DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING IN DATA SCIENCE						
SEM: III (R19)						
Course Code:	**CSC301**		**Course Name**	**ENGINERING MATHEMATICS-III**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1,2,5	-	1.6	1.6.1,2.6.3	3	1	Apply the concept of Laplace transforms and use to solve real integrals in engineering problems
2,3	-	2.5	2.5.2,3.5.6	3,5	2	Identify the concept of inverse laplace transform and compare to various functions and its applications
3,4	-	3.5	3.5.6,4.5.1	3,6	3	Develop and determine Fourier series for real life problems and applications.
1,2	-	2.8	1.6.1,2.8.1	3,4	4	Apply the properties of Complex analysis and select the application to orthogonal trajectories.
2,3,5	-	5.4	2.6.3,5.4.2	3	5	Use the concept of statistical techniques to solve problems in data science, machine learning and AI.
1,2,12	-	1.2	1.2.2,2.8.1, 12.5.2	3	6	Apply the concept of probability, expectation to determine the spread of data and probability distribution.
Course Code:	**CSC302**		**Course Name**	**DISCRETE STRUCTURE AND GRAPH THEORY**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1	1	1.1	1.1.1	3	1	Apply clear thinking for problem solving using laws of logic and mathematical induction.
2	1	2.5	2.5.3	3	2	Apply the knowledge of Discrete Structure to solve complex relations and functions to find appropriate solution
2	1	2.6	2.6.3	3	3	Analyze complex relations and design Hasse diagram and Lattice
2	1	2.8	2.8.1	4	4	Apply formulate and analyse permutation and combination using principle of mathematics.
4	1	4.6	4.6.1	4	5	Use different algebra structures to analyse data.
4	1	4.6	4.6.3	4	6	Apply concepts of graph theory in solving real world problems.
Course Code:	**CSC303**		**Course Name**	**DATA STRUCTURE**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
3	_	2.5	2.5.2	1	1	Identify functionalities of Data structure of a computer-based system to solve a engineering problem
3	_	3.6	3.6.2	1	2	Able to produce a variety of potential design solutions suited to meet functional requirements for implementation of stack and queue
5	_	5.4	5.4.1	1	3	Identify different Linked list techniques for engineering activities
4	_	4.4	4.4.3	1	4	Able to choose appropriate tree traversal method to conduct the experiment.
5	_	5.4	5.4.2	6	5	Adapt graph traversal techniques to solve engineering problems
1	1	1	1.7.1	3	6	Apply theory and principles searching techniques of computer science and engineering to solve an engineering problem

Course Code:	CSC304		Course Name	DIGITAL LOGIC & COMPUTER ARCHITECTURE		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
2	2	2.6	2.6.5	1	1	To learn different number systems and basic structure of computer system.
1	2	1.2	1.2.1	5	2	To demonstrate the arithmetic algorithms.
4	2	4.6	4.6.1	3	3	To understand the basic concepts of digital components and processor organization.
2	2	2.8	2.8.2	1	4	To understand the generation of control signals of computer.
3	2	3.8	3.8.2	5	5	To demonstrate the memory organization.
2	2	2.6	2.6.4	1	6	To describe the concepts of parallel processing and different Buses.
Course Code:	CSC305		Course Name	COMPUTER GRAPHICS		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1	1	1.6	1.6.1	1	1	Describe the basic concept of Computer Graphics
2	1	2.5	2.5.3	2	2	Demonstrate various algorithms for basic graphics primitives.
1	2	1.2	1.2.1	3	3	Apply 2-D geometric transformations on graphical objects Matrix multiplication.
4	2	4.5	4.5.1	3	4	Use various Clipping algorithms on graphical objects.
2	2	2.7	2.7.2	4	5	Explore 3-D geometric transformations, curve representation techniques and projections methods.
