

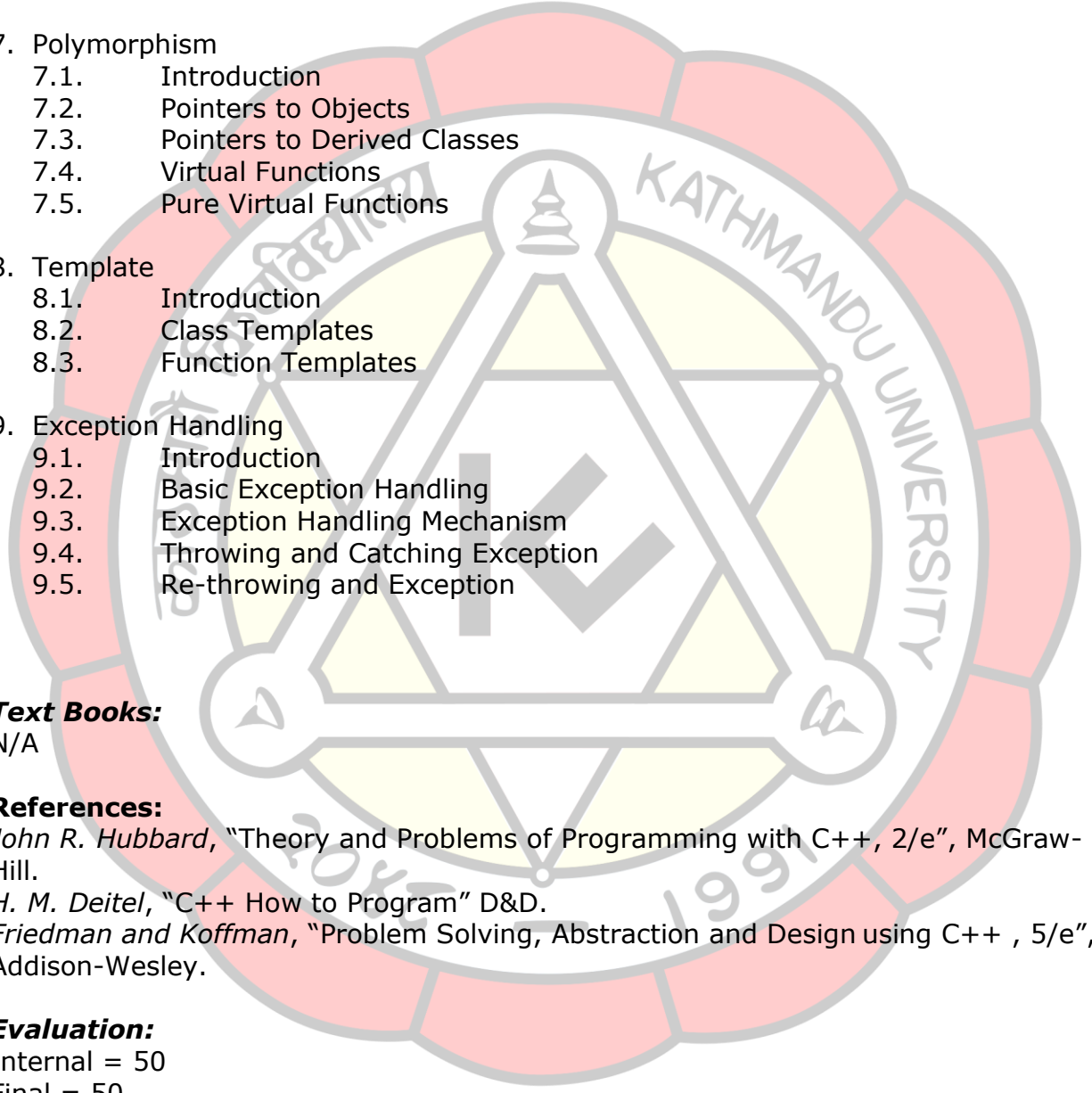
## COMP 116: Object Oriented Programming [3 Credit]

### Objectives

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
  - 1.1. Concept of Object Oriented Paradigm
  - 1.2. Features of OOP
  - 1.3. Benefits of OOP
2. Introducing C++
  - 2.1. Introduction
  - 2.2. A Sample C++ program
  - 2.3. Reference Variables
  - 2.4. Inline functions
  - 2.5. Function Overloading
  - 2.6. Comparison between C and C++
3. Classes and Objects
  - 3.1. Introduction to Classes and Objects
  - 3.2. Defining a class with member function
  - 3.3. Private member functions
  - 3.4. Initializing an object
  - 3.5. Static data member
  - 3.6. Static member functions
4. Object Constructions and Destructions
  - 4.1. Introduction to Constructor
  - 4.2. Parameterized Constructors
  - 4.3. Copy constructor
  - 4.4. Destructor
5. Operator Overloading
  - 5.1. Introduction
  - 5.2. Defining Operator Overloading
  - 5.3. Overloading Unary Operators
  - 5.4. Overloading Binary Operators
  - 5.5. Overloading Binary Operators using Friend Functions

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- The logo of Kathmandu University is a large, circular emblem. It features a central yellow triangle with a white border, containing a stylized white 'K' and a white 'U'. The triangle is set against a background of red and yellow segments. The words 'KATHMANDU UNIVERSITY' are written in a circular path around the triangle. At the top of the triangle is a small white stupa. At the bottom left and right corners of the triangle are two small white figures, possibly deities or scholars. The entire logo is rendered in a light gray, semi-transparent style.
- 6. Inheritance
    - 6.1. Introduction
    - 6.2. Base Classes and Derived Classes
    - 6.3. Single Inheritance and Multiple Inheritance
    - 6.4. Protected Members
    - 6.5. Virtual Base Classes and Abstract Classes
    - 6.6. Constructor and Destructor in Derived Classes
  - 7. Polymorphism
    - 7.1. Introduction
    - 7.2. Pointers to Objects
    - 7.3. Pointers to Derived Classes
    - 7.4. Virtual Functions
    - 7.5. Pure Virtual Functions
  - 8. Template
    - 8.1. Introduction
    - 8.2. Class Templates
    - 8.3. Function Templates
  - 9. Exception Handling
    - 9.1. Introduction
    - 9.2. Basic Exception Handling
    - 9.3. Exception Handling Mechanism
    - 9.4. Throwing and Catching Exception
    - 9.5. Re-throwing and Exception

**Text Books:**

N/A

**References:**

*John R. Hubbard*, "Theory and Problems of Programming with C++, 2/e", McGraw-Hill.

*H. M. Deitel*, "C++ How to Program" D&D.

*Friedman and Koffman*, "Problem Solving, Abstraction and Design using C++ , 5/e", Addison-Wesley.

**Evaluation:**

Internal = 50

Final = 50