Program Outcomes

1. **Communication Efficacy:** Communicate effectively with the computing community as well as society by being able to comprehend effective documentations and presentations.
2. **Modern Tool Usage:** Design, analyse and develop the computing systems using modern tools by considering the limitations.
3. **Solutions to Complex Problems:** Explore and design solutions for complex computing problems and design system components or processes using computing algorithms.
4. **Computational Knowledge:** Apply mathematics, sciences and computing fundamental and domain concepts to find out the solution of defined problems and requirements.
5. **Individual and team work** Function effectively as an individual, and as a member or leader in diverse teams.
6. **Project management:** Establishing strategies in developing and implementing ideas in multidisciplinary environments using computing and management skills
7. **Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
8. **Ethics:** Recognize the different value systems including own, understand the moral dimensions of own decisions.

PSO for MCA

Program Specific Outcomes

1. Empart skills to design and develop algorithms and implement those using high-level programming language.

2. To employ modern computer techniques to understand the structure and development methodologies of software systems.

3. Develop ability to choose career prospects in industry, academia and research and to communicate effectively and understand the professional, legal and social responsibilities.

Mapping:

PO ->	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
MCA ->	**PSO3**	**PSO2**	**PSO1**	**PSO2**	**PSO1**	**PSO2**	**PSO3**	**PSO3**

CO (MCA)

Subject Code		**CO**
MCAPS1-101 Computer Networks	CO1	Understand basic computer network technology, data communication system and its components
	CO2	Identify the different types of network topologies, protocols, layers of the OSI model and TCP/IP.
MCAPS1-102 Relational Database Management System	CO1	Understand the fundamental elements of database management systems, architecture of dbms, data models and normalization.
	CO2	Describe the operations for making and using databases with help of SQL and PL/SQL.
MCAPS1-103 Object Oriented Programming Using C++	CO1	Able to learn basics and programming skills of high-level language C++.
	CO2	Able to manage the memory by using dynamic memory management.
MCAPS1-104 Computer Organisation and Architecture	CO1	Examine the operation of the major building blocks of a computer system
	CO2	Design and organization of modern digital computers & basic assembly language
MCAPS1-105 Business Communication	CO1	Make student conversant with fundamentals of communication, help them honing oral, written and non-verbal communication skills and to transform their communication abilities.
MCAPS1-106 Relational Database Management System Lab	CO1	Design and implement database applications
	CO2	Apply the concept of Transaction Management & Recovery techniques in RDBMS.
MCAPS1-107	CO1	To practice programming from real world examples

Object oriented programming using C++ Lab	CO2	To create computer-based solutions to various real-world problems using C++
MCAPS1-108 Business Communication and Soft Skills Lab	CO1	To demonstrate his/her ability to write error free while making an optimum use of correct Business Vocabulary & Grammar
	CO2	To demonstrate verbal and non-verbal communication ability through presentations
MCAPS1-201 Data Structures	CO1	Learn to choose approporiate data structures and algorithms and use it to design solution for a specific problem
	CO2	Execute the operations of hashing to retrieve data from data structure
MCAPS1-202 Operating System	CO1	Describe the architecture in terms of functions performed by different types of operating systems.
	CO2	Analyze the performance of different algorithms used in design of operating system components
MCAPS1-203 Discrete Mathematics	CO1	Represent computing data using various mathematical notions.
	CO2	Describe various mathematical operations and formulas used to solve computing problems.
MCAPS1-204 Data Structures Lab	CO1	Be able to design and analyze the time and space efficiency of the data structure
	CO2	Be capable to choose the appropriate data structure for development of software systems.
MCAPS1-205 Operating System Lab	CO1	Install & configure different operating systems
	CO2	Write programs/ scripts for different scheduling algorithms.
MCAPD1-211 Dataware Housing and Data Mining	CO1	Understand operational database, data ware housing, need of database to meet industrial needs.
	CO2	Understand the knowledge about data mining, decision tree, generic algorithms and Fuzzy set approach.
MCAPD1-212 Business Intelligence and Digital Marketing	CO1	Understand the role of business intelligence and digital marketing within an organization
	CO2	Analyse and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.
MCAPD1-213 Software Testing and Quality Assurance	CO1	Analyse different approaches to software testing and quality assurance.
	CO2	Conduct independent research in software testing and quality assurance and apply that knowledge in practice
MCAPD1-221 Programming in Java	CO1	Learn the advanced features of Java
	CO2	Work with the JDBC technology and learn Java Generics and the development of Projects
MCAPD1-223 Programming With Python	CO1	Understand Python environment, data types, operators used in Python.
	CO2	Use Python to read and write files and Work with the Python standard library

