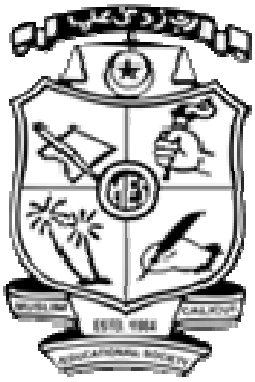
MES College Nedumkandam

Affiliated to Mahatma Gandhi University, Kottayam and Accredited by NAAC



Course Outcome- Computer Science

For 2020-21 Academic year

Chembalam PO, Idukki District, Kerala

Pin code: 685553

Tel: +91 4868232043, 233060 E mail: mesndkm@gmail.com

Fax: +91 4868 233060

MSc Computer Science

Semester: 1

Course code	Course Title	Ccourse Outcome	
CA500101	Computational Mathematics	CO1	Understand fundamental concepts of a special topic in computational mathematics and its role in modern mathematics and applied contexts.
		CO2	Demonstrate accurate and efficient use of specific computational mathematics techniques.
		CO3	Demonstrate capacity for mathematical reasoning through analysing, proving and explaining concepts from computational mathematics.
Course code	**Course Title**	**Ccourse Outcome**	
CA010101	Advanced web Technology	CO1	develop a dynamic webpage by the use of java script and DHTML.
		CO2	Apply in eal word concepts HTML5, CSS3, JavaScript
		CO3	Understand server-side scripting language, PHP
		CO4	Use PHP to access a MySQL database
		CO5	Design and implement o typical static web pages and interactive web applications. o dynamic web applications.
Course code	**Course Title**	**Ccourse Outcome**	
CA010102	Operating Systems	CO1	understand the basic components of a computer operating system,
		CO2	Define, restate, discuss, and explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems
		CO3	Design and construct the following OS components: System calls, Schedulers, Memory management systems, Virtual Memory and Paging systems.
		CO4	understand the file concepts deeply.
Course code	**Course Title**	**Ccourse Outcome**	
CA500102	Advanced Java Programming	CO1	Identify and state object-oriented concepts and basic java programming concepts
		CO2	Understand the Object-Oriented Programming concepts and Java programming language constructs like syntax and programming structures.
		CO3	Solving real-world problems using object-oriented concepts and write corresponding algorithms and java programs

		CO4	Understand java program to a DBMS and perform insert, update and delete operations on DBMS table
		CO5	Design server side java application called Servlet to catch form data sent from client, process it and store it on database.
		CO6	Desin a server side java application called JSP to catch form data sent from client and store it on database.
Course code	Course Title	Ccourse Outcome	
CA010103	Lab I [Java& PHP]	CO1	Develope simple object-oriented Java programs
		CO2	Read and make elementary modifications to Java programs that solve real-world problems
		CO3	Validate input in a Java program
		CO4	Identify and fix defects and common security issues in code
		CO5	Develop GUI based applications.
		CO6	Evaluate the client server prorammin
Semester: 2			
Course code	**Course Title**	**Ccourse Outcome**	
CA500201	Advanced data structure	CO1	Compare between different data structures
		CO2	Ability to summarise searching and sorting techniques
		CO3	Ability to describe stack ,queue and linked list Operations
		CO4	Ability to have knowledge of tree and graph concepts
		CO5	Appropriate data structures to solve collision resolution techniques.
Course code	**Course Title**	**Ccourse Outcome**	
CA010201	Computer Networks	CO1	Understand the concepts of Data Communication.
		CO2	Study the functions of OSI Layers
		CO3	Familiarise with the Transmission Media, Flow Control and Error Detection & Correction
		CO4	Understand fundamental concepts in Routing, Addressing & working of Transport Protocols
		CO5	Gain familiarity with common networking & Application Protocols.
		CO6	
Course code	**Course Title**	**On successful completion of the course students will be able to:**	
CA010202	Research Methadology and technical writtings	CO1	Develop understanding on various kinds of research, objectives of doing research and research Process.
		CO2	Search for, select and critically analyze research articles and papers and to prepare a literature review.
		CO3	Distinguish between different research designs.

