Course Specifications

Course Title:	Programming in C++
Course Code:	**ICS 331**
Program:	**Information and computer science**
Department:	**Computer science and information**
College:	**College of science**
Institution:	**Majmaah University**

Table of Contents

A. Course Identification

1. Credit hours:3
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☐ Elective ☑
3. Level/year at which this course is offered: Elective
4. Pre-requisites for this course (if any)**: ICS 223**
5. Co-requisites for this course (if any)**: nil**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**		80%
2	**Blended**		10%
3	**E-learning**		10%
4	**Correspondence**		
5	**Other**		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	60
2	**Laboratory/Studio**	45
3	**Tutorial**	
4	**Others** (specify)	
	Total	
Other Learning Hours*		
1	**Study**	
2	**Assignments**	
3	**Library**	
4	**Projects/Research Essays/Theses**	
5	**Others** (specify)	
	Total	

***** The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description :

This course introduces C++ for students with Java programming background. Concepts of Object Oriented Programming: Principles of OOP, encapsulation, benefits and applications of OOP in C++ , Overview of C++ Basics ,Objects and Classes ,Inheritance ,Polymorphism I/O and File Management , Exceptions and use of Standard Template Library.

2. Course Main Objective

1.Understand/Apply class data type with its constructor, destructor, and using objects of classes into the structure of programs.
2. Understand/Apply inheritance, and how to inherited classes
3. Understand/Apply polymorphism on Object Oriented programming

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge:**	
1.1	Students will understand the concepts of and techniques used in C++ programming like classes, polymorphism.	
1.2		
1.3		
1...		
2	**Skills :**	
2.1	Students will have an understanding of programming based on object , and complex programming.	
2.2	Students will learn to think about life solutions by programming skills.	
2.3		
2...		
3	**Competence:**	
3.1	Design, implement and evaluate a computer-based system, process, component, or program to meet desired needs	
3.2		
3.3		
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Concepts of Object Oriented Programming: Principles of OOP, encapsulation, benefits and applications of OOP in C++ .	6
2	• Overview of C++ Basics: Program structure, namespace, identifiers, variables, constants, operators, typecasting, control structures and functions	6
3	Objects and Classes : Basics of object and class , operator overloading and type conversion.	9

4	• Inheritance : Concept of Inheritance, overriding and virtual base class.	6
5	Polymorphism : Pointes and Objects, this pointer, virtual and pure virtual functions, Implementing polymorphism	6
	• I/O and File Management : Concept of C++ stream classes, File stream classes and management functions.	6
	Templates, Exceptions and use of Standard Template Library.	3
	Course conclusion	3
...		
Total		

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	understand the concepts of and techniques used in C++ programming like classes, polymorphism.	Lectures Lab Demonstrations Case studies	
1.2	Understanding of programming based on object , and complex programming.		
…			
2.0	**Skills**		
2.1	learn to think about life solutions by programming skills.	Lectures Lab demonstrations Case studies Individual presentations Brainstorming	
2.2	Design, implement and evaluate a computer-based system, process, component, or program to meet desired needs		
…			
3.0	**Competence**		
3.1	Apply knowledge of computing and mathematics appropriate to the discipline	Lectures. Lab demonstrations. Case studies. Individual presentations. Brainstorming	
3.2			
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First written mid-term exam	6	10%
2	Second written mid-term exam	11	10%
3	E quiz	12	10%
4	Presentation, class activities, and group discussion Homework assignments, Implementation of presented programs	Every week	10%
5	Lab exam		20%
6	Final written exam		40%
7			
8			

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice : office hours

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	D. S. Malik "C++ Programming: From Problem Analysis to Program Design" Cengage Learning 2018 **ISBN: 9781337102087, 1337102083**
Essential References Materials	
Electronic Materials	Web sites and video lectures
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom and Lab, as those that are available at college of science at AzZulfi
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show, Smart Board, software
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or	

Item	Resources
attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment,	Students, Faculty	Direct
Extent of achievement of course learning outcomes,	Program Leaders	Direct
Quality of learning resources	Peer Reviewer	Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	
Reference No.	
Date	