

## C++ AND DATA STRUCTURE

Semester	Subject Code	Category	Lecture Hrs		Theory Hrs		Practical		Credits
			Per week	Per Sem	Per week	Per Sem	Per week	Per Sem	
II		CORE PAPER-II	6	90	6	90	0	0	4

### OBJECTIVE

- This paper helps the students to quickly move into the world of C++ with Object Oriented Programming and Data structure concept.

### COURSE OUTCOME

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

CO Number	CO Statement	Knowledge Level (K1-K4)
<b>CO1</b>	To learn the Basic Concept of Object Oriented Programming Language.	K1
<b>CO2</b>	To understand how to implement OOPs Concept in C++.	K2
<b>CO3</b>	Understanding the Data Structure Concept	K2
<b>CO4</b>	To develop the algorithms for various data structure operations and applications.	K3
<b>CO5</b>	To pertain the data in trees and Graphs.	K4

*Knowledge Level – K1-Remember, K2- Understand, K3-Apply, K4-Analyze*

### MAPPING WITH PROGRAMME OUTCOME

COS	PO1	PO2	PO3	PO4	PO5	PO6
<b>CO1</b>	S	M	S	S	M	M
<b>CO2</b>	S	S	S	S	M	S
<b>CO3</b>	S	M	S	S	M	M
<b>CO4</b>	S	S	S	M	S	S
<b>CO5</b>	S	S	S	M	M	S

*S-Strong*

*M-Medium L-Low*

## **SYLLABUS**

### **UNIT I – BASICS OF OOP’S and C++**

**18 Hrs**

Basic Concepts of OOP - Benefits of OOP - Applications of OOP- Introduction to C++ - Streams Classes & Member functions of stream class - manipulators - -I/O in C++ -Formatted & - Unformatted Console I/O Operations.

### **UNIT II – CLASSES AND OBJECTS AND FILE OPERATIONS**

**19 Hrs**

Classes and Objects - Constructors and Destructors - Types of Constructors - Defining member functions - Inline function - Friend function- Function Overloading - Operator overloading - Inheritance - Types of Inheritance - Virtual Functions and Polymorphism. Files-File operations.

### **UNIT III – BASICS OF DATA STRUCTURES**

**18 Hrs**

Definition of Data structure – Primitive and Composite data types – Arrays, Operations on Arrays - Stack – Operations on stack – Infix to Post fix Conversion - Queue – Operations on Queue – Circular Queues.

### **UNIT IV -COMPOSITE DATA STRUCTURES**

**17 Hrs**

Singly Linked List – Operations, - Doubly Linked List – Operations – Sorting and Searching.

### **UNIT V –TREES AND GRAPHS**

**18 Hrs**

Trees and Graphs: Binary Trees - Operations - Tree Traversals- Recursive In order, Preorder, Post order - Graph - Definition, Types of Graphs - Graph Traversal – DFS & BFS

**Distribution of Marks: Theory :80% and Problems:20%**

### **TEXT BOOKS**

S.No	Authors	Title	Publishers	Year of Publication
1.	E. Balagurusamy	Object Oriented Programming with C++	Tata McGraw Hill	1995
2.	Nell Dale	C++ with Data structure	Narosa Publications	2000

#### REFERENCE BOOKS

S.No	Authors	Title	Publishers	Year of Publication
1.	Reema Thareja	Object Oriented Programming with C++	Oxford University Press	2015
2.	Varsha H. Patil	Data Structures using C++	Oxford University Press	2012

#### WEB RESOURCES

1. <https://www.tutorialspoint.com/cplusplus/>
2. <https://www.guru99.com/cpp-tutorial.html>
3. [https://www.tutorialspoint.com/data\\_structures\\_algorithms/](https://www.tutorialspoint.com/data_structures_algorithms/)

#### TEACHING METHODOLOGY

- Class room teaching
- Group discussions and Seminars
- Chart/Assignment
- Simulation Model
- Smart Class room

#### SYLLABUS DESIGNERS

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