M.A.M. SCHOOL OF ENGINEERING

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Department of Computer Science and Engineering

R 2021 Programme Outcomes

PO1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

R 2021 Programme Specific Outcomes – Computer Science and Engineering

PSO1	Exhibit design and programming skills to build and automate business solutions using cutting edge technologies.
PSO2	Strong theoretical foundation leading to excellence and excitement towards research, toprovide elegant solutions to complex problems.
PSO3	Ability to work effectively with various engineering fields as a team to design, build and develop system applications.

Department of Computer Science and Engineering
Regulation 2021 – UG

Year/Semester: I/I	
C101/ HS3151/COMMUNICATIVE ENGLISH	
C101.1	To use appropriate words in a professional context
C101.2	To gain understanding of basic grammatic structures and use them in right context.
C101.3	To read and infer the denotative and connotative meanings of technical texts
C101.4	To write definitions, descriptions & narrations essays on various topics
C101.5	To write essays on various topics
C102/ MA3151/ENGINEERING MATHEMATICS I	
C102.1	Use the matrix algebra methods for solving practical problems.
C102.2	Apply differential calculus tools in solving various application problems.
C102.3	Able to use differential calculus ideas on several variable functions.
C102.4	Apply different methods of integration in solving practical problems.
C102.5	Apply multiple integral ideas in solving areas, volumes and other practical problems.
C103/PH3151/ENGINEERING PHYSICS	
C103.1	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.
C103.2	Understand the importance of quantum physics.
C103.3	Comprehend and apply quantum mechanical principles towards the formation of energy bands.
C103.4	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.
C103.5	Understand the importance of quantum physics.
C104/CY3151/ENGINEERING CHEMISTRY	
C104.1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.
C104.2	To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.
C104.3	To apply the knowledge of phase rule and composites for material selection requirements.
C104.4	To recommend suitable fuels for engineering processes and applications.
C104.5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors.
C105 / GE3151/ PROBLEM SOLVING AND PYTHON PROGRAMMING	
C105.1	Develop algorithmic solutions to simple computational problems and sample programs.
C105.2	Write simple Python programs using conditionals and loops for solving problems.
C105.3	Decompose a Python program into functions.
C105.4	Represent compound data using Python lists, tuples, dictionaries etc.
C105.5	Read and write data from/to files in Python programs.
C106 / GE3171/ PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	
C106.1	Develop algorithmic solutions to simple computational problems and execute simple Python programs

C106.2	Implement programs in Python using conditionals and loops for solving problems.
C106.3	Deploy functions to decompose a Python program.
C106.4	Process compound data using Python data structures.
C106.5	Utilize Python packages in developing software applications.
C107 / BS3171/Physics and Chemistry Laboratory	
C107.1.1	Understand the functioning of various physics laboratory equipment.
C107.2.1	Use graphical models to analyze laboratory data.
C107.3.1	Use mathematical models as a medium for quantitative reasoning and describing physical reality.
C107.4.1	Access, process and analyze scientific information.
C107.5.1	Solve problems individually and collaboratively.
C107.1.2	To analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO.
C107.2.2	To determine the amount of metal ions through volumetric and spectroscopic techniques
C107.3.2	To analyse and determine the composition of alloys.
C107.4.2	To learn simple method of synthesis of nanoparticles
C107.5.2	To quantitatively analyse the impurities in solution by electroanalytical techniques
C108/ GE3172 - ENGLISH LABORATORY	
C108.1	To listen and comprehend complex academic texts.
C108.2	To speak fluently and accurately in formal.
C108.3	To speak informal communicative contexts.
C108.4	To express their opinions effectively in both oral.
C108.5	To express their written medium of communication.
C109 / HS3251 PROFESSIONAL ENGLISH -II	
C109.1	To compare and contrast products and ideas in technical texts.
C109.2	To identify cause and effects in events, industrial processes through technical texts
C109.3	To analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format.
C109.4	To report events and the processes of technical and industrial nature.
C109.5	To present their opinions in a planned and logical manner, and draft effective resumes in context of job search.
C110 / MA3251/STATISTICS AND NUMERICAL METHODS	
C110.1	Apply the concept of testing of hypothesis for small and large samples in real life problems.
C110.2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
C110.3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
C110.4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
C110.5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

