

P.G. DEPARTMENT OF COMPUTER SCIENCE

Nallamuthu Gounder Mahalingam College

(Autonomous)

(An ISO 9001:2015 Certified Institution)

Re-Accredited by NAAC

Pollachi-642001



SYLLABUS

M. Sc. COMPUTER SCIENCE

BATCH 2022-2024

NGM COLLEGE

VISION

Our dream is to make the College an institution of excellence at the national level by imparting quality education of global standards to make students academically superior, socially committed, ethically strong, spiritually evolved and culturally rich citizens to contribute to the holistic development of the self and society.

MISSION

Training students to become role models in academic arena by strengthening infrastructure, upgrading curriculum, developing faculty, augmenting extension services and imparting quality education through an enlightened management and committed faculty who ensure knowledge transfer, instill research aptitude and infuse ethical and cultural values to transform students into disciplined citizens in order to improve quality of life.

PG DEPARTMENT OF COMPUTER SCIENCE

VISION

Exploring innovative approaches to enhance learning opportunities through the integration of technology and to develop more responsive strategies for adapting curriculum and changing demands in the Computing Profession.

MISSION

To provide strong theoretical foundation complemented with extensive practical training. Provide a learning ambience to enhance innovations, problem solving skills, leadership qualities, team spirit and ethical responsibilities.

Program Educational Objectives (PEOs)	
The goals that graduates are supposed to achieve within five to seven years after graduation are defined in the M.Sc. CS program.	
PEO1	To provide students with a clear understanding of the course goals and to visualize their needs.
PEO2	Employed in the software sector and attempting to acquire and implement new ideas and concepts as the field progresses.
PEO3	To instill the value of continuous learning and the importance of research and development for the betterment of society and the country as a whole.
PEO4	Enhanced to cope with evolving technologies on the frontiers of computer science and incorporating Industry 5.0 Technologies into their careers based on industry requirements

PROGRAMME OUTCOMES

PO1	Develop core competence in computer science and to take up a career in the IT industry as well as to impart the analytical skills in research and development.
PO2	Ability to instill various thrust areas of computer science with sound knowledge of theory and hands-on practical skills.
PO3	Ability to design, implement and evaluate the principles of computer science and apply these in the multidisciplinary environments to manage project.
PO4	Ability to analyze the local, global needs of computing in par with IT industry and society.
PO5	Develop innovative computing skills through information technology solutions
PO6	Review of the most up-to-date tools and mechanisms for tool handling
PO7	Work in accordance with ethical and professional standards.
PO8	Determine the viewpoint on business practices, risks, and constraints.
PO9	Develop responsibilities on entrepreneurial spirit roles.
P10	Ability to plan, conduct, and analyze experiments, as well as extrapolate results

PROGRAMME SPECIFIC OUTCOMES

PSO1	Able to understand, analyze and develop computer programs in the areas related to various domains for efficient design of computer-based systems of varying complexity.
PSO2	Acquire foundation for research into the theory, practice of programming and apply the knowledge gained during the course of the program from advanced computing and solve real life complex problems faced in society.

PEO and PO MAPPING:

PEO PO	PEO1	PEO2	PEO3	PEO4
PO1	H	H	H	H
PO2	M	H	H	H
PO3	H	H	H	H
PO4	M	M	H	H
PO5	H	H	H	H
PO6	M	H	H	H
PO7	L	H	M	L
PO8	L	H	H	M
PO9	L	H	H	M
P10	H	H	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS101	Course Title:	Design & Analysis of Computer Algorithms		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		4	Tutorial Hrs/Sem	-	Semester:	I
					Credits:	4

Course Objective

To prepare the students for a job in industry and to learn the systematic way of solving the problems using data structures and algorithms.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember and Understand the concepts of time and space complexity, worst case, average case and best case complexities and the big-O notation	K1
CO2	Identify the key characteristics of a given problem and analyse the suitability of a specific algorithm design technique for the problem.	K2
CO3	Apply important algorithmic design paradigms and methods of analysis.	K3,K4
CO4	Analyze major graph algorithms and to employ graphs to model engineering problems	K4,K5
CO5	Analyze worst-case running times of algorithms using various algorithms	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	H	M	H	H	M
CO2	H	M	M	H	H	H	M	M	H	H	M	H	H	H	M
CO3	H	H	H	M	M	H	H	H	M	M	M	H	H	M	H
CO4	M	H	M	H	M	M	H	M	H	M	H	M	H	H	M
CO5	M	H	H	H	M	M	H	H	H	M	H	H	M	M	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS102	Course Title:	Data Mining using R		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		6	Tutorial Hrs/Sem	-	Semester:	I
					Credits:	5

Course Objective

To understand the basic concepts and techniques of Data Mining and to develop skills of using recent data mining software for solving practical problems using R

