



MACET
MARTHANDAM COLLEGE OF
ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE OUTCOMES



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S.No	Sem	Course Code	Course Name
1.	I	HS3152	Professional English I
2	I	MA3151	Matrices and Calculus
3	I	PH3151	Engineering Physics
4	I	CY3151	Engineering Chemistry
5	I	GE3151	Problem Solving and Python Programming
6	I	GE3171	Problem Solving and Python Programming Laboratory
7	I	BS3171	Physics and Chemistry Laboratory (Physics)
8	I	BS3171	Physics and Chemistry Laboratory (Chemistry)
9	I	GE3172	English Laboratory
10	II	HS3252	Professional English II
11	II	MA3251	Statistics and Numerical Methods
12	II	PH3256	Physics for Information Science
13	II	BE3251	Basic Electrical and Electronics Engineering
14	II	GE3251	Engineering Graphics
15	II	CS3251	Programming in C
16	II	GE3271	Engineering Practices Laboratory
17	II	CS3271	Programming in C Laboratory
18	II	GE3272	Communication Laboratory
19	III	MA3354	Discrete Mathematics
20	III	CS3351	Digital Principles and Computer Organization
21	III	CS3352	Foundations of Data Science
22	III	CS3301	Data Structures
23	III	CS3391	Object Oriented Programming
24	III	CS3311	Data Structures Laboratory



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25	III	CS3381	Object Oriented Programming Laboratory
26	III	CS3361	Data Science Laboratory
27	IV	CS3452	Theory of Computation
28	IV	CS3491	Artificial Intelligence and Machine Learning
29	IV	CS3492	Database Management Systems
30	IV	CS3401	Algorithms
31	IV	CS3451	Introduction to Operating Systems
32	IV	GE3451	Environmental Sciences and Sustainability
33	IV	CS3461	Operating Systems Laboratory
34	IV	CS3481	Database Management Systems Laboratory
35	V	CS3591	Computer Networks
36	V	CS3501	Compiler Design
37	V	CB3491	Cryptography and Cyber Security
38	V	CS3551	Distributed Computing
39	V	CCS375	Web Technologies
40	V	CCS366	Software Testing and Automation
41	V	MX3084	Disaster Risk Reduction And Management
42	VI	CCS356	Object Oriented Software Engineering
43	VI	CS3691	Embedded Systems and IoT
44	VI	OEE351	Renewable Energy System
45	VI	CCS370	UI and UX Design
46	VI	CCS354	Network Security
47	VI	CCS352	Multimedia and Animation
48	VI	MX3089	Industrial Safety



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I SEMESTER



Course Code & Course Name: HS3152 – Professional English I

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To use appropriate words in a professional context
CO2	To gain understanding of basic grammatic structures and use them in right context.
CO3	To read and infer the denotative and connotative meanings of technical texts
CO4	To write definitions, descriptions, narrations and essays on various topics
CO5	To interpret non verbal texts

Course Code & Course Name: MA3151- Matrices and Calculus

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use the matrix algebra methods for solving practical problems.
CO2	Apply differential calculus tools in solving various application problems.
CO3	Able to use differential calculus ideas on several variable functions.
CO4	Apply different methods of integration in solving practical problems.
CO5	Apply multiple integral ideas in solving areas, volumes and other practical problems.

Course Code & Course Name: PH3151-ENGINEERING PHYSICS

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the importance of mechanics.
CO2	Express their knowledge in electromagnetic waves.
CO3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers.
CO4	Understand the importance of quantum physics.
CO5	Comprehend and apply quantum mechanical principles towards the formation of energy bands.



Course Code & Course Name:CY3151 Engineering Chemistry

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.
CO2	To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.
CO3	To apply the knowledge of phase rule and composites for material selection requirements.
CO4	To recommend suitable fuels for engineering processes and applications.
CO5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors.

