



# MAR ELIAS COLLEGE

Kottappady, Kottappady (P.O), Kothamangalam  
 Ernakulam Dist., Kerala State Pin -686692  
 Affiliated to MG University and Approved by Govt. of Kerala  
 Established in 2006

## BACHELOR OF COMPUTER APPLICATION

### COURSE OUTCOMES (CO)

#### SEMESTER I

Course Code – Course Name	Course Outcomes
<b>EN1CCT01-</b> Fine Tune Your English	<b>By successful completion of this programme, the student will be able to:-</b>
	CO1- apply English in both written and spoken forms.
	CO2-utilize English for formal communication effectively.
	CO3-explain rules regarding how words are used and when they should be used.
	CO4- discover words, their structure and function.
<b>MM1CMT03-</b> Mathematics-Discrete Mathematics(I)	CO5- show examples using grammar.
	CO1-illustrate sets and perform operations and algebra on sets.
	CO2- illustrate and construct correct mathematical arguments.
	CO3- apply the concepts and procedures for expressing mathematical ideas clearly, precisely and unambiguously.
	CO4- apply the logic of quantified statements and the precision of thought and language to achieve a mathematical certainty.
<b>ST1CMT31-</b> Basic Statistics and Introductory Probability Theory	CO5- relate the concept of equivalence relations as used in modular arithmetic and cryptography.
	CO1- analyse statistical data using measures of central tendency and dispersion.
	CO2 -explain the basic concepts of probability and to find probabilities of various events
	CO3- solve and interpret the correlation between two variables
	CO4- apply linear regression models in practice

	CO5 -find the expected values of random variables and apply the properties of mathematical expectation
<b>CS1CRT01-</b> Computer Fundamentals and Digital Principles	CO1- apply the principles of number system, binary codes and Boolean algebra to minimize logic expressions
	CO2- interpret K-maps to minimize and optimize logic functions up to 5 variables
	CO3- discover knowledge about various logic gates and logic families and analyze basic circuits of these families.
	CO4- recognize various combinational and sequential circuits such as encoders , decoders and counters using multiplexers, and flip – flops digital and digital to analog conversion circuits
	CO5- explain and compare various memory systems, shift registers and analog to digital and digital to analog conversion circuits
<b>CS1CRT02-</b> Methodology of Programming and C Language	CO1- explain the basic operations using C Language.
	CO2- demonstrate the basic programming skills in C Language
	CO3- define the concepts of decision making ,iterative statements in C
	CO4- interpret the concepts of arrays, pointers, functions, structures and memory allocation techniques in C Language
	CO5- summarize different C programming concepts at application level.
<b>CS1CRP01-</b> Software Lab I	CO1- explain the basic operations using C Language.
	CO2- demonstrate the basic programming skills in C Language
	CO3- define the concepts of decision making ,iterative statements in C
	CO4- interpret the concepts of arrays, pointers, functions, structures and memory allocation techniques in C Language
	CO5- summarize different C programming concepts at application level.

## SEMESTER II

<b>Course Code –</b>	<b>Course Outcomes</b>
<b>Course Name</b>	<b>By successful completion of this programme, the student will be able to:-</b>

<b>EN2CCT03-</b> English - Issues That Matter	CO1-relate the irreparable damage of war in its wake, both physical and psychological.
	CO2- explain the common biases, assumptions and judgements as well as allowing young minds to express the realities without fear of censure.
	CO3-identify literatures of resistance which have emerged from dominated and marginalised cultures.
	CO4- analyse the philosophical and practical concerns about the impact of human activity on the environment and aims at sensitising youth to their role in preserving it.
	CO5- examine the special challenges refugees face regarding cultural assimilation and repatriation.
<b>MM2CMT03-</b> Mathematics-Discrete Mathematics II	CO1 -construct problems in graphical form to illustrate selected information
	CO2- identify other applications of Graph Theory.
	CO3- solve a system of linear equations by row-reducing its augmented
	CO4- construct routes and find path lengths in networks.
	CO5- explain Boolean algebra and basic properties of Boolean algebra.
<b>CS2CRT04-</b> Data Base Management Systems	CO1- compare the concepts and principles of Database Management System with the conventional file processing system.
	CO2- illustrate E-R concepts and relate it with Relational database concepts
	CO3- demonstrate SQL concepts in creating, manipulating the database schemas
	CO4- interpret the database schemas using various normalization techniques
	CO5- explain various accounts and create various levels of security in database
<b>CS2CRT05-</b> Computer Organization and Architecture	CO1-identify the basic concepts and structure of computers.
	CO2- extended the concepts of register transfer logic and arithmetic operations
	CO3- explain different types of addressing modes and memory organization
	CO4- classify the different types of serial communication techniques

	and Summarize the Instruction execution stages.
	CO5- outline the importance of parallel processing in CPU execution speed.
<b>CS2CRT06-</b> Object Oriented Programming using C++	CO1- develop programming skills of students, using object-oriented programming concepts
	CO2- compare the concept of class and objects from procedure oriented programming
	CO3- identify the OOPs Concepts
	CO4- apply the principles of virtual functions and polymorphism
	CO5- analysing and handling formatted I/O and unformatted
	CO6- evaluate classes for simple applications
<b>CS2CRP02-</b> Software Lab- II	CO1- develop programming skills of students, using object-oriented programming concepts
	CO2- identify the concepts of ADT and OOP and list syntax and semantics in formal notation
	CO3- assess in C++ and evaluate relative benefits with C and develop classes for simple applications.
	CO4- illustrate database schemas using the DML and DDL concepts.
	CO5- summarize various set operations, aggregate functions, clauses using sql

