

Outline of the Syllabus

Unit 1: Fundamentals of computer Science

Module 1: Computer Architecture and Organization

1. Hardware Components

- Input and Output
- Memory Types and features
- Storage Devices
- Security
- Types of Computers

2. Computer Architecture

- Truth Tables
- Logic gates; flip flops; registers, counters, multiplexors, encoders, decoders

3. Data Representation

- Number Systems

4. Computer Organization

- CPU Components
- Instructions
- Addressing Modes

Module 2: Problem Solving with Computers

1. Definition of Problem Solving

2. Stages in the Problem Solving Process

3. Algorithms

4. Properties of Algorithms

5. Ways of Representing Algorithms

- Narrative; Flowcharts; Pseudocode

6. Control Structures

- Sequence, Selection, Iteration

7. Interpret Algorithms from Case Problems

8. Correct Algorithms from Case Problems

9. Develop Algorithms from Case Problems

10. Explain the need for Developing the Logic of a Computer Program

Module 3: Programming

1. Characteristics of Different Programming Languages

- Procedural or Imperative, Object-oriented, Functional, Declarative

2. Explain the need for Different Programming Languages

3. Assemblers, Compilers and Interpreters

- Stages in translation process: lexical analysis, syntax analysis, semantic analysis, intermediate code generation, code optimization, code generation.

4. Assign Values to Declared Variables

5. Use input and Output Statements

6. and 7. Conditional and Iterative Constructs

8. Arrays

9. Functions

10. Implement Algorithms to Solve a given Problem

11. Records

12. Text Files

- File Operations: open, close, read, write, append

13. Develop Good Programming Style