C111 / PH3256/PHYSICS FOR INFORMATION SCIENCE	
C111.1	Gain knowledge on classical and quantum electron theories, and energy band structures
C111.2	Acquire knowledge on basics of semiconductor physics and its applications in various devices
C111.3	Get knowledge on magnetic properties of materials and their applications in data storage,
C111.4	Have the necessary understanding on the functioning of optical materials for optoelectronics
C111.5	Understand the basics of quantum structures and their applications and basics of quantum computing
C112 / BE3251/BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	
C112.1	Compute the electric circuit parameters for simple problems
C112.2	Explain the working principle and applications of electrical machines
C112.3	Analyze the characteristics of analog electronic devices
C112.4	Explain the basic concepts of digital electronics
C112.5	Explain the operating principles of measuring instruments
C113 / GE3251/ENGINEERING GRAPHICS	
C113.1	Use BIS conventions and specifications for engineering drawing.
C113.2	Construct the conic curves, involutes and cycloid.
C113.3	Solve practical problems involving projection of lines.
C113.4	Draw the orthographic, isometric and perspective projections of simple solids.
C113.5	Draw the development of simple solids.
C114 /CS3251/PROGRAMMING IN C	
C114.1	Demonstrate knowledge on C Programming constructs Develop simple applications in C using basic constructs
C114.2	Design and implement applications using arrays and strings
C114.3	Develop and implement modular applications in C using functions, structures and pointers.
C114.4	Design applications using sequential and random access file processing.
C114.5	Demonstrate knowledge on C Programming constructs Develop simple applications in C using basic constructs
C115 / GE3271/ENGINEERING PRACTICES LABORATORY	
C115.1	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.
C115.2	Wire various electrical joints in common household electrical wire work.
C115.3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.
C115.4	Solder and test simple electronic circuits; Assemble.
C115.5	Test simple electronic components on PCB.
C116 / CS3271/PROGRAMMING IN C LABORATORY	
C116.1	Demonstrate knowledge on C programming constructs.Develop programs in C using basic

	constructs and arrays.
C116.2	Develop applications in C using strings, pointers, functions.CO5: Develop applications in C using structures.
C116.3	Develop applications in C using file processing.
C116.4	Demonstrate knowledge on C programming constructs.Develop programs in C using basic constructs and arrays.
C116.5	Develop applications in C using strings, pointers, functions.CO5: Develop applications in C using structures.
C117 / GE3272/COMMUNICATION LABORATORY	
C117.1	Speak effectively in group discussions held in a formal/semi formal contexts.
C117.2	Write emails and effective job applications.
C117.3	To speak fluently and accurately in formal.
C117.4	To speak informal communicative contexts.
C117.5	To express their opinions effectively in both oral.
Year/Semester: II/III	
C201/ MA3354/DISCRETE MATHEMATICS	
C201.1	Have knowledge of the concepts needed to test the logic of a program.
C201.2	Have an understanding in identifying structures on many levels.
C201.3	Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.
C201.4	Be aware of the counting principles.
C201.5	Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.
C202/ CS3351/DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	
C202.1	Design various combinational digital circuits using logic gates
C202.2	Design sequential circuits and analyze the design procedures
C202.3	State the fundamentals of computer systems and analyze the execution of an instruction
C202.4	Analyze different types of control design and identify hazards
C202.5	Identify the characteristics of various memory systems and I/O communication
C203/ CS3352/FOUNDATIONS OF DATA SCIENCE	
C203.1	Define the data science process
C203.2	Understand different types of data description for data science processGain knowledge on relationships between data
C203.3	Use the Python Libraries for Data Wrangling
C203.4	Apply visualization Libraries in Python to interpret and explore data
C203.5	Define the data science process
	C204/ CS3301/DATA STRUCTURES
C204.1	Define linear and non-linear data structures.
C204.2	Implement linear and non–linear data structure operations.
C204.3	Use appropriate linear/non–linear data structure operations for solving a given problem.
C204.4	Apply appropriate graph algorithms for graph applications.

C204.5	Analyze the various searching and sorting algorithms.
	C205/ CS3391/OBJECT ORIENTED PROGRAMMING
C205.1	Apply the concepts of classes and objects to solve simple problems
C205.2	Develop programs using inheritance, packages and interfaces
C205.3	Make use of exception handling mechanisms and multithreaded model to solve real world problems
C205.4	Build Java applications with I/O packages, string classes, Collections and generics concepts Integrate the concepts of event handling and JavaFX components and controls for developing GUIbased applications
C205.5	Apply the concepts of classes and objects to solve simple problems
	C206/ CS3311/DATA STRUCTURES LABORATORY
C206.1	Implement Linear data structure algorithms.
C206.2	Implement applications using Stacks and Linked lists Implement Binary Search tree and AVL tree operations.Implement graph algorithms.
C206.3	Analyze the various searching and sorting algorithms.
C206.4	Implement Linear data structure algorithms.
C206.5	Implement applications using Stacks and Linked lists Implement Binary Search tree and AVL tree operations.Implement graph algorithms.
	C207/ CS3381/OBJECT ORIENTED PROGRAMMING LABORATORY
C207.1	Design and develop java programs using object oriented programming concepts
C207.2	Develop simple applications using object oriented concepts such as package, exceptions
C207.3	Implement multithreading, and generics concepts
C207.4	Create GUIs and event driven programming applications for real world problems
C207.5	Implement and deploy web applications using Java
	C208/ CS3361/DATA SCIENCE LABORATORY
C208.1	Make use of the python libraries for data science
C208.2	Make use of the basic Statistical and Probability measures for data science.
C208.3	Perform descriptive analytics on the benchmark data sets.
C208.4	Perform correlation and regression analytics on standard data sets
C208.5	Present and interpret data using visualization packages in Python
	C209/ GE3361/PROFESSIONAL DEVELOPMENT
C209.1	Use MS Word to create quality documents, by structuring.
C209.2	Use MS Word to create organizing content for their day to day technical and academic requirements.
C209.3	Use MS EXCEL to perform data operations and requirements.
C209.4	Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements.
C209.5	Use MS PowerPoint to create using media objects.