, message authentications, modes and different h algorithms

CO4. To provide knowledge about network security tools.

Web Programming Technologies (MCA 304)

CO1. Understand the various protocols used for Web Technology

CO2. Understand the various steps in designing Creative and dynamic website

CO3. Write HTML, JavaScript, CSS & DTD

CO4. Understand PHP, working with files, forms & Database.

CO5. Understand Web Security & Services.

Computer Graphics (MCA 305.1)

CO1. Understand the real graphics programming

CO2. Understand the API OpenGL

CO3. Understand the mathematics basics, mainly linear algebra and implemented by OpenGL and programming language like C

CO4. Recognize a number of problems and topics drawn from computer graphics, and explores them through the lens of dynamic geometry software

CO5. Understand the 2D and 3D computer graphics.

Compiler Design (MCA 305.2)

CO1. To learn the various phases of compiler.

CO2. To learn the various parsing techniques.

CO3. To understand intermediate code generation and run-time environment.

CO4.   To learn to implement front-end of the compiler.

CO5.   To learn to implement code generator.

Introduction to Machine Learning   (MCA 305.3)

CO1.   Develop an appreciation for what is involved in learning from data

CO2.   Understand a wide variety of learning algorithms

CO3.   Understand how to apply a variety of learning algorithms to data

CO4.   Understand how to perform evaluation of learning algorithms and model selection

CO5.   To provide students with an in-depth introduction to the areas of Machine Learning mainly the Algorithms, Credibility & Implementations.

Software Testing and Quality Assurance   (MCA 305.4)

CO1.   Deliver successful software projects that support organization's strategic goals.

CO2.   Match organizational needs to the most effective software development model.

CO3.   Plan and manage projects at each stage of the software development life cycle.

CO4.   Create project plans that address real-world management challenges.

CO5.   Develop the skills for tracking and controlling software deliverables.

Design and Analysis of Algorithms (MCA 305.5)

CO1.   To understand and analyze space and time complexity of various algorithms.

CO2.   To implement various operations on arrays and linked list.

CO3.   To understand and analyze Divide -and –Conquer, Dynamic Programming and Greedy Methods.

CO4.   To design tree data structure and apply it in data compression algorithms.

CO5.   To understand and implement sorting and searching algorithms and evaluate the Complexities of these algorithms.

Statistical Tool (MatLab) (MCA 307)

CO1.   Understand the basics of MatLab Programming, command line and understand the use to statistics toolbox to perform arithmetic operations in Matlab.

CO2.   Perform basic statistical investigation of a data set, including visualization and calculation of summary statistics. • Plotting • Central tendency • Spread • Shape • Correlations • Grouped data

CO3.   Use the functionality in Statistics Toolbox to investigate different probability distributions and to fit distributions to a data set. • Probability distributions • Distribution parameters •Comparing and fitting distributions • Nonparametric fitting • Distribution objects.

CO4.   Perform predictive modeling by fitting linear and nonlinear models to a data set. Explore techniques for improving model quality.

Management Information System (MCA401)
CO1.   To understand the managerial level management in organizations

CO2.   To learn about different management tools, level of decision making

CO3.   Coordination with DSS.

CO4.   To develop team management skills.

CO5.   Describe how technology facilitates and enhances both operational and strategic decision making in an organization.

Wireless Networks (MCA 402.1)
CO1.   To provide the concept of wireless vs. Wired communication
CO2.   To learn about mobile communication technology
CO3.   To learn different multiplexing techniques, coding techniques
CO4.   To understanding the Interface of a mobile computing system to hardware and networks
CO5.   To design applications on a mobile computing system interacting with servers and database systems

Artificial Intelligence (MCA 402.2)
CO1.   To understand basic concepts of Artificial intelligence, developments in this field, basic knowledge representation techniques, problem solving, and learning methods of Artificial Intelligence

CO2.   To learn the applicability, strengths, and weaknesses of the basic knowledge representation

CO3.   Learn about problem different type of searching algorithm

CO4.   To learn knowledge about Rule based system and Expert system

CO5.   To understand Natural language processing, modern developments in the field of AI , Soft Computing, Image processing, Robotics ,Lisp and Prolog etc

Data Mining and Warehousing (MCA 402.3)
CO1.   To understand the concept of data warehousing and its related technologies

CO2.   Learn about data warehouse architecture, data mining

CO3.   Comparison of RDBMS, OLPA, MOLAP, OLTP etc

CO4.   To know about the techniques of clustering, classification, association used real world data

CO5.   To provide a comprehensive knowledge of different data mining algorithms.