		CO4	understand basic awareness of data analysis-and hypothesis testing procedures.
		CO5	write a research report and thesis.
		CO6	Develop an understanding of the ethical dimensions of conducting research.
Course code	**Course Title**	**Ccourse Outcome**	
CA500202	Database management system	CO1	identify the basic concepts and various data model used in database design ER modelling concepts and architecture use and design queries using SQL
		CO2	apply relational database theory and be able to describe relational algebra expression, tuple and domain relation expression fro queries.
		CO3	identify the use of normalization and functional dependency, indexing and hashing technique used in database design.
		CO4	identify the purpose of query processing and optimization and also demonstrate the basic of query evaluation.
		CO5	apply and relate the concept of transaction, concurrency control and recovery in database.
		CO6	
Course code	Course Title	After the successful completion of the lab course the student will be able to :	
CA010203	Lab II[DS USIN JAVA ,SQL]	CO1	Write programs to solve problems.
		CO2	Choose and implement efficient data structures and apply them to solve problems.
		CO3	Be able to design and analyze the time and space efficiency of the data structure
		CO4	Apply the basic concepts of Database Systems and Applications
		CO5	Design a commercial relational database system (Oracle, MySQL) by writing SQL using the system.
Semester: 3			
Course code	**Course Title**	**Ccourse Outcome**	
CA010302	Python programming	CO1	:Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python ,
		CO2	"Interpret Object oriented programming in Python"
		CO3	Understand and summarize different File handling operations
		CO4	design GUI Applications in Python and evaluate different database operations"

		CO5	Design and develop Client Server network applications using Python
		CO6	Express different Decision Making statements and Functions.
Course code	**Course Title**	**Ccourse Outcome**	
CA500301	Software Engineering	CO1	Understand How Software is devoloped In an IT firm..They will be able to understand Mancy process models and Software engineering practices for devoloping a software
		CO2	Apply Many devolopment Methods and Also Agile Modelling and Agile devolopment..They also learn About Uml which is used as a Graphical Modelling method used in Organisations
		CO3	learn About Requirement Engineering..They understand How requirements are collected and How to interact with customers
		CO4	Describe about Many Design Concepts and Architectural Styles used by Organisations
		CO5	Understand How to measure software and which Models are used for measing Softwares
Course code	**Course Title**	**Ccourse Outcome**	
CA010304	INTERNET OF THINGS, Mini Project Using IoT	CO1	understand Internet of Things. Better understanding of how IoT Interacting with real world
		CO2	Understand Basic components for IoT project development. Understanding of sensors and it's implementations.
		CO3	Apply IoT development with Raspberry Pi and related components. They are used for the real time projects development.
		CO4	Understand Image processing based techniques are discussed. Better understanding of High-level application development and implementation of open cv based programs
		CO5	Design IoT application and simulation. Working with IoT application development and incorporate python with IoT. Better skill development for IoT projects.
		CO6	understand new technology made the students up to date.
Course code	**Course Title**	**Ccourse Outcome**	
CA800301	Introduction to Cyber Security	CO1	Understand Introduction to Cyber Security
		CO2	Analyse and evaluate the cyber security needs of an organisation.
		CO3	Implement cyber security solutions and use of cyber security, information assurance and cyber forensics software /tools.

		CO4	Comprehend and execute risk management process, risk treatment methods and performance indicators.
		CO5	Design and develop a security architecture for an organisation.
		CO6	Design operational and strategic cyber security strategies and policies.
Course code	**Course Title**	**Ccourse Outcome**	
CA0103303	Lab III[DIP usin Python]	CO1	Gain practical knowledge in Digital Image processing which will pave the way to do their projects.
		CO2	Understand different basic intensity transformation.
		CO3	Understand discrete transfrom works including concepts ofbasic images.
		CO4	Understand about different noise models.
Course code	**Course Title**	**Ccourse Outcome**	
CA010330	Digital Imae Processing	CO1	Compare different methods for image acquisition, storage & representation in digital devices & computers.
		CO2	Appreciate role of image transforms in representing, highlighting & modifying image features.
		CO3	Interpret the mathematical principles in digital image enhancement & apply them in Spatial and frequency domain.
		CO4	Compare various types of image compression & restoration techniques and applying different compression techniques on image.
		CO5	Apply various methods for segmenting image & identifying image components.
Semester 4			
Course code	**Course Title**	**Ccourse Outcome**	
CA010401	**Data Mining**	CO1	Understand & apply most current data mining technique & application.
		CO2	Design a data warehouse system & perform business analysis with OLAP Tool.
		CO3	Apply association rule mining technique for data analysis.
		CO4	Apply appropriate classification & clustering technique for data analysis.
		CO5	Data mining methods for the new domain of data.
Course code	**Course Title**	**Ccourse Outcome**	
CA800402	**Applied Cryptography**	CO1	Describe how various cryptography algorithms and protocols work.
		CO2	Criticize other people's work based on rigorous principles.
		CO3	Appraise the great work in this field, and articulate why the work is great.

