Prasad.V.Potluri Siddhartha Institute of Technology, Kanuru, Vijayawada

Object Oriented Programming Using C++

Course Code	19IT3302	Year	II	Semester	I
Course Category	PC	Branch	IT	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	C Language
Continuous Internal Evaluation :	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes	
Upon Successful completion of course, the student will be able to	BloomsTaxonomy Level
CO1 Illustrate general principles and basics of C++.	L2
CO2 Outline the features of OOP.	L2
CO3 Make use of arrays, pointers and polymorphism in writing programs.	L3
CO4 Develop programs using files and generic programming concepts.	L3
CO5 Identify programs using string functions and exception handling mechanism.	L3

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (H:High, M: Medium, L:Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2				2		1			2	2
CO2	2	2	2	2				2		1			2	2
CO3	2	2	2	2				2		1			2	2
CO4	2	2	2	2				2		1			2	2
CO5	2	2	2	2				2		1			2	2

Syllabus		
Unit No	Contents	Mapped CO
I	**Introduction to C++** (Chapter 1)**:** Difference between C and C++, Evaluation of C++, ANSI Standard, Programming Paradigms, Key concepts of OOP, Advantages of OOP, Usage of OOP **Input and Output in C++** (Chapter 3)**:** Streams in C++ and Stream Classes, Pre-defined streams, Buffering, Stream Classes, Unformatted	CO1

	console I/O operations, Formatted console I/O operations **Declarations** (Chapter 4)**:** Tokens, Variable declaration and initialization, Data types in C++, Operators in C and C++, Scope access operator, Name Space, Memory management operators, Comments, Comma operator **Decision Statements** (Chapter 5)**:** Introduction, The if statement, Multiple ifs, Nested if-else, else-if ladder, unconditional control transfer statements, the switch statement, nested switch-case. **Control Loop Structures** (Chapter 6): Introduction, What is loop, The for loop, Nested for loops, the while loop, The do-while loop, the do-while loop statement with while loop. **Functions in C++**(Chapter 7): Introduction, Parts of a function, Passing arguments, Return by reference, Returning more values by reference, Default arguments, const arguments, Inline functions, Function overloading, Recursion	
II	**Classes and Objects**(Chapter 8): Introduction, Structure in C, Structure in C++, Classes in C++, declaring Objects, The public keyword, The private keyword, The Protected keyword, Access specifiers and their scope, Defining member functions, Characteristics of member functions, Outside member function as inline, Rules for inline functions, Encapsulation, Static member variable, static member functions , object as function arguments, friend functions **Constructors and Destructors** (Chapter 9): Introduction, Constructors and destructors, Characteristics, Applications of constructors, Parameterized constructor, Overloading constructors, Array of objects using constructors, Constructors with default arguments, Copy constructors, The const objects, Destructors **Operator Overloading**(Chapter10): Introduction, The keyword operator, Overloading unary operators, Operator return type, Constraint on increment and decrement operator, Overloading binary operator, Overloading assignment operator **Inheritance** (Chapter11): Introduction, Reusability, Access Specifiers and Simple inheritance, Protected data with private inheritance, Types of inheritance, Single, Multiple, Hierarchical, Hybrid, Multipath inheritances, Virtual base classes	**CO2**
III	**Arrays**(Chapter12): Introduction, One-dimensional array declaration, characteristics of arrays, Accessing array elements through pointers, Array of pointers, Passing array elements to a function, Passing complete array elements to a function, Initialization of arrays using functions, two dimensional arrays, Pointers and Two dimensional arrays, **Pointers**(Chapter13):Introduction, Features of pointers, Pointer Declaration, Pointer to pointer, void pointer, wild pointer, The this pointer, Pointers to derived class and base class **Memory Models** (Chapter14): Introduction, Memory models, Dynamic memory allocation, The new and delete operators **Binding and Polymorphism and Virtual Functions**(Chapter15): Introduction, Binding in C++, Pointer to base class and derived class objects, Virtual functions, Rules for virtual functions, Array of pointers, Pure virtual functions, Abstract classes	**CO3**

IV	**Files**(Chapter 16):Introduction, File stream classes, Steps for file operations, Checking for errors, Finding end of file, File opening modes, File pointers and manipulators, Error handling functions. **Templates** (chapter 17): Introduction, need for templates, Definition of class templates, Working of function templates, Class templates with more parameters, Function templates with more arguments, Overloading of template function, Member function templates, Recursion with function templates.	**CO4**
V	**Strings**(Chapter 18): Introduction, Moving from C string to C++ string, Declaring and Initializing string objects, Relational operators, Handling string objects, String attributes, Accessing elements strings, Comparing and exchanging **Exception Handling** (Chapter19): Introduction, Principles of exception handling, the keywords try, throw and catch, Guidelines, Multiple catch statements, Re-throwing an exception, Specifying exceptions.	**CO5**

Learning Recourses
Text Books
Programming in C++, Second Edition, by Ashok N Kamthane, Pearson Education.
References
1. C++ How To Program, Dietel and Dietel, Prentice Hal . 2. C++ The Complete Reference, 5th Edition, by Herbert Schildt, TMH.
E-Recourses and other Digital Material
http://www.cplusplus.com https://www.w3schools.com/cpp/