



SYLLABUS

Course Title	Object Oriented Programming in C++
Course Code	BCA311
Course Credit	Theory(Hrs) : 4
	Practical(Hrs) : 4
	Tutorial(Hrs) : 0
	Credits : 6

Course Objectives

The objectives of the course are:

- To distinguish between procedural and object oriented programming and identify the flow and working of an object oriented program
- To implement principles of the object oriented programming paradigm for solving real life problems
- To discover errors in a program and describe techniques to resolve them
- To apply the essential techniques to develop programs in a command-line environment

Detailed Syllabus

Sr. No.	Name of chapter & details	Hours Allotted
Section – I		
1	Introduction to OOP Concepts of Procedure-Oriented Programming and OOP, OOP Features, OOP Vs. Procedure-Oriented Programming, Basics of C++, History of C++, Features of C++, Basic Structure of C++ Program, Concepts of Creating, Compiling and Linking Program	04
2	Language Basics Identifiers, Keywords, Comments, Basic Data Types, Variables: Declaration, Naming Conventions and Dynamic Initialization, Typecasting, Constants, Operators, Control Structure, Looping Statements, Jumping Statements: break, continue and goto, Standard and Formatted Input & Output	04

3	Functions Introduction, Anatomy of a Function, main Function, Function Prototypes, Call By Value and Call By Reference, Returning Values from Functions, Inline Functions, Function Overloading, Math Library Functions Concept of Variable Scope and Scope Rules, Static and Automatic Variables, Global Variables, Scope Resolution Operator	06
4	Classes and Objects Concept of A Class, Structure Vs. Class, Defining a Class, Creating an Object, Object Scope, Declaring and Defining Members Within a Class, Accessing Members of a Class, Nesting of Member Functions, Make Outside Function as Inline, Access Specifiers, Arrays within a Class, Static Members, Array of Objects, Returning Objects, Objects as Function Argument, Friend Functions, Local Classes	10
5	Constructor and Destructor Introduction, Characteristics of Constructor, Parameterized Constructor, Multiple Constructors in a Class, Constructor with Default Argument, Copy Constructor, Dynamic Initialization of Objects, Dynamic Constructor, Destructors, 'this' Pointer	04
Section – II		
6	Operator Overloading and Type Conversion Concept of Operator Overloading, Basic Structure of Operator Overloading, Over Loading Unary and Binary Operators, Operator Overloading using Friend Function, Manipulation of String using Operators, Rules for Operator Overloading, Type Conversion	07
7	Inheritance And Virtual Functions Introduction, Basics of Derived and Base Class, Implementing Different Types of Inheritance, Function Overriding, Access Specifiers with Inheritance, Working with Derived Class Constructors, Abstract Classes and Methods, Concept of Nested Class, Basics and Implementation of Virtual Functions, Pure Virtual Functions	10
8	I/O Operations C++ Streams, C++ Stream Classes, Unformatted and Formatted I/O Operations, Use of Manipulators, Creating Manipulators	05
9	File Handling Introduction, File Stream Classes, Opening and Closing a File, Error Handling, File Modes, File Pointers, Sequential I/O Operations, Updating a File with Random Access, Command Line Arguments	06

Instructional Method and Pedagogy:

- Lectures will be conducted on the basis of Classroom Response Systems with the use of multimedia projector and black board.
- Assignments based on course contents will be given at the end of each unit/topic and will be evaluated at regular interval.
- Experiments will be based on the practical curriculum and will be evaluated at regular interval.

Course Learning Outcomes:

On the completion of the course, students will be able to:

- **Understand** the concept and underlying principles of Object-Oriented Programming
- **Apply** the techniques of object-oriented programming to solve real problems
- **Design, write and test** programs that make appropriate use of object-oriented facilities common to many object-oriented languages such as classes, overloading and inheritance
- **Understand** implementation issues related to object-oriented techniques and to develop the skill to solve real-world problems
- **Implement** the file handling techniques for back-end storage problems solutions

Text books:

- Title: Object Oriented Programming with C++, TMH Publication
Author(s): E Balagurusamy

Reference Books:

- Title: Mastering in C++, TMH Publication
Author(s): Venugopal, Rajkumar & T Ravishankar
- Title: The Complete Reference of C++, TMH Publication
Author(s): Herbert Schildt

Additional Resources

- www.tutorialspoint.com
- <http://cquestionbank.blogspot.com>
- www.intelligentedu.com/
- www.hermetic.ch/cfunlib.htm
- N.P.T.L. Video Lecture Series
- N.I.T.T.I. Instructional Resources Videos.
- www.cprogramming.com/
- www.c-program.com/
- www.cprogrammingreference.com
- <http://cslibrary.stanford.edu>