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the basic concepts of data mining techniques	K1
CO2	Understand the concept of data warehouse and its backend process	K2
CO3	Apply various clustering and association finding algorithms for feature selection	K3
CO4	Demonstrate an understanding of the basic algorithmic methods that support knowledge discovery	K4
CO5	Evaluate what has been learned through the application of the appropriate statistics.	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	M	H	M	H	H	H	H	M	M	H
CO2	M	H	M	H	H	H	M	M	H	H	H	M	M	H	M
CO3	H	H	H	M	M	H	H	M	M	M	M	H	M	H	M
CO4	M	M	H	H	M	M	H	M	H	M	M	M	H	M	M
CO5	H	H	M	H	M	M	H	H	H	H	H	H	M	H	M

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS103	Course Title:	Advanced Operating Systems		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		4	Tutorial Hrs/Sem	-	Semester:	I
					Credits:	4

Course Objective

To understand the concepts of operating system, distributed operating systems, real time operating systems, operating system for handheld systems, LINUX OS and iOS.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the basic concepts of Operating Systems and its applications.	K1
CO2	Understand the advanced concepts in operating system, the concepts of distributed operating systems, the information about Linux operating system and iOS architecture, layers and its functions.	K2
CO3	Apply different Operating Systems	K3
CO4	Analyze deadlock situations, the reason for deadlock, recovery of deadlocks, how to avoid deadlocks, the need for Real time operating system and security issues.	K4
CO5	Evaluate the use of Palm OS and Android in handheld devices.	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	M	L	L	M	H	H	M	H	H	H	M	L	L	M
CO2	H	M	M	M	L	H	M	M	H	H	H	M	M	M	L
CO3	H	M	M	L	M	H	H	H	M	M	H	L	L	M	M
CO4	H	H	H	L	M	M	H	M	H	M	H	H	H	L	L
CO5	H	L	M	L	M	M	H	H	H	M	H	L	M	L	M

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS104	Course Title:	Advanced Java Programming		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		6	Tutorial Hrs/Sem	-	Semester:	II
					Credits:	5

Course Objective

To understand the advanced Java concepts, also develop Java based applications by applying java components and implementing in web based applications.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect different classes, constructors and methods of Swing components	K1
CO2	Get an idea to construct an enterprise application using Java Beans	K2.,K3
CO3	Develop RMI programs for real world applications and establishing DATABASE Connectivity using Java.	K4,K5
CO4	Analyze session tracking using Session objects and Cookies	K4,K5
CO5	Validate server side java programs using Servlets and JSP	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	M	H	H	H	H	H	M
CO2	M	M	H	M	H	H	M	M	H	H	M	H	H	M	M
CO3	H	H	H	H	M	H	H	H	M	H	H	M	H	H	H
CO4	H	H	H	H	H	M	H	M	H	M	H	H	M	H	M
CO5	H	H	M	H	M	M	H	H	H	M	H	M	M	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS105	Course Title:	Programming Lab I: Design & Analysis of Algorithms		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		5	Tutorial Hrs/Sem	-	Semester:	I
					Credits:	3

Course Objective

To deal with a wide variety of computational problems and to provide a thorough knowledge of the most common algorithms and data structures.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand problems by applying appropriate algorithms.	K3
CO2	Analyze the efficiency of various algorithms.	K4
CO3	Apply various data structure techniques to solve problems.	K4
CO4	Solve a program in many ways using different techniques.	K4,K5
CO5	Identify and evaluate complex problems using principles of mathematics and engineering science.	K5

MAPPING

PO/PSO CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	H	M	H	M	H	H	M	H	H	H	M	H	H	H
CO2	H	M	M	H	L	H	M	M	H	H	H	M	H	M	M
CO3	M	H	M	H	M	H	H	H	M	H	M	M	M	M	H
CO4	H	H	H	M	H	M	H	M	H	M	H	M	H	H	M
CO5	H	M	M	H	H	M	H	H	H	M	H	H	H	M	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS1E1	Course Title:	Elective I: Advanced Networks		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		5	Tutorial Hrs/Sem	-	Semester:	I
					Credits:	5

Course Objective

To gain depth knowledge of Transmission protocol/Internet protocols and their functionalities.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect OSI and TCP/IP layers and their tasks. Interpret and explain physical, logical and port addresses.	K1
CO2	Comprehend Standard Ethernet and Mapping techniques.	K2
CO3	Deploy Logical addressing and discuss the format of IPv4 and IPv6 addresses	K3
CO4	Analyze the problems and solutions associated with delivery and forwarding of packets	K4
CO5	Present knowledge on Mobile IP and Client-Server interactions	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	H	M	H	H	H
CO2	H	M	H	M	H	H	M	M	H	H	H	M	M	M	H
CO3	H	M	H	M	H	H	H	H	M	M	M	H	M	H	H
CO4	H	H	M	M	M	M	H	M	H	M	M	H	H	M	M
CO5	H	H	H	M	M	M	H	H	H	M	M	H	H	M	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS1E2	Course Title:	Elective I: Wireless Networks		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		5	Tutorial Hrs/Sem	-	Semester:	I
					Credits:	5

