

3CP85: OBJECT ORIENTED CONCEPTS AND PROGRAMMING
CREDITS - 4 (LTP: 3,0,1)

Course Objective:

To impart knowledge about the principles of object-oriented programming paradigm using C++.

Teaching and Assessment Scheme:

Teaching Scheme (Hours per Week)			Credits	Assessment Scheme				Total Marks
L	T	P		Theory Marks		Practical marks		
			ESE	CE	ESE	CE		
3	0	2	4	60	40	20	30	150

Course Contents:

Unit No.	Topics	Teaching Hours
1	Overview and Concepts of C++ Review of fundamental concepts of Object-oriented programming, Procedural Vs. Object Oriented Programming, Principles of OOP , Benefits and applications of OOP, Introduction to C++, Program structure, namespace, identifiers, variables, constants, enum, operators, typecasting, control structures	05
2	Objects and Classes Basics of object and class; Private and public members; static data and function members; constructors and their types; destructors; type conversion; new and delete operators. Arrays of objects; Reference variables.	10
3	Functions and Inheritance Simple functions; Call and Return by reference; Inline functions; Macro Vs. Inline functions; Operator overloading; Overloading of functions; default arguments; friend functions; Concept of Inheritance; types of inheritance: single; multiple; multilevel; hierarchical; hybrid; protected members; overriding; virtual base class.	10
4	Dynamic Polymorphism Pointers and Objects; this pointer; virtual and pure virtual functions; Implementing dynamic polymorphism.	05
5	I/O and File Management Concept of streams; cin and cout; Overloading of inserter and extractor operators; C++ stream classes; Unformatted and formatted I/O; manipulators; File stream and C++ classes; File management functions; File modes; Binary and random Files.	05
6	Exception Handling Review of traditional error handling; basics of exception handling; exception handling mechanism; throwing mechanism; catching mechanism; rethrowing an exception; specifying exceptions, Introduction of Advanced topics.	06
7	Introduction to Java Introduction, OOP basics, Packages, Interface.	04
Total		45

List of References:

1. E Balagurusamy, “*Object Oriented Programming with C++*”, McGraw-Hill (E-book available on the BVM intranet)

2. Herbert Schildt, "*The Complete Reference C++*", McGraw-Hill
3. Deitel, "*C++: How to Program*", PHI
4. Jana Debasish, "*C++ and Object Oriented Programming Paradigm*", PHI
5. Saurav Sahay, "*Object Oriented Programming with C++*", Oxford
6. Herbert Schildt, "*The Complete Reference, Java*", McGrawHill.

Course Outcomes (COs):

At the end of this course students will be able to...

1. Differentiate between object-oriented programming and procedural programming paradigms
2. Understand features of object-oriented programming like encapsulation, inheritance, polymorphism, etc. using C++
3. Design a solution to a given problem using object-oriented programming concepts
4. Prepare an application in C++ using I/O, File management and exception handling concepts.
5. Understand concepts of OOP with Java.
6. Enhance logical reasoning and programming skills.