



# THE MADURA COLLEGE

An Autonomous Institution affiliated to Madurai Kamaraj University  
 Re-accredited (3<sup>rd</sup> cycle) with 'A' grade by NAAC  
 Vidya Nagar, T.P.K. Road, Madurai – 625 011

## DEPARTMENT OF COMPUTER SCIENCE

### Course Outcomes mapped with POs

PROGRAMME : M.Sc. (Computer Science)

Course Code	Course Title	CLO	Mapping of CO with PO					
			PO1	PO2	PO3	PO4	PO5	PO6
21P1DMC1	Mathematical Foundations for Computer Science	Evaluate mathematical problems.	2	1	2	2	2	-
		Make use of the Concept of Set Theory and its functions.	2	1	3	3	3	2
		Discover various groups, properties of groups and its operations.	2	1	1	1	1	-
		Apply the concepts of Lattices as Partially Ordered sets.	2	2	2	1	1	-
		Model and solve real-world problems using graphs and trees.	2	2	3	3	3	2
21P1DMC2	Data Structures and Algorithms in C++	Design and analyze the problem statements and various ADTs.	3	2	3	3	2	-
		Gain knowledge of non linear data structure like trees and hash which can be applied to solve problems.	3	3	3	3	2	-
		Describe the computational efficiency of various sorting techniques.	3	3	3	2	2	2
		Design and implement the graph operations and its application.	3	3	3	3	2	-
		Explain basics, control statements and modules.	2	2	1	2	2	1
21P1DMC3	Python Programming	Classify various string operations and File handling methods.	2	3	2	2	2	2
		Compare various Data Structures and to implement Classes & Objects	2	3	3	2	1	1
		Apply the concepts of Object-Oriented Programming.	2	3	3	2	2	2
		Utilize Standard libraries to perform Multithreading, Networking, Database and Graphics.	2	2	2	2	2	1

<b>21P1DME1</b>	<b>Advanced Computer Organization and Architecture</b>	Explain basic operational concepts and identify the use of various Addressing Modes.	2	1	-	-	1	-
		Classify types of controls used in instruction execution and inspect the principle of Pipelining.	2	2	2	1	2	-
		Compare various memory organizations and focus on Arithmetic Operations and Interrupt techniques to access I/O devices.	2	3	2	2	3	2
		Utilize different types of parallelism and interconnect architectures	2	1	-	1	2	-
		Assess the use of vector processing, multithreading and parallel processing software.	2	2	1	1	2	2
	<b>Embedded Systems</b>	Understand the Concept of Embedded System, Micro Controller, Different Components of Micro Controller and their interactions.	2	2	1	1	1	1
		To analyze the Programming Environment to develop Embedded solutions with C and C++.	2	3	2	2	2	-
		Get familiarized with Software Algorithm Complexity, Software Design and Software Testing, Validating, Debugging.	2	3	2	2	2	2
		Understand the key concepts of Embedded Systems such as I/O, Timers, Interrupts and RTOS.	2	2	1	2	1	-
		Understand the key concepts of Embedded systems with Peripheral devices.	2	2	2	2	3	2
	<b>Object Oriented Analysis and Design</b>	Summarize the basics of Objects. Describe the life cycle for object development.	2	2	1	1	-	-
		Classify various UML methodologies. Construct various UML diagrams.	2	3	3	2	2	2
		Identify the relationships between attributes and Use cases.	2	3	2	1	-	-
		Evaluate the process of designing in OOAD. Measure the need of different layers.	2	3	3	3	-	-
		Describe various testing strategies and the usability level of a product.	2	3	1	1	2	2
<b>21P1DMP1</b>	<b>Data Structures and Algorithms in C++ Lab</b>	Design and analyze the problem statements and various ADTs.	3	2	3	3	2	-
		Gain knowledge of non linear data structure like trees and hash which can be applied to solve problems.	3	3	3	3	2	-
		Describe the computational efficiency of various sorting techniques.	3	3	3	2	2	2