Course Objective

To state the art wireless network convention, models Adhoc network and Wireless Sensor.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn state-of-the-art wireless technologies and the fundamental principles of Electromagnetic wave propagation and the parameters that dictate its performance.	K1,K2
CO2	Understand the medium access control protocols and address physical layer issues	K2
CO3	Evaluate key routing protocols for sensor networks and main design issues.	K3,K4
CO4	Sensor management, sensor network middleware, operating systems.	K5
CO5	Analyze low-power devices equipped with sensing, computation, and wireless communication capabilities.	K6

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	H	M	H	H	H
CO2	H	M	H	M	H	H	M	M	H	H	H	M	H	M	H
CO3	H	M	H	M	H	H	H	H	M	M	M	M	H	H	H
CO4	H	H	H	M	H	M	H	M	H	H	M	M	H	M	M
CO5	H	H	H	M	M	M	H	H	H	M	M	H	H	M	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS1E3	Course Title:	Network Security & Cryptography		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		5	Tutorial Hrs/Sem	-	Semester:	I
					Credits:	5

Course Objective

To understand Cryptography Theories, Algorithms and necessary approaches and techniques to build protection mechanisms in order to secure computer networks.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the basics of network security and cryptography	K1
CO2	Understand the symmetric key cryptography and Mathematics of symmetric key cryptography	K2
CO3	Apply the mathematics of asymmetric key cryptography	K3
CO4	Analyze differential message authentication and integrity	K4
CO5	Evaluate various security practice and system security	K5

MAPPING

PQ/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	H	M	H	H	M	H	M	M	M	M	H	M	M	M
CO2	H	H	H	H	M	M	M	M	H	H	M	M	M	H	H
CO3	M	H	M	M	M	M	H	H	M	M	M	H	H	M	M
CO4	H	H	H	M	M	M	H	M	H	M	M	H	M	H	M
CO5	H	M	M	L	H	M	M	M	L	M	M	M	M	L	M

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS206	Course Title:	Android Programming		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		4	Tutorial Hrs/Sem	-	Semester:	II
					Credits:	4

Course Objective

To inculcate knowledge on Android operating system and enrich the programming skills to develop mobile applications for smart gadgets using Google's Android open-source platform.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the basics of Android operating system and the structure of Android application.	K1
CO2	Understand the various components and layout managers used for user interface design.	K2
CO3	Apply the packages and classes to create a SQLite database.	K3
CO4	Analyze the functions of various sensors.	K4
CO5	Evaluate the run time security during the deployment of an application.	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	M	M	M	M	M	M	H	H	M	M	H	H
CO2	H	H	H	H	M	H	M	M	L	H	H	M	M	H	M
CO3	H	H	H	M	M	M	M	M	L	H	H	M	M	H	M
CO4	H	H	H	M	M	M	M	M	L	H	H	M	M	H	M
CO5	H	H	H	H	H	H	H	H	L	H	H	M	M	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS207	Course Title:	Cloud Computing		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		4	Tutorial Hrs/Sem	-	Semester:	II
					Credits:	4

Course Objective

To gain knowledge on cloud computing, parallel vs. distributed computing, virtualization and data intensive computing .To enable the students to learn the applications of cloud in scientific, business and consumer and third-party cloud services.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the concepts of Cloud computing Paradigms.	K1,K2
CO2	Collaborate Cloud Service Architecture and its Service models	K3,K4
CO3	Analyze the Virtualization Concepts	K4
CO4	Analyze intensive computation in Cloud Computing	K4
CO5	Explore applications and management of Cloud Computing	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	H	M	H	M	H	M	M	M	H	M	M	M	H	L
CO2	M	H	L	H	H	H	M	M	M	H	M	H	M	H	H
CO3	H	H	H	M	H	H	H	H	H	H	H	H	H	L	L
CO4	H	H	M	H	M	H	H	H	H	H	H	H	H	H	H
CO5	M	H	H	H	H	H	M	H	H	H	M	H	H	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS208	Course Title:	Big Data Analytics		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		6	Tutorial Hrs/Sem	-	Semester:	II
					Credits:	5

