Ministry of Higher Education and Scientific research



# **Department of Computer science College of Science University of Salahaddin Subject: Object Oriented Programming** Course Book – For 2<sup>nd</sup> Year First Semester Lecturer's name: Safeen Hasan Rasool **Academic Year: 2022/2023**

# **Course Book**

1. Course name	Object Oriented Programming	
2. Lecturer in charge	Safeen H. Rasool	
3. Department/ College	Collage of Science – Computer Department	
4. Contact	e-mail: <u>saven.rasool@su.edu.krd</u>	
5. Time (in hours) per week	Theory: 2	
	Practical: 2	
6. Office hours		
7. Course code	CSIT201	
8. Teacher's academic profile	Teacher at Salahaddin university, collage of Science/ computer department since 2011, responsible of too many academic subjects, I obtained BSc in collage of education/computer department in2004 and MSc in same department since 2011. https://academics.su.edu.krd/saven.rasool	
9. Keywords	C++ Programming, Object Oriented Programming, Class	

#### **10.** Course overview:

This course provides 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. The course briefly covers the mapping of UML design to C++ implementation and object-oriented considerations for software design and reuse.

#### **11. Course objective:**

- Perform object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O. and other standard language constructs.
- Demonstrate adeptness of object oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.
- Demonstrate ability to implement one or more patterns involving realization of an abstract interface and utilization of polymorphism in the solution of problems which can take advantage of dynamic dispatching.

• Learn syntax, features of, and how to utilize the Standard Template Library. Learn other features of the C++ language including templates, exceptions, forms of casting, conversions, covering all features of the language.

#### 12. Student's obligation

There will be two main theoretical and practical exams plus a number of quizzes in the lab. The quizzes will be calculated as one exam mark, after studding most Programming and OOP topic skills the student will be required to create an objective OOP project.

### **13.** Forms of teaching

The lectures will be created by Power point presentation viewed to students through data projector and the explanation will be done on the white board, a computer labs. Also required with visual studio package.

#### 14. Assessment scheme

Student marks will be as follow

- Course 1 Theoretical exam will be out of 20
- Course 2 Theoretical exam will be out of 20
- Course 1 Practical exam will be out of 30
- Course 2 Practical exam will be out of 30
- The Lab quizzes calculated out of 10 and each 3 quizzes consider as one exam.

The total over 50 marks then calculated as:

(Average of theoretical course 1 and 2) + (Average of practical course 1, practical course 2, quizzes and project)

The final exam will takes 50% of the marks and it is only theoretical.

#### 15. Student learning outcome:

After completion this course, the student will be able to understand better the object-oriented

programming features and will be able to write and test programs that make appropriate use of object-

oriented facilities common to many object-oriented languages.

## 16. Course Reading List and References:

Object-Oriented Programming in C++, Fourth Edition, Robert Lafore, 2002 by Sams Publishing Available in https://fac.ksu.edu.sa/sites/default/files/ObjectOrientedProgramminginC4thEdition.pdf

A Complete Guide to Programming in C++, Ulla Kirch-Prinz Peter Prinz, JONES AND BARTLETT PUBLISHERS Available in <u>http://www.lmpt.univ-tours.fr/~volkov/C++.pdf</u>

17. The Topics:		Lecturer's name	
Week(s)	Basic Tutorial Subject to be covered	Lab	
1	<b>Overview:</b> Functions and Parameter Transmission in C++	Introduction to code block program, procedural language, general c++ programming overview, functions	
2	General C++ review,	Practice on For, loop, If statement, and variables, with reviewing some functions and procedures.	
3-4	<b>Introduction:</b> Classes, Objects, Methods, in capsulation and Properties of OOP.	Example: Classes, data hiding feature and converting procedural language to Class	
5-10	<b>Objects and Classes:</b> Declaring classes, Data members and members functions, Protected Level (Private, Public), Defining Objects, Calling Data and Members Functions, Scope Resolution Operators, Pointers to objects.	Example: Defining Data members and member functions in class. Using protection level (Private, Public) for both data members and member functions	
11-12	Constructor and destructor Functions.	Example: Using Constructor do initialize class data members, and destructor to delete the class object.	
13-14	<b>Functions:</b> Virtual Function, Friend Function, Static Function, Assignment and Copy Initialization, This pointer, Dynamic Type Information.	Example: Using New and Delete to allocate and deallocate memory location dynamically, and using pointers inside functions to access those locations.	
15	Final Exam		
18. Practical Topics (If there is any)			
Explained with Theoretical part			
19. Examinations:			
Create a C++ Object for students that have attributes (Age, name, Mar[7], Average, then			
The average of 10 students			
20. Extra notes:			
21. Peer review			