Distributed System (MCA 402.4)

CO1. To provide the concept of distributed system and the distinction with traditional database system

CO2. To review the limitation of DBMS and needs of distributed system

CO3. To learn inter process communication techniques and knowledge of segmentation

CO4. To understand various distributed algorithms, such as logical clocks and leader election

CO5. To acquire knowledge about the application of distributed system in organizations specially in banking and telecommunications.

E-Commerce & Digital Marketing (MCA 402.5)

CO1. Understand the term e-commerce

CO2. Come to know about the distributed applications.

CO3. Able to understand different technologies used in e-commerce.

CO4. Know about different cryptographic techniques.

CO5. Come to know about different type of cyber crime and cyber law.

Python Programming (MCA 402.6)

CO1. Able to understand the python history, basic python programming concept and different control statements of python programming.

CO2. Come to know about the collections of python and python functions.

CO3. Able to understand the modules programming and File handling concepts of different types of file.

CO4. Able to understand the error handling concepts using python and Object Oriented concepts of python.

CO5. Able to understand the concepts of relational database and working with python also the GUI application with python.

Pattern Recognition & Image Processing (MCA 403.1)

CO1. Students can learn the concept of image processing, image recognitions, quantization etc.

CO2. To provide the knowledge of digitization

CO3. To learn security aspect and how pattern reorganizations are used in security

CO4. To provide the knowledge of Fourier transform, Laplace transform and domain conversion.

Computer Based Optimisation Techniques (MCA 403.2)

CO1. To provide the basic concept of computer simulation and optimization

CO2. Application of maximizing benefit/minimizing product costs in various manufacturing and construction processes

CO3. To understand and apply queuing theory, replacement theory, inventory theory etc. in business applications

CO4. To learn Critical path and network analysis using PERT.

CO5. To learn how to calculate and solve sequencing problem through machines.

Internet of Things (MCA 403.3)

CO1. Understand general concepts of Internet of Things (IoT) (Understand)

CO2. Recognize various devices, sensors and applications (Knowledge)

CO3. Apply design concept to IoT solutions (Apply)

CO4. Analyze various M2M and IoT architectures (Analyze)

CO5. Create IoT solutions using sensors, actuators and Devices (Create)

Spatial Databases (MCA 403.4)

CO1. Design well formed database models, using appropriate design techniques, and be able to implement such designs using relational database software

CO2. Use SQL fragments and/or statements as appropriate to interrogate spatial databases to accomplish data loading, maintenance, map production and analysis.

CO3. Explain the strengths and limitations of various databases and non-relational structures for spatial data.

CO4. Critically assess current advances in database design for geographical applications

CO5. Define a geographical realm of interest, the legacy of Geodata and the legal issues.

Neural Network Computing (MCA 403.5)

CO1. We come to know about basic neuron models and basic neural network models

CO2. Understand Soft Computing concepts, technologies, and applications

CO3. Understand the underlying principle of soft computing with its usage in various applications. .

CO4. Understand different soft computing tools to solve real life problems.

CO5. We also go through some basic genetic algorithm.

Microprocessor and Interfacing (MCA 403.6)

CO1. Students should be able to solve basic binary math operations using the microprocessor. Students should be able to demonstrate programming proficiency using the various addressing modes and data transfer instructions of the target microprocessor.

CO2. Students should be able to program using the capabilities of the stack, the program counter, and the status register and show how these are used to execute a machine code program.

CO3. Students should be able to apply knowledge of the microprocessor's internal registers and operations by use of a PC based microprocessor simulator.

CO4. Students should be able to design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.

CO5. Students should be able to write assembly language programs and download the machine code that will provide solutions real-world control problems such as fluid level control, temperature control, and batch processes.

Project   (MCA 404)

CO1. Student will get exposure to implement practical knowledge in real life applications.

CO2. Students will get exposure to enhance skills in problem solving, fault analysis and debugging

CO3. Students will be able to discover potential research areas in the field of IT.

CO4. Demonstrate an ability to work in a team.

CO5. Compare and contrast the existing solutions for the research challenge.

CO6. Formulate and propose a plan for creating a solution for the research plan identified.

CO7. Report and present the findings of the study conducted in the preferred domain.

CO8. Establish a good repo with external organization and get employability skills.