Course Objective

To possess the skills necessary for utilizing tools (including deploying them on Hadoop/MapReduce) to handle a variety of big data analytics and to learn Hadoop, MapReduce, Hive, HBase and Pig.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember how to collect, manage, store, query, and analyze various forms of big data	K1
CO2	Understand the foundations of Hadoop and Hadoop Distributed File System. Design of HDFS and file-based data structures along with virtualization concept.	K2,K3, K6
CO3	Analyze the working of Map Reduce and YARN for job scheduling.	K4
CO4	Analyze un-modeled, multi-structured data using Hadoop, MapReduce	K4,K5
CO5	Compute basic summary statistics and data analysis using Pig Programming	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	M	M	H	H	H
CO2	H	M	M	H	H	H	M	M	H	H	H	M	H	H	H
CO3	H	H	H	M	M	H	H	H	M	M	H	H	M	M	M
CO4	M	H	M	H	M	M	H	M	H	M	H	M	H	M	H
CO5	M	H	H	H	M	M	H	H	H	M	M	H	H	M	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS209	Course Title:	Advanced Database Management System		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		6	Tutorial Hrs/Sem	-	Semester:	II
					Credits:	5

Course Objective

To improve the knowledge of database management system and effectively demonstrate the key concepts of advanced SQL and NoSql.

Course Outcomes(CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember and Understand the design and creation of tables in databases.	K1
CO2	Understand Relational data model and design theory with different indexing structures and physical databases.	K2
CO3	Remember and Apply advanced SQL, Sub-queries, embedded and dynamic SQL.PL/SQL concepts with triggers.	K1,K4
CO4	Analyze the history of NoSql with features, DB design, Applying consistency methods, Evaluating keys.	K4,K5
CO5	Ability to understand features of Document database, Hybrid NoSql.	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	H	H	H	H	H	M	M	H	H	H	H	M	M	L
CO2	M	M	H	H	H	M	M	M	H	H	H	H	M	L	M
CO3	M	H	H	H	M	H	H	H	M	H	M	M	H	M	M
CO4	M	H	M	M	H	M	H	M	H	M	H	H	H	H	H
CO5	H	H	M	M	H	M	H	H	H	M	H	H	H	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS210	Course Title:	Programming Lab II: Android Programming		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		4	Tutorial Hrs/Sem	-	Semester:	II
					Credits:	2

Course Objective

To inculcate knowledge on Android operating system and enrich the programming skills to develop mobile applications for smart gadgets using Google's Android open-source platform.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Use various controls and layout managers for user interface design.	K3
CO2	Analyze the different methods to build user interface for an application.	K4
CO3	Apply the packages and classes to create a SQLite database.	K3
CO4	Analyze the functions of various sensors.	K4
CO5	Evaluate the deployment of applications on mobile devices.	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	M	M	M	M	M	M	H	H	M	M	H	H
CO2	H	H	H	H	M	H	M	M	L	H	H	M	M	H	M
CO3	H	H	H	M	M	M	M	M	L	H	H	M	M	H	M
CO4	H	H	H	M	M	M	M	M	L	H	H	M	M	H	M
CO5	H	H	H	H	H	H	H	H	L	H	H	M	M	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)
Course Code:	22PCS2E1	Course Title:	Elective II: Software Project Management		Batch : 2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		4	Tutorial Hrs/Sem	-	Semester: II
					Credits: 4

Course Objectives

To provide in depth knowledge about the basic concepts of software project management, project planning, step wise framework in project planning and cost benefit.

Course Outcomes (CO)

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the model from the conventional software product to the modern.	K1
CO2	Understand various estimation levels of cost and effort.	K2
CO3	Deploy various artifacts sets for better understanding of software development.	K3
CO4	Analyze and design the software architecture.	K4
CO5	Validate appropriate project management approach through an evaluation of the business context and scope of the project.	K5

Mapping

PO\PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	L	M	M	M	L	L	H	H	L	M	L	H	L	M
CO2	H	M	M	H	H	L	M	H	M	H	H	L	H	M	M
CO3	H	L	L	H	L	M	H	M	M	H	L	M	H	L	L
CO4	H	M	L	L	M	M	H	M	L	M	M	M	H	M	L
CO5	H	L	L	H	M	M	M	H	L	M	M	M	H	L	L

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS2E2	Course Title:	Elective – II: Software Engineering and Testing		Batch	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		4	Tutorial Hrs/Sem	-	Semester:	II
					Credits:	4

Course Objective

To learn all the software development approaches, design methodologies, test metrics, measurements, tools in software development process and testing

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect basic software process models to ensure that software designs, development and maintenance meet or exceed applicable standards.	K1
CO2	Understand concepts of software management activities, requirement gathering, design, analysis and maintenance.	K2
CO3	Apply advanced software projects in designing, testing, cost estimation and risk management.	K3
CO4	Analyze and implement the design by types of testing, scenarios, process, methodologies and architecture for automation, using testing tools and solve challenges in testing.	K4
CO5	Access verification and validation, integrate functional and non-functional testing, to perform regression testing, framework for test tools, testing an application using WinRunner tool.	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	M	M	H	H	M	M	M	M	H	H	M	M	M	H
CO2	M	H	M	M	H	H	M	M	H	M	H	H	M	M	H
CO3	H	H	H	M	H	H	H	M	H	H	H	H	H	M	H
CO4	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
CO5	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

H: High; M: Medium; L: Low.

