DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING	
COURSE OUTCOMES (MIC18)	
I SEMESTER (I BTECH-I SEM)	
18CS1T1	ENGLISH-1
CO 1	Use English language, both written and spoken, competently and correctly
CO 2	Improve comprehension and fluency of speech.
CO 3	Gain confidence in using English in verbal situations.
CO 4	Hone the communication skills to meet the challenges of their careers very successfully.
CO 5	Strengthen communication skills in different contexts like formal and informal
18CS1T2	LINEAR ALGEBRA & DIFFERENTIAL EQUATIONS
CO 1	Apply the knowledge to solve a system of homogeneous and non-homogeneous linear equations
CO 2	Optimize functions of several variables and able to find extreme values of constrained functions
CO 3	Able to analyze the real-life situations, formulate the differential equations and then applying the methods
CO 4	Apply the knowledge to solve the linear differential equations
CO 5	Provide the techniques of Laplace transformations and able to solve problems related to digital signal processing
18CS1T3	APPLIED PHYSICS
CO 1	Study of lasers and optical fibers with an emphasis of their application in communication in particular.
CO 2	Outline the principles of Quantum mechanics to understand the principles of solid state materials for use in engineering applications
CO 3	The Analytical study of response of materials to Electromagnetic fields.
CO 4	To study various magnetic and dielectric materials and their Engineering applications.
CO 5	To Gain knowledge on the physics of semiconductors for their engineering applications
18CS1T4	PROBLEM SOLVING APPROACHES
CO 1	To formulate simple algorithms for arithmetic, logical problems and translate them to programs in c language.
CO 2	To implement conditional branching, iteration and recursion.
CO 3	To decompose a problem into functions and synthesize a complete program using divide and conquer approach.
CO 4	To use arrays, pointers and structures to formulate algorithms and programs.
CO 5	To apply programming to solve matrix addition and multiplication problems and searching and sorting problems.

18CS1T05	**ENGINEERING GRAPHICS**
CO 1	Draw the polygons, ellipse, parabola, hyperbola, cycloids and involutes for various types of profiles.
CO 2	Construction of various scales like plain, diagonal and venier scales .Draw the orthographic projections of the points, lines.
CO 3	Draw the projections of planes
CO 4	Draw the projections of solids
CO 5	Convert Orthographic projections to isometric projection and vice versa.
18CS1L06	**ENGLISH COMMUNICATION SKILLS LAB-1**
CO 1	The student will acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
18CS1T07	**APPLIED PHYSICS LAB**
CO 1	Implement the basic principles of Optics through various phenomena of light.
CO 2	Implement the basic principles of Mechanics to measure different physical parameters.
CO 3	Enhance the knowledge of Usage of electronic devices in various applications
18CS1L08	**PROBLEM SOLVING LAB USING C AND PYTHON**
CO 1	Demonstrate Knowledge on various concepts of a C language.
CO 2	Able to draw flowcharts and write algorithms.
CO 3	Able design and development of C problem solving skills.
CO 4	Able to design and develop modular programming skills.
CO 5	Able to trace and debug a program
18CS1T09	**ENVIRONMENTAL STUDIES**
CO 1	The importance of environment, Natural resources and current global environmental challenges for the sustenance of the life on planet earth
CO 2	The concepts of the ecosystem and its function in the environment
CO 3	The biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CO 4	The various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CO 5	The environmental legislations of India and Social issues and the possible means and EIA
18CS2T01	**ENGLISH-II**
CO 1	Use English language in various contexts
CO 2	Improve comprehension and fluency of speech
CO 3	Appreciate a literary text
CO 4	Hone the communication skills to meet the challenges of their careers very successfully
CO 5	Understand the need for lifelong learning

