

# Lesson Plan

Name of the Faculty: Mr. Rattan Deep Aneja

Discipline: B.Tech (IT)

Semester: 3rd

Subject: OOP using C++ (PC-IT-207A)

Lesson Plan Duration: 13 weeks (from Aug, 2021 to Dec, 2021)

Lecture per week, In hours: 3

| Lecture Day | Topic (Including Assignment/Test)   |
|-------------|---|
| 1           | Introduction to C++, C++ Standard Library   |
| 2           | Basics of a Typical C++   |
| 3           | Environment, Pre-processors Directives, Illustrative Simple C++ Programs  |
| 4           | Header Files and Namespaces, library files. Concept of objects,   |
| 5           | basic of object modeling, object classes,   |
| 6           | associations, behaviors, description  |
| 7           | Object Oriented Analysis & Object Modeling techniques   |
| 8           | Introduction to Objects and Object Oriented Programming   |
| 9           | Encapsulation(Information Hiding), Access Modifiers: Controlling access to a class, method, or variable (public protected, private, package), Other Modifiers |
| 10          | Polymorphism: Overloading,, Inheritance, Overriding Methods, Abstract Classes   |
| 11          | Reusability, Class's Behaviors, Classes and Data Abstraction, Introduction, Structure Definitions, Accessing Members of Structures                            |
| 12          | Class Scope and Accessing Class Members, Separating Interface from Implementation   |
| 13          | Controlling Access Function And Utility Functions   |
| 14          | Initializing Class Objects: Constructors, Using Default Arguments With Constructors, Using Destructors  |
| 15          | Classes : Const(Constant) Object And Const Member Functions   |

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| 16 | Object as Member of Classes, Friend Function and Friend Classes  |
| 17 | Using This Pointer, Dynamic Memory Allocation with New and Delete  |
| 18 | Static Class Members, Container Classes And Integrators, Proxy Classes   |
| 19 | Function overloading, Operator Overloading: Introduction, Fundamentals of Operator Overloading   |
| 20 | Restrictions On Operators Overloading, Operator Functions as Class Members vs. as Friend Functions   |
| 21 | Overloading, <<, >> Overloading Unary Operators  |
| 22 | Overloading Binary Operators   |
| 23 | Inheritance: Introduction, Inheritance: Base Classes And Derived Classes   |
| 24 | Protected Members, Casting Base- Class Pointers to Derived- Class Pointers   |
| 25 | Using Member Functions, Overriding Base – Class Members in a Derived Class, Public, Protected and Private Inheritance, Using Constructors and Destructors in derived Classes |
| 26 | Implicit Derived – Class Object To Base- Class Object Conversion   |
| 27 | Composition Vs. Inheritance, Introduction to Virtual Functions   |
| 28 | Abstract Base Classes And Concrete Classes, Polymorphism, New Classes And Dynamic Binding  |
| 29 | Virtual Destructors, Polymorphism, Dynamic Binding   |
| 30 | Files and Streams, Creating a Sequential Access File, Reading Data From A Sequential Access File   |

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| 31 | Updating Sequential Access Files, Random Access Files, Creating A Random Access File                                       |
| 32 | Writing Data Randomly To a Random Access File, Reading Data Sequentially from a Random Access File.                        |
| 33 | Stream Input/Output Classes and Objects  |
| 34 | Stream Output, Stream Input, Unformatted I/O (with read and write)   |
| 35 | Stream Manipulators, Stream Format States, Stream Error States.  |
| 36 | Function Templates, Overloading Template Functions   |
| 37 | Class Template, Class Templates and Non-Type Parameters  |
| 38 | Templates and Inheritance, Templates and Friends, Templates and Static Members   |
| 39 | Basics of C++ Exception Handling, Try Throw, Catch, Throwing an Exception, Catching an Exception, Re-throwing an Exception |