MCAPD1-222 Programming In Java Lab	CO1	Learn Java Generics and develop Projects.
	CO2	Learn the advanced features of Java and write the programs to solve the specific problem.
MCAPD1-224 Programming with Python Lab	CO1	Solve simple to advanced problems using Python language
	CO2	Develop logic of various programming problems using numerous data types and control structures of Python.
MCAPS1-301 Artificial Intelligence	CO1	Apply artificial neural networks and fuzzy logic theory for various problems.
	CO2	Be exposed to the role of AI in different areas like NLP, Pattern Recognition etc.
MCAPS1-302 Design and Analysis Of Algorithm	CO1	Basic ability to analyze algorithms and to determine algorithm correctness and time efficiency
	CO2	Ability to apply and implement learned algorithm design techniques and data structures to solve problems.
MCAPS1-303 Information and Network Security	CO1	Apply Symmetric Encryption techniques.
	CO2	Understand the security requirements of Confidentiality, Integrity &Availability.
MCAPS1-304 Design and Analysis of Algorithm Lab	CO1	Design algorithm using an appropriate design paradigm for solving a given problem .
	CO3	Develop Algorithms using correct approach
MCAPD1-311 Lamp Technologies	CO1	Understand brief introduction to the open-source technologies
	CO2	Understand interactive sessions enabling students to enhance their skills in contributing and implementing their technical knowledge.
MCAPD1-313 Database Administration	Co1	Learn install and configure various database packages.
	CO2	Learn Database backup and recovery and perform database tuning and optimization.
MCAPD1-315 Cloud Computing	CO1	To understand the basic concepts Cloud Computing.
	CO3	Compare and evaluate the virtualization technologies.
MCAPD1-312 Lamp Technologies Lab	CO1	Correlate the Linux, Apache, MySQL and PHP for building an application.
	CO2	Implement application using JSP technology
MCAPD1-314 Database Administration Lab	CO1	Design, model and install any database management systems by using Oracle database as sample
	CO3	Compare and contrast by examining the database systems and new trends in data storage, data retrieval and maintenance techniques
MCAPD1-316 Cloud Computing Lab	CO1	Design and Implement applications on the Cloud
MCAPS1-401 Theory of Computation	CO1	Solve problems regarding thecomputability and complexity of computational problems
	CO2	Design Turing machine and Post machine for a given language.
MCAPS1-402 Current Trends and Technologies	CO1	Recognize the concepts of emerging technologies.

	CO2	Critically Analyse case studies to derive the best practice model to apply when developing and deploying parallel, distributed, cloud and IoT based applications.
MCAPS1-403 Software Project	CO1	Understand the conceptual clarity about project organization and feasibility analyses
	CO2	To apply tools and techniques to analyze and logically approach the organizational problems.
MCAPS1-404 Seminar	CO1	To improve the mass communication
	CO3	To enhance understanding skills of students.
MCAPD1-411 Big Data	CO1	Model and implement efficient big data solutions for various application .
	CO2	Analyze methods and algorithms, to compare and evaluate them with respect to time and space requirements.
MCAPD1-413 Dot Net Framework	CO1	To know about basic goals of the .NET Framework
	CO2	Develop secured web application
MCAPD1-415 Mobile Computing and Android	CO1	Develop useful mobile applications.
	CO2	Understand how to work with various mobile application development frameworks
MCAPD1-417 Soft Computing	CO1	Examine the useful search techniques; learn their advantages, disadvantages and comparison.
	CO2	To understand the features of neural network and its applications
MCAPD1-412 Big Data Lab	CO1	Ability to identify the characteristics of datasets and compare the trivial data and big data for various applications
	CO2	Ability to integrate machine learning libraries and mathematical and statistical tools with modern technologies like hadoop and mapreduce.
MCAPD1-414 Dot Net Framework Lab	CO1	Create user interactive web pages using ASP.Net.
	CO2	Performing Database operations for Windows Form and web applications.
MCAPD1-416 Mobile Computing and Android Lab	CO1	Apply essential Android Programming concepts
	CO2	Develop various Android applications related to layouts & rich uses interactive interfaces
MCAPD1-418 Soft Computing Lab	CO1	Determine the use of Genetic algorithm to obtain optimized solutions to problems
	CO2	Apply artificial neural networks and fuzzy logic theory for various problems
MCAPD1-421 Machine Learning	CO1	To learn the basic concepts, techniques and applications of machine learning
	CO2	To have a thorough understanding of the Supervised and Unsupervised learning techniques
MCAPD1-423 Computer Graphics	CO1	Understand the basics of computer graphics, different graphics systems and applications of computer graphics
	CO2	Learn algorithms for scan conversion and filling of basic objects and their comparative analysis
MCAPD1-425 Fog Computing and Internet Of Things	CO1	To understand Fog Computing technology and its architecture
	CO2	To gain practical know-how about various use-cases of fog computing.
MCAPD1-422 Machine Learning Lab	CO1	Design Java/Python programs for various Learning algorithms.
	Co2	Identify and apply Machine Learning algorithms to solve real world problems