18CS2T02	**NUMERICAL METHODS &VECTOR CALCULUS**
CO 1	Determine the solution of transcendental & linear equations by different numerical methods
CO 2	Illustrate the numerical methods to determine solutions for a class of ordinary differential equations involving irregularly shaped boundaries
CO 3	Determine the areas and volumes using multiple integration
CO 4	Interpret the divergence, gradient and curl physically
CO 5	Apply complex functions in the study of thermodynamics and electric fields
18CS2L03	**APPLIED CHEMISTRY**
CO 1	Study of polymers and composite materials enable us to use them in a good number of engineering fields
CO 2	Industries are run by the quality of fuels and energy crisis can be met by broad understanding of different fuels
CO 3	Electrochemical principles form the basis of batteries that are being developed. Destruction of metals and alloys can be prevented by understanding the science of corrosion.
CO 4	Study of the existing developed materials forms a basis for developing more number of advanced materials
CO 5	Methods of purification of water can be known so that more of them can be developed
18CS2T04	**BIOLOGY FOR ENGINEERS**
CO 1	Understand how biological observations lead to major discoveries and the morphological ,Biochemical and ecological classification of organisms
CO 2	Understand that all forms of life have the same building blocks and their involvement in the maintenance and metabolic processes of living organisms
CO 3	Classify enzymes and distinguish between different mechanisms of enzyme action and study the chemical reactions that are catalyzed by enzymes. Apply thermodynamic principles to biological systems and able to understand major chemical process that occur within a living organism in order to maintain life
CO 4	Identify DNA as genetic material in the molecular basis of information transfer
CO 5	Identify and classify micro-organisms, Understand media compositions and growth of microorganisms
18CS2T05	**BASIC ELECTRONICS & ELECTRICAL ENGINEERING**
CO 1	Understand basic semiconductor devices
CO 2	Observe characteristics diodes
CO 3	Analyze applications of Semiconductor diodes
CO 4	Characterize the Bipolar Junction Transistor in different modes
CO 5	Understand the construction and working of Field Effect Transistor
CO 6	To understand the concepts and applications of electronic devices
18CS2T06	**DATA STRUCTURES USING C**
CO 1	Understand the properties, interfaces, and behaviors of basic abstract data types.

CO 2	Understand and apply linked lists
CO 3	Apply Stacks and Queue data structures.
CO 4	Demonstrate different methods for traversing trees.
CO 5	Demonstrate the application of Graphs
18CS2L07	**APPLIED CHEMISTRY LAB**
CO 1	Student is exposed to different methods of chemical analysis and use of some commonly employed instruments, they thus acquire some experimental skills
18CS2L08	**BASIC ELECTRONICS & ELECTRICAL ENGINEERING LAB**
CO 1	Measure voltage, frequency and phase of any waveform using CRO
CO 2	Generate sine, square and triangular waveforms with required frequency and amplitude using function generator
CO 3	Analyze the characteristics of different electronic devices such as diodes, transistors etc., and simple circuits like rectifiers, amplifiers etc.
18CS2L09	**DATA STRUCTURES USING C LAB**
CO1	Understand the properties, interfaces, and behaviors of basic abstract data types.
CO2	Understand and apply linked lists
CO3	Apply Stacks and Queue data structures.
CO4	Demonstrate different methods for traversing trees.
CO5	Demonstrate the application of Graphs
18CS3T01	**PROBABILITY THEORY & STOCHASTIC PROCESSES**
CO 1	Understand random variables and discrete probability distributions
CO 2	Determine probabilities based on practical situations using the normal distributions
CO 3	Apply different distributions to compute confidence intervals
CO 4	Test the hypothesis concerning means and proportions
CO 5	Understand the concept of least square estimation linear regression
18CS3T02	**OBJECT ORIENTED PROGRAMMING**
CO 1	Understand the principles of object oriented concepts. Define classes and objects by identifying real world entities, their properties and functionalities.
CO 2	Reuse the existing classes by using inheritance and understand the concepts of packages and exception handling.
CO 3	Make use of built-in classes in Java and understand the concept of thread.
CO 4	Develop user interfaces using applets, AWT and Event handling in java.
CO 5	Create portable GUI applications using Swing components.
18CS3T03	**DIGITAL LOGIC DESIGN**
CO 1	Apply Boolean laws & theorems to digital Logic functions; simplify the Boolean functions to the minimum number of literals
CO 2	Design different types of combinational logic circuits using Adders, Subtractors, Decoders, Multiplexers and Magnitude Comparators

