



**Addis Ababa university**  
**College of Natural and Computational Science**  
**Department of Computer Science**

**Course Title:** Fundamental of Programming II

**Course Code:** CoSc 2111

**Prerequisite(s):** Fundamentals of Programming I

**Course Objectives & Competences:**

- Upon successful completion of the course, students should:
- Describe and implement the concepts of modular programming (functions) in solving problems.
- Describe and implement the concepts of Structures in solving problems.
- Describe how to manage files using C++.
- Have an understanding of the concept and application of iteration and recursion in program development;
- Be able to uncover and reason about repetitive aspects of a computing problem, and to develop appropriate recursive or iterative solutions.
- Understand the specification of a program and its implementation as separate, but related design problems.

**Chapter 1: Functions**

- 1.1. Introduction to Modular Programming (Functions)
- 1.2. Declaration of function
- 1.3. Definition of functions
- 1.4. Calling functions
- 1.5. Scope of Variables
- 1.6. Function Arguments
- 1.7. Return Values
- 1.8. Default Parameters
- 1.9. Parameters passing
  - 1.9.1. Call by value
  - 1.9.2. Call by reference
- 1.10. Function Overloading
- 1.11. Recursive function

### 1.12. Inline function

## **Chapter 2: Structures**

### 2.1. Introduction

### 2.2. Overview of Structure

#### 2.2.1. Declaring structure

#### 2.2.2. Defining structure in structure

#### 2.2.3. Initializing structure

#### 2.2.4. Manipulating structure

### 2.3. Array of structure

### 2.4. Nested structure

### 2.5. Structure, Reference and Pointer

### 2.6. Passing structure to function

#### 2.6.1. Passing value of structure to a function

#### 2.6.2. Passing address of a structure to a function

## **Chapter 3 : File Management**

### 1.1. Streams and Files

### 1.2. Text and Binary Files

### 1.3. Text File processing

### 1.4. Binary File processing

### 1.5. Random Access Files

### 1.6. Buffers and Synchronization

## **Template**

### **Text books & References:**

- Walter Savitch, “Problem solving with C++ - The Object of programming”, Menlo Park: Addison-Wesley, 1996.
- Dietel&Dietel, “C++ How To Program”, Third Edition, Prentice – Hall, 2003