### SEMESTER III

Course Code – Course Name	Course Outcomes
	<b>By successful completion of this programme, the student will be able to:-</b>
<b>ST3CMT32-</b> Advanced Statistical Meth	CO1- relate the characteristics of different discrete and continuous distributions.
	CO2- list the collected data in terms of experimental designs and statistical surveys.
	CO3- apply the normal probability distribution including standard normal curve calculations of appropriate areas.
	CO4- make use of different distributions to solve simple practical

	problems.
	CO5- test for the hypothesis to evaluate the strength of evidence from the sample
<b>CS3CRT07</b> - Computer Graphics	CO1- define the concepts of computer graphics.
	CO2- demonstrate various algorithms for drawing lines and Circles.
	CO3- make use of geometric transformations on graphics objects and their application in composite form.
	CO4- explain different clipping methods and its transformation to Graphics display devices.
	CO5- classify different types of projections and describe visible surface detection techniques for display of 3D scenes on 2D screens.
	CO6- compare different types of animations.
<b>CA3CRT01-</b> Microprocessor and PC Hardware	CO1- relate the general architecture of a microcomputer system and architecture organization of 8085
	CO2- classify the instruction set of 8085 microprocessors and distinguish the use of different instructions.
	CO3- demonstrate different components and their functions on the motherboard.
	CO4- identify the operations of the hard disk.
	CO5- contrast the features of physical memory, memory modules and memory areas.
<b>CA3CRT02-</b> Operating Sy	CO1- outline the basics and types of operating systems
	CO2- organize process management and various CPU scheduling algorithms
	CO3- explain various memory management techniques
	CO4- make use of disk management and disk scheduling algorithms for better utilization of external memory.
	CO5- make use of disk management and disk scheduling algorithms for better utilization of external memory.
<b>CS3CRT08-</b> Data Structure using C++	CO1- choose appropriate data structures to represent data Items
	CO2- relate The concept of Dynamic memory management, data types, algorithms and Describe the hash function and concepts of collision and its resolution methods

	CO3- analyse concepts about searching and sorting techniques.
	CO4- analyse concepts about searching and sorting techniques.
	CO5- design programs using a variety of data structures such as stacks, queues, binary trees, search trees
	CO6- determine ADTs such as lists, graphs, search trees in C++ to solve Problems
<b>CS3CRP03-</b> Software Lab - III	CO1- apply data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems.
	CO2- explain various kinds of searching and sorting techniques.
	CO3- identify the appropriate data structures and algorithms for solving problems
	CO4- apply Algorithm for solving problems like sorting, searching, insertion and deletion of data
	CO5- develop programs of various data structures using static and dynamic memory allocation.

### SEMESTER IV

Course Code – Course Name	Course Outcomes
	<b>By successful completion of this programme, the student will be able to:-</b>
<b>MM4CMT03-</b> Operational Research	CO1- develop operational research models from the verbal description of the real system.
	CO2- explain the mathematical tools that are needed to solve optimization problems.
	CO3- find mathematical software to solve the proposed models.
	CO4- find a report that describes the models and the solving techniques
	CO5- extend the results and propose recommendations understandable to the decision-making processes in Management Engineering.

<b>CS4CRT09-</b> Design and Analysis of Analysis	CO1- compare the basic notation for analysing the performance of the algorithms.
	CO2- demonstrate divide-and-conquer techniques for solving suitable problems
	CO3- make use of a greedy approach to solve an appropriate problem for optimal solution.
	CO4- relate dynamic programming and backtracking approaches to solve suitable problems.
	CO5- explain the major graph algorithms and their analyses.
<b>CA4CRT03-</b> System Analysis & Software Engineering	CO1- outline basic concepts of System analysis and Software engineering
	CO2- analyse the role of System analyst, designers , developers, customers and other stakeholders.
	CO3- explain verification and validation
	CO4- summarize software Testing
	CO5- plan efficient, reliable, robust and cost-effective software solutions.
<b>CS4CRT10-</b> Linux Administration	CO1- summarize the features of Linux, Unix operating systems with file and directory commands
	CO2- classify different processes in Linux
	CO3- develop programming skills using shell script
	CO4- explain the role of administrator in file organization
	CO5- demonstrate different types of filter commands and various servers
<b>CS4CRT11-</b> Web Programming using PHP	CO1- explain World wide web architecture.
	CO2- develop Web pages using HTML.
	CO3- what are the differences between HTML and CSS.
	CO4- make use of basic concepts of PHP.
	CO5- construct database connection between PHP and MYSQL.
<b>CS4CRP04-</b> Software Lab - IV	CO1- construct programs based on HTML.
	CO2- develop a JavaScript based program.
	CO3- build database programs using PHP and MYSQL.
	CO4- develop basic programming concepts in shell script