CO 3	Design clocked sequential logic circuits using flip flops
CO 4	Design different types of Counters, Registers
CO 5	Contrast Programmable logic devices(PROM, PAL, and PLA) and its design
18CS3T04	**EFFECTIVE TECHNICAL COMMUNICATION**
CO 1	Learn different ways of enhancing their range of vocabulary
CO 2	Improve their writing skills
CO 3	Identify common errors in writing
CO 4	Hone their skills needed for making presentations and succeed at interviews
CO 5	Gain practical knowledge about the soft skills required
18CS3L08	**ADVANCED DATA STRUCTURES LAB**
CO 1	Develop indices.
CO 2	Implement various search trees.
CO 3	Create a graph and traverse the graph
CO 4	Develop code for shortest path problems.
CO 5	Develop indices.
18CS3L09	**R PROGRAMMING LAB**
CO 1	Implement the basic concepts and data structures of R.
CO 2	Implement loops and functions in R
CO 3	Implement mathematical functions and handling files
CO 4	Apply the different distributions
CO 5	Use various graphical tools in R
18CS3T06	**CONSTITUTION OF INDIA**
CO 1	Know the sources, features and principles of Indian Constitution.
CO 2	Learn about Union Government, State government and its administration.
CO 3	Get acquainted with Local administration and Pachayati Raj.
CO 4	Be aware of basic concepts and developments of Human Rights.
18CS4T01	**DISCRETE MATHEMATICS**
CO 1	Apply mathematical logic to design new programming languages
CO 2	Illustrate the properties of sets and functions to design a modelling software system
CO 3	Explain a structure of an algebra which is useful to understand the theory of sequential machines, formal languages and coding theory
CO 4	Apply the techniques of recursion for representing the data in the analysis of algorithms
CO 5	Provide the knowledge of graphs such as trees which is useful in maintaining files and directories by OS

18CS4T02	**DATABASE MANAGEMENT SYSTEMS**
CO 1	Describe a database and different database models
CO 2	Design Entity Relationship models And Relational Model
CO 3	Design and implement queries using Structured Query Language
CO 4	Design database schema using normalization.
CO 5	Understand the characteristics of database transaction management.
18CS4T03	**COMPUTER ORGANIZATION & ARCHITECTURE**
CO 1	Understand the architecture of a modern computer with its various processing units.
CO 2	Understand RTL, micro operations, instruction cycle
CO 3	Understand the features of hardwired and micro programmed control units.
CO 4	Analyze the memory hierarchy system and performance improvement by cache memory.
CO 5	Analyze the communication methods of I/O devices and standard I/O interfaces.
18CS4T04	**OPERATING SYSTEMS**
CO 1	Understand the functionalities of an operating system and Evaluate different CPU scheduling algorithms.
CO 2	Apply synchronization to cooperating processes and handle the deadlocks
CO 3	Learn various management techniques for efficient utilization of system memory.
CO 4	Understand and analyze theory and implementation offiles and Evaluate different disk scheduling algorithms.
CO 5	Analyze the functionalities in various operating systems.
18CS4T05	**MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS**
CO 1	The Learner is equipped with the knowledge of estimating the Demand for a product and the relationship between Price and Demand.
CO 2	One should understand the Cost Concepts for decision making and to estimate the least cost combination of inputs.
CO 3	One has to understand the nature of different markets and Price Output determination under various market conditions.
CO 4	One should equipped with the knowledge of different Business Units
CO 5	The Learner is able to prepare Financial Statements and the usage of various Accounting tools for Analysis.
18CS4T06	**PROFESSIONAL ETHICS**
CO 1	It gives a comprehensive understanding of a various issues that are encountered by every professional in discharging professional duties
CO 2	It provides the student the sensitivity and global outlook in the contemporary world to fulfill the professional obligations effectively.
18CS4L07	**OPERATING SYSTEMS &LINUX PROGRAMMINGLAB**
CO 1	Implement various basic functionalities of operating systems
CO 2	Illustrate kernel functionalities using LINUX

18CS4L08	**DATABASE MANAGEMENT SYSTEMS LAB**
CO 1	Create own database.
CO 2	Manipulate data in database using SQL language.
CO 3	Experiment with various SQL queries with database created
CO 4	Write programs using PL/SQL language.
CO 5	Create triggers using PL/SQL.
18CS4L09	**PYTHON PROGRAMMING LAB**
CO 1	Structure simple Python programs for solving problems.
CO 2	Decompose a Python program into functions.
CO 3	Represent compound data using Python lists, tuples, and dictionaries.
CO 4	Read and write data from/to files in Python Programs.
18CS5T01	**DATA MINING & WAREHOUSING**
CO 1	Identify the scope and necessity of Data Mining & Warehousing for the society.
CO 2	Describe the design of Data Warehousing so that it can be able to solve the root problems.
CO 3	To understand various tools of Data Mining and their techniques to solve the real time problems.
CO 4	To develop ability to design various algorithms based on data mining tools.
CO 5	To develop further interest in research and design of new Data Mining Techniques.
18CS5T02	**WEB TECHNOLOGIES**
CO 1	Analyze a web page and identify its elements and attributes.
CO 2	Create web pages using HTML and Cascading Styles sheets.
CO 3	Build dynamic web pages and client-side scripts using AJAX
CO 4	Build web applications using PHP.
CO 5	Develop interactive web pages that include databases
18CS5T03	**DESIGN AND ANALYSIS OF ALGORITHMS**
CO 1	Understand the performance Analysis of an Algorithm using Space and Time Complexities
CO 2	Describe, apply and analyze the complexity of divide and conquer strategy.
CO 3	Synthesize efficient Algorithms for common engineering problems using Greedy Method.
CO 4	Apply and analyze the complexity of dynamic programming strategy.
CO 5	Ability to solve complex problems using Back Tracking and Branch & Bound.
18CS5T04	**FORMAL LANGUAGES & AUTOMATA THEORY**
CO 1	Understand the basic concepts of Automata Theory
CO 2	Infer the equivalence of languages described by finite automata and regular expressions.
CO 3	Devise regular, context free grammars while recognizing the strings and tokens and able to Normalize grammars.

