PROGRAMME OUTCOMES AND COURSE OUTCOMES

2021 – 2022

NAME OF THE PROGRAMME: M.Sc Computer Science **PROGRAMME CODE: PSCS**

Programme Outcomes (POs)

PO 1	Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and desirous for the "more" in all aspects.
PO2	They will be efficient individual and team performers who would deliver excellent professional service exhibiting progress, flexibility, transparency and accountability in their professional work.
PO3	The graduates will be effective managers of all sorts of real – life and professional circumstances, making ethical decisions, pursuing excellence within the time framework and demonstrating apt leadership skills.

PO4	They will engage locally and globally evincing social and environmental stewardship demonstrating civic responsibilities and employing right skills at the right moment.

Programme Specific Outcomes (PSOs)

PSO 1	To develop professionally competent citizens by applying the scientific knowledge of Computer Science with the ability to think clearly, rationally and creatively to support in evolving solutions to the social/public/scientific issues with responsible democratic participation.
PSO 2	Enterprising resourcefulness to identify, plan, formulate, design and evaluate solutions for complex computing problems that address the specific needs with appropriate consideration for Societal, Cultural, Environmental and Industrial domains.
PSO 3	Holistic development to ignite the lateral thinking ability in problem solving, acquisition of new skills,open-minded and organized way of facing problems with self-awareness and evolving analytical solutions

PSO 4	Create and initiate innovations effectively and communicate efficiently with the computing community and society at large to bridge the gap between computing industry and academia
PSO 5	Through Digital Literacy, understand, assess and commit to professional and ethical principles, norms and responsibilities of the cyber world and the ability for work efficacy as a part of a team and engage effectively with diverse stakeholders
PSO 6	Ability and willingness to embark on new ventures and initiatives with critical thinking and desire for more continuous learning focusing on life skills.
PSO 7	Use research-based knowledge and research methods to design, analyse, and interpret data and to synthesize information to provide valid findings to serve community.

Course Outcomes (COs)

Course Code	Course Title	Course Outcomes
19PG1B1	Advanced Programming In Java	CO1: Describe client/server applications, TCP/IP socket programming and distributed applications using RMI. CO2: Analyze and design Window based applications using Swing Objects. CO3: Develop and design Java programs using Swing components. CO4: Discuss the various JDBC drivers and demonstrate J2EE application using JDBC connection and server side programs with Servlets. CO5: Write component-based Java programs using JavaBeans.
19PG1B2	Distributed Operating Systems	CO1:Discuss the core concepts of distributed systems. CO2:Analyze various message passing mechanisms with its model.

		CO3:Identify the inherent difficulties that arise due to distribution of computing resources. CO4:Explain migration with the process management policies. CO5:Explain the basic concepts, design and structure of the LINUX operating system.
19PG1B3	Object Oriented Software Engineering	CO1: Differentiate traditional and object oriented software engineering CO2: Explain various SDLC methods of OOSE CO3: Describe techniques used in OOSE CO4: Explain OOSE testing methods CO5: Analyze and choose necessary method for a particular project
19PG1B4	Theory Of Computation	CO1: Demonstrate an in-depth understanding of theories, concepts and techniques in automata and their link to computation.

		CO2: Develop abstract machines that demonstrate the properties of physical machines and be able to specify the possible inputs, processes and outputs of these machines. CO3: Analyze the computational strengths and weaknesses of these machines. CO4: Explain Context-Free Grammar. CO5: Apply automata concepts and techniques in designing systems that address real world problems.
19PG1B5	Lab-I- Advanced Programming In Java	CO1: Implementation of java applications that illustrate professionally acceptable coding and performance standards. CO2: Develop distributed applications using RMI. CO3: Design and develop event-driven programming and graphical user interfaces using Swing-based GUI. CO4: Design and developJava programs using JDBC connection

		for data access and also Develop server side programs with Servlets. CO5: Design and develop component-based Java programs using JavaBeans.
19PG1B6	Lab-Ii- Operating System	CO1: Utilize basic LINUX Utilities. CO2: Write different LINUX shell scripts and execute various shell programs. CO3: Apply LINUX system calls. CO4: Compute various file permissions and have a basic understanding of system security. CO5: Demonstrate the basic knowledge of Linux commands and file handling utilities by using Linux shell environment.
19PGB1EDC	Web Development	CO1: Define various tags of HTML CO2: Design a web page with attractive display

		CO3: Create a Layout for a webpage using Block tags CO4: Explain how and where to apply CSS CO5: Design own website
19PG2B7	Extreme Programming – Asp.Net	CO1: Explain the important facts of ASP.NET 3.5, analyze and evaluate Web Form processing stages. CO2: Demonstrate web application using different types of Server Controls with input validation. Analysis and Identify state management techniques. CO3: Discuss Data Access Technology using ADO.NET architecture. CO4: Formulate Data Sources using SQL Data Source , Object Data Source and process data with rich datacontrols. CO5: Discuss and demonstrate Themes and Master pages of Web site .