Course Code & Course Name:GE3151Problem Solving and Python Programming

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	CO1: Develop algorithmic solutions to simple computational problems.
CO2	CO2: Develop and execute simple Python programs.
CO3	CO3: Write simple Python programs using conditionals and loops for solving problems.
CO4	CO4: Decompose a Python program into functions.
CO5	CO5: Represent compound data using Python lists, tuples, dictionaries etc.



Course Code & Course Name: GE3171 Problem Solving and Python Programming Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Develop algorithmic solutions to simple computational problems
CO2	Develop and execute simple Python programs.
CO3	Implement programs in Python using conditionals and loops for solving problems.
CO4	Deploy functions to decompose a Python program.
CO5	Process compound data using Python data structures.

Course Code & Course Name: BS3171&Physics and Chemistry Laboratory (Physics)

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the functioning of various physics laboratory equipment.
CO2	Use graphical models to analyze laboratory data.
CO3	Use mathematical models as a medium for quantitative reasoning and describing physical reality.
CO4	Access, process and analyze scientific information.
CO5	Solve problems individually and collaboratively.

Course Code & Course Name: BS3171&Physics and Chemistry Laboratory (Chemistry)

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO
CO2	To determine the amount of metal ions through volumetric and spectroscopic techniques
CO3	To analyse and determine the composition of alloys.
CO4	To learn simple method of synthesis of nanoparticles
CO5	To quantitatively analyse the impurities in solution by electroanalytical techniques



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Course Code & Course Name: GE3172- English Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To listen to and comprehend general as well as complex academic information
CO2	To listen to and understand different points of view in a discussion
CO3	To speak fluently and accurately in formal and informal communicative contexts
CO4	To describe products and processes and explain their uses and purposes clearly and accurately.
CO5	To express their opinions effectively in both formal and informal discussions



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II SEMESTER



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Course Code & Course Name: HS3252 – Professional English II

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To compare and contrast products and ideas in technical texts.
CO2	To identify and report cause and effects in events, industrial processes through technical texts
CO3	To analyse problems in order to arrive at feasible solutions and communicate them in the written format.
CO4	To present their ideas and opinions in a planned and logical manner
CO5	To draft effective resumes in the context of job search.

Course Code & Course Name: MA3251-Statistics and Numerical Methods

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.
CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.

Course Code & Course Name: PH3256 – Physics for Information Science

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Gain knowledge on classical and quantum electron theories, and energy band structures
CO2	acquire knowledge on basics of semiconductor physics and its applications in various devices



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CO3	get knowledge on magnetic properties of materials and their applications in data storage,
CO4	have the necessary understanding on the functioning of optical materials for optoelectronics
CO5	understand the basics of quantum structures and their applications and basics of quantum computing

Course Code & Course Name: BE3251 – Basic Electrical and Electronics Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Compute the electric circuit parameters for simple problems
CO2	Explain the working principle and applications of electrical machines
CO3	Analyze the characteristics of analog electronic devices
CO4	Explain the basic concepts of digital electronics
CO5	Explain the operating principles of measuring instruments

Course Code & Course Name:GE3251Engineering Graphics

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use BIS conventions and specifications for engineering drawing.
CO2	Construct the conic curves, involutes and cycloid.
CO3	Solve practical problems involving projection of lines.
CO4	Draw the orthographic, isometric and perspective projections of simple solids.
CO5	Draw the development of simple solids.

Course Code & Course Name: CS3251 Programming in C

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Demonstrate knowledge on C Programming constructs
CO2	Develop simple applications in C using basic constructs
CO3	Design and implement applications using arrays and strings



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CO4	Develop and implement modular applications in C using functions.
CO5	Develop applications in C using structures and pointers.

Course Code & Course Name: GE3271 Engineering Practices Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	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.
CO2	Wire various electrical joints in common household electrical wire work.
CO3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts;
CO4	Assemble simple mechanical assembly of common household equipment, Make a tray out of metal sheet using sheet metal work.
CO5	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.

