Name of Department:- Computer Science and Engineering

1. Subject Code: TCS 307 Course Title: **Object Oriented Programming with C++**
2. Contact Hours: L: 3 T: - P: -
3. Semester: III

4. Pre-requisite: TCS 101, TCS 201

5. Course Outcomes: After completion of the course students will be able to

1. Demonstrate the C++ Program uses data types, operators, expressions, array, strings and functions.
2. Implement Constructors (Parameterized, Copy), this pointer, friend function, dynamic objects, arrays of objects,
3. Illustrate the Operator Overloading of +, -, preincrement, postincrement, << and >>.
4. Implement the single, multiple, multilevel and hybrid inheritance in C++.
5. Illustrate function overloading, Overriding and virtual functions.
6. Carry out exception handling techniques and provide solutions to storage related problems using STL.

6. Details of Syllabus

UNIT	CONTENTS	Contact Hrs
Unit – I	**Introduction:** Need of object oriented programming, Overview of C++,Header Files and Namespaces, Sample C++ program, Different data types, operators, expressions, and statements, arrays and strings, pointers & user-defined types Function Components, argument passing ,inline functions, recursive functions.	**10**
Unit - II	**Classes & Objects:** Class Specification, Objects, Scope resolution operator, Access members, Defining member functions, Data hiding, Constructors , Parameterized constructors, Destructors, Static data members, Friend functions, Passing objects as arguments, Returning objects, Arrays of objects, Dynamic objects, Pointers to objects, Copy constructors, This Pointer **Operator overloading** :Fundamentals of Operator Overloading, Overloading Binary Operators and unary operators, Operator	**9**

	overloading using friend functions such as +, - , pre-increment, post-increment, overloading of << and >>.	
Unit – III	**Inheritance:** Necessity of inheritance, Types of inheritance with examples**,** Base Class and Derived class, Public, private and protected access modifiers, Inheriting multiple base classes ,working of Constructors and Destructors in Inheritance, Passing parameters to base class constructors, Virtual base classes	**9**
Unit – IV	**Virtual functions and Polymorphism:** Polymorphism, function overloading, Overriding Methods, Virtual function, Calling a Virtual function through a base class reference, Pure virtual functions, Abstract classes, Virtual Destructors ,Early and late binding.	**9**
Unit – V	I/O System Basics and STL: C++ stream classes, I/O manipulators, fstream and the File classes, basic file operations, function templates Exception Handling: Exception handling fundamentals, Throwing an Exception, Catching an Exception, Re-throwing an Exception, An exception example, STL: An overview, containers, vectors, lists, maps, Algorithms	**9**
	Total	**46**

Text Books:

1. Herbert Schildt: "The Complete Reference C++", 4th Edition, Tata McGraw Hill, 2003.