Course Title: Object Oriented Programming
Course Code: COMP 116
Credit Hours: 3

Course Description:
This course introduces the fundamental concepts of object-oriented programming Constructs in C++. Topics include classes, objects, inheritance, polymorphism and template etc.

Course Contents:

Unit 1: Introduction to Object Oriented Programming
Concept of Object Oriented Paradigm, Features of OOP, Benefits of OOP

Unit 2: Introducing C++
Introduction, A sample C++ program, Reference Variables, Inline Functions, Function Overloading, Comparison between C and C++

Unit 3: Classes and Objects
Introduction to class and objects, defining a class with member function, Private Member Functions, Initializing an Object, Static Data Members, Static Member Functions

Unit 4: Object Constructions and Destructions
Introduction to Constructor, Parameterized, Constructor, Copy Constructor, Destructor

Unit 5: Operator Overloading
Introduction, Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Overloading Binary Operators using Friend Functions

Unit 6: Inheritance
Introduction, Base Classes and Derived Classes, Single Inheritance and Multiple Inheritance, Protected Members, Virtual Base classes and Abstract classes, Constructors and Destructor in Derived Classes

Unit 7: Polymorphism
Introduction, Pointers to Objects, Pointers to Derived Classes, Virtual Functions, Pure Virtual Functions

Unit 8: Template
Introduction, Class Templates, Function Templates

Unit 9: Exception Handling
Introduction, Basics of Exception Handling, Exception Handling Mechanism, Throwing and Catching Exception, Re-throwing an Exception

References:
1. John R. Hubbard, *Theory and Problems of Programming with C++,* 2/e, Mc Graw-Hill

2. H. Deitel, P. Deitel, *C++ How to Program*, Pearson Education
3. Friedman and Koffman, *Problem Solving, Abstraction and Design using* C++, 5/e, Addison-Wesley.