MCAPD1-424 Computer Graphics Lab	CO1	Practical applications of graphics, Program development and basic animations without using graphical software.
	CO2	Implementation of various scan & clipping algorithms
MCAPD1-426 Fog Computing and Internet of Things Lab	Co1	Implement an architectural design for IoT for specified requirement

Mapping (PSO/CO)

PO		**PSO1**	**PSO2**	**PSO3**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
Subject Code	**CO**											
MCAPS1-101	CO1	1	2	3	-	1	2	3	-	-	-	-
	CO2	1	1	3	-	1	2	3	-	-	-	-
MCAPS1-102	CO1	1	3	2	-	-	-	-	-	-	-	-
	CO2	1	2	3	-	2	2	3	-	-	-	-
MCAPS1-103	CO1	3	2	2	-	2	3	2	-	-	-	-
	CO2	2	3	2	-	2	2	3	-	-	-	-
MCAPS1-104	CO1	1	1	3	-	1	2	3	-	-	-	-
	CO2	1	3	2	-	2	3	2	-	-	-	-
MCAPS1-105	CO1	1	1	3	3	-	-	-	2	-	-	-
MCAPS1-106	CO1	1	3	2	-	-	3	2	-	-	-	-
	CO2	2	3	2	-	-	3	-2	-	-	-	-
MCAPS1-107	CO1	3	2	2	-	2	3	2	-	-	-	-
	CO2	3	2	2	-	2	3	2	-	-	-	-
MCAPS1-108	CO1	1	1	3	3	-	-	-	2	-	-	-
	CO2	1	1	3	3	-	-	2	2	-	-	-
MCAPS1-201	CO1	3	2	2	-	2	3	2	-	-	-	-
	CO2	3	2	2	-	2	2	3	-	-	-	-
MCAPS1-202	CO1	2	2	3	-	-	-	3	-	-	-	-
	CO2	3	2	2	-	-	3	2	-	-	-	-
MCAPS1-203	CO1	1	3	1	-	1	-	3	-	-	-	-
	CO2	1	3	1	-	1	-	3	-	-	-	-
MCAPS1-204	CO1	3	2	1	-	1	3	2	-	-	-	-
	CO2	3	2	2	-	1	3	2	-	-	-	-
MCAPS1-205	CO1	1	2	3	-	-	-	3	-	-	-	-
	CO2	3	2	2	-	1	2	3	-	-	-	-
MCAPD1-211	CO1	1	2	3	-	-	2	3	-	-	-	-
	CO2	1	1	3	-	2	1	3	-	-	-	-
MCAPD1-212	CO1	1	1	3	-	2	-	3	-	-	-	-
	CO2	1	2	3	-	2	-	3	-	-	-	-
MCAPD1-213	CO1	1	2	3	-	-	-	2	-	3	-	-
	CO2	1	2	3	-	-	-	2	-	3	-	-

