Department Of Computer Science and Engineering
Kathmandu University
Dhulikhel, Kavre

Subject: Object Oriented Programming **Course: COMP 116**
Level: B.E./B.Sc 1st Year/2nd Semester **Credit Hours: 3**

Prerequisite:
COMP 102, COMP 103 - Structured Programming.

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

Contents

1. Introduction to Object Oriented Programming[4 hours]

- Concept of Object Oriented Paradigm
- Features of OOP
- Benefits of OOP

2. Introducing C++ [4 hours]

- Introduction
- A sample C++ program
- Reference Variables
- Inline Functions
- Function Overloading
- Comparison between C and C++

3. Classes and Objects [6 hours]

- Introduction to class and objects
- Defining a class with member function
- Private Member Functions
- Initializing an Object
- Static Data Members
- Static Member Functions

4. Object Constructions and Destructions [5 hours]

- Introduction to Constructor
- Parameterized Constructor
- Copy Constructor
- Destructor

5. Operator Overloading [6 hours]

- Introduction
- Defining Operator Overloading
- Overloading Unary Operators
- Overloading Binary Operators
- Overloading Binary Operators using Friend Functions

6. Inheritance[6 hours]

- 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

7. Polymorphism [6 hours]

- Introduction
- Pointers to Objects
- Pointers to Derived Classes
- Virtual Functions
- Pure Virtual Functions

8. Template [4 hours]

- Introduction
- Class Templates
- Function Templates

9. Exception Handling [4 hours]

- Introduction
- Basics of Exception Handling
- Exception Handling Mechanism
- Throwing and Catching Exception
- Re-throwing an Exception

Total Lecture Hours: 45

Reference Books:

1. John R. Hubbard, “Theory and Problems of Programming with C++, 2/e”, McGraw-Hill. 2. H. M. Deitel, “C++ How to Program” D&D. 3. Friedman and Koffman, “Problem Solving, Abstraction and Design using C++ , 5/e”, Addison-
Wesley.