

COURSE NAME: B.Sc. (Computer Science) (CBCS)

DEPARTMENT OF COMPUTER SCIENCE

PROGRAM OUTCOMES (PO)

The BSc Computer Science helps to develop a widely applicable skill set in computing with strong programming and mathematics skills, as well as wide ranging skills in project management, effective presentations and teamwork.

PO1: Learn how to organize information efficiently in the forms of outlines, charts, etc. by using appropriate software. Develop the skills to present ideas effectively and efficiently.

PO2: Do Academic and Professional Presentations - Designing and delivering an effective presentation and developing the various IT skills to the electronic databases.

PO3: Use the Systems Analysis Design paradigm to critically analyze a problem. Solve the problems (programming networking database and Web design) in the Information Technology environment. Function effectively on teams to accomplish a common goal and demonstrate professional behaviour.

PO4: Develop IT-oriented security issues and protocols. Design and implement a web page. Improve communication and business management skills, especially in providing technical support. Serve as the System Administrators with thorough knowledge of DBMS.

PROGRAM SPECIFIC OUTCOMES (PSO)

PSO1: Develop ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.

PSO2: Apply standard software engineering process and strategies in software project development using open source programming environment to deliver a quality product for business success.

PSO3: Acquaintance with latest trends in technological development and thereby innovate new ideas and solutions to existing problems.

PSO4: Conceptual grounding in computer usage as well as its practical business applications.

PSO5: To demonstrate advanced skills in the effective analysis design and realization of business system utilizing contemporary information technology.

PSO6: To prepare students to undertake careers involving problem solving using computer science and technologies.

PSO7: Develop ability to pursue advanced studies and research in computer science.

PSO8: To produce entrepreneurs who can innovate and develop software product.

COURSE OUTCOMES

SEMESTER :1

Course Title: Programming Fundamentals using C / C++

Course Code: CC-1

Course Outcomes:

- Explore algorithmic approaches to problem solving.
- Ability to analyze a problem and devise an algorithm to solve it.
- Able to formulate algorithms, pseudo codes and flowcharts for arithmetic and logical problems.
- Illustrate the flowchart and design an algorithm for a given problem to develop a C programs using operators.
- Develop conditional and iterative statements to write c programs.
- Exercise user defined functions to solve real time problems.
- Ability to implement algorithms in the 'C' language.
- Develop modular programs using control structures and arrays in 'C'.

- Inscribe c programs that use pointers to access arrays, strings and functions.
- Exercise user defined data types including structures and unions to solve problems.
- Inscribe c programs using pointers and to allocate memory using dynamic memory management functions.
- Exercise files concept to show input and output of files in c
- Able to understand the concept of object oriented programming.
- Use the benefits of object oriented design and understand when it is an appropriate methodology to use.
- Design object oriented solutions for small systems involving multiple objects.

Course Title: Computer System Architecture

Course Code: CC-2

Course Outcomes:

- Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.
- Analyze the performance of commercially available computers.
- To develop logic for assembly language programming.

Course Title: Differential Calculus

Course Code: GE-II

Course Outcomes:

- Gain Knowledge of fundamental concepts of real numbers.
- Verify the value of the limit of a function at a point using the definition of the limit
- Introduction to sequence and series.
- Learn to check function is continuous understand the consequences of the intermediate value theorem for continuous functions.
- Student will be to understand differentiation and fundamental theorem in differentiation and various rules.
- Geometrical representation and problem solving on MVT and Rolls theorem.
- Finding extreme values of function.
- Introduction to Ordinary Differential Equation.

SEMESTER :2

Course Title: Programming in Java

Course Code: CC-3

Course Outcomes:

- Explore knowledge of the structure and model of the Java programming language.
- Develop software applications using Java.
- Identify Java language components and how they work together in applications
- Able to understand the use of OOPs concepts.
- Able to solve real world problems using OOP techniques.
- Able to understand the use of abstraction.
- Able to understand the use of Packages and Interface in java.
- Able to develop and understand exception handling, multithreaded applications with synchronization.
- Able to design GUI based applications and develop applets for web applications.
- Able to handle IOstreams Use and create package and interfaces in a Java program.
- Understand to implement object oriented programming concepts.
- Understand how to design graphical user interface in Java programs.
- Understand how to design and develop applets.
- Able to design User Interface using Swing and AWT.
- Understand concept of packages and study how to implement them.

Course Title: Discrete Structure

Course Code: CC-4

Course Outcomes:

- The fundamental logic behind computer design
- Propositional logic helps them in various competitive exams
- Using graph theory, they can solve various types of real world problems
- They can calculate time complexities of various algorithms

Course Title: Differential Equations

Course Code: GE-II

Course Outcomes:

- Student will be able to solve first order differential equations utilizing the standard techniques for separable, exact, linear, homogeneous, or Bernoulli cases.
- Student will be able to find the complete solution of a non homogeneous differential equation as a linear combination of the complementary function and a particular solution.
- Student will have a working knowledge of basic application problems described by second order linear differential equations with constant coefficients.

SEMESTER : 3

Course Title: Data Structure

Course Code: CC-5

Course Outcomes:

- Understand basic data structures such as arrays, linked lists, stacks and queues.
- Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
- Compare alternative implementations of data structures with respect to performance
- Compare and contrast the benefits of dynamic and static data structures implementations
- Describe the concept of recursion, give examples of its use, describe how it can be implemented using a stack.
- Discuss the principal algorithms for sorting, searching
- Understand the concept of Dynamic memory management, data types, and algorithms.
- Demonstrate different methods for traversing trees. Solve problem involving graphs, trees and heaps
- Solving problems like sorting, searching, insertion and deletion of data.