		CO4	Evaluate security mechanisms using rigorous approaches, including theoretical derivation, modeling, and simulations.
		CO5	Formulate research problems in the computer security field.
Course code	**Course Title**	**Ccourse Outcome**	
CA800403	**Ethical Hacking**	CO1	To gain knowledge about Ethical hacking and penetration testing.
		CO2	To learn about various types of attacks, attackers and security threats and vulnerabilities present in the computer system.
		CO3	To examine how social engineering can be done by attacker to gain access of useful & sensitive information about the confidential data.
		CO4	**To learn about basics of web application attacks.**
		CO5	To gain knowledge of the tools , techniques and ethical issues likely to face the domain of ethical hacking and ethical responsibilities.
Course code	**Course Title**	**Ccourse Outcome**	
CA010402	**Project**	CO1	To demonstrate a depth of knowledge of modern technology.
		CO2	Students will acquire the skills to communicate effectively and to present ideas clearly and coherently to specific audience in both the written and oral forms.
		CO3	Students will be able to learn on their own, reflect on their learning and take appropriate actions to improve it

BCA

Semester: 1

Course code	Course Title	Course Outcome	
CA1CRT02	METHODOLOGY OF PROGRAMMING AND C LANGUAGE	CO1	Develop logics which will help them to create programs, applications in C.
		CO2	Develop algorithms and draw flowcharts for various problems.
		CO3	Demonstrate an understanding of computer programming language concepts
		CO4	–Understand the functional hierarchical code organization.
		CO5	Develop programs that use calculations, selections, loops, arrays, pointers, structures and union
Course code	**Course Title**	**Course Outcome**	
CA1CRP01	SOFTWARE LAB1	CO1	Read, understand and trace the execution of programs written in C language.
		CO2	Write the C code for a given algorithm.
		CO3	Understand dynamic memory management.
		CO4	Design, implements, test and debug programs that use calculations, selections, loops, arrays, pointers, structures and union.
		CO5	Ability to handle possible errors during program execution.
Course code	**Course Title**	**Course Outcome**	
CA1CRT01	Computer Fundamentals and Digital Principles	CO1	Analyze basic knowledge about computers including I/O devices, hardwires, software, internet, networks
		CO2	Introduce basic principles of digital electronics such as logic gates, Boolean algebra, number systems, digital and logic circuits
		CO3	represent numerical values in various number systems and perform number conversions between different number systems
		CO4	understand the basics of digital electronics and able to design basic logic circuits, combinational and sequential circuits
		CO5	understand the basic structure and functioning of computer
		CO6	
Course code	**Course Title**	**Course Outcome**	
CA500201	Advanced data structure	CO1	Compare between different data structures
		CO2	Ability to summarise searching and sorting techniques
		CO3	Ability to describe stack ,queue and linked list Operations
		CO4	Ability to have knowledge of tree and graph concepts
		CO5	Appropriate data structures to solve collision resolution techniques.

Course code	Course Title	Course Outcome	
CA010201	Computer Networks	CO1	Understand the concepts of Data Communication.
		CO2	Study the functions of OSI Layers
		CO3	Familiarize with the Transmission Media, Flow Control and Error Detection & Correction
		CO4	Understand fundamental concepts in Routing, Addressing & working of Transport Protocols
		CO5	Gain familiarity with common networking & Application Protocols.
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Course code	**Course Title**	**On successful completion of the course students will be able to:**	
CA010202	Research Methadology and technical writtings	CO1	Develop understanding on various kinds of research, objectives of doing research and research Process.
		CO2	Search for, select and critically analyze research articles and papers and to prepare a literature review.
		CO3	Distinguish between different research designs.
		CO4	Understand basic awareness of data analysis-and hypothesis testing procedures.
		CO5	Write a research report and thesis.
		CO6	Develop an understanding of the ethical dimensions of conducting research.
Semester 2			

