



St. Albert's College (Autonomous)

An initiative of Archdiocese of Verapoly

Affiliated to Mahatma Gandhi University, Kottayam

(Accredited with "A" Grade by NAAC)

Programme Outcomes Programme Specific Outcomes Course Outcomes

Department of Computer Science

Computer Science

2016 Syllabus Onwards

Programme Objectives (POs)

1. **Deep Knowledge in the Discipline:** To develop a thorough knowledge about the subject and its allied realms by conscious and continuous process of learning and get informed about the cutting edge research in the frontier areas of the subject.
2. **Critical Thinking and Problem Solving Skills:** To develop an informed and analytical approach to learning and demonstrate an in-depth knowledge of the subject and to give his/her opinion supported by logical reasoning and problem solving skills.
3. **Self-Awareness and Emotional Intelligence:** To develop a proper idea about one's own capabilities and potentials and to nurture those attributes towards holistic personality development.
4. **Teamwork and Effective Communication:** To demonstrate proficiency in communicating competently in groups and organizations, competence in interpersonal communication and to possess skills to effectively deliver formal and informal presentations to a variety of audiences in multiple contexts.
5. **Leadership Qualities:** To build essential features of a true leader and to cultivate the character and courage to shoulder responsibilities.
6. **Social Interaction and Ethical Standards:** To foster the social skills and developing peer interaction and enabling them to make all people feel valued and to respect their differences by being responsible citizens for creating a socially inclusive society. To recognize values such as justice, trust, equity, fairness, kindness and develop a commitment to meeting and upholding standards of ethical behavior in all walks of life and comprehending the moral dimensions of decisions and actions.
7. **Environmental Consciousness:** To discern the issues of environmental contexts and engages in promoting values and attitudes that claim coexistence and sustainable living with reduced, minimal, or no harm upon ecosystems.
8. **Lifelong Learning:** To develop a passion to be an independent lifelong learner by imbibing real-time changes in the socio-technological context, promoting continuous development and improvement of the knowledge and skills needed for employment and personal fulfillment.

Programme Specific Outcomes (PSOs)

1. Apply knowledge of computing and mathematics appropriate to the discipline and to provide effective solution in the area of computing
2. Design, implement, and evaluate a computational system to meet desired needs of the industry
3. Function effectively on teams to accomplish shared computing design, evaluation, or implementation goals.
4. Perform professionally with social, cultural and ethical responsibility as an individual as well as in multifaceted teams with positive attitude
5. Capable of adapting to new technologies and constantly upgrade their skills with an attitude towards independent and lifelong learning

Course Outcomes (COs)

CORE COURSES

SEMESTER – I

COURSE 1 - CSC1CRT01: BASIC ELECTRONICS AND COMPUTER FUNDAMENTALS

The students will be able

1. To understand Era of computer development.
2. To draw and explain the basic architecture and working of a computer system.
3. To describe the Booting process of computer system.
4. To identify the power supply strategy used in a computer.
5. To understand the working of standard input and output devices.

COURSE 2 - CSC1CRT02: METHODOLOGY OF PROGRAMMING IN C

The students will be able

1. To describe the advantages of a high level language like C, the programming process, and the compilation process.
2. To apply good programming principles to the design and implementation of C programs.
3. To design, implement, debug and test programs using the fundamental elements of C.
4. To demonstrate an understanding of primitive data types, values, operators and expressions in C.

COURSE 3 - CSC1CRP01: SOFTWARE LAB - I

The students will be able

1. To develop the logic for a given problem.
2. To write the algorithm and draw a flow chart.
3. To recognize and understand the syntax and construction of C code.
4. To know the steps involved in compiling, linking and debugging C code.
5. To make use of different data-structures like arrays, pointers, structures and files.
6. To understand function declaration and definition.
7. To know the alternative ways of providing solution to a given problem.

COURSE 4 – CSC2CRT01: DATA STRUCTURES

The students will be able

1. To introduce the concepts of Abstract data Type, data structure, performance measurement, time and space complexities of algorithms.
2. To discuss the implementation linear data structures such as stacks, queues and lists and their applications.
3. To discuss the implementation of different nonlinear data structures such as trees and graphs.
4. To introduce various search data structures such as hashing, binary search trees, red black trees, splay trees and b-trees.
5. To introduce various internal sorting techniques and analyze their time complexities.

COURSE 5 - CSC2CRT02: OBJECT ORIENTED PROGRAMMING IN C++

The students will be able

1. To describe the advantages of a high level language like C/C++, the programming process, and the compilation process.
2. To describe and use software tools in the programming process.
3. To apply good programming principles to the design and implementation of C/C++ programs.
4. To design, implement, debug and test programs using the fundamental elements of C/C++.
5. To demonstrate an understanding of primitive data types, values, operators and expressions in C/C++.