5	2	5.4	5.4.2	6	6	Explain Visible Surface Detection Techniques And Animation
Course Code:	CSL301		Course Name	DATA STRUCTURE LAB		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
3	1	3.6	3.6.2	3	1	Able to produce a variety of potential design solutions suited to meet functional requirements for implementation of stack
3	1	3.6	3.6.2	4	2	Design potential solutions suited to meet functional requirements for implementation of queue
5	1	5.4	5.4.1	3	3	illustrate and apply different Linked list techniques for engineering activities
4	1	4.4	4.4.2	2	4	Able to choose appropriate tree traversal method to conduct the experiment.
5	2	5.4	5.4.2	2,4	5	Adapt graph traversal techniques to solve engineering problems
1	1	1.7	1.7.1	1,3	6	Apply theory and principles searching techniques of computer science and engineering to solve an engineering problem
Course Code:	CSL302		Course Name	DIGITAL LOGIC & COMPUTER ORGANIZATION AND ARCHITECTURE LAB		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
2	1	2.4	2.4.4	2	1	Understand the basics implementation of gates.
4	2	4.2	4.2.1	6	2	Implement arithmetic operations using Multiplexer/demultiplexer.
2	1	2.1	2.1.2	2	3	Understand and learn about basics of counters .
2	2	2.4	2.4.1	6	4	Implement arithmetic operations using various algorithms.
4	2	4.1	4.1.3	2, 6	5	Understand and implement the processor designing.
1	2	1.3	1.3.1	5	6	Implement the operation of memory and caches.
Course Code:	CSL303		Course Name	COMPUTER GRAPHICS LAB		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1	1	2.5	2.5.3	2	1	Implement various algorithms for basic graphics primitives

3	1	3.6	3.6.2	2	2	Implement various filled area primitive algorithms
1	2	1.2	1.2.1	3	3	Apply transformation on graphical objects
4	2	4.5	4.5.1	3	4	Apply clipping algorithms on graphical objects
2	2	2.7	2.7.2	4	5	Perform curve and fractal generation methods.
5	2	5.4	5.4.2	6	6	Develop a Graphical application/Animation based on learned concept
Course Code:	**CSL304**		**Course Name**	**OOPM LAB**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1	1	1.6	1.6.1	2	1	Understanding fundamental programming constructs
3	1,2	3.6	3.6.2	4	2	Illustrate the concept of packages, classes and objects.
5	2	5.4	5.4.2	3	3	To extend the concept of strings, arrays and vectors.
3	-	3.6	3.6.1	4	4	To implement the concept of inheritance and interfaces
4	1,2	4.5	4.5.1	2	5	Deep understating of handling exceptions and threads in JAVA Programming
4	2	4.4	4.4.3	3	6	Illustrating GUI based application.
Course Code:	**CSM301**		**Course Name**	**MINI PROJECT 1 A**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
9	2	9.4	9.4.2	1,5	1	Understand problems and use knowledge and skills to interpret societal/research problems in a group
9	1	9.5	9.5.1	6	2	Build interpersonal skills to work as member of a group or leader
7	1	7.3	7.3.2	2	3	Design the proper inference through theoretical/experimental/simulation and illustrate the impact of solution in social, environmental context for sustainable
1	2	1.6	1.6.1	3	4	Apply standard norms of engineering practices
10	1	10.4	10.4.2	6	5	Develop in written and oral communication
9	2	9.6	9.6.1	3,6	6	Apply project management principles and capabilities of self-learning in a group for a lifelong learning

SEM: IV (R 19)						
Course Code:	**CSC401**		**Course Name**	**ENGINEERING MATHEMATICS-IV**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1,2,3	-	1.7	1.7.1	3	1	Apply The Concept Of Eigenvalues And Eigenvectors In engineering problems
2,4	-	2.8	2.8.1	3,5	2	Use the concepts of Complex integration for evaluating integrals ,computing residues and evaluate various contour integrals.
1,5	-	5.4	5.4.2	3	3	Apply the concept of Z-transformation and inverse in engineering problem.
1,2,12	-	2.8	2.8.4,	3,2	4	Illustrate understanding the concept of probability distribution and sampling theory to engineering problem.
1,4	-	4.5	4.5.1	3	5	Apply the concept of Linear programming problems to optimization.