Semester: 3			
Course code	**Course Title**	**Course Outcome**	
CA3CRT06	Computer Graphics	CO1	Compare various graphic devices.
		CO2	Analyze & implement algorithms for Line Drawing & Circle drawing.
		CO3	Apply geometric transformation on 2D objects.
		CO4	Applying 2D viewing & analyze and implement algorithm for clipping.
		CO5	Compare various 3D concept & 3D object representation.
		CO6	Compare various Computer Animation techniques.
Course code	Course Title	Course Outcome	
CA3CRT09	Data Structure	CO1	Summarize different categories of data structure and file organization
		CO2	Explain the significance of dynamic memory management
		CO3	Illustrate various technique for searching ,sorting, hashing and collision resolution technique
		CO4	Appropriate data structure to solve real world problem efficiently
Course code	Course Title	Course Outcome	
CA3CRT08	Operating Systems	CO1	understand the basic components of a computer operating system,

		CO2	Define, restate, discuss, and explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems
		CO3	Design and construct the following OS components: System calls, Schedulers, Memory management systems, Virtual Memory and Paging systems.
		CO4	understand the file manipulation concepts deeply.
Course code	Course Title	Course Outcome	
CA3CRT07	Microprocessor PC Hardware	CO1	understand the basic architecture and mode of operations of a microprocessor based computer
		CO2	identify the different components and its functions in a microprocessor based computer
		CO3	understand functions and working of the computer hardware components like motherboard, hard disk and memory modules
		CO4	define the working of computer hardware components
		CO5	explain the entire working of a microprocessor based computer system
		CO6	demonstrate the working of a microprocessor based computer system and its components
Course code	Course Title	Course Outcome	
CA3CRT09	Softwae Lab III	CO1	Develop programs using pointers, functions dynamic memory management
		CO2	Compare various sorting and searching algorithms
		CO3	Construct linear and nonlinear data structures to operate and solve real world problems
		CO4	Choose appropriate data structures to solve various computing problems
Semester: 4			
Course code	**Course Title**	**Course Outcome**	
CA4CRT10	Design and analysis of Algorithm	CO1	Ability to choose appropriate algorithm design techniques for solving problems
		CO2	Describe dynamic programming paradigm, divide and conquer, greedy approach and back tracking
		CO3	Analyse worst case running times of Algorithms using asymptotic analysis
		CO4	Ability to understand how the algorithm design methods impact the performance of programs
Course code	**Course Title**	**Course Outcome**	
CA4CRT11	System analysis and software	CO1	Basic knowledge and understanding of the analysis and design of complex systems

	Engineering	CO2	Ability to apply software engineering principles and techniques.
		CO3	Ability to understand and meet ethical standards and legal responsibilities
		CO4	To rapidly learn and apply emerging technologies
Course code	**Course Title**	**Upon completion of this course, the students will be able to:**	
CA4CRT12	Linux Administration	CO1	Explain the fundamental concepts of open-source operating system Linux
		CO2	Understand and administer file permissions on directories and regular files
		CO3	Understand the basic set of commands and editors in Linux operating system.
		CO4	Discuss shell programming in Linux operating system
		CO5	Distinguish various filter and server commands
Course code	**Course Title**	**Upon completion of this course, the students will be able to:**	
CA4CRT13	**Web programming using PHP**	CO1	The students can understand the basic architecture and concepts of world wide web. Understand Style sheets javascript and its programming structures
		CO2	Understand the server side scripting and PHP programming structures
		CO3	Write web programmes using PHP on server side javascript on client side and CSS for design of web page
		CO4	Write PHP programmes incooperating MySQL as back end
		CO5	Develop a web application using PHP, Javascript, CSS and MySQL
Course code	**Course Title**	**Upon completion of this course, the students will be able to:**	
CA4CRP04	**SOFTWARE LAB IV**	CO1	Identify the basic Linux general purpose commands.
		CO2	Apply and change the ownership and file permissions using Linux commands.
		CO3	Implement shell scripts
		CO4	Describe fundamentals of web and Introduce the creation of static webpage using HTML
		CO5	Describe the function of JavaScript as a dynamic webpage creating tool
		CO6	Outline the principles behind using MySQL as a backend DBMS with PHP
Semester: 5			