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS2E3	Course Title:	Elective II: Object Oriented Analysis and Design with UML		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		4	Tutorial Hrs/Sem	-	Semester:	II
					Credits:	4

Course Objective

To prepare the students for job in developing the area of system analysis and design concepts using object-oriented approach

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember and Understand OOAD concepts and various UML diagrams	K1
CO2	Identify the classes and responsibilities of the problem domain	K2
CO3	Apply the concepts of architectural design for deploying the code for software.	K3
CO4	Analyze the systems, various components and collaborate them interchangeably.	K4
CO5	Ability to Construct projects using UML diagrams	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	M	H	H	M	M
CO2	H	M	M	H	H	H	M	M	H	H	M	M	H	H	M
CO3	H	H	H	M	M	H	H	H	M	M	H	M	M	H	H
CO4	M	H	M	H	M	M	H	M	H	M	M	H	M	H	M
CO5	M	H	H	H	M	M	H	H	H	M	H	M	H	H	M

H: High; M: Medium; L: Low.

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS2N1	Course Title:	Non-Major Elective I: Web Designing Lab		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		2	Tutorial Hrs/Sem	-	Semester:	II
					Credits:	2

Course Objective

To enable the students to develop and design various applications using Web Technology.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Apply critical thinking skills	K3
CO2	Analyze and write a well formed / valid XML document	K4
CO3	Access and analyze website performance by interpreting analytics to measure site traffic, SEO, engagement, and activity on social media	K3
CO4	Access XSL transformation, sorting..	K4
CO5	Design and create websites	K5, K6

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	M	H	H	H	M	M	H	H	H	H	H	M
CO2	H	M	M	H	H	H	M	M	H	H	M	H	H	M	M
CO3	H	H	H	M	H	H	H	H	M	H	H	M	H	H	H
CO4	M	H	M	H	M	M	H	M	H	M	H	H	M	H	M
CO5	M	H	H	H	M	M	H	H	H	M	H	M	M	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS2N2	Course Title:	Non-Major Elective I: Advanced Internet Technologies		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		2	Tutorial Hrs/Sem	-	Semester:	II
					Credits:	2

Course Objective

To develop and design fundamentals of Internet, use Google and the Web functions.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the fundamentals of Internet and the Web concepts.	K3
CO2	Analyze and apply the online information resources.	K4
CO3	Inspect and utilize the appropriate Google Apps for education effectively.	K4
CO4	Analyze the concepts of World wide web	K5
CO5	Developing Web forms	K5

MAPPING

PO/PSO CO	PO 1	PO2	PO3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	M	H	H	H	H	H	M
CO2	M	M	H	M	H	H	M	M	H	H	M	H	H	M	M
CO3	H	H	H	H	M	H	H	H	M	H	H	M	H	H	H
CO4	H	H	H	H	H	M	H	M	H	M	H	H	M	H	M
CO5	H	H	M	H	M	M	H	H	H	M	H	M	M	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS311	Course Title:	Internet of Things		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		4	Tutorial Hrs/Sem	-	Semester:	III
					Credits:	4

Course Objective

To explore the fundamentals of Internet of Things, IoT Protocols and to apply the concept of Internet of Things in the real world scenario.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the basics of IoT and IIoT	K1
CO2	Understand IoT reference layer and various protocols of IoT	K2,K3
CO3	Deploy cloud in the context of IoT	K4
CO4	Design IoT applications in different domain and be able to analyze their performance	K4,K5
CO5	Implement basic IOT Applications on Embedded Platforms	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	H	M	H	H	H
CO2	H	M	M	H	L	H	M	M	H	H	H	H	H	M	M
CO3	M	H	H	H	M	H	H	H	M	M	M	M	M	M	H
CO4	M	H	H	M	H	M	H	M	H	M	H	M	H	H	M
CO5	H	M	M	H	L	M	H	H	H	M	H	H	H	M	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS312	Course Title:	Full Stack Web Development		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		5	Tutorial Hrs/Sem	-	Semester:	III
					Credits:	4