Course Code & Course Name: CS3271 Programming in C Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	CO1: Demonstrate knowledge on C programming constructs.
CO2	CO2: Develop programs in C using basic constructs.
CO3	CO3: Develop programs in C using arrays.
CO4	CO4: Develop applications in C using strings, pointers, functions.
CO5	CO5: Develop applications in C using structures.

Course Code & Course Name: GE3272- Communication Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Speak effectively in group discussions held in a formal/semi formal contexts.
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CO2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions
CO3	Write emails, letters and effective job applications.
CO4	Write critical reports to convey data and information with clarity and precision
CO5	Give appropriate instructions and recommendations for safe execution of tasks



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III SEMESTER



Course Code & Course Name: MA3354 Discrete Mathematics

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Have knowledge of the concepts needed to test the logic of a program.
CO2	Have an understanding in identifying structures on many levels.
CO3	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.
CO4	Be aware of the counting principles.
CO5	Be exposed to concepts and properties of algebraic structures such as groups, rings and fields

Course Code & Course Name: CS3351 Digital Principles and Computer Organization

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Design various combinational digital circuits using logic gates
CO2	Design sequential circuits and analyze the design procedures
CO3	State the fundamentals of computer systems and analyze the execution of an instruction
CO4	Analyze different types of control design and identify hazards
CO5	Identify the characteristics of various memory systems and I/O communication

Course Code & Course Name: CS3352 Foundations of Data Science

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Define the data science process
CO2	Understand different types of data description for data science process
CO3	Gain knowledge on relationships between data
CO4	Use the Python Libraries for Data Wrangling



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CO5	Apply visualization Libraries in Python to interpret and explore data
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Course Code & Course Name: CS3301 Data Structures

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Define linear and non-linear data structures.
CO2	Implement linear and non-linear data structure operations.
CO3	Use appropriate linear/non-linear data structure operations for solving a given problem.
CO4	Apply appropriate graph algorithms for graph applications.
CO5	Analyze the various searching and sorting algorithms.

Course Code & Course Name: CS3391 Object Oriented Programming

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Apply the concepts of classes and objects to solve simple problems
CO2	Develop programs using inheritance, packages and interfaces
CO3	Make use of exception handling mechanisms and multithreaded model to solve real world problems
CO4	Build Java applications with I/O packages, string classes, Collections and generics concepts
CO5	Integrate the concepts of event handling and JavaFX components and controls for developing GUI based applications

Course Code & Course Name: CS3311 Data Structures Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Implement Linear data structure algorithms.
CO2	Implement applications using Stacks and Linked lists.
CO3	Implement Binary Search tree and AVL tree operations.



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CO4	Implement graph algorithms
CO5	Analyze the various searching and sorting algorithms

Course Code & Course Name: CS3381 Object Oriented Programming Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Design and develop Java programs using object-oriented programming concepts
CO2	Develop simple applications using object-oriented concepts such as package, exceptions
CO3	Implement multithreading, and generics concepts
CO4	Create GUIs and event-driven programming applications for real-world problems
CO5	Implement and deploy web applications using Java

Course Code & Course Name: CS3361 Data Science Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Make use of the Python libraries for data science
CO2	Make use of the basic Statistical and Probability measures for data science.
CO3	Perform descriptive analytics on the benchmark datasets.
CO4	Perform correlation and regression analytics on standard datasets
CO5	Present and interpret data using visualization packages in Python.



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IV SEMESTER



Course Code & Course Name : CS3452 Theory of Computation

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Construct automata theory using Finite Automata
CO2	Write regular expressions for any pattern
CO3	Design context free grammar and Pushdown Automata
CO4	Design Turing machine for computational functions
CO5	Differentiate between decidable and undecidable problems

Course Code & Course Name : CS3491 Artificial Intelligence and Machine Learning

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Use appropriate search algorithms for problem solving
CO2	Apply reasoning under uncertainty
CO3	Build supervised learning models
CO4	Build ensemble and unsupervised models
CO5	Build deep learning neural network models

Course Code & Course Name : CS3492 Database Management Systems

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Construct SQL Queries using relational algebra
CO2	Design database using ER model and normalize the database
CO3	Construct queries to handle transaction processing and maintain consistency of the database



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CO4	Compare and contrast various indexing strategies and apply the knowledge to tune the performance of the database
CO5	Appraise how advanced databases differ from Relational Databases and find a suitable database for the given requirement.