	CO5- demonstrate various processing and file system commands
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## SEMESTER V

Course Code – Course Name	Course Outcomes
	<b>By successful completion of this programme, the student will be able to:-</b>
<b>CS5CRT12-</b> Computer Networks	CO1- explain the basis and structure of an abstract layered protocol model
	CO2- demonstrate the concepts of network topology, network operating systems and how the networks are developed as per the need of the organization
	CO3- explain flow control and error control mechanisms and apply them using standard data link layer protocols
	CO4- compare different types of addressing schemes used on the internet.
	CO5- list various security mechanisms used in networks.
<b>CS5CRT13-</b> IT and Environment	CO1- identify the opportunities of knowledge dissemination.
	CO2- utilize up to date knowledge in IT
	CO3- analyse and evaluate the global scale of environmental problems
	CO4- plan critically on their roles, responsibilities, and identities as citizens, consumers and environmental actors in a complex, interconnected world
	CO5- build knowledge about the environment and ecosystem.
<b>CS5CRT14-</b> Java Programming using Linux	CO1- explain about the concept of classes and Objects
	CO2- apply the concept of packages and interfaces.
	CO3- identify different types of inheritance used in java
	CO4- build GUI applications Using Swing.
	CO5- demonstrate database connection between java and MYSQL.
<b>CO5OPT01-</b> Fundamentals Of Banking and Insurance	CO1- analyse the Indian banking sector.
	CO2- describe the term banker ,customer ,promissory notes, cheque, pledge, hypothecation
	CO3- explain banking and insurance instruments.
	CO4- compare awareness about modern banking services like



	e-banking, mobile banking and internet banking.
	CO5- analyse the different types of insurance sector.
<b>CS5CRP05-</b> Software Lab V	CO1- make use of the syntax and semantics of java programming language and basic concepts of OOP.
	CO2- apply the concepts of inheritance, interfaces ,packages and applets.
	CO3- build Java programs using Multithreaded Programming and Exception Handling.
	CO4- construct event driven GUI programs with Swing.
	CO5- create database connection between java and MYSQL.
<b>CA5PRP01-</b> Software Development Lab I (Mini Project in PHP)	CO1- apply a sound knowledge/skills to select and develop their project in PHP and MYSQL
	CO2- develop plans and allocate roles with clear lines of responsibility and accountability
	CO3- design solutions to complex problems following a systematic approach like problem identification, formulation and solution.
	CO4- relationship with professionals and the community at large in written and in oral forms
	CO5- discover the knowledge, skills and attitudes of a professional.

### SEMESTER VI

Course Code – Course Name	Course Outcomes
	<b>By successful completion of this programme, the student will be able to:-</b>
<b>CA6CRT04-</b> Cloud Computing	CO1- demonstrate the concepts, characteristics, delivery models and benefits of cloud computing.
	CO2- explain different Types of clouds and its applications.
	CO3- how increased availability of high-performance applications to small/ medium-sized businesses.
	CO4- apply different techniques for reducing implementation and maintenance costs
	CO5- list different Applications of Clouds.

<b>CS6CRT15-</b> Mobile Application development- Android	CO1- illustrate the SQLite concepts in creating, manipulating the databases schemas
	CO2- summarize the basics and covers everything Android developers need to know for both smartphones and tablets
	CO3- apply how to customize activities and intents, create rich user interfaces, and manage data
	CO4 -show the most essential steps you need to know so you can start creating Android applications today.
	CO5- build robust mobile applications and learn how to integrate them with other services
<b>CS6CBT02-</b> Data Mining	CO1- define the basic concepts of Data Mining
	CO2- classify the concepts of OLAP technology in Data Warehouse
	CO3 demonstrate different classification concepts in data mining
	CO4- compare major clustering methods
	CO5- identify different types of data mining
<b>CA6SMP01-</b> Software Lab VI &Seminar	CO1- Identify and summarize a topic pertaining to recent advancements Computer Science
	CO2- Plan a report based on the formatting guidelines
	CO3- Develop skills in presentation and discussion of research topics in a public forum.
	CO4- Choose a variety of research projects and activities in order to enrich their academic experience
	CO5- Explain the topic before an audience with the help of multimedia slides
<b>CA6PRP02-</b> Software Development Lab II ( Main Project)	CO1- apply a sound knowledge/skills to select and develop their topic and project respectively.
	CO2- develop plans and allocate roles with clear lines of responsibility and accountability
	CO3- design solutions to complex problems following a systematic approach like problem identification, formulation and solution.
	CO4- relationship with professionals and the community at large in written and in oral forms
	CO5- discover the knowledge, skills and attitudes of a professional.

<b>CA6VVP01-</b> Viva Voce	CO1 assess themselves regarding knowledge gained during the programme.
	CO2- find the practical difficulties in applying the various forms of solutions to find the feasible solution
	CO3- solve the problems and assess the implications of various forms of solutions
	CO4- analyse the evaluation abilities to respond to improve questions by members
	CO5- identify a prospective technical interview