2.4	-	2.6	2.6.3	3	6	Solve Non linear programming problem for optimization of engineering problem.
Course Code:	**CSC402**		**Course Name**	**ANALYSIS OF ALGORITHMS**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
2	1	2.8	2.8.2	3,4	1	Analyze the running time and space complexity of algorithms.
`1	1	1.2	1.2.2	3,4	2	Describe, apply and analyze the complexity of divide and conquer strategy.
1	1	2.7	1.2.2	3,4	3	Describe, apply and analyze the complexity of greedy strategy.
2	1	2.4	2.7.1	2, 3, 4	4	Describe, apply and analyze the complexity of dynamic programming strategy.
2	1	2.4	2.4.3	3	5	Explain and apply backtracking, branch and bound.
2	1	2.1	2.1.1	3	6	Explain and apply string matching techniques.
Course Code:	**CSC403**		**Course Name**	**DATABASE MANAGEMENT SYSTEM**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
2	1	2.8	2.8.1	1,3	1	Identify and analyze the roles and responsibilities of different types of user and investigate the different architecture to find appropriate solution.
4	1	4.5	4.5.1	3	2	Understand and Design data modeling using ER and Extended ER features to meet the specified needs.
4	2	4.6	4.6.3	3	3	Investigate and apply different relational algebra operators to find appropriate solution leading to valid conclusion.
1	1	1.7	1.7.6	4	4	Investigate and formulate SQL queries to find appropriate solution to complex problems.
2	1	2.8	2.8.1	2	5	Analyze and apply different normalization techniques to process and meet the specified needs with appropriate solution
2	2	2.8	2.8.3	3	6	Identify the strength and limitation of tools for concept of transaction, concurrency and recovery
Course Code:	**CSC404**		**Course Name**	**OPERATING SYSTEM**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
2	1	1.2	1.2.1	3	1	Understand the objectives, functions and structure of Operating system.
2	1	1.1	1.1.1	3	2	Analyse the concept of process management and evaluate performance of process scheduling algorithms
2	1	2.5	2.5.3	3	3	Understand and apply the concepts of synchronization and deadlocks.
2	1	1.2	1.2.1	3	4	Evaluate performance of memory allocation and replacement policies
2	1	2.6	2.6.3	4	5	Understand the concepts of file management.
1,2	1	2.8	2.8.4	4	6	Apply concepts of I/O management and analyze techniques of disk scheduling

Course Code:	CSC405		Course Name	MICRO PROCESSOR		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
4	1	4.5	4.5.1	3	1	Apply basic engineering fundamentals to describe the architecture of 8086 processor .
2	1	2.8	2.8.2	3,4	2	Apply the instructions of 8086 to implement the assembly language program .Analyse and interpret the result of ALP using integrated tool.
3	1	3.8	3.8.1	2	3	Able to refine architecture design into detailed design using processor, memory chip or different peripheral ICs within existing constraints
7	1	7.3	7.3.2	3	4	Explore and synthesize 80386 system requirements from larger social and professional concerns
3	1	3.7	3.7.1	3	5	Able to perform systematic evaluation of degree of microprocessor from 8086 to Pentium to which several design concepts meet the criteria.
1	1	1.7	1.7.1	2	6	Apply basic engineering fundamentals to describe the hyperthreading technology in higher processors
Course Code:	**CSL401**		**Course Name**	**Analysis of Algorithms LAB**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1,2	1	1.7,2.8	1.7,2.8	3	1	Analyze the complexities of various problems in different domains.
1	1	1.2	1.2.2	2, 3,4	2	Describe, apply and analyze the running time of the basic algorithms for those classic problems in various domains using divide and conquer strategy.
1	1	1.2	1.2.2	2,3	3	Define and apply the efficient algorithms for the effective problem solving with the help of different strategies like greedy method.
2	1	2.7	2.7.1	3	4	Apply dynamic programming strategy to solve different problems effectively.
2	1	2.4	2.4.3	3	5	Recognize and apply backtracking, branch and bound and to deal with some hard problems.