Course Code & Course Name :CS3401 Algorithms

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Analyze the efficiency of algorithms using various frameworks
CO2	Apply graph algorithms to solve problems and analyze their efficiency.
CO3	Make use of algorithm design techniques like divide and conquer, dynamic programming and greedy techniques to solve problems
CO4	Use the state space tree method for solving problems.
CO5	Solve problems using approximation algorithms and randomized algorithms

Course Code & Course Name : CS3451 Introduction to Operating Systems

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Analyze various scheduling algorithms and process synchronization.
CO2	Explain deadlock prevention and avoidance algorithms.
CO3	Compare and contrast various memory management schemes.
CO4	Explain the functionality of file systems, I/O systems, and Virtualization
CO5	Compare iOS and Android Operating Systems.



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Course Code & Course Name : GE3451 Environmental Sciences and Sustainability

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
CO2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the prevention of the same in the society.
CO3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
CO4	To recognize the different goals of sustainable development and apply them for suitable technological advancement.
CO5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and their impact on urbanization.

Course Code & Course Name : CS3461 Operating Systems Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Define and implement UNIX Commands.
CO2	Compare the performance of various CPU Scheduling Algorithms.
CO3	Compare and contrast various Memory Allocation Methods.
CO4	Define File Organization and File Allocation Strategies.
CO5	Implement various Disk Scheduling Algorithms.

Course Code & Course Name : CS3481 Database Management Systems Laboratory

COURSE OUTCOMES (COs)

List of Course Outcomes

CO 1	Create databases with different types of key constraints.
CO 2	Construct simple and complex SQL queries using DML and DCL commands.



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CO 3	Use advanced features such as stored procedures and triggers and incorporate in GUI based application development.
CO 4	Create an XML database and validate with meta-data (XML schema).
CO 5	Create and manipulate data using NOSQL database.



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V SEMESTER



Course Code & Course Name :CS3591 Computer Networks

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Explainthebasiclayersanditsfunctionsincomputernetworks
CO2	Understandthebasics ofhowdataflowsfromonenodetoanother.
CO3	Analyze routing algorithms.
CO4	Describeprotocolsforvariousfunctionsinthenetwork.
CO5	Analyzetheworkingof variousapplicationlayerprotocols.

Course Code & Course Name : CS3501 Compiler Design

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	CO1: Understandthetechniquesindifferentphasesof acompiler
CO2	Design alexicalanalyserforasamplelanguageandlearntousetheLEXtool.
CO3	ApplydifferentparsingalgorithmstodevelopaparserandlearntouseYACCtool
CO4	Understandsemanticrules(SDT),intermediatecodegenerationandruntimeenvironment
CO5	Implementcodegenerationandapplycodeoptimizationtechniques.

Course Code & Course Name : CB3491 Cryptography and Cyber Security

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the fundamentals of networks security, security architecture, threats andvulnerabilities
CO2	Applythedifferentcryptographicoperationsof symmetriccryptographicalgorithms
CO3	Apply the different cryptographic operations of public key cryptography
CO4	Apply the various Authentication schemes to simulate different applications.
CO5	Understand various cyber crimesand cybersecurity



Course Code & Course Name : CS3551 Distributed Computing

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Explain the foundations of distributed systems (K2)
CO2	Solve synchronization and state consistency problems (K3)
CO3	Use resource sharing techniques in distributed systems (K3)
CO4	Apply working model of consensus and reliability of distributed systems (K3)
CO5	Explain the fundamentals of cloud computing (K2)

