Republic of Iraq
Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Directorate
Quality Assurance and Academic Accreditation
International Accreditation Dept.

Academic Program Specification Form For The Academic

Universitiy: University of Baghdad
College : Al_Khwarizmi College of Engineering
Number Of Departments In The College :5
Date Of Form Completion :11/10/2023

Dean's Name

Date : / /

Signature

Dean's Assistant For Scientific Affairs

Date : / /
Signature

The College Quality Assurance And University Performance Manager

Date : / /
Signature

Quality Assurance And University Performance Manager
Date : / /
Signature

TEMPLATE FOR PROGRAMME SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

PROGRAMME SPECIFICATION

This Programme Specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It is supported by a specification for each course that contributes to the programme.

1. Teaching Institution	University of Baghdad/Al_Khwarizmi College of Engineering
2. University Department/Centre	Information and Communication Engineering
3. Programme Title	Object Oriented Programming / **ICE 232**
4. Title of Final Award	
5. Modes of Attendance offered	Attendance is according to the university rules in 2023-2024
6. Accreditation	Abet
7. Other external influences	
8. Date of production/revision of this specification	Oct/2023
9. Aims of the Programme	
To master all techniques of software development in the C++ Programming Language and demonstrate these techniques by the solution of a variety of problems spanning the breadth of the language including C++ changes	

10. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Cognitive goals

A1. To understand the concept of Object Oriented Programming .

A2. To help student to understand how to use a programming language such as C++ to resolve problems.

A3. To impart problems understanding, analyzing skills in order to formulate Algorithms.

A4. To provide knowledge about C++ fundamentals: data types, variables, keywords and control structures.

A5. To understand methods, arrays, inheritance, Interface, package and multithreading.

B. The skills goals special to the programme .

B1. Perform object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O. and other standard language constructs.

B2. Demonstrate adeptness of object oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.

B3. 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.

B4. 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.

Teaching and Learning Methods
Assessment methods
Seminar -- 5% Quizzes --10% Lab -- 20 Midterm --15% Final -- 50%
C. Affective and value goals C1. Students will be able to code a program using C++ constructs. C2.Given an algorithm a student will be able to formulate a program that correctly implements the algorithm. C3. Students will be able to generate different patterns and flows using control structures. C4.Students will implement method overloading in their code. C5.Students will be able to demonstrate reusability with the help of inheritance. C6.Students will be able to make more efficient programs.
Teaching and Learning Methods
Assessment methods
Seminar -- 5% Quizzes --10% Lab -- 20 Midterm --15% Final -- 50%

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Ability to design and conduct experiments.

D2. Ability to design a system, component or process to meet desired needs

Teaching and Learning Methods

Assessment Methods

Seminar -- 5%
Quizzes --10%
Lab -- 20
Midterm --15%
Final -- 50%

11. Programme Structure				12. Awards and Credits
Level/Year	Course or Module Code	Course or Module Title	Credit rating	
second		Object Oriented Programming		Bachelor Degree Requires (4) credits

13. Personal Development Planning

1. Provide strong foundation in mathematical, scientific and engineering fundamentals necessary to analyze, formulate and solve engineering problems in the field of Information and Communication Engineering.
2. Enhance the skills and experience in defining problems in Information and Communication Engineering design and implement, analyzing the experimental evaluations, and finally making appropriate decisions.
3. Enhance their skills and embrace new Information and Communication Engineering Technologies through self-directed professional development and post-graduate training or education.

14. Admission criteria .

According to the rules of Ministry of Higher Education and Scientific Research in Iraq.

15. Key sources of information about the programme

1. Books
2. Trusted Internet sources related to the Program
3. Papers.

Curriculum Skills Map																			
please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed																			
				Programme Learning Outcomes															
Year / Level	Course Code	Course Title	Core (C) Title or Option (O**)**	Knowledge and understanding				Subject-specific skills				Thinking Skills				General and Transferable Skills (or) Other skills relevant to employability and personal development			
				A1	**A2**	**A3**	**A4**	**B1**	**B2**	**B3**	**B4**	**C1**	**C2**	**C3**	**C4**	**D1**	**D2**	**D3**	**D4**
second		Object Oriented Programming	**C**																

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the programme specification.

1. Teaching Institution	University of Baghdad/Al_Khwarizmi College of Engineering
2. University Department/Centre	Information and Communication Engineering
3. Course title/code	Object Oriented Programming / **ICE 232**
4. Modes of Attendance offered	attendance is according to the university rules in 2023-2024
5. Semester/Year	1st/ second year
6. Number of hours tuition (total)	75
7. Date of production/revision of this specification	Oct/2023
8. Aims of the Course	
To master all techniques of software development in the C++ Programming Language and demonstrate these techniques by the solution of a variety of problems spanning the breadth of the language including C++ changes.	

9. Learning Outcomes, Teaching, Learning and Assessment Methods

A. Cognitive goals

A1. To understand the concept of Object Oriented Programming .

A2. To help student to understand how to use a programming language such as C++ to resolve problems.

A3. To impart problems understanding, analyzing skills in order to formulate Algorithms.

A4. To provide knowledge about C++ fundamentals: data types, variables, keywords and control structures.

A5. To understand methods, arrays, inheritance, Interface, package and multithreading.

B. The skills goals special to the programme .

B1. Perform object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O. and other standard language constructs.

B2. Demonstrate adeptness of object oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.

B3. 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.

B4. 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.

Teaching and Learning Methods

Assessment methods

Seminar -- 5%
Quizzes --10%
Lab -- 20
Midterm --15%
Final -- 50%

C. Affective and value goals

C1. Students will be able to code a program using C++ constructs.
C2.Given an algorithm a student will be able to formulate a program that correctly implements the algorithm.
C3. Students will be able to generate different patterns and flows using control structures.
C