18CS5T05	**OBJECT ORIENTED ANALYSIS AND DESIGN**
CO 1	Understand the necessity of Object Modeling
CO 2	Represent classes, responsibilities and states using UML notation.
CO 3	Demonstrate knowledge about the conceptual Model of UML.
CO 4	Model the event driven state of object and transform them into implementation specific layouts.
CO 5	Identify, Analyze the subsystems, various components and collaborate them interchangeably.
18CS5T09	**OPTIMIZATION TECHNIQUES**
CO 1	Understand the methodology of Operations Research & concepts of linear programming
CO 2	Formulate the solutions to transportation problems
CO 3	Explain the solutions for various sequencing problems
CO 4	Apply game theory to solve real world problems
CO 5	Illustrate the solutions to different replacement policies
18CS5L16	**DATA MINING LAB**
CO 1	Learn about WEKA tool and its applications
CO 2	Extract knowledge using Data Mining techniques.
CO 3	Adapt to new Data Mining tools.
CO 4	Explore recent trends in Data Mining such as Web mining, spatial-temporal mining,
18CS5L10	**WEB TECHNOLOGIES LAB**
CO 1	Knowledge of HTML, Java Script and XML to develop web applications
CO 2	Understanding about JDBC connections and Java Mail API
CO 3	Acquire Knowledge of the design and development process of a complete web application
18CS5L17	**ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE**
CO 1	Understand the significance of Indian Traditional Knowledge
CO 2	Classify the Indian Traditional Knowledge
CO 3	Compare Modern Science with Indian Traditional Knowledge system.
CO 4	Analyze the role of Government in protecting the Traditional Knowledge
CO 5	Understand the impact of Philosophical tradition on Indian Knowledge System.
18CS6T01	**COMPILER DESIGN**
CO 1	Acquire knowledge in different phases and passes of Compiler.
CO 2	Demonstrate knowledge about scanning of tokens and perform the syntax analysis by using Top-down parsing techniques.
CO 3	Perform the syntax analysis by using Bottom Up parsing techniques for more complex grammars.
CO 4	Compare different memory management techniques in runtime environment.
CO 5	Demonstrate knowledge about compiler generation tools and techniques.

18CS6T02	**COMPUTER NETWORKS**
CO 1	Independently enumerate the layers of the OSI model and TCP/IP
CO 2	Identify the different types of network topologies and protocols.
CO 3	Compare and contrast methods to identify Errors and correct them.
CO 4	Differentiate between various network routing algorithms.
CO 5	Understand WWW and HTTP Architectures.
18CS6T03	**SOFTWARE ENGINEERING**
CO 1	Understand the perspective of various software process models
CO 2	Understand the Requirements Engineering Process and compile an SRS
CO 3	Analyze the requirements and perform a Design
CO 4	Apply testing principles on software project and understand the maintenance concepts.
CO 5	Identify risks, manage the change to assure quality in software projects
18CS6T06	**UNIX & SHELL PROGRAMMING**
CO 1	Create powerful data processing applications using UNIX shell and commands
CO 2	Manage data, files and programs at command line using UNIX
CO 3	Create and modify data files and documents using editors and tools
CO 4	Demonstrate knowledge of creating new commands.
CO 5	Develop Scripts and programs that demonstrate effective use of structured programming.
18CS6T07	**EMPLOYABILITY SKILLS: QUANTITATIVE APTITUDE & REASONING**
CO 1	Understand the basics concepts of Numerical Ability & Reasoning Skills
CO 2	Use the logical thinking and analytical abilities to solve Quantitative aptitude questions from companies specific and other competitive tests
CO 3	Solve questions related to time and distance, time and work ,percentages, simple interest and compound interest etc.
CO 4	Solve questions related to coding and decoding, number series, directions, puzzles ,etc.
CO 5	Understand and solve puzzle related questions for competitive and campus placements exams.
18CS6L21	**COMPUTER NETWORKS LAB**
CO 1	Practical orientation of networking concepts
CO 2	To teach students various forms of IPC through UNIX and socket Programming
18CS6L22	**SOFTWARE ENGINEERING LAB**
CO 1	Prepare SRS document, design document, test cases and software configuration management and risk management related document.
CO 2	Develop function oriented and object oriented software design using tools like rational rose.
CO 3	Design and develop Test Cases for a system

