

PROBLEM SOLVING IN C

Semester	Course Code	Course Title	Hours	Credits
I	C1	PROBLEM SOLVING IN C	60	3

Objectives:

This course aims to provide exposure to problem-solving through programming. It introduces the concepts of the C Programming language.

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand the evolution and functionality of a Digital Computer.
2. Apply logical skills to analyse a given problem
3. Develop an algorithm for solving a given problem.
4. Understand 'C' language constructs like Iterative statements, Array processing, Pointers, etc.
5. Apply 'C' language constructs to the algorithms to write a 'C' language program.

DATA STRUCTURES USING C

Semester	Course Code	Course Title	Hours	Credits
II	C2	DATA STRUCTURES USING C	60	3

Course Objectives

To introduce the fundamental concept of data structures and to emphasize the importance of various data structures in developing and implementing efficient algorithms.

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Understand available Data Structures for data storage and processing.
2. Comprehend Data Structure and their real-time applications - Stack, Queue, Linked List, Trees and Graph
3. Choose a suitable Data Structures for an application
4. Develop ability to implement different Sorting and Search methods
5. Have knowledge on Data Structures basic operations like insert, delete, search, update and traversal
6. Design and develop programs using various data structures
7. Implement the applications of algorithms for sorting, pattern matching etc

DATABASE MANAGEMENT SYSTEMS

Semester	Course Code	Course Title	Hours	Credits
III	C3	DATABASE MANAGEMENT SYSTEMS	60	3

Course Objective:

The objective of the course is to introduce the design and development of databases with special emphasis on relational databases.

Course Learning Outcomes:

On completing the subject, students will be able to:

1. Gain knowledge of Database and DBMS.
2. Understand the fundamental concepts of DBMS with special emphasis on relational data model.
3. Demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database
4. Model database using ER Diagrams and design database schemas based on the model.
5. Create a small database using SQL.
6. Store, Retrieve data in database.

OBJECT ORIENTATED PROGRAMMING THROUGH JAVA

Semester	Course Code	Course Title	Hours	Credits
IV	C4	OBJECT ORIENTATED PROGRAMMING THROUGH JAVA	60	3

Objectives:

To introduce the fundamental concepts of Object-Oriented programming and to design & implement object oriented programming concepts in Java.

Course Learning Outcomes: At the end of this course student will:

1. Understand the benefits of a well-structured program
2. Understand different computer programming paradigms
3. Understand underlying principles of Object-Oriented Programming in Java
4. Develop problem-solving and programming skills using OOP concepts
5. Develop the ability to solve real-world problems through software development in high-level programming language like Java

OPERATING SYSTEMS

Semester	Course Code	Course Title	Hours	Credits
IV	C5	OPERATING SYSTEMS	60	2

Objectives:

This course aims to introduce the structure and organization of a file system. It emphasizes various functions of an operating system like memory management, process management, device management, etc.

Course Learning Outcomes:

Upon successful completion of the course, a student will be able to:

1. Know Computer system resources and the role of operating system in resource management with algorithms
2. Understand Operating System Architectural design and its services.
3. Gain knowledge of various types of operating systems including Unix and Android.
4. Understand various process management concepts including scheduling, synchronization, and deadlocks.
5. Have a basic knowledge about multithreading.
6. Comprehend different approaches for memory management.
7. Understand and identify potential threats to operating systems and the security features design to guard against them.
8. Specify objectives of modern operating systems and describe how operating systems have evolved over time.
9. Describe the functions of a contemporary operating system

Course 6C: DATA SCIENCE
Course (Elective), Credits: 05)

- I. Learning Outcomes:** Students after successful completion of the course will be able to:
1. Develop relevant programming abilities.
 2. Demonstrate proficiency with statistical analysis of data.
 3. Develop the ability to build and assess data-based models.
 4. Demonstrate skill in data management
 5. Apply data science concepts and methods to solve problems in real-world contexts and will communicate these solutions effectively

Course 7C: Python for Data Science
(Skill Enhancement Course (Elective), Credits: 05)

- I. Learning Outcomes:** Students after successful completion of the course will be able to:
1. Identify the need for data science and solve basic problems using Python built-in data types and their methods.
 2. Design an application with user-defined modules and packages using OOP concept
 3. Employ efficient storage and data operations using NumPy arrays.
 4. Apply powerful data manipulations using Pandas.
 5. Do data pre-processing and visualization using Pandas