Course code	Course Title	Course Outcome	
CA5CRT14	Computer Networks	CO1	Describe the various communication protocols in networking.
		CO2	Describe the multiplexing techniques, different transmission medias and the switching techniques in computer network.
		CO3	Describe the functions of data link layer in network model.
		CO4	Describe the functions of network and transport layer in new model.
		CO5	Describe the functions of application layer in network model.
		CO6	Describe the common threats in computer network.
Course code	**Course Title**	**Course Outcome**	
CA5RT15	IT and Environment	CO1	Understand More about Internet ,its Searching Techniques and Also Can learn more about Environmental studies
		CO2	Understand more about Educational Websites
		CO3	Demonstrate the social issues and Concerns on IT devolopment also They Learns about guidelines for proper usage of computers,internet and also Mobile phone
		CO4	Understand E-waste Management and also importance of Green computing
		CO5	Understand Human Rights and how it is implemented and also value Dimensions of Human Rights
		CO6	Students learns about Their fundamental Rights
Course code	**Course Title**	**Course Outcome**	
CA5CRT16	Java Programming using Linux (Core)	CO1	Identify and state object-oriented concepts and basic java programming concepts
		CO2	Understand the Object-Oriented Programming concepts and Java programming language constructs like syntax and programming structures.
		CO3	Solving real-world problems using object-oriented concepts and write corresponding algorithms and java programs
		CO4	Apply the real-world to the object-oriented concepts and organize the entities in the problem domain as objects and the relationship between them
		CO5	Differentiate algorithms/programs designed in Object-Oriented methodology and judge whether there are any discrepancies
		CO6	Design a solution to a real-world problem in object-oriented methodology and develop the designed project in the java programming language
Course code	**Course Title**	**Course Outcome**	
CSPRP06	Software Development Lab 1	CO1	practical application of theoretical knowledge gained in order to develop real time software application
		CO2	analyze the industrial line of work and corporate work culture

		CO3	understanding regarding a particular domain of software platform
		CO4	illustrate the presentation skill of an individual by project presentation
		CO5	Exploring challenging work areas in their area of interest
		CO6	
Course code	**Course Title**	**Course Outcome**	
		CO1	Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs
		CO2	Read and make elementary modifications to Java programs that solve real-world problems
		CO3	Validate input in a Java program
		CO4	Identify and fix defects and common security issues in code
		CO5	Develop GUI based applications.
CSPRP05	Software Lab V	CO6	
Semester: 6			
Course code	**Course Title**	**Students will able to:**	
		CO1	.Define Cloud Computing and memorize the different Cloud service and deployment models
		CO2	Describe importance of virtualization along with their technologies.
		CO3	Use and Examine different cloud computing services
		CO4	Analyze the components of open stack & Google Cloud platform and understand Mobile Cloud Computing
		CO5	Describe the key components of Amazon web Service
CA6CRT17	Cloud Computing	CO6	Design & develop backup strategies for cloud data based on features.
Course code	**Course Title**	**Course Outcome**	
		CO1	Develop application and user interface for various mobile platforms.
		CO2	Demonstrate and deploy various tools in Android applications.
CA6CRT18	Mobile Application development Android	CO3	Demonstrate basic skills of using an integrated development environment (Android studio) and Android SDK for implementing Android applications.
Course code	**Course Title**	**Ccourse Outcome**	
CA6PET01	Data Mining	CO1	Understand & apply most current data mining technique & application.

		CO2	Design a data warehouse system & perform business analysis with OLAP Tool.
		CO3	Apply association rule mining technique for data analysis.
		CO4	Apply appropriate classification & clustering technique for data analysis.
		CO5	Data mining methods for the new domain of data.
Course code	**Course Title**	**Course Outcome**	
CA6CRP07	Seminar	CO1	Develop skills in presentation and discussion of research topics in a public forum.
		CO2	Exposure to a variety of research projects and activities in order to enrich their academic experience
Course code	**Course Title**	**Course Outcome**	
CA6CRP08	SOFTWARE DEVELOPMENT LAB(MAIN PROJECT	CO1	It makes the student confident in designing an Online Project with advanced technologies on their choice
		CO2	Students are trained to meet the requirements of the Industry.