Course Code & Course Name : CCS375 Web Technologies

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Construct a basic website using HTML and Cascading Style Sheets
CO2	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.
CO3	Develop server-side programs using Servlets and JSP.
CO4	Construct simple web pages in PHP and to represent data in XML format.
CO5	Develop interactive web applications

Course Code & Course Name : CCS366 Software Testing and Automation

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understand the basic concepts of software testing and the need for software testing
CO2	Design Test planning and different activities involved in test planning
CO3	Design effective test cases that can uncover critical defects in the application
CO4	Carry out advanced types of testing
CO5	Automate the software testing using Selenium and TestNG



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Course Code & Course Name :MX3084 Disaster Risk Reduction And Management

COURSE OUTCOMES (COs)

List of Course Outcomes

CO 1	To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)
CO 2	To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction
CO 3	To develop disaster response skills by adopting relevant tools and technology
CO 4	Enhance awareness of institutional processes for Disaster response in the country
CO 5	Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity



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VI SEMESTER



Course Code & Course Name :CCS356 Object Oriented Software Engineering

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	ComparevariousSoftwareDevelopment LifecycleModels
CO2	Evaluate project management approaches as well as cost and schedule estimationstrategies.
CO3	Performformalanalysisonspecifications.
CO4	UseUMLdiagramsforanalysisanddesign.
CO5	Architectanddesignusingarchitecturalstylesanddesignpatterns,andtestthesystem

Course Code & Course Name :CS3691 Embedded Systems and IoT

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Explainthearchitectureof embeddedprocessors.
CO2	Write embedded Cprograms.
CO3	Designsimpleembeddedapplications.
CO4	ComparethecommunicationmodelsinIOT
CO5	DesignIoTapplicationsusing Arduino/RaspberryPi/openplatform

Course Code & Course Name :OEE351 Renewable Energy System

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Attainedknowledgeaboutvarious renewableenergytechnologies
CO2	AbilitytounderstandanddesignaPVsystem.
CO3	Understandtheconcept ofvariouswindenergysystem.
CO4	Gainedknowledgeaboutvariouspossiblehybridenergysystems
CO5	Attainedknowledgeaboutvariousapplicationof renewableenergytechnologies



Course Code & Course Name :CCS370 UI and UX Design

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	BuildUIforuserApplications
CO2	Evaluate UX design of any product or application
CO3	Demonstrate UX Skills in product development
CO4	ImplementSketching principles
CO5	CreateWireframeandPrototype

Course Code & Course Name :CCS354 Network Security

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Classifytheencryptiontechniques
CO2	Illustratethekeymanagementtechniqueandauthentication.
CO3	Evaluatethesecuritytechniquesappliedtonetworkandtransport layer
CO4	Discusstheapplicationlayersecuritystandards.
CO5	Applysecuritypracticesforrealtimeapplications.

Course Code & Course Name :CCS352 Multimedia and Animation

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	GetthebiggerpictureofthecontextofMultimediaanditsapplications
CO2	Usethedifferenttypes ofmediaelementsfordifferentformats oncontent pages
CO3	Author2Dand3Dcreativeandinteractivepresentationsfordifferenttargetmultimediaapplications.
CO4	Usedifferentstandardanimationtechniquesfor2D,21/2D,3Dapplications
CO5	Understandthecomplexityofmultimediaapplicationsinthecontextofcloud,security,bigdatastreaming,socialnetworking,CBIRetc



Course Code & Course Name :MX3089 Industrial Safety

COURSE OUTCOMES (COs)

List of Course Outcomes

CO1	Understandthebasicconceptofsafety.
CO2	ObtainknowledgeofStatutoryRegulationsandstandards.
CO3	KnowaboutthesafetyActivities oftheWorkingPlace.
CO4	AnalyzeontheimpactofOccupationalExposuresandtheirRemedies
CO5	ObtainknowledgeofRisk AssessmentTechniques