COURSE 6 -CSC2CRP01: SOFTWARE LAB – II

The students will be able to

1. Recognize and understand the syntax and construction of C++ code.
2. Gain experience of object oriented language programming.
3. Make use of different data-structures like arrays, pointers, structures and files.
4. Understand function declaration and definition.
5. To know the alternative ways of providing solution to a given problem.

SEMESTER – III

COURSE 7 – CSC3CRT01: SYSTEM SOFTWARE

The students will be able

1. To understand the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger.
2. To understand the various phases of compiler and compare its working with assembler.
3. To understand how linker and loader create an executable program from an object module created by assembler and compiler.
4. Understand the basics of operating systems like kernel, shell, types and views of operating systems
5. Describe the various CPU scheduling algorithms for removing deadlocks.

COURSE 8 - CSC3CRT02: DATABASE MANAGEMENT SYSTEMS

The students will be able to

1. List and explain the fundamental concepts of a relational database system.
2. Utilize a wide range of features available in a DBMS package.
3. Analyze database requirements and determine the entities involved in the system and their relationship to one another.
4. Develop the logical design of the database using data modeling concepts such as entity-relationship diagrams.
5. Manipulate a database using SQL.

COURSE 9 -CSC3CRT03: DATA COMMUNICATION

The student will be able to

1. Describe the components of a data communications system.
2. Identify key considerations in selecting various transmission media in networks.

3. Explain the role of line codes in a data communications network.
4. Explain the role of digital communications devices in a data communications network.
5. Describe the various types of signals and their features.
6. Describe the various error detection and correction schemes

COURSE 10 – CSC3CRT04: COMPUTER ORGANIZATION

The students will be able to

1. Understand the basic structure of computer
2. Understand the control unit operations
3. Design memory organization that uses banks for different word size operations
4. Understand the concept of cache mapping techniques
5. Understand the concept of I/O organization

COURSE 11 - CSC3CRP01: SOFTWARE LAB – III (ORACLE)

The students able to

1. Understand the different types of SQL statements
2. Develop the logical design of the database using data modelling concepts such as entity-relationship diagrams.
3. Design and develop a relational database for an organisation

SEMESTER – IV

COURSE 12 – CSC4CRT01: VISUAL PROGRAMMING

The students able to

1. Demonstrate knowledge of programming terminology and how applied using Visual Basic (e.g., variables, selection statements, repetition statements, etc.)
2. Develop a Graphical User Interface (GUI) based on problem description
3. Develop an Event Planning Chart based on problem description so as to define the processing that is to occur based on specific events

COURSE 13 - CSC4CRT02: MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

The students will be able to

1. Describe the basic organization of computer and the architecture of 8086 microprocessor.

2. Implement assembly language program for given task for 8086 microprocessors.
3. Demonstrate control unit operations and conceptualize instruction level parallelism.
4. Demonstrate and perform computer arithmetic operations on integer and real numbers.
5. Categorize memory organization and explain the function of each element of a memory hierarchy.

COURSE 14 – CSC4CRT03: COMPUTER NETWORK AND INTERNET

The students will be able to

1. Describe the functions of each layer in OSI and TCP/IP model.
2. Explain the functions of application layer, presentation layer and data link layer paradigms and Protocols.
3. Describe the session layer design issues and transport layer services.
4. Classify the routing protocols and analyze how to assign the IP addresses for the given network.
5. Explain the types of transmission media with real time applications.

COURSE 15 – CSC4CRT04: OPERATING SYSTEM

The students will be able to

1. Understand the basics of operating systems like kernel, shell, types and views of operating systems
2. Describe the various CPU scheduling algorithms for removing deadlocks.
3. Explain various memory management techniques and concept of thrashing
4. Use disk management and disk scheduling algorithms for better utilization of external memory

COURSE 16 - CSC4CRP01: SOFTWARE LAB – IV (VB)

The students will be able to

1. Familiar with the IDE (Integrated Development Environment) that provides a platform for visual programming.
2. Understand the Visual Basic programming language concepts
3. enhance the intellectual and motor skills of students
4. understand and implement the event driven requirement of user and providing a solution via Visual Basic Programming.

