CP371: OBJECT ORIENTED CONCEPTS AND PROGRAMMING
CREDITS = 5 (L=3, T=0, P=2)

Course Objective:
To impart knowledge about the principles of object oriented programming paradigm using C++.

Teaching and Assessment Scheme:

Teaching Scheme			Credits	Assessment Scheme				Total Marks
				Theory		Practical		
L	T	P	C	ESE	CE	ESE	CE	
3	0	2	5	70	30	30	20	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

Unit No.	Topics	Teaching Hours
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 Compete 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.