		Design and implement the graph operations and its application.	3	3	3	3	2	2
		Analyze the complexity of different algorithms to solve real life problems.	3	3	3	3	2	-
<b>21P1DMP2</b>	<b>Python Programming Lab</b>	Apply the basics, control statements and modules in Python.	2	2	1	2	2	1
		Demonstrate various string operations and File handling methods.	2	3	2	2	2	2
		Use different Data Structures and implement classes and objects	2	3	3	2	1	1
		Implement the concepts of Object-Oriented Programming.	2	3	3	2	2	2
		Utilize Standard libraries to perform Multithreading, Networking, Databases and Graphics.	2	2	2	2	2	1
<b>21P1DNM1</b>	<b>Office Automation</b>	Describe how to create a Document using Microsoft Word.	2	2	2	2	2	1
		Learn the concepts of Formatting & Enhancing Document using Microsoft Word	2	2	3	2	3	2
		Design and Create a Worksheet using Microsoft Excel .	2	2	3	2	3	2
		Perform various calculation using formulae.	2	2	3	2	3	3
		Design a slide show using Microsoft PowerPoint	2	2	3	2	2	2
<b>21P2DMC4</b>	<b>Operating System Concepts</b>	Describe the evolution , types, process concepts of operating system and scheduling	2	2	1	-	-	-
		Identify the concept of inter-process communication and deadlock	2	2	2	1	-	-
		Analyze the concepts of memory and file management.	2	2	2	2	1	1
		Devise the code using basic commands in Linux	2	3	3	2	2	2
		Design the code to manage files using Linux.	2	3	3	2	2	1
<b>21P2DMC5</b>	<b>Advanced Computer Networks</b>	Describe the functions of each layer in OSI and TCP/IP model.	2	2	2	1	1	-
		Differentiate various Switching techniques and Apply the concept of different Error Detection and Correction methods.	2	2	2	1	2	-
		Discuss the design principles of wired and wireless communication media.	2	2	2	2	2	1
		Understand the various Transport layer protocols and also differentiate IPV4 and IPV6 Protocols.	2	2	1	2	2	1

		Discuss and Explain current network authentication applications, network security and their vulnerabilities that are exploited by intentional and unintentional attacks.	2	2	1	2	3	3
<b>21P2DMC6</b>	<b>Computer Graphics</b>	Utilize the fundamentals of Graphics system and model various Drawing Algorithms	2	1	1	-	-	-
		Understand the fundamental output primitives and 2D Geometric Transformation Techniques.	2	3	3	3	1	-
		Evaluate different 2D Viewing Concepts and various Interactive Input Methods.	2	3	2	2	1	-
		Apply 3D Geometric Transformation in Computer Graphics.	2	3	3	3	3	2
		Classify various Visible Surface Detection Methods to Display Images.	2	3	3	3	3	2
<b>21P2DME2</b>	<b>Compiler Design</b>	Understand the structure of compilers, Application of Lexical Analyzers.	2	2	2	2	3	-
		Evaluate various Parsing methods.	2	3	2	2	3	-
		Compute and Translate various intermediate codes	2	1	2	2	3	-
		Construct symbol tables and detect errors	2	1	2	2	3	-
		Recommend Code Generation Technique to convert Source Code into Object Code.	2	3	3	2	3	2
	<b>Android Programming</b>	Develop various Android applications related to layouts and pass information between multiple activities.	2	2	1	1	1	2
		Describe how to design simple GUI applications, use built-in widgets and components.	2	2	1	2	1	2
		Discuss the usage of fragments in android platform. Design and develop user interfaces for the Android platform.	2	2	1	2	1	2
		Design Android applications which make use of internal storage.	2	2	2	2	3	2
		Rate the importance of animation techniques and graphics with simple graphical objects on a display screen.	2	2	3	3	3	2
	<b>WAP and XML</b>	Understand the basics of WAP architecture	2	2	1	2	1	-
		Identify the usage of WAP gate ways.	2	2	1	2	1	-
		Apply WML concepts to develop Web application.	2	2	1	2	1	-
		Develop the interactive real time applications.	2	2	1	2	1	-
		Design web sites using XSL Style Sheets.	2	2	1	2	2	-
<b>21P2DMP3</b>	<b>Linux Programming Lab</b>	Demonstrate the basic knowledge of Shell commands and files handling utilities.	2	2	2	3	2	2
		Examine the concept of shell programs using loops.	2	2	2	3	2	2