19PG2B8	Mobile Application Development Using Android Studio	CO1: Design scripts to meet given interface and media control requirements CO2: Utilize variables, properties and other code elements appropriately to implement the code design CO3: Implement and evaluate techniques for the installation of mobile applications CO4: Explain the principles of technologies which support media production and delivery on a variety of platforms CO5: Evaluate alternative mobile frameworks, and contrast different programming platforms
19PG2B9	Design And Analysis Of Algorithms	CO1: Analyze the time and space complexity of given Algorithms. CO2: Demonstrate operations like searching, insertion, and deletion on various data structures. CO3: Identify appropriate sorting/searching technique for given problem.

		CO4: Apply the dynamic programming technique to solve the problems. CO5: Discuss advanced tree and graph applications.
19PG2B10	Lab-Iii - Extreme Programming - Asp.Net	CO1: Design and develop web applications using different Server Controls. CO2: Implement web applications with different state managements. CO3: Create Data Access Technology using ADO.NET architecture. CO4: Design and utilize Data Sources using SQL Data Source , Object Data Source for data manipulation operation. CO5: Design and develop web sites.
19PG2B11	Lab-Iv – Mobile Application Development Using Android Studio	CO1: Develop enterprise-level mobile solutions. CO2: Install and configure Android application development tools. CO3: Demonstrate Save State information across important

		operating system events. CO4: Develop advanced application programs using Android CO5: Design and develop mobile applications.
19PG2BE1	Computational Intelligence	CO1: Demonstrate the fundamental concepts of soft computing and its applications. CO2: Explain the concepts of fuzzy sets, knowledge representation using fuzzy rules, and othermachine intelligence applications of fuzzy logic. CO3: Discuss the basics of an evolutionary computing CO4: Explain genetic algorithms for practical problems. CO5: Discuss the performance of granular computing in solving specific problems.
19PG2BE2	Neural Networks	CO1: Explain the basic concepts of Neural Networks. CO2: Describe the various Neural Network models. CO3: Explain Learning Rules of Neural Network

		CO4: Distinguish Feedback and Feed forward networks CO5: Compare Special networks and discuss the applications of Neural Network.
19PG2BE3	Software Testing	CO1: Discuss various software application domains and different process model used in software development. CO2: Demonstrate the basics of software quality assurance and defect prevention. CO3: Compare different testing strategies and tactics. CO4: Describe the software testing techniques in different environments. CO5: Explain high performance testing using Jmeter.
19PG2BE4	Embedded Systems	CO1: Explain the concepts of embedded systems CO2: Analyze the architecture of embedded systems CO3: Describe about the processors and memory organization CO4: Distinguish when and where to apply embedded concepts

		CO5: Describe different embedded system design technologies
19PGB2EDC	Web Development	CO1: Define various tags of HTML CO2: Analyze information to provide attractive display CO3: Create clear webpage for given data CO4: Explain how and where to apply CSS CO5: Design own website
19PG3B12	Digital Image Processing	CO1: Explain the representation of digital image and its manipulations CO2: Analyze image sampling and quantization requirements and implications CO3: Describe various Transformation and Filtering Techniques CO4: Demonstrate Restoration And Reconstruction models CO5: Utilize Image Compression And Segmentation for efficient storage.
19PG3B13	Data Mining And Data	CO1: Explain the fundamental concept of Data Mining and

	Warehousing	analyze and evaluate the data cleaning, integration , transformation and reduction techniques. CO2:Design multidimensional data using Data Warehouse architecture. CO3:Design and evaluate Classification algorithms. CO4:Identify the types of data in Cluster Analysis and categorize the Cluster Methods. CO5: Utilize the Data Mining techniques in various real applications and in major issues
19PG3B14	Lab-V- Digital Image Processing	CO1: Demonstrate Fundamental Steps involved in Digital Image Processing CO2: Analyze and use Mathematical Tools for Digital Image Processing. CO3: Apply Intensity Transformation functions and Spatial filtering methods CO4: Utilise Color Image Processing with different Color Models

