

**UNIVERSITY OF MADRAS**  
**B.Sc. DEGREE COURSE IN SOFTWARE APPLICATION**  
**SYLLABUS WITH EFFECT FROM 2020-2021**

**BSA-CSC03**

**CORE-III: OBJECT ORIENTED PROGRAMMING CONCEPTS USING C++**

(Common paper to B.C.A.)

**I YEAR / II SEM**

**OBJECTIVES:**

- To inculcate knowledge on Object-oriented programming concepts using C++.
- To gain Knowledge on programming with C++.

**OUTCOMES:**

- To write programs using OOP concepts like Abstraction, Encapsulation, Inheritance and Polymorphism

**UNIT - I**

Introduction to C++ - key concepts of Object-Oriented Programming –Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations. Control Structures : - Decision Making and Statements : If ..else, jump, goto, break, continue, Switch case statements - Loops in C++ : for, while, do - functions in C++ - inline functions – Function Overloading.

**UNIT - II**

Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.

**UNIT- III**

Operator Overloading: Overloading unary, binary operators – Overloading Friend functions – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.

**UNIT - IV**

Pointers – Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and delete operators – dynamic object – Binding, Polymorphism and Virtual Functions.

**UNIT - V**

Files – File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling - String – Declaring and Initializing string objects – String Attributes – Miscellaneous functions .

**TEXT BOOK:**

1. E. Balagurusamy, “*Object-Oriented Programming with C++*”, TMH 2013, 7<sup>th</sup> Edition.

**REFERENCE BOOKS:**

1. Ashok N Kamthane, “*Object-Oriented Programming with ANSI and Turbo C++*”, Pearson Education 2003.
2. Maria Litvin & Gray Litvin, “*C++ for you*”, Vikas publication 2002.

**WEB REFERENCES:**

- NPTEL & MOOC courses titled Object oriented programming concepts using C++
- <https://alison.com/course/introduction-to-c-plus-plus-programming>