

Course Title: Object Oriented Programming
Course No: CSC-202
Credit Hours: 3

Full Marks:60+20+20
Pass Marks: 24+8+8

Nature of Course: Theory (3hrs) + Lab (3hrs)

Course Synopsis: Study of basic programming skills, the concept of object oriented programming and its features, implementing the features.

Goal: to provide the object oriented programming approach to solve the problem. Course contents:

Unit 1:	11hrs.
1.1. Introduction to programming concept Overview of structural programming approach Object oriented approach Features of object oriented languages Components of object oriented languages.	4hrs.
1.2. Elements of object oriented languages Introduction to inheritance Introduction to polymorphism Encapsulation and abstraction.	3hrs
1.3. C++ basics Introduction to C++ Basic program construction; like functions, statements etc. Output using cout. Directives: Preprocessor directives Header files The using directives etc. Comments and syntax Integer variable Definition Declaration, Variable names Assignment statements Integer constants Output variable. Input with cin Operators Library functions etc.	4hrs
Unit 2:	15 hrs
2.1. Control structure Introduction Control statements The if selection structure The if/else selection structure The while structure The for structure	3hrs

The do/while structure	
The switch structure,	
The break and continue statement etc.	
2.2.The functions	4hrs
Introduction	
Math library functions	
Function definition, prototype.	
Header files	
Storage classes	
Scope rules	
Recursion	
Inline functions	
Function overloading	
Function templates etc.	
2.3.Arrays	2hrs
Introduction	
Declaring arrays	
Passing arrays to functions	
Types of array, etc	
2.4.Pointers	6hrs
Introduction	
Pointer variable declaration and initialization	
Operators in pointers	
Calling functions by references	
Relationship between array and pointers	
Arrays of pointers	
Function pointers, etc.	
Unit 3:	19hrs
3.1.Class and Objects	4hrs
Introduction	
Features of class,	
Object and its features	
Declaration of class	
Using class	
Accessing member of class	
Class scope	
Initialization class objects	
Constructor	
Destructor	
Object as function arguments	
Overload constructor	
Member functions defined outside class	
Objects as arguments, etc.	
3.2. Operator overloading	6hrs
Introduction	
Fundamentals of operator overloading	

Restriction on operator overloading	
Operator functions as a class member	
Overloading stream insertion and stream extraction operators	
Overloading unary and binary operators, etc.	
3.3. Inheritance	3hrs
Introduction	
Types of inheritance	
Protected members	
Casting base class pointers to derived class pointer	
Public, protected and private inheritance	
Constructor and destructor in derived classes, etc.	
3.4. Virtual functions and polymorphisms	3hrs
Introduction	
Type fields and switch statements	
Virtual functions	
Abstract base classes and concrete classes	
Polymorphism and its roles, etc.	
3.5. Templates	2hrs
Introduction	
Function templates	
Overloading templates functions	
Class templates	
Templates and inheritance, etc.	
3.6. Exceptional handling	1hrs
Introduction	
Use of exceptional handling	
Try, throw and catch statements	

Laboratory works:

Suitable examples from each subsection are considered as the laboratory work. **Text books:** C++ how to program; Deitel & Deitel, 3rd Edition, PEARSON

Reference: Object Oriented Programming in C++; Robert Lafore, Third Edition, GALGOTIA
Homework

Assignment: Assignment should be given from the above units in throughout the semester.

Computer Usage: No specific
Prerequisite: C
Category content: Science aspect: 40%
Design aspect: 60%