COURSE 17 - CSC4CRP01: ASSEMBLY LANGUAGE PROGRAMMING LAB

The students will be able to

1. Apply the fundamentals of assembly level programming in microprocessors.
2. Build a program on a microprocessor using arithmetic & logical instruction set of 8086.
3. Develop the assembly level programming using 8086 loop instruction set.
4. Write programs based on string and procedure for 8086 microprocessors.
5. Analyze abstract problems and apply a combination of hardware and software to address the problem

COURSE 18 – CSC5CRT01: COMPUTER AIDED OPTIMIZATION TECHNIQUES

The students will be able to

1. Identify and develop operational research models from the verbal description of the real system.
2. Understand the mathematical tools that are needed to solve optimisation problems
3. Understand the content of an operations strategy and the decisions involved.
4. Solve the problems using special solution algorithms.
5. Formulate and solve problems as networks and graphs.
6. Use CPM and PERT techniques, to plan, schedule, and control project activities.

SEMESTER – V

COURSE 19 – CSC5CRT02: SYSTEM ANALYSIS AND DESIGN

The students will be able to

1. Ability to understand the elements of SDLC
2. Ability to understand the various approaches to system analysis and design
3. Ability to develop the data flow diagram of the system
4. Ability to understand the common deployment environments

COURSE 20 - CSC5CRT03: PROGRAMMING IN JAVA

The students will be able to

1. Understand concept of Object Oriented Programming & Java Programming Constructs.
2. Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem

3. Understand the concept of exception handling and Input / Output operations
4. Identify and describe common abstract user interface components to design GUI in
5. Java using Applet & AWT along with response to events

COURSE 21 – CSC5CRT04: LINUX AND PHP

The students will be able to

1. Demonstrate how to install LINUX in server and workstation configurations
2. Demonstrate how to install and use office software on a LINUX workstation
3. Use advanced LINUX commands and utilities for system administration
4. Develop interactive web pages using HTML, CSS and JavaScript
5. Build dynamic web site using server side PHP Programming and Database connectivity.

SEMESTER – VI

COURSE 22 – CSC6CRT02: PARALLEL PROCESSING

1. Develop an understanding of various basic concepts associated with parallel computing environments.
2. Understand the effects that issues of synchronization, latency and bandwidth have on the efficiency and effectiveness of parallel computing applications.
3. Gain experience in a number of different parallel computing paradigms including memory passing, memory sharing, data-parallel and other approaches.

COURSE 23 - CSC6CRT03: COMPUTER GRAPHICS AND MULTIMEDIA

The students will be able to

1. To list the basic concepts used in computer graphics.
2. To implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping.
3. To describe the importance of viewing and projections.
4. To define the fundamentals of animation, virtual reality and its related technologies.
5. To understand a typical graphics pipeline.
6. To design an application with the principles of virtual reality

COMPLEMENTARY COURSES

SEMESTER – I

COURSE 1 -CSC1CMT01: DIGITAL ELECTRONICS

The students will be able

1. To apply the principles of number system, binary codes and Boolean algebra to minimize logic expressions.
2. To develop K-maps to minimize and optimize logic functions up to 5 variables
3. To acquire knowledge about various logic gates and logic families and analyze basic circuits of these families.
4. To design various combinational and sequential circuits such as encoders, decoders and counters using multiplexers, and flip – flops.
5. To describe and compare various memory systems, shift registers and analog to digital and digital to analog conversion circuits

OPEN COURSES

SEMESTER – V

COURSE 1 - CSC5COT01: INTERNET WEB DESIGNING AND CYBER LAWS

The students will be able to

1. Review the current topics in Web & Internet technologies.
2. Describe the basic concepts for network implementation.
3. Learn the basic working scheme of the Internet and World Wide Web.
4. Understand fundamental tools and technologies for web design.
5. Comprehend the technologies for Hypertext Mark-up Language (HTML).

ELECTIVE COURSES

SEMESTR VI

COURSE 2- CSC6CBT01: DATA MINING

The students will be able to

1. Gain an understanding of what data mining is all about.
2. Able to perform the data preparation tasks and understand the implications.
3. Demonstrate an understanding of the alternative knowledge representations such as rules, decision trees, decision tables, and Bayesian networks.
4. Demonstrate and understanding of the basic machine learning algorithmic methods that support knowledge discovery.

SEMESTER – VI

FIELD WORK

CSC6CRP01: SEMINAR

The students will be able to

1. Conduct a study of a latest topic in the field of Information Technology
2. Conduct a depth study of the topic by advanced searching
3. To present and report the findings of the study conducted in the preferred domain

PROJECT

CSC6CRP01 : SOFTWARE DEVELOPMENT LAB II (MAIN PROJECT)

The students will be able to

1. Discover potential research areas in the field of IT.
2. Conduct a survey of several available literature in the preferred field of study.
3. Compare and contrast the several existing solutions for research challenge.
4. Demonstrate an ability to work in teams and manage the conduct of the research study.
5. Formulate and propose a plan for creating a solution for the research plan identified.
6. To report and present the findings of the study conducted in the preferred domain