		Develop shell programs using patterns	2	2	2	3	2	2
		Construct programs using system call of Linux	2	2	2	3	2	2
		Develop program using I/O System call and ls command with various attributes.	2	2	2	3	2	2
<b>21P2DMP4</b>	<b>Computer Graphics Lab</b>	Discuss about various Drawing Algorithms	2	1	1	-	-	-
		Demonstrate various types of Text and Fonts and Apply the concepts of Polygon filling using boundary fill Algorithm.	2	3	3	3	1	-
		Implementing the various Clippings Algorithm and Apply the concept of 2D object representation.	2	3	2	2	1	-
		Apply 3D Geometric Transformation in an object.	2	3	3	3	3	2
		Describe the importance of Viewing and Projections.	2	3	3	3	3	2
<b>21P2DNM2</b>	<b>Basics Of Internetworks</b>	Describe the concept of Network Definition, Network Administrator, Network Security and Network Topologies	2	-	-	-	1	1
		Discuss the concepts of Browsers and Search Engines	2	-	-	-	1	1
		Describe the E-mail Networks and Servers, E-mail Protocols, Structure of E-mail, Attachments, E-mail Clients, web-based E-mail-Address book, Signature File	2	2	1	2	1	2
		Elaborate the concept of Computer Security and Computer Crimes.	2	-	-	2	3	2
		Discuss the concept of Computer Viruses, Bombs and Worms	2	-	-	3	3	2
<b>21P3DMC7</b>	<b>Relational Database Management System</b>	Analyze the concept of E-R Model and Functional Dependency.	2	2	2	2	2	1
		Utilize the Triggers and functions to perform various database operations.	3	3	3	3	3	2
		Focus on the performance of a database by using indexing techniques.	3	3	2	3	2	1
		Describe the significance of transaction facilities.	2	1	1	2	1	1
		Identify the importance of NoSQL in relation with SQL.	2	2	3	3	2	1
<b>21P3DMC8</b>	<b>Advanced Java Programming</b>	Illustrate the concept of Inheritance, Exception Handling and Multithreading.	1	1	1	1	1	2
		Focus on the concept of AWT and creation of GUI screens using Swing Classes.	1	1	1	3	1	2
		Build the Web Applications using Servlets and Distributed object model using RMI.	1	3	3	1	3	3
		Develop the Web programming on client side and server side using JDBC.	2	1	2	1	2	3

		Discover the dynamic web pages using JSP.	3	3	3	1	2	1
<b>21P3DMC9</b>	<b>Advanced Software Engineering</b>	Discuss the concept of the software process and agile development	2	1	1	2	1	1
		Identify various Requirements modelling	2	2	2	2	2	2
		Make use of various software design concepts.	2	2	3	2	3	3
		Analyze the software Quality assurance and Testing strategies.	3	2	2	3	3	3
		Focus on software process improvements and emerging trends in software engineering.	2	2	2	3	3	3
<b>21P3DMDC</b>	<b>Internet of Things</b>	Describe the basics of IoT.	3	2	1	2	3	1
		Classify the various protocols.	3	2	1	2	3	1
		Identify design methodology and hardware platforms involved in IoT	3	2	1	2	3	1
		Categorize Data analytics and supporting service	3	2	1	1	2	1
		Use Industrial & real time application.	3	3	2	2	2	1
<b>21P3DMP5</b>	<b>Relational Database Management System Lab</b>	Analyze the concept of simple and moderate queries.	2	2	2	2	2	1
		Utilize the various clauses of advanced Queries.	3	3	3	3	3	2
		Focus on the performance of Join queries and basic PL/SQL Blocks.	3	3	2	3	2	1
		Identify the significance in the implementation of Triggers.	2	1	1	2	1	1
		Describe the concepts of Exceptions and Packages of PL/SQL.	1	1	2	1	2	2
<b>21P3DMP6</b>	<b>Advanced Java Programming Lab</b>	Illustrate the concept of Inheritance, Exception Handling and Multithreading.	2	1	1	3	1	2
		Focus on the concept of AWT and creation of GUI screens using Swing Classes.	1	1	1	3	1	2
		Build the Web Applications using Servlets and Distributed object model using RMI.	1	3	3	1	3	3
		Develop the Web programming on client side and server side using JDBC.	2	1	2	1	2	3
		Discover the dynamic web pages using JSP.	3	3	3	1	2	1
<b>21P4DMC10</b>	<b>Data Mining and Data Warehousing</b>	Identify the significance of data preprocessing.	2	2	2	2	2	3
		Describe the concepts of data warehousing.	1	1	2	1	1	1
		Make use of various pattern mining and classification algorithms.	1	1	2	3	1	2
		Correlate various clustering methods.	3	3	2	2	3	1
		Focus on the data mining techniques in various real time applications.	3	3	2	2	3	2

