Part A: Introduction

Program: Certificate		Class: B.Sc.-IT II Semester	Year: 2023	Session:2023-24
1	Course Code	ITDSC-2T		
2	Course Title	Programming in C++		
3	Course Type	Discipline Specific Course (DSC)		
4	Pre-requisite(if any)	As per Govt. Norms / Institutional Scheme		
5	Course Learning Outcomes (CLO)	After successfully completing this course, the students will be able to: • Learn the fundamental programming concepts and methodologies which are essential to create good C++ programs. • Practice the fundamental programming methodologies in the C++ programming language via laboratory experiences. • Code, test, and implement a well-structured, robust computer program using the C++ programming language. • Write reusable modules (collections of functions).		
6	Credit Values	04 (03Theory + 01 Practical)		
7	Total Marks	Max. Marks: 100 = 80Theory + 20 Internal Assessment	Min Passing Marks: 40	

Part B: Content of the Course

Total number of Teaching-Learning – Hours-45

Unit	Topics (Course Contents)	Hours
I	**Introduction**: Features of C++, OOP vs. procedure-oriented programming, OOP Concepts: Abstraction, Inheritance, Polymorphism, Data Binding, Encapsulation, Classes, subclasses and Objects; Basics of C++: Data Types and sizes, Variable, Constants and its types, Use of « and » operators, Operators and Expressions Precedence and Order of Evaluation. Program Flow & Decision Control: if, if - else, if - else if, Loop Control: while, do - while, for, break, continue, Case Control: switch, goto;	11
II	**Binding Data & Functions**: Defining a Class, Creating an Object, Scope, Data Abstraction, Data Encapsulation, Inline function, Passing Default arguments in function. Constructors and Destructors: Parameterized & Copy constructor, Member Functions & Methods, Friend Class and Friendly Functions, Returning Objects, Arrays of Objects.	11
III	**Polymorphism**: Compile time and run time, function and Operator overloading. Rules for Overloading, Operator overloading and its uses: Overloading unary and binary operators, Virtual functions, Rules for Virtual Functions, Pure Virtual Functions, Converting data types: Basic to class type, Class to Basic Type, Class to Another Class Type.	11
IV	**Reusing Classes:** Inheritance-Base and Derived classes, Inheritance types, Access Modifiers, Multiple & Multilevel Inheritance, Calling Base Class Constructor, Overriding Base Class Members, Exception Handling, Throwing an exception, Catch.	12