2	1	2.6	2.6.2	3	6	Apply and analyze the string matching algorithms to find the pattern.
Course Code:	**CSL402**		**Course Name**	**DATABASE MANAGEMENT SYSTEM LAB**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
4	1	4.5	4.5.1	1	1	Identify and investigate the real life problem to find appropriate solution and design and draw ER and EER diagram with software tool
4	1	4.4	2.3.1	5	2	Design, Create and update database and tables with different DDL and DML statements
1	2	1.6	1.6.1	3	3	Apply appropriate integrity constraints and provide security to data.
2	1	2.8	2.8.1	5	4	Investigate and formulate SQL queries to find appropriate solution to complex problems.
6	1	6.3	6.3.1	3	5	Identify and apply triggers and procedures for specific module to meet the specified needs with appropriate solution to safety standards and societal
1	2	1.7	1.7.1	3	6	Use PL / SQL Constructs.
Course Code:	**CSL403**		**Course Name**	**OPERATING SYSTEM LAB**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1	1	1.2	1.2.1	2	1	Demonstrate basic operating system commands, shell scripts, system calls and API wrt Linux.
1	1	1.1	1.1.1	5	2	Determine various process scheduling algorithms.
2	1	2.5	2.5.3	4	3	Analyze the concept of synchronization and deadlocks.
1	1	1.2	1.2.1	5	4	Determine various memory management techniquees and evaluate their performance.
2	1	2.6	2.6.3	4	5	Identify the concept of virtual memory.
2	1	2.8	2.8.4	2,4	6	Demonstrate and analyze concept of file management and I/O management techniques.

Course Code:	CSL404		Course Name	MICRO PROCESSING LAB		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1	-	1.7	1.7.1	3	1	Explain basic engineering fundamentals to describe the architecture of 8086 processor .
2	-	2.8	2.8.2	3	2	Explain the instructions of 8086 to implement the assembly language program. Identify and interpret the result of ALP using integrated tool.
4	-	4.4	4.4.3	3	3	Design 8086 based system using Memory and peripheral chip.
2	-	2.8	2.8.3	4	4	Appraise the architecture of 80386 DX processor.
4	-	4.6	4.6.2	3	5	Determine the degree of microprocessor from 8086 to Pentium to which several design concepts meet the criteria.
1	-	1.7	1.7.1	2	6	Explain the hyper threading technology in higher processors
Course Code:	**CSL405**		**Course Name**	**PYTHON PROGRAMING LAB**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1	1	1.6	1.6.1	2	1	Understand basic concepts in python
3	1,2	3.6	3.6.2	3	2	Exploring contents of files, directories and text processing with python
4	2	4.5	4.5.1	6	3	Develop program for data structure using built in functions in python.
5	1	5.4	5.4.2	3	4	To explore django web framework for developing python-based web application.
3	1	3.6	3.6.1	3	5	Able to explore design alternatives
1	2	1.6	1.6.1	2	6	Understand the concept of numpy and pandas
Course Code:	**CSM401**		**Course Name**	**MINI PROJECT 1 B**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
9	2	9.4	9.4.2	1,5	1	Understand problems and use knowledge and skills to interpret societal/research problems in a group
9	1	9.5	9.5.1	6	2	Build interpersonal skills to work as member of a group or leader
7	1	7.3	7.3.2	2	3	Design the proper inference through theoretical/experimental/simulation and illustrate the impact of solution in social, environmental context for sustainable
1	2	1.6	1.6.1	3	4	Apply standard norms of engineering practices
10	1	10.4	10.4.2	6	5	Develop in written and oral communication
9	2	9.6	9.6.1	3,6	6	Apply project management principles and capabilities of self-learning in a group for a lifelong learning

SEM: V (R19)						
Course Code:	**CSC501**		**Course Name**	**COMPUTER NETWORK**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1	1	1.2	1.2.1	3	1	Apply the knowledge of fundamentals of data communication to identify the differences between OSI and TCP/IP models and connection less & connection-oriented services.
1	1	1.5	1.5.1	3	2	Apply the knowledge of data communication & analyze different types of media.