Course Objective

To understand full stack web development and use HTML, CSS and Javascript to handle front-end operations and back-end server scripting. MEAN is a full-stack development toolkit used to develop a fast and robust web application.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the basics of HTML, CSS and Javascript	K1, K2
CO2	Understand the principles, knowledge and skills for the design and construction of web-enabled internet applications	K2
CO3	Design, implement and deploy an inhouse project using MongoDB, Express.js, AngularJS and Node.js	K4, K5
CO4	Analyze and design appropriate database services based on the requirements	K4, K5
CO5	Evaluate different web application development alternatives and choose the appropriate one for a specific scenario	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	H	M	M	H	H	M	H	H	H	M	H	H	M
CO2	M	M	H	H	H	H	M	M	H	H	H	M	H	H	M
CO3	H	H	H	M	H	H	M	H	M	H	H	M	H	H	H
CO4	M	H	M	M	H	M	H	M	H	M	H	M	H	H	H
CO5	M	M	H	H	H	H	H	H	H	H	M	H	H	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS313	Course Title:	Python Programming		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		5	Tutorial Hrs/Sem	-	Semester:	III
					Credits:	4

Course Objective

To understand the core principles of the Python Language and use the tools to produce well designed programs in python and create effective GUI applications.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the principles of structured programming recognize and construct common programming idioms: variables, loop, branch, subroutine, and input/output.	K1, K2
CO2	Understand the common programming idioms: variables, loop, branch, subroutine, and input/output	K2
CO3	Deploy the concepts of lists, tuples, dictionaries, standard libraries, modular programming and the design of user interfaces	K3,K4
CO4	Ability to analyze and solve the problems using advanced facilities of the Python language	K4,K5
CO5	Apply the functions and python libraries to analyze and solve various data analytics problems	K4, K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	M	H	H	M	H	H	H	M	H	H	M
CO2	M	M	H	H	H	H	M	M	H	H	H	M	H	H	M
CO3	H	H	H	M	H	H	H	H	M	M	H	M	H	H	H
CO4	M	H	L	M	H	M	H	M	H	M	H	M	H	H	H
CO5	M	M	H	H	H	M	H	H	H	H	M	H	H	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS314	Course Title:	Digital Image Processing		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		3	Tutorial Hrs/Sem	-	Semester:	III
					Credits:	3

Course Objective

To prepare the students for solving real problems, knowledge in Image transformation, Image Enhancement techniques, Image compression and Segmentation procedures.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Get broad exposure and understanding of various applications of image processing in industry, medicine, and defense and other applications.	K1
CO2	To be familiar with basic concepts of two-dimensional signal acquisition, sampling, and quantization.	K2
CO3	To implement the fundamental image enhancement algorithms such as histogram modification, contrast manipulation, and edge detection.	K3,K4
CO4	To analyze programming skills in image compression, segmentation and restoration techniques.	K4,K5
CO5	To access digital images and process using MATLAB.	K5

MAPPING

PO/PSO CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	H	M	H	M	H
CO2	H	M	M	H	H	H	M	M	H	H	M	M	H	M	H
CO3	H	H	H	M	M	H	H	H	M	M	H	H	M	H	M
CO4	M	H	M	H	M	M	H	M	H	M	H	M	H	M	H
CO5	M	H	H	H	M	M	H	H	H	M	H	H	H	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS315	Course Title:	Programming Lab III: Internet of Things		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		3	Tutorial Hrs/Sem	-	Semester:	III
					Credits:	2

Course Objective

To create an environment for design, development and testing of IoT solutions, in the field of distributed sensor devices and advanced user interfaces.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Implement IoT to different applications	K3
CO2	Analyze the revolution of Internet in Mobile Devices, Cloud & Sensor Networks	K4
CO3	Design IoT applications in different domain and be able to analyze their performance	K4,K5
CO4	Discover and demonstrate the promise of the Internet of Things	K4,K5
CO5	Design an IoT device to work with a Cloud Computing infrastructure.	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	H	M	H	H	H
CO2	H	M	M	H	L	H	M	M	H	H	H	H	H	M	M
CO3	M	H	H	H	M	H	H	H	M	M	M	M	M	M	H
CO4	M	H	H	M	H	M	H	M	H	M	H	M	H	H	M
CO5	H	M	M	H	L	M	H	H	H	M	H	H	H	M	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS316	Course Title:	Programming Lab IV: Digital Image Processing using MATLAB		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		3	Tutorial Hrs/Sem	-	Semester:	III
					Credits:	2

Course Objective

On successful completion of the course the students should understand about Image Processing, image compression and segmentation using MATLAB.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Implement the fundamental image enhancement algorithms such as histogram modification, contrast manipulation, and edge detection.	K3
CO2	Analyze and visualize data using MATLAB effectively	K4
CO3	Apply a top-down, modular, and systematic approach to design, write, test, and debug sequential MATLAB programs to achieve computational objectives	K4
CO4	Analyze programming skills in image compression, segmentation and restoration techniques.	K4,K5
CO5	Apply numeric techniques and computer simulations to solve real time problems.	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	H	M	H	H	H
CO2	H	M	H	H	L	H	M	H	M	H	H	H	H	H	M
CO3	M	H	H	H	M	H	H	H	M	M	M	M	H	H	H
CO4	M	H	H	M	H	M	H	M	H	M	H	M	H	H	M
CO5	H	H	M	H	L	M	H	M	H	M	H	M	H	M	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS3P1	Course Title:	Pilot Project-I		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		2	Tutorial Hrs/Sem	-	Semester:	III
					Credits:	2

