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| **CS203: Object Oriented Programming Concepts** | **L** | **T** | **P** | **C Programming** |
| | **3** | **0** | **2** | |

**Course Objective:** To provide knowledge of Object Oriented programming features.

| S. No | Course Outcomes (CO) |
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| **CO1** | To understand the need of object oriented programming. |
| **CO2** | Describe the concept of function overloading, operator overloading, virtual functions and polymorphism. |
| **CO3** | To implement relationships between classes. |
| **CO4** | Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming |
| **CO5** | To demonstrate programs on exceptions, multithreading and applets. |

| S. No | Contents | Contact Hours |
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| **UNIT 1** | Object oriented paradigm & C++ at a glance: Evolution of programming paradigm, structured versus object-oriented development, elements of object-oriented programming, Objects, classes, methods, popular OOP languages, software reuse.<br>Classes and objects: Introduction, Class revisited, constant objects and constructor, static data members with constructors and destructors, constructor overloading, nested classes, objects as arguments, returning objects , friend functions and friend classes, constant parameters and member functions, static data and member functions. | **8** |
| **UNIT 2** | Dynamic objects: Introduction, pointers to objects, array of objects, pointers to object members, this pointer, self-referential classes Operator overloading and Inheritance: overloading of new and delete operators, conversion between objects and basic types, conversion between objects of different classes, overloading with friend functions, abstract classes, inheritance types, virtual base classes, virtual functions, pointer to derived class objects, and base class objects, pure virtual functions, virtual destructors.<br>Generic programming with templates: Introduction, function templates, overloaded function templates, class templates, inheritance of class template, class template containership, class template with overloaded operators. | **8** |
| **UNIT 3** | Introduction to byte code, security and portability, Data Types, variables, operators, arrays, type conversion and casting, type promotion, Control statements, standard input-output, Designing Classes, constructors, methods, access specifiers : public, private, protected, inheritance, packages and interfaces, Math, String, Vectors, and Array List classes, polymorphism: function and operator overloading, function overriding, abstract classes. | **8** |
| **UNIT 4** | Exception Handling: exception types, nested try-catch, throw, throws and finally statements, Multithread Programming: thread creation, synchronization and priorities. | **6** |
| **UNIT 5** | Input-output and file operations: Java.io, stream classes, Byte streams, character streams, serialization. Networking concepts: Client server and socket programming, TCP/IP client and server sockets. | **6** |
| **UNIT 6** | Applets and Java Swing: Applet design, AWT packages, Applet event handling, parameters to applets, AWT controls, layout manager, Frames, container classes, Introduction to Java Beans, Swing and Servlets. | **6** |
| | **Total** | **42** |