<b>21P4DMC11</b>	<b>Dot Net Programming</b>	Discuss the concept to build ASP.NET MVC Applications.	2	2	2	1	2	1
		Utilize the concept of Controllers and Actions.	2	2	1	1	2	1
		Identify the Data Models and HTML Helpers.	2	1	3	1	2	1
		Analyze the Model Binder and Validation techniques.	3	1	3	1	2	1
		Classify the concept of Database access and understanding view Master pages and User controls.	3	2	3	2	3	1
<b>21P4DMC12</b>	<b>PHP Programming</b>	Describe basics and control statements and functions.	1	1	2	1	1	2
		Experiment with arrays and OOPS concepts.	2	2	1	1	2	2
		Construct program using exception handling, Regular expression.	3	2	2	2	1	1
		Focus on the concepts of file uploading, validating forms and database connectivity.	1	3	2	3	2	2
		Devise projects with Laravel Development Environment.	2	3	3	3	2	3
<b>21P4DME3</b>	<b>Cloud Computing</b>	Describe the nature of Cloud models.	2	1	-	1	2	1
		Make use of various technologies in Cloud applications.	2	2	2	1	2	1
		Focus on various Cloud architectures.	2	3	2	2	3	2
		Identify the significance of delivery models and cost metrics.	2	1	-	1	2	1
		Compare various services provided different organizations.	2	2	1	3	2	2
	<b>Mobile Computing</b>	Discuss on the Mobile computing architecture and its emerging trends.	2	1	2	2	2	1
		Determine the concept of GSM and GPRS.	2	2	3	3	2	3
		Identify the wireless application protocol, CDMA and Wireless LAN.	2	2	3	3	2	2
		Analyze the client programming, Palm OS and windows CE architecture.	2	2	3	3	2	2
		Focus on the concept of 5G technology.	2	2	1	2	2	1
	<b>Block Chain Technology</b>	Describe the types, benefits and limitations of Blockchain	2	1	-	-	1	-
		Make use of decentralization and cryptography concepts.	2	2	2	1	2	-
		Identify the bitcoin features and its alternative options.	2	3	2	2	3	2
		Illustrate and deploy smart contracts and Ethereum.	2	1	-	1	2	-
		Focus on the significance of the blockchain features outside of currencies	2	2	1	1	2	2
<b>21P4DMP7</b>	<b>Dot Net Programming Lab</b>	Discuss the concept to build ASP.NET MVC Applications.	2	2	2	1	2	1
		Utilize the concept of Controllers and Actions.	2	2	1	1	2	1
		Identify the Data Models and HTML Helpers.	2	1	3	1	2	1

		Analyze the Model Binder and Validation techniques.	3	1	3	1	2	1
		Classify the concept of Database access and understanding view Master pages and User controls.	3	2	3	2	3	1
<b>21P4DMP8</b>	<b>PHP Programming Lab</b>	Describe basics and control statements and functions.	1	1	2	1	1	2
		Experiment with arrays and OOPS concepts.	2	2	1	1	2	2
		Construct program using exception handling, Regular expression.	3	2	2	2	1	1
		Focus on the concepts of file uploading, validating forms and databases connectivity.	1	3	2	3	2	2
		Devise projects with Laravel Development Environment.	2	3	3	3	2	3
<b>Project</b>	<b>21P4DMPR</b>	An ability to apply knowledge of computing and mathematics appropriate to the discipline.	3	3	3	3	3	3
		Gains knowledge in complete understanding of end user requirements.	3	3	3	3	3	3
		An ability to function effectively on teams to accomplish shared computing design, evaluation, or implementation goals.	3	3	3	3	3	3
		Recognition of the need for and ability to engage in continuing professional development.	3	3	3	3	3	3
		An ability to use appropriate techniques, skills, and tools necessary for computing practice	3	3	3	3	3	3

  
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