I. LAB OUTLINE

CS112L Object Oriented Programming Lab (1 CH)
Pre-Requisite: CS101 Instructor: **Engr. Amna Arooj** Email: amna.arooj@giki.edu.pk Office #03, G35 FCSE. Ext. 2746 Office Hours: 10:00am ~ 01:00 pm

Lab Introduction

As a second lab. on programming, the emphasis would be that students should be able to write a program of reasonable size and complexity. Devising a solution to a problem will be encouraged and converting a design into a computer program would be stressed including the software reuse. The primary aspect of the lab is to introduce students with the object-oriented programming skills. This Lab will provide in-depth coverage of object-oriented programming principles and techniques using C++. Topics include classes, overloading, data abstraction, information hiding, encapsulation, inheritance, polymorphism, file processing, templates, exceptions, container classes, and low-level language features.

Lab Contents

Broadly, this Lab will cover following: Introduction to Classes and Objects, Control Structures, Methods, Arrays, Pointers, Classes Inheritance, Polymorphism, Templates, Exceptions, STL, and Operator Overloading, Dynamic Memory Allocation and Dynamic Arrays.

Mapping of CLOs and PLOs

Sr. No	Course Learning Outcomes+	PLOs*	Blooms Taxonomy
CLO_1	Utilize the basic techniques of an object-oriented programming language.	-	P2 (Set)
CLO_2	Implement programming structures to design solutions for the given problems.	PLO 1	P3 (Guided Response)
CLO_3	Apply the major object-oriented concepts to implement programs in C++ using encapsulation, inheritance, and polymorphism .	PLO 3	P4 (Mechanism)
	+Please add the prefix "Upon successful completion of this course, the student will be able to" *PLOs are for BS (CE) only		

CLO Assessment Mechanism (Tentative)

Assessment tools	CLO_1	CLO_2	CLO_3
Lab Performance	80%	45%	20%
Open Ended Lab	-	10%	-
Project	-	15%	20%
Midterm Exam	20%	-	20%
Final Exam	-	30%	40%

Overall Grading Policy (Tentative)

Assessment Items	Percentage
Lab Performance	25%
Midterm Exam	20%
Open Ended Lab	5%
Project	15%
Final Exam	35%

Text and Reference Books

Text books:

- Harvey M. Dietel and Paul J. Deitel, "How to Program C++", 9th Edition, Deitel & Associates, Inc. (2014)
- Lab Manual for CS112L

Lab Breakdown

Week	Contents/Topics
Week 1	User defined data types - Structures, Unions, Enumerations
Week 2	Pre-processor Directives, Bit Manipulation, Function Pointers
Week 3	Dynamic Memory Allocation and Dynamic Arrays
Week 4	C++ Classes-I Introduction
Week 5	C++ Classes-II Constructor, Destructor, Copy Constructor, this Pointer
Week 6	Friend Functions and Classes, Static Members, Constant Objects and Functions, Composition
Week 7	Type Casting – Static Vs Dynamic Casting
Week 8	Operator Overloading
Week 9	Inheritance
Week 10	Virtual Functions, Abstract Base Classes and Polymorphism
Week 11	Introduction to Standard Template Library (STL)
Week 12	Open-Ended Lab