Advanced C and C++

Course Code	**20EC2701C**	**Year**	IV	**Semester**	I
Course Category	Open Elective-III	**Branch**	ECE	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Basic knowledge of C Language.
Continuous Internal Evaluation:	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes	
Upon successful completion of the course, the student will be able to	
CO1	Understand the basic principles and operations of data structures. (L2)
CO2	Apply correct Data Structure for storing Data in the application. (L3)
CO3	Apply object oriented concepts to develop solution for the given problem. (L3)
CO4	Analyze the given scenario and choose appropriate generic programming aspects to develop large computer programs and applications that are part of bigger projects. (L4)

Mapping of course outcomes with Program outcomes (CO/ PO/PSO Matrix)
Note: 1- Weak correlation 2-Medium correlation 3-Strong correlation
*** - Average value indicates course correlation strength with mapped PO**

COs	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO1**	**PSO2**
CO1	3													
CO2		3	3		2							2	2	
CO3		3	3		2							2	2	
CO4		3	3	2	2							2	2	
Average* (Rounded to nearest integer)	**3**	**3**	3	2	**2**							**2**	**2**	

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	**DATA STRUCTURES IN C - PART-I** Introduction, Algorithms, Time Complexity, Linear & Non-Linear Data Structures, Arrays. Stacks & Queues implemented using Arrays.	CO1,CO2

II	**DATA STRUCTURES IN C - PART-II** Linked Lists, Stacks & Queues implemented using Linked Lists, Introduction to Trees, Inserting, Traversing Trees. Searching a node in Tree, Removing a Node from Tree, Destroying Tree.	CO1,CO2
III	**C++ PART-I** Introduction to OOP concepts, Encapsulation, Class, std namespace, using statement, private, public & protected member access specifiers. Input/output using stream classes. Objects, Inheritance & its types. Derivation types.	CO3,CO4
IV	**C++ PART-II** Polymorphism introduction, Function overloading. Constructors and Destructor, Default arguments. const and static data & function members. Namespaces. Reference variables. Exception handling, Dynamic allocation of memory. Copy constructor.	CO3,CO4
V	**C++ PART-III** Scope of variables. Nested class. Friend functions. Inheritance. Containership, Runtime Polymorphism using Virtual functions, Operator overloading. Text and binary files. Template functions and classes. Formatting streams, variadic Templates.	CO3,CO4

Learning Resources
Text Books
1. Herbert Schildt, The Complete Reference C++, 4th Ed., TMH, 2000. 2. Yashavant Kanetkar, Let Us C++ , BPB Publication 3. Yashavant Kanetkar, Data Structures Through C, BPB Publication
Reference Books
1. 1. Al Stevens and Clayton Walnum, Standard C++ Bible, Hungry Minds, Inc., 2000. 2. Bjarne Stroustrup, Programming: Principles and Practice Using C++, Addison-Wesley Publications 3. E. Balaguruswamy: C Programming and Data Structures, The McGraw Hill Companies.