STRUCTURED AND OBJECT ORIENTED PROGRAMMING SYLLABUS

Module 1: C Programming Fundamentals

- Variables
- Reserved words
- Data Types
- Operators and Operator Precedence
- Expressions and Type Conversions
- I/O Statements
- Branching and Looping:
    - if, if-else, nested if, if-else ladder
    - switch statement
    - goto statement
- Loops:
    - for, while, do...while
- break and continue statements

Module 2: Arrays and Functions

- **Arrays**:
    - One-Dimensional Array
    - Two-Dimensional Array
    - Strings and String Operations
- **User Defined Functions**:
    - Declaration and Definition
    - Call by Value and Call by Reference
    - Types of Functions
    - Recursive Functions
- **Storage Classes**:
    - Scope, Visibility, and Lifetime of Variables

Module 3: Pointers

- Declaration and Access of Pointer Variables
- Pointer Arithmetic
- Dynamic Memory Allocation
- Pointers and Arrays
- Pointers and Functions

Module 4: Structure and Union

- Declaration, Initialization, Access of Structure Variables
- Arrays of Structures
- Arrays within Structures
- Structure within Structures
- Structures and Functions
- Pointers to Structures

Module 5: Overview of Object-Oriented Programming

- Features of OOP
- Classes and Objects
- "this" pointer
- Constructors and Destructors
- Static Data Members, Static Member Functions, and Objects
- Inline Functions
- Call by Reference
- Functions with Default Arguments
- Functions with Objects as Arguments
- Friend Functions and Friend Classes

Module 6: Inheritance

- Types of Inheritance:
    - Single Inheritance
    - Multiple Inheritance
    - Multi-level Inheritance
    - Hierarchical Inheritance
    - Multipath Inheritance
- Inheritance and Constructors

Module 7: Polymorphism

- Function Overloading
- Operator Overloading
- Dynamic Polymorphism
- Virtual Functions
- Pure Virtual Functions
- Abstract Classes

Module 8: Generic Programming

- Function Templates
- Class Templates
- Standard Template Library (STL)