Course Objective

To understand and develop recent applications based on the student project, also basic information of business processes according to project title.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Apply DBMS concepts	K3
CO2	Design Techniques like DFD or UML etc.	K4
CO3	Analyze and developing new app	K5
CO4	Implementation of entire applications.	K5
CO5	Creation of SDLC and models for software engineering	K6

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	H	H	M	M	H
CO2	M	M	H	M	H	M	M	H	M	H	H	M	M	H	H
CO3	H	H	H	H	M	H	H	H	H	H	H	H	H	M	H
CO4	H	H	H	H	H	H	H	H	H	M	M	H	M	H	M
CO5	H	H	M	H	M	M	H	M	M	M	M	H	H	H	M

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS3E1	Course Title:	Elective III: Artificial Intelligence & Machine Learning		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		5	Tutorial Hrs/Sem	-	Semester:	III
					Credits:	5

Course Objective

To provide the knowledge of problem solving using AI techniques, knowledge representations and to understand the concepts of predicate logic.

To understand the basic concepts of machine learning, probability theory and also algorithms of supervised learning and unsupervised learning.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn about the artificial intelligence problem and the characteristics of the problem space.	K2
CO2	Identifies the Heuristics search techniques and issues in representing the knowledge and comprehend the statistical reasoning	K3
CO3	Understand the problem solving using predicates and infer the knowledge using rules	K2,K4
CO4	Design a learning model appropriate to the application and recognize the characteristics of machine learning techniques that are useful to solve real-world problems	K5
CO5	Design and implement various machine learning algorithms in a range of real-world applications	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	L	L	L	L	L	L	L	L	L	M	M	M	L	M
CO2	M	L	M	M	L	L	L	L	L	L	M	M	M	L	M
CO3	M	L	M	L	M	L	L	L	L	M	M	M	M	L	M
CO4	H	H	H	H	H	H	L	L	L	H	H	H	H	H	H
CO5	H	H	H	H	H	H	L	L	L	H	H	H	H	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS3E2	Course Title:	Elective III: Natural Language Processing and Text Analytics		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		5	Tutorial Hrs/Sem	-	Semester:	III
					Credits:	5

Course Objective

To understand text processing for extracting information and to provide insights into fundamental concepts to speech processing and phonetic.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the data science concepts and infer the knowledge about data science process	K2,K4
CO2	Illustrate the basics of natural language processing and apply feature engineering concept for text representation	K2,K3
CO3	Analyze text classification and evaluate the classification model in real word application	K4,K5
CO4	Learn and apply different text analytics techniques to retrieve information from text	K3
CO5	Understand the basic concept of speech recognition and analyze the phonetic in speech	K2,K4

MAPPING

PQ/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	L	H	H	L	M	L	L	L	H	H	H	H	H	H
CO2	M	L	H	H	L	L	L	L	L	M	H	H	H	H	H
CO3	H	M	H	M	M	L	L	L	L	H	H	H	H	H	H
CO4	H	H	H	M	M	M	L	L	L	H	H	H	H	H	H
CO5	L	L	M	M	M	M	L	L	L	M	M	M	M	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (ComputerScience)	
Course Code:	22PCS3E3	Course Title:	Elective III: Robotic Process Automation for Business		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		5	Tutorial Hrs/Sem	-	Semester:	III
					Credits:	5

Course Objective

To gain knowledge on concepts of RPA, its benefits, types and models. Also in applications of RPA in Business Scenarios and identify measures and skills required for RPA.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the benefits and ethics of RPA	K1
CO2	Understand the Automation cycle and its techniques	K2
CO3	Apply the of design inferences and information processing of RPA	K3
CO4	Implement & Apply RPA in Business Scenarios	K4
CO5	Analyze on Robots & leveraging automation	K4

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	M	H	H	M	H	M	H	H
CO2	H	H	M	H	H	H	M	M	H	H	M	H	H	H	H
CO3	H	H	H	M	H	H	H	H	M	H	H	H	H	H	H
CO4	H	H	H	H	H	M	H	M	H	H	H	H	H	H	H
CO5	H	H	M	H	H	M	H	H	H	H	H	H	H	H	H

L-Low M- Medium H-High

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCS4P2	Course Title:	Project Work and Viva -Voce		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		-	Tutorial Hrs/Sem	-	Semester:	IV
					Credits:	12