MCAPD 1-221	CO1	1	2	3	-	2	2	3	-	-	-	-
	CO2	1	3	2	-	2-	2	3	-	-	-	-
MCAPD 1-223	CO1	3	2	1	-	1	2	3	-	-	-	-
	CO2	3	2	2	-	1	2	3	-	-	-	-
MCAPD 1-222	CO1	3	2	2	-	2	2	3	-	-	-	-
	CO2	3	2	2	-	2	2	3	-	-	-	-
MCAPD 1-224	CO1	3	2	2	-	2	3	2	-	-	-	-
	CO2	3	2	2	-	2	3	2	-	-	-	-
MCAPS1 -301	CO1	2	3	1	-	2	2	3	-	-	-	-
	CO2	1	3	2	-	2	2	3	-	-	-	-
MCAPS1 -302	CO1	3	2	1	-	2	3	2	-	-	-	-
	CO2	3	2	2	-	2	3	2	-	-	-	-
MCAPS1 -303	CO1	1	3	2	-	2	-	3	-	-	-	-
	CO2	1	2	3	-	2	-	2	-	-	-	3
PSO		**PSO1**	**PSO 2**	**PSO 3**								
Subject Code	**CO**											
MCAPS1 -304	CO1	3	2	2	-	2	3	2	-	-	-	-
	CO2	3	2	2	-	2	3	2	-	-	-	-
MCAPD 1-311	CO1	1	3	2	-	3	-	2	-	-	-	-
	CO2	2	3	2	1	3	-	2	1	-	-	-
MCAPD 1-313	CO1	1	2	2	-	-	-	2	-	-	-	-
	CO2	1	2	3	-	-	-	3	-	-	-	-
MCAPD 1-315	CO1	1	3	2	-	3	-	2	-	-	-	-
	CO2	1	3	2	-	3	-	2	-	-	-	-
MCAPD 1-312	CO1	1	3	2	-	2	2	3	-	-	-	-
	CO2	3	2	2	-	2	3	2	-	-	-	-
MCAPD 1-314	CO1	1	3	2	-	1	2	3	-	-	-	-
	CO2	1	3	2	-	1	2	3	-	-	-	-
MCAPD 1-316	CO1	1	3	2	-	3	-	2	-	-	-	-
MCAPS1 -401	CO1	1	1	2	-	1	1	3	-	-	-	-
	CO2	1	2	2	-	1	1	3	-	-	-	-
MCAPS1 -402	CO1	1	3	2	-	3	2	2	-	-	-	-
	CO2	1	3	2	-	2	2	2	-	3	-	-
MCAPS1 -403	CO1	1	3	2	-	-	-	2	-	3	-	-
	CO2	1	2	3	-	-	-	2	-	3	-	-
MCAPS1 -404	CO1	1	2	3	3	-	-	-	2	-	-	-
	CO2	1	2	3	3	-	-	-	2	-	-	-
MCAPD 1-411	CO1	2	3	2	-	3	-	2	-	-	-	-
	CO2	3	2	2	-	1	3	2	-	-	-	-
MCAPD 1-413	CO1	3	2	2	-	1	2	3	-	-	-	
	CO2	3	3	2	-	1	2	2	-	-	-	-
MCAPD 1-415	CO1	3	2	2	-	1	3	2	-	-	-	-
	CO2	2	3	2	-	2	3	2	-	-	-	-

MCAPD 1-417	CO1	1	2	3	-	2	2	3	-	-	-	-
	CO2	1	2	3	-	3	-	2	-	-	-	-
MCAPD 1-412	CO1	1	1	3	-	-	-	3	-	-	-	-
	CO2	1	2	3	-	3	2	2	-	-	-	-
MCAPD 1-414	CO1	3	2	2	-	2	3	2	-	-	-	-
	CO2	2	3	2	-	-	2	3	-	2	-	-
MCAPD 1-416	CO1	1	3	2	-	2	3	2	-	-	-	-
	CO2	1	3	2	-	2	3	2	-	-	-	-
MCAPD 1-418	CO1	3	2	2	-	-	3	2	-	-	-	-
	CO2	1	3	2	-	2	2	3	-	-	-	-
MCAPD 1-421	CO1	1	3	2	-	3	-	2	-	-	-	-
	CO2	1	2	3	-	3	-	2	-	-	-	-
MCAPD 1-423	CO1	1	2	3	-	2-	-	3	-	-	-	-
	CO2	1	3	2	-	2-	2	3	-	-	--	-
MCAPD 1-425	CO1	1	3	2	-	3	-	2	-	-	-	-
	CO2	1	3	2	-	3	-	2	-	-	-	-
MCAPD 1-422	CO1	3	2	2	-	2	3	2	-	-	-	-
	CO2	1	3	2	-	2	3	2	-	-	-	-
MCAPD 1-424	CO1	1	3	2	-	-	2	3	-	-	-	-
	CO2	1	2	3	-	-	3	2-	-	-	-	-
MCAPD 1-426	CO1	1	3	2	-	3	2	2-	-	-	-	