Course Title: Operating System

Course Code: CC-6

Course Outcomes:

- Learn how a computer works.
- Different operating systems used in different electronic goods or gadgets.
- Improve the security of the system.
- Multiple processes can be run parallel in a system.

Course Title: Computer Network

Course Code: CC-7

Course Outcomes:

- Recognize the technological trends of Computer Networking.
- Discuss the key technological components of the Network.
- Evaluate the challenges in building networks and solutions to those.

Course Title: Python

Course Code: SEC-1

Course Outcomes:

- They can implement real world scenarios in programming.
- They can use Python in various aspects of programming.
- Differentiate between C, C++, JAVA and Python.
- Realize the advantage of using Python.

SEMESTER : 4

Course Title: PHP Programming

Course Code: SEC-2

Course Outcomes:

- Analyze the construction of a web page and relate how PHP and HTML combine to produce the web page.
- Compare and contrast PHP variable types, and relate the advantages and disadvantages of PHP variables with local or global scope.
- Formulate, design and create PHP control structures, including selection and iterative structures.
- Write PHP scripts to handle HTML forms.
- Analyze and solve various database tasks using the PHP language.
- Analyze and solve common Web application tasks by writing PHP programs.

Course Title: Algorithm

Course Code: CC-8

Course Outcomes:

- Find out the time complexity of different algorithms.
- Learn about various different searching and sorting methods.
- Learn various techniques to solve algorithms.
- Make them suitable to apply algorithms in real world projects.

Course Title: Software Engineering

Course Code: CC-9

Course Outcomes:

- Basic knowledge and understanding of the analysis and design of complex systems.
- Ability to apply software engineering principles and techniques.
- Ability to develop, maintain and evaluate large-scale software systems.
- To produce efficient, reliable, robust and cost-effective software solutions.
- Ability to perform independent research and analysis.
- To communicate and coordinate competently by listening, speaking, reading and writing English for technical and general purposes.
- Ability to work as an effective member or leader of software engineering teams.
- To manage time, processes and resources effectively by prioritizing competing demands to achieve personal and team goals Identify and analyzes the common threats in each domain.
- Ability to understand and meet ethical standards and legal responsibilities.

Course Title: DBMS (Database Management System)

Course Code: CC-10

Course Outcomes:

- Describe the fundamental elements of relational database management systems
- Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.
- Design ER-models to represent simple database application scenarios
- Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.

- Improve the database design by normalization.
- Familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing.

SEMESTER : 5

Course Title: Internet Technology

Course Code: CC-11

Course Outcomes:

- Learn Internet based technologies.
- Make them suitable to apply algorithms in real world projects.
- Helps them in front-end design.
- Suitable for IT professionals.

Course Title: Theory of Computation

Course Code: CC-12

Course Outcomes:

- To use basic concepts of formal languages of finite automata techniques.
- To Design Finite Automata's for different Regular Expressions and Languages.
- To construct context free grammar for various languages.
- To solve various problems of applying normal form techniques, push down automata and Turing Machines.
- To participate in GATE, PGECET and other competitive examinations.

Course Title: Digital Image Processing

Course Code: DSE-1

Course Outcomes:

- Understand the need for image transforms different types of image transforms and their properties.
- Develop any image processing application.
- Understand the rapid advances in Machine vision.
- Learn different techniques employed for the enhancement of images.

- Learn different causes for image degradation and overview of image restoration techniques.
- Understand the need for image compression and to learn the spatial and frequency domain techniques of image compression.
- Learn different feature extraction techniques for image analysis and recognition.

Course Title: System Programming

Course Code: DSE-2

Course Outcomes:

- Specify and analyse the lexical, syntactic and semantic structures of advanced language features
- Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation
- Write a scanner, parser, and semantic analyser without the aid of automatic generators
- Describe techniques for intermediate code and machine code optimisation
- Design the structures and support required for compiling advanced language features.

SEMESTER : 6

Course Title: Artificial Intelligence

Course Code: CC-13

Course Outcomes:

- Concrete foundation and enrich their abilities to qualify for Employment, Higher studies and Research in Artificial Intelligence and Data science with ethical values
- Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations.
- Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
- Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.

- Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool.
- Demonstrate proficiency in applying scientific method to models of machine learning.
- Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications

Course Title: Computer Graphics

Course Code: CC-14

Course Outcomes:

- Understand the basics of computer graphics, different graphics systems and applications of computer graphics.
- Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.
- Use of geometric transformations on graphics objects and their application in composite form.
- Extract scene with different clipping methods.
- Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.
- Explore Interaction handling and use of illumination models.

Course Title: Soft Computing

Course Code: DSE-3

Course Outcomes:

- Learn about soft computing techniques and their applications
- Analyze various neural network architectures
- Understand perceptions and counter propagation networks.
- Define the fuzzy systems
- Analyze the genetic algorithms and their applications.

Course Title: Data Mining

Course Code: DSE-4

Course Outcomes:

- Learn the concepts of database technology evolutionary path which has led to the need for data mining and its applications.
- Examine the types of the data to be mined and present a general classification of tasks and primitives to integrate a data mining system.
- Apply preprocessing statistical methods for any given raw data.
- To fully understand standard data mining methods and techniques such as association rules, data clustering and classification.
- Explain major Issues in data mining.