CO 4	Track the progress of a project using various tools.
18CS6T23	**ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE**
CO 1	Understand the concept of Traditional knowledge and its importance
CO 2	Know the need and importance of protecting traditional knowledge
CO 3	Know the various enactments related to the protection of traditional knowledge.
CO 4	Understand the concepts of Intellectual property to protect the traditional knowledge
18CS7T01	**BIG DATA & HADOOP**
CO 1	Understand methods for data summarization, query, and analysis.
CO 2	Apply data modeling techniques to large data sets
CO 3	Creating applications for Big Data analytics
CO 4	Building a complete business data analytic solution.
CO 5	Understand programming tools PIG & HIVE in Hadoop eco-system.
18CS7T02	**CRYPTOGRAPHY & NETWORK SECURITY**
CO 1	Understand the need of information security and its importance.
CO 2	Apply symmetric security mechanisms for confidentiality
CO 3	Apply asymmetric security mechanisms for confidentiality
CO 4	Apply digital signature techniques for authentication
CO 5	Understand network security designs using available secure solutions (such as PGP, SSL, IPSec)
18CS7T05	**DATA ANALYTICS**
CO 1	Understand big data and data analytics life cycle.
CO 2	Explore various supervised learning methods.
CO 3	Explore various unsupervised learning methods.
CO 4	Understand and apply ARIMA model on time series data.
CO 5	Learn various technology and tools in big data analytics.
18CS7T07	**SOFTWARE TESTING METHODOLOGIES**
CO 1	Have an ability to apply software testing knowledge and engineering methods.
CO 2	Ability to identify the needs of software test automation, and define a test tool to support test automation.
CO 3	Understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.
CO 4	Use various communication methods and skills to communicate with their teammates to conduct their practice-oriented software testing projects.
CO 5	Apply techniques and skills to use modern software testing tools to support software testing projects.
18CS7T19	**GLOBAL ENVIRONMENT TRENDS**
CO 1	To impart the students about the knowledge on Global Environments
CO 2	To understand about Trade Theories and their applications

CO 3	To learn and understand about International Marketing
CO 4	To learn and understand about Financial Management
CO 5	To learn and understand about Human Resources and Management
18CS7L20	**BIG DATA & HADOOP LAB**
CO 1	Preparing for data summarization, query and analysis.
CO 2	Applying data modeling techniques to large data sets.
CO 3	Creating applications for Big data Analytics.
CO 4	Building a complete business data analytic solution.
18CS8T01	**CLOUD COMPUTING**
CO 1	Explain and characterize different cloud deployment models and service models
CO 2	Understand different cloud programming platforms and tools
CO 3	Illustrate Virtualization for Data-Center Automation.
CO 4	Identify the security issues in cloud computing
CO 5	Understand various basic concepts related to cloud computing technologies
18CS8T05	**HUMAN COMPUTER INTERACTION**
CO 1	Describe typical human–computer interaction (HCI) models, styles, and various historic HCI paradigms.
CO 2	Apply an interactive design process and universal design principles to designing HCI systems.
CO 3	Understand the importance of Natural Languages in computing interactions.
CO 4	Analyze and identify user models, user support, socio-organizational issues, and stakeholder requirements of HCI systems.
CO 5	Discuss tasks and dialogs of relevant HCI systems based on task analysis and dialog design.
18CS8T08	**SATELLITE COMMUNICATION**
CO 1	Understand the basic concepts, applications, frequencies used and types of satellite communications
CO 2	Understand the concept of look angles, launches and launch vehicles and orbital effects in satellite Communications
CO 3	Understand the various satellite subsystems and its functionality
CO 4	Understand the concepts of satellite link design and calculation of C/N ratio
CO 5	Understand the concepts of multiple access and various types of multiple access techniques in satellite Systems
18CS8T05	**ADDITIVE MANUFACTURING**
CO 1	Understand the working principle and process parameters of AM processes
CO 2	Explore the applications of AM processes in various fields
CO 3	Apply the suitable process and material for fabricating a given product
CO 4	Use the suitable post process based on product application
CO 5	Design and develop a product for AM Process