17CS41O3 - C++ PROGRAMMING (CPP)

(Common to ECE, EEE, CE and ME)

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| **Course Category:** | Open Elective  | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture – Tutorial – Practical:** | 2-2-0 |
| **Prerequisite:** | Basics of mathematics and Logic with programming knowledge in C or any Language as optional. | **Sessional Evaluation:****Univ. Exam Evaluation:****Total Marks:** | 4060100 |
| **Objectives** | * Understanding the basics of C++ features.
* Getting awareness of how to create Classes, Object and their implementation.
* Learning fundamental ideas about core concepts of Object Oriented Programming.
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| **Course Outcomes** | Upon the successful completion of the course, the students will be able to: |
| CO1 | Understand the basic terminology and key concepts used in C++. |
| CO2 | Gets the basic idea of how to implement and use of Classes and Objects. |
| CO3 | Acquire the knowledge to identify the importance of Reusability based on inheritance and overloading.  |
| CO4 | Ready to use variousforms of Binding and Polymorphism. |
| CO5 | Explore the basic idea and utilization of Generic Programming templates. |
| CO6 | Gain the basic knowledge in core concepts of Standard Template Library. |
| **Course Content** | **UNIT – I****Introduction to C++:**Difference between C and C++, Evolution of C++, The Object Oriented Technology, Disadvantage of Conventional Programming, Key Concepts of Object Oriented Programming, Advantage of OOP, Object Oriented Language.**UNIT – II****Classes and Objects:**Classes in C++, Declaring Objects, Access Specifies and their Scope, Defining Member Function, Overloading Member Function, Nested class.**Constructors and Destructor:**Introduction to Constructors and Destructor, Characteristics of Constructor and Destructor, Application with Constructor, Constructor with Arguments. **UNIT – III****Operator Overloading:** Introduction to Operator Overloading , Rules for Overloading Operators, Overloading Unary Operator ,Overloading Assignment Operator (=).**Inheritance:**Introduction to Inheritance, Reusability,Types ofInheritance, Advantages of Inheritance,Disadvantages of Inheritance.**UNIT – IV****Binding, Polymorphisms and Virtual Functions:**Introduction to Binding in C++, Static Binding, Dynamic Binding,Introduction to Polymorphisms, Types of Polymorphisms,Introduction to Virtual Functions, Rules for Virtual Function- Virtual Destructor. **UNIT – V****Generic Programming with Templates:**Generic Programming with Templates, Need for Templates, Definition of class Templates, Normal Function Templates, Over Loading of Template Function. **Exception Handling:**Principles of Exception Handling, Implementation of try, throw and catch,Multiple Catch Statements,Specifying Exceptions. **UNIT – VI****Overview of Standard Template Library:**Overview of Standard Template Library, STL Programming Model, Containers, Sequence Containers, Associative Containers, Algorithms, Iterators, Vectors,Lists, Maps.  |
| **Text Books and References** | **Text Book(s):****1.** The Complete Reference C++, Herbert Schildt, TMH.**Reference Books:**1.A First Book of C++, Gary Bronson, Cengage Learning.2.Programming in C++, Ashok N Kamathane, Pearson 2nd Edition. |
| **E-Resources** | 1. <https://nptel.ac.in/courses>
2. <https://freevideolectures.com/university/iitm>
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