2	1	2.1	2.6.2	3	3	Apply the knowledge of different protocol used at Data link layer and identify and analyze differences in protocols
2	1	2.6	2.6.2, 2.6.3	3	4	Select and apply concepts of subnetting and supernetting.classify & compare transport layer protocols at network layer & Identify the protocols used at the application layer.
2	1	2.6	2.6.2, 2.6.3	4	5	Create & analyze the enter prize Network design model.
2	1	2.8	2.8.1,2.8.4	4	6	Create and analyze the software defined networks.
Course Code:	**CSC502**		**Course Name**	**WEB COMPUTING**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1	1	1.6	1.6.1	1	CO1	Describe and Recall various fundamentals of Web Programming.
5	2	5.4	5.4.1	3	CO2	Apply various concepts of Java Script for interactive web pages.
2	1	2.1	2.5.2	6	CO3	Understand the basics of REACT with installation.
1	2	1.7	1.7.1	6,1	CO5	Develop node js fundamentals.
3	2	3.5	3.5.1	6,1	CO4	Create node.js applications along with an express framework.
1	1	1.7	1.7.1	6	CO6	Formulation of Advance concepts of REACT.
Course Code:	**CSC503**		**Course Name**	**ARTIFICIAL INTELLIGENCE**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
2	**1**	**2.5**	**2.5.2**	**2**	**1**	Identify the characteristics of the environment and differentiate between various agent architectures.
4	**1**	**4.5**	**4.5.1**	**3**	**2**	Apply the most suitable search strategy to design problem solving agents.
2	**1**	**2.7**	**2.7.2**	**3**	**3**	Represent a natural language description of statements in logic and apply the inference rules to design Knowledge Based agents
2	**1**	**2.7**	**2.7.1**	**3**	**4**	Apply a probabilistic model for reasoning under uncertainty.
5	**1**	**5.4**	**5.4.1, 5.5.2**	**4**	**5**	Comprehend various learning techniques.
3	**2**	**3.7**	**3.7.1**	**5**	**6**	Describe the various building blocks of an expert system for a given real word problem.

Course Code:	CSC504		Course Name	DATA WAREHOUSING &MINING		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
4	2	4.4	4.4.2	2	1	Organize strategic data in an enterprise and build a data Warehouse.
4	2	4.6	4.6.1	4	2	Analyze data using OLAP operations so as to take strategic decisions and Demonstrate an understanding of the importance of data mining.
3	2	3.8	3.8.2	2	3	Organize and Prepare the data needed for data mining using pre preprocessing techniques
4	2	4.6	4.6.1	3	4	Implement the appropriate data mining methods like classification, clustering or Frequent Pattern mining on large data sets.
4	2	4.4	4.4.2	1,3	5	Define and apply metrics to measure the performance of various data mining algorithms
4	2	4.4	4.4.2	2	6	Understand Concepts related to Web mining
Course Code:	**CSDLO5011**		**Course Name**	**STATISTICS FOR ARTIFICIAL INTELLIGENCE & DATA SCIENCE**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
1	1	1.2	1.2.1	1	1	Apply the basics exploratory analysis on the datasets
1	2	1.5	1.5.1	3	2	Apply the various distribution and sampling
2	2	2.1	2.5.1	3	3	Apply Hypothesis Testing on datasets
1	2	1.7	1.7.1	4	4	Apply different techniques for Summarizing Data
1	2	1.7	1.7.1	3	5	Apply the Analysis of Variance to solve the problem
2	1	2.8	2.8.1	3	6	Apply the basics the Linear Least Squares
Course Code:	**CSDLO5013**		**Course Name**	**INTERNET OF THINGS**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
2	2	2.6	2.6.4	2,3	1	Describe the Characteristics and Conceptual Framework of IoT.