		CO5: Implement Image Segmentation Techniques and Image Compression Techniques using Huffman , Golomb and Arithmetic coding algorithms
19PG3B15	Lab V1- Data Mining And Data Warehousing	CO1: Utilize Weka tool to evaluate Data Mining algorithms. CO2: Demonstrate preprocessing steps involved in different datasets. CO3: Analyze Data Mining techniques for realistic data. CO4: Develop the decision tree algorithm using different datasets. CO5: Demonstrate the classification and clusters algorithms using large datasets
19PGBSL1	Summer Internship/ Training/ Online Certification	CO1: Identify employment contacts leading directly to a full-time job following course completion CO2: Create communication, interpersonal and other soft skills essential for the job interview process. CO3: Analyse the project requirements and engages in

		continuing professional development. CO4: Analyze a problem and identify the computing requirements appropriate to its solution. CO5: Utilizing a new software tool.
19PG3BE5	Mobile Computing	CO1: Determine solutions using problem solving principles, logic and systematic methodologies. CO2: Evaluate the architecture and principles of operation of computer systems and networks. CO3: Synthesize principles and theories of computer science and software engineering for application to different computing paradigms. CO4: Design and develop software systems for various application domains. CO5: Manage the development of software systems through a variety of development processes and methodologies.
19PG3BE6	Cryptography And	CO1: Explain the various symmetric encryption techniques and

	Network Security	demonstrate the functionalities of DES algorithm. CO2: Analyze public key algorithms. CO3: Evaluate the authentication concept and hash algorithms. CO4: Apply the concepts of key management techniques. CO5: Analyze the vulnerabilities in data communication through networks.
19PG3BE7	Distributed Database	CO1: Compare normal and distributed DBMS and to explain various approaches of DDBMS. CO2: Formulate various kinds of retrieving statements to retrieve information from DDB. CO3: Explain multiple processes dealing with distributed database system without clash CO4: Describe the set of protocols used in DDBMS to make effective communication. CO5: Discuss object concepts and object models.

19PG3BE8	Compiler Design	CO1: Describe the phases of Compiler. CO2: Explain the role and type of Parser CO3: Analyze and use Intermediate languages CO4: Describe the design of code generation with register utilization. CO5: Demonstrate code optimization techniques.
19PG3BE9	Cloud Computing	CO1: Identify and use different cloud computing services. CO2: Explain the basic principles of cloud virtualization. CO3: Prepare the appropriate cloud computing solutions to meet the requirement of specific applications. CO4: Design application by utilizing cloud platforms such as Google app Engine and Amazon Web Services. CO5: Analyze different cloud programming models.
19PG3BE10	Advanced Computer Graphics & Animation	CO1: Explain the basic concepts in computer graphics. CO2: Analyze various algorithms and to convert the basic

		geometrical primitives. CO3: Demonstrate the importance of viewing and clipping. CO4: Discuss the fundamentals of animation CO5: Describe Interpolation-Based Animation
19PG3BE11	Big Data Analytics	CO1: Explain Characteristics and challenges of Big Data CO2: Describe Big Data Analytics CO3: Utilize Hadoop for Big Data Technologies CO4: Demonstrate MAPREDUCE Programming CO5: Describe types of Recommendation Systems using Big Data Analytics.
19PG3BE12	Deep Learning	CO1: Explain Deep learning CO2: Analyze different methods used for modelling CO3: Choose appropriate model according to application CO4: Compare various learning methods CO5: Explain Applications in Object Recognition and Computer

		Vision
19PG4B16	Principles Of Internet Of Things	CO1: Explain the basic concepts of IoT. CO2: Discuss physical and logical design of IoT enabled technologies. CO3: Analyze how and where IoT can be applied. CO4: Compare M2M and IoT. CO5: Describe the features of Python used for IoT implementation.
19PG4BPR	Project	CO1: Discuss project development and the associated business processes. CO2: Analyse problems and formulate solutions. CO3: Communicate with engineers and the community at large in written and oral forms. CO4: Create effective communication skills for presentation. CO5: Plan as an individual or in a team in development of technical projects.