Course Objective

To enable the students to understand and select the task based on their core skills, also knowledge about analytical skill for solving the selected task. Students get confidence for implementing the task and solving the real time problems.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand and formulate a real world problem and develop its requirements	K2
CO2	Analyze the problem requirements	K3
CO3	Design solution for a set of requirements	K3,K4
CO4	Apply test cases and validate the conformance of the developed prototype against the original requirements of the problem	K4,K5
CO5	Responsible member and possibly a leader of a team in developing software solutions	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	H	M	H	H	H	H	H	M	H	H	H	H	H	H
CO2	M	M	H	M	H	H	M	H	H	H	M	H	H	M	H
CO3	H	H	H	H	M	H	H	H	M	H	H	M	H	H	H
CO4	H	H	H	H	H	M	H	M	H	M	H	H	M	H	M
CO5	H	H	M	H	M	M	H	H	H	M	H	M	M	H	H

L-Low M- Medium H-High

VALUE ADDED COURSE

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	22PCSV A1	Course Title:	VAC I: Virtual Reality		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		1	Total Hours	30	Semester:	III
					Credits:	2

Course Objective

To impart knowledge in Virtual Reality (VR) technology in terms of used devices, building of the virtual environment and modalities of interaction and modeling and its various applications.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the fundamentals of Virtual Reality and its design in different applications	K1
CO2	Understand the foundations of modelling in VR and various sensing Gloves	K2
CO3	Apply the VR technology in digital entertainment – films, TV Production and games	K3
CO4	Analyze the design of VR- specific input & output devices , their principles, capacities and design tradeoffs of the current commercial VR output interfaces	K4
CO5	Analyze human factor issues, user performance, sensorial conflict aspects of VR	K4

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	H	M	H	M	M	H	H	M	M	H	M	M	M	H	M
CO2	H	M	M	H	H	M	M	M	M	H	H	M	M	H	M
CO3	H	H	H	M	M	M	M	M	M	H	M	M	M	M	M
CO4	H	H	H	H	M	H	M	M	M	M	H	M	M	H	M
CO5	H	H	M	H	M	H	M	H	M	M	H	M	M	M	H

L-Low M- Medium H-High

VALUE ADDED COURSE

Programme Code:		M.Sc CS	Programme Title:		Master of Science (ComputerScience)	
Course Code:	22PCSVA2	Course Title:	VAC II: Digital Entrepreneurship		Batch :	2022-2024
Lecture Hrs./Week Or Practical Hrs./Week		1	Total Hours 30		Semester:	III
					Credits:	2

Course Objective

To provide knowledge on how entrepreneurial ventures use digital technology to design and offer new products and services, acquire and retain customers, analyze customer data, and provide satisfying user experiences online.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the principles of digital business design.	K1
CO2	Understand the basics of a content management system, and how it can be used as the foundation for an internet business presence.	K2
CO3	Launch a business-quality online presence, using widely available services and software.	K3
CO4	Analyze the usability and customer experience through web.	K4
CO5	Evaluate and monitor the progress of digital business through web analytics.	K5

MAPPING

PO/PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	M	M	M	H	H	M	M	H	H	M	M	M	M	H	H
CO2	M	M	M	H	H	M	M	H	H	M	H	M	M	H	H
CO3	M	H	H	H	H	H	M	H	H	H	H	M	M	H	H
CO4	M	M	M	H	H	M	M	H	H	M	M	M	M	H	H
CO5	M	H	H	H	H	M	M	H	H	M	M	M	M	H	H

L-Low M- Medium H-High

CERTIFICATE COURSE

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	-	Course Title:	Software Testing Lab - Selenium	Batch :	2022-2024	
Lecture Hrs./Week Or Practical Hrs./Week		1	Total Hours	30	Semester:	Any Semester
					Credits:	2

Course Objective

To understand the basic concepts of software testing over various selenium methods and automation frameworks.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn the importance of software testing	K1
CO2	Understand and use Selenium IDE	K2
CO3	Create programs using Selenium	K3
CO4	Create test beds for software testing	K4
CO5	Identify potential problems in software and develop solutions for testing	K5

ADVANCED LEARNER COURSE

Programme Code:		M.Sc CS	Programme Title:		Master of Science (Computer Science)	
Course Code:	-	Course Title:	User Interface Design - Figma	Batch :	2022-2024	
Lecture Hrs./Week Or Practical Hrs./Week		1	Total Hours	30	Semester:	Any Semester

Course Objective


To ensure learners are exposed to describe the structure of user Interface, design process and learn how to organize the web systems and control.

Course Outcomes (CO)

On successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the Characteristics of Graphics Interface and its Principles.	K3
CO2	Understand the components of web systems and text boxes	K3
CO3	Design the standards and structures for Human computer interaction	K5
CO4	Demonstrate the Guidance of multimedia and Text boxes	K4,K5
CO5	Select, adapt and apply suitable interaction design approaches and techniques towards the design of an interactive product.	K5




Dr. R. MUTHUKUMARAN,
 M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
 N.G.M. College, Pollachi - 64. 001
 Coimbatore District