2	1	2.6,	2.6.4,2.6.5	2,4	2	Differentiate between the levels of the IoT architectures
2,3	2	2.8, 4.6	2.8.2,4.6.2	4	3	Analyze the IoT access technologies
6	1	6.3	6.3.1	2,4	4	Illustrate various edge to cloud protocol for IoT
2	2	2.7	2.7.1	3	5	Apply IoT analytics and data visualization
2	2	2.8	2.8.2	4	6	Analyze and evaluate IoT applications
Course Code:	**CSL504**		**Course Name**	**BUSINESS COMMUNICATIONAND ETHICS-II**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
3	-	3.5	3.5.1, 3.5.2	6	1	Design a technical document using precise language, suitable vocabulary and apt style
3	-	3.5	5.4.1	6	2	Develop writing skills of a cover letter and a CV/resume/SOP

4	-	4.5	4.5.1	6	3	Develop interpersonal skills to progress professionally by building strong relationships with peers
4	-	4.5	4.5.1	6	4	Develop effective presentation skills and an impressive body language
1	-	1.5	1.5.1	3	5	Apply codes of personal integrity, values, aptitudes and skills
1	-	1.5	1.5.1	2	6	Demonstrate awareness of contemporary issues, knowledge of professional and ethical responsibilities
Course Code:	**CSL501**		**Course Name**	**WEB COMPUTING AND NETWORK LAB**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
2	1	2.5	2.5.1	6	1	Identify and apply the appropriate HTML tags to develop a web page
2	1	2.5	2.5.1	6	2	Identify and apply the appropriate CSS tags to format data on web page
3	1	3.6	3.6.1	6	3	Design responsive websites using Bootstrap
3	1	3.6	3.6.2	6	4	Design web page using JavaScript to develop interactive web pages
4	2	4.6	4.6.1	6	5	Construct front end applications using React and back end using Node.js/express
2	2	2.8	2.8.2	4	6	Analyze the packet using simulator for CISCO packet tracer/GNS3
Course Code:	**CSL502**		**Course Name**	**ARTIFICIAL INTELLIGENCE LAB**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
4	1	4.5	4.5.1	3	1	Identify suitable Agent Architecture for a given real world AI problem
5	1	5.4	5.4.1	3	2	Implement simple programs using Prolog.
5	1	5.4	5.4.2	3	3	Implement various search techniques for a Problem-Solving Agent.
2	1	2.7	2.7.2	3	4	Represent natural language description as statements in Logic and apply inference rules to it.
4	2	4.5	4.5.1	6	5	Construct a Bayesian Belief Network for a given problem and draw probabilistic inferences from it
2	1	2.7	2.7.2	4	6	Analyze and understand any successful AI system.
Course Code:	**CSL503**		**Course Name**	**DATA WAREHOUSING & MINING LAB**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
5	1	5.5	5.5.1	6	1	Build a Data Warehouse and construct Star Schema and Snow Flake Schema
2	1	2.8	2.8.2	4	2	Analyze data using OLAP operations.
12	1	12.5	12.5.2	2	3	Demonstrate and understand the importance Data mining.
2	2	2.8	2.8.2	6	4	Prepare the data needed for data mining using pre-processing techniques
2	1	2.8	2.8.2	4	5	Analyze data and algorithms for mining.
5	2	2.5	2.5.2	3	6	Implement classification, clustering and association mining algorithms on large datasets
Course Code:	CSM501		**Course Name**	**MINI PROJECT: 2 A**		
PO	**PSO**	**Competency**	**PI**	**Bloom's Level**	**CO**	**Description**
2	2	2.1	2.5.1	4	1	Identify societal/research/innovation/entrepreneurship problems through appropriate literature surveys
2	2	2.1	2.5.2	5	2	Identify Methodology for solving above problem and apply engineering knowledge and skills to solve it
3	1	3.5	3.5.6	5	3	Able to validate, Verify the results using test cases/benchmark data/theoretical/ inferences/experiments/simulations
3	2	3.6	3.6.2	4	4	Analyze and evaluate the impact of solution/product/research/innovation /entrepreneurship towards societal/environmental/sustainable development

9	2	9.5	9.5.1	2	5	Demonstrate capabilities of self-learning, leading to lifelong learning
9	2	9.6	9.6.1	2	6	Develop interpersonal skills to work as a member of a group or as leader