MANNAR THIRUMALAI NAICKER COLLEGE

A Co-educational, Autonomous and Linguistic Minority Institution
Affiliated to Madurai Kamaraj University
Re-accredited with "A" Grade by NAAC
Pasumalai, Madurai – 625 004 Tamil Nadu.

CURRICULUM RELEVANCE TO THE LOCAL, REGIONAL, NATIONAL AND GLOBAL NEEDS

NAME OF THE PROGRAMME : B.Sc (Computer Science) PROGRAMME CODE: UCS

PROGRAMME OUTCOMES

PO1: Knowledge and expertise in at least one procedure-oriented and object oriented programming language.

PO2: Aware of the design principles of Operating Systems specializing on at least one popular Operating System.

PO3: Use ICT tools in various learning situations, related information sources and have a wide perspective on software development including web based applications as well as graphic applications.

PO4: Employ critical and analytical thinking in understanding the concepts and ability to design and implement optimal databases using current technologies.

PO5: Able to design algorithms as per need by relating the data structure for various problems.

PO6: Identify and describe the communication networks technologies in local area networks and the internet and countermeasures for security threats.

PROGRAMME SPECIFIC OUTCOMES

PSO1: Students to have knowledge and expertise in at least one procedure-oriented and object oriented programming language**.**

PSO2: Students to have wide perspective on software development including web based applications as well as graphic applications.

PSO3: Students will be aware of the design principles of Operating Systems specializing on at least one popular operating System.

PSO4: Students to have the ability to design and implement optimal databases using current technologies.

PSO5: Students design algorithms as per need by relating the data structure.

PSO6: Students identify and describe the communication networks technologies. In local area networks and the internet and counter measures for security threats.

Sl.No	Course Code	Course Name	Course Outcomes
1.	21UCSC11	PROGRAMMING IN C	**CO1:** Use the concepts for solving scientific and mathematical problems. **CO2:**Demonstrate an understanding of computer programming language concepts. **CO3:**Design and develop computer programs, analyses and interprets the concept of pointers, declarations, initialization, operations on pointers and their implementations. **CO4:** Define data types, use them in simple data processing applications and able to describe the concept of array of structures. **CO5:** Relate the concepts of programming and develop confidence to learn the C language for life time.
2.	21UCSCP1	PROGRAMMING IN C Lab	**CO1:** Develop solutions to simple computational problems using C programs. **CO2:** Solve problems using conditionals and loops in C. **CO3:** Understand the concepts of Arrays and structure. **CO4:** Develop C programs by defining functions and pointers **CO5:** Develop C programs using files.

3.	**21UMCA11**	**Mathematical Foundations**	**CO1:** To understand the rank of a matrix and apply it to solving system of linear equations. **CO2:** To analyze Eigen values and associated Eigen vectors of a matrix. **CO3:**To study the methods of reasoning, which includes algebra of propositions, such as compound. **CO4:** propositions, truth tables, and tautologies To write and interpret mathematical notation and mathematical definitions **CO5:** To acquire a basic idea of graph, various terms associated and matrix representations of graphs.
4.	**21UCSSP1**	**OFFICE AUTOMATIONLAB**	**CO1:** To familiarize the students in preparation of documents and presentations with office automation tool. **CO2:** To make aware of Office automation using MS-Office. **CO3:** To educate MS-office system, internet operations, online, offline working areas. **CO4:** To train them to work on the comment based activities in MS-office system. **CO5:** To make the participants to understand various services based on online and offline surfaces.

5.	**21UEVG11**	**ENVIRONMENTAL STUDIES**	**CO1:** Mention and outline the structure and components of environment **CO2:** Compare different ecosystems. **CO3:** classify innumerable types of species on earth **CO4:** Identify the causes for various climatic changes occurring due to pollution **CO5:** Describe the environmental impacts of natural and manmade disasters and Develop sustainable strategies to protect the environment.
6.	**21UCSC21**	**OBJECT ORIENTED PROGRAMMING USING C++**	**CO1:** Learn the fundamental programming concepts and methodologies which are essential to building good C++ programs. **CO2:** Code, document, test, and implement a well-structured, robust computer program using the C++ programming language. **CO3:** Describe the object-oriented programming approach in connection with C++. **CO4:** Understand concepts like inheritance, polymorphism, pointers and virtual functions. **CO5:** Demonstrate the need of files and their operations.
7.	**21UCSCP2**	**OBJECT ORIENTED PROGRAMMING USING C++ LAB**	**CO1:** Learn how to design C++ classes for code reuse. **CO2:** Examine the types of inheritance. **CO3:** Implement object

			oriented programming concepts in C++. **CO4:** Describe the concept of function overloading, operator overloading, polymorphism. **CO5:** Apply the concepts of and principles of the programming language to the real– World problems and solve the problems.
8.	**21UMCA21**	**PROBABILITY AND STATISTICS**	**CO1:** Improve data handling skills and summarize statistical computations. **CO2:** Determine the relationship between quantitative variables and extend Regression Analysis. **CO3:** Recall and apply a comprehensive set of Probability ideas. **CO4:** Find, interpret and analyze the measure of central tendencies, Moment. Generating function and Characteristic function of random variables. **CO5:** Relate, Analyze and Demonstrate the knowledge of using various distributions for statistical analysis.
9.	**21UCSSP2**	**MULTIMEDIA LAB**	**CO1:** Perform the operations of various multimedia techniques. **CO2:** Ability to know about techniques of image processing **CO3:** Understand the various designing process in multimedia animation. **CO4:** Develop an

			interactive multimedia presentation by using multimedia devices. **CO5:** Identify practical aspects in designing latest multimedia applications.
10.	**21UVLG21**	**VALUE EDUCATION**	**CO1:** Clarifying the meaning and concept of value- value education. **CO2:** To inspire students to develop their personality and social values based on the principles of human values. **CO3:** Developing sense of Love, Peace and Brotherhood at Local, national and international levels. **CO4:**To enable the students to understand the social realities and to inculcate an essential value system towards building a health society
11.	**21UCSC31**	**DATA STRUCTURES AND ALGORITHMS**	**CO1:** Be able to check the correctness of algorithms using inductive proofs and loop Invariants. **CO2:** Be able to compare functions using asymptotic analysis and describe the relative merits of worst-, average-, and best-case analysis. **CO3:** Become familiar with the major graph algorithms and their analyses. Employ graphs to model engineering problems, when appropriate. **CO4:** Become familiar with a variety of sorting algorithms and their

			performance Characteristics (eg, runing time, stability, space usage) and be able to choose the best one under a variety of requirements. **CO5:** Be able to understand and identify the performance characteristics of File Structure.
12.	**21UCSCP3**	**DATA STRUCTURES AND ALGORITHMS– LAB**	**CO1:** Infer the basic concepts of Arrays. **CO2:** Summarizing the knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, sorting of each data structure. **CO3:** Use the concepts of searching the element in data structures. **CO4:** Sketch the concepts of QUEUE and STACK, Linked list data structure. **CO5:** Classify the concepts of Trees.
13.	**21UMCA31**	**NUMERICAL APTITUDE**	**CO1:** Acquire the knowledge of numbers. **CO2:** Understand the concepts of ratio and proportions. **CO3:** Appear for Competitive Examinations. **CO4:** Find HCF and LCM. **CO5:** Understand the difference between ordinary interest and exact interest, and be able to calculate both.
14.	**21UCSSP3**	**WEB DESIGN LAB**	**CO1:** Demonstrate page layout, color schemes and typography in the designs. **CO2:** Write valid and

			concise code for webpage. **CO3:** Demonstrate knowledge of artistic and design components that are used in the creation of a web site. **CO4:** Design static websites that meet specified needs and interests. **CO5:** Select appropriate HTML code from public repositories that enhances the experience of web application design.
15.	**21UCSN31**	**MULTIMEDIA TECHNOLOGIES**	**CO1:** Know the basic resources of multimedia developers. **CO2:** Know about Operating systems and Multimedia computer Architecture. **CO3:** Understand the concepts graphics-Images and color. **CO4:** Understand about digital video-digital video data sizing-Video capture. **CO5:** Understand the usage of Multimedia in Web Page Design.
16.	**21UCSC41**	**RELATIONAL DATABASE MANAGEMENT SYSTEM**	**CO1:** Enumerate the underlying concepts of the management of database systems. **CO2:** Describe the structure and model of the relational database System. **CO3:** Analyze a database based on a data model considering the normalization to a specified level **CO4:** Construct simple and moderately advanced

			database queries using Structured Query Language (SQL). **CO5**: Design multiple tables using group functions, sub queries and Implement cursor and trigger concept for a given scenario.
17.	**21UCASP4**	**R Programming Lab**	**CO1:** Understand basic concepts such as data type and index and use them in their work. **CO2:** Demonstrate use of basic functions. **CO3:**Understand, Analyze, Interpret Correlation and Regression to analyze the underlying relationships between different variables **CO4:** Conceptualize and create loops to solve different types of problems. **CO5:** Define Calculate, Implement Probability and Probability Distributions to solve a wide variety of problems.
18.	**21UCSSP4**	**PROGRAMMING IN PHP LAB**	**CO1:** Defining dynamic web pages with good aesthetic sense of designing and latest technical know-how's. **CO2:** Summarizing various database tasks by applying MYSQL database tool. **CO3:** Determining the insights of PHP programming tools and implement complete application over the web. **CO4:** Examining the important PHP functions for designing dynamic web

			pages and communicate database using MYSQL. **CO5:** Experimenting well-formed web documents and implement web service using apache Web Server.
19.	**21UCSN41**	**WEB DEVELOPMENT**	**CO1:** Remember concepts of Internet Technologies. **CO2:** Know the uses of text formatting tags. **CO3:** Understand usage List and tables tags. **CO4:** Understand the concepts of Table Tags. **CO5:** Understand the usage Frame and Frameset Tags.
20.	**21UCSC51**	**ADVANCED JAVA PROGRAMMING**	**CO1:** Summarize the classes and Interfaces in advanced JAVA **CO2:** Develop and understand the methods , Strings and immutability **CO3:** Apply the concepts of Exceptions and Thread Groups **CO4:** Implement the Dynamics language support and getting more knowledge of API **CO5:** Put in practice Java agent and learn a java annotation processors
21.	**21UCSC52**	**DATA COMMUNICATION AND NETWORKING**	**CO1:** Explain about building blocks of Computer Network, Components and Transmission media. **CO2:** Demonstrate the Functionalities and Protocols in the layers of ISO/OSI Network Model. **CO3:** Make use of the Data link layer protocols in Error

			detection and correction. **CO4:** Apply Suitable Routing Strategies for a given network and choose appropriate access control, congestion control and congestion avoidance technique for given Traffic scenario **CO5:** Assess the functions of Application layer Paradigms and Protocols and design for the real time applications.
22.	**21UCSCP5**	**JAVA PROGRAMMING LAB**	**CO1:** Infer the concepts of JDBC. **CO2:** Summarizing the knowledge of JSP and Java Beans **CO3:** Use the concepts of RMI and its important. **CO4:** Sketch the concepts of JList and make good programming skills **CO5:** Implement the concept of java and applying real time environment
23.	**21UCSE51**	**OPERATINGSYSTEM CONCEPTS**	**CO1:** Describe the general architecture of computers **CO2:** Describe the structures for operating systems **CO3:** Analyze theory and implementation of processes **CO4:** Understand the high level structure of concepts **CO5:** Understand and get more knowledge of Distributed Operating system and Remote

			Procedure Call
24.	**21UCSE52**	**SOFTWARE ENGINEERING**	**CO1:** Explain about software engineering life cycle and process model in software development. **CO2:** Prepare the SRS, Design document, Project plan of a given software system. **CO3:** Apply Project Management and Requirement analysis, Principles to S/W project development. **CO4:** Analyze the cost estimate and problem complexity using various estimation techniques **CO5:** Assess SQA in software projects through various testing strategies with product metrics.
25.	**21UCSE53**	**OBJECT ORIENTED ANALYSIS AND DESIGN**	**CO1:** Design and implement software employing the principles of encapsulation, information hiding, abstraction, and polymorphism, **CO2:** Ability to abstract object-based views for generic software systems. **CO3:** Ability to deliver robust software components **CO4:** Use frameworks, classes, and methods from standard libraries in problem solutions. **CO5:** Ability to analyze and model software specifications.
26.	**21UCSE54**	**CYBER SECURITY**	**CO1:** Know the sources of information on

			cyber crime and crimes in India and its IT Act **CO2:** Understanding security and privacy for mobile and wireless devices **CO3:** Know the sources of cyber threats and impact of threat intelligence along with threat detection methods. **CO4:** Learn and Understand the Indian laws related to cyber security. Understand the concept to managing Forensic Data and Study the Forensic analysis of storage media and web. **CO5:** Know the Security and Privacy implications from cloud computing-Social Media Marketing – Protecting People's Privacy in Organization .Study the money laundering controls by analyzing mini-cases.
27.	**21UCSE55**	**INTERNET OF THINGS**	**CO1:** Describe and explain about IoT, Physical and Logical design of IoT, IoT levels, domainspecificIoTs **CO2:** Determine physical and logic design of IoT. **CO3:** Compare Physical and Logical IoT, different levels and domain specific IoTs. **CO4:** Conclude the importance of IoT, Physical and Logical IoT, IoT levels, domain specific IoTs. **CO5:** Design and develop Physical and Logical IoT, IoT deployment templates.
28.	**21UCSE56**	**DATA MINING**	**CO1:** Understand the

		TECHNIQUES	functionality of the various data mining and data warehousing component. **CO2:** Appreciate the strengths and limitations of various data mining and data warehousing models **CO3:** Explain the analyzing techniques of various data **CO4:** Describe different methodologies used in data mining and data ware housing **CO5:** Compare different approaches of the data warehousing and data mining with various technologies.
29.	**21UCSSP5**	**R PROGRAMMING LAB**	**CO1:** Construct the programming logic using R Packages. **CO2:** Differentiate the Data types for developing programs. **CO3:** Show the installation of R Programming Environment. **CO4:** Analyze the datasets using R programming capabilities. **CO5:** Classify the use of different R Data Structures
30.	**21UCSC61**	**C# AND.NET PROGRAMMING**	**CO1:** Understand code solutions and compile C# projects within the .NET framework. **CO2:** Design and develop professional console and window-based .NET application **CO3:** Demonstrate knowledge of object-oriented concepts Design user experience and

			functional requirements C#.NET application. **CO4:** Construct classes, methods, and assessors, and instantiate objects. **CO5:** Understand and implement string manipulation, events, and exception handling within .NET application environment.
31.	**21UCSCP6**	**C# AND.NET PROGRAMMING LAB**	**CO1:** Display proficiency in C# by building stand-alone applications in the .NET framework using C# **CO2:** Create distributed data-driven applications using the .NET Framework, C#, SQL Server and ADO.NET **CO3:** Apply the syntax of basic C# programming constructs. **CO4:** Create web-based distributed applications using C#, ASP.NET, SQL Server and ADO.NET **CO5:** Understand the concept of Web Applications.
32.	**21UCSPR1**	**PROJECT AND VIVA – VOCE**	**CO1:** Design and implement a software with a good aesthetic sense of designing and latest technical know-how's. **CO2:** Project one that involves practical work for understanding and solving problems in the field of computing. **CO3:** Familiar with any software and develop tools **CO4:** Develop a software or application using

			languages. **CO5:** Document the application with implementation.
33.	**21UCSE61**	**CLOUD INFRASTRUCTURE AND SERVICES**	**CO1:** Understand the functionality of the various cloud and services provided by them. **CO2:** Appreciate the strengths and limitations of various cloud models with Virtualization **CO3:** Explain and implementation of task Scheduling algorithms. **CO4:** Describe different methodologies used in cloud and cloud services. **CO5:** Build a private cloud
34.	**21UCSE62**	**MACHINE LEARNING**	**CO1:** Understand the basic concepts and techniques of Machine Learning. **CO2:** Apply different model on datasets and design suitable problem solutions. **CO3:** Study the various probability based learning techniques **CO4:** Apply specific supervised machine learning techniques for a particular Problem **CO5:** Understand the Supervised and Unsupervised learning techniques
35.	**21UCSE63**	**SOFTWARE TESTING AND QUALITY ASSURANCE**	**CO1:** Understand the Software Structure and Software Testing Models **CO2:** Understand and identify various software testing bugs and correcting them after knowing the

			consequences of the bug **CO3:** Understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods. **CO4:** Analysis of Domain Values, Partitioning, Comparison in Testing a software to detect the flow of Anomalies **CO5:** Performing Functional Testing using Control flow and transaction Flow graphs.
36.	**21UCSE64**	**BIG DATA ANALYTICS**	**CO1:** Understand the key issues in big data management and its associated applications in intelligent business and scientific computing. **CO2:** Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics. **CO3:** Interpret business models and scientific computing paradigms, and apply software tools for big data analytics. **CO4:** Achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc. **CO5:** Ability to understand and apply scaling up

			machine learning techniques and associated computing techniques and technologies.
37.	**21UCSE65**	**OPEN SOURCE TECHNOLOGIES**	**CO1:** Understand the students about Open Source Technology method **CO2:** Implement Open Source Method using Principles and Platforms **CO3:** Do Case Study of Apache, Linux, **CO4:** Understand Open Source Design and Hardware. **CO5:** Know Open Source ETHICS.
38.	**21UCSE66**	**CLIENT SERVER COMPUTING**	**CO1:** Overview of Client/Server Computing Technology **CO2:** Understanding the Client/Server Application **CO3:** Understanding the Client Hardware and Software Client Requirements **CO4:**Overview Server Operating System Server Requirements **CO5:** Types of Networks Server Data Management and Access Tools Overview of Networking.

39.	**21UCSSP6**	**PYTHON LAB**	**CO1:** Explain basic principles of Python programming language **CO2:** Explain basic principles of Python programming language **CO3:** Implement database and GUI applications. **CO4:** Be able to do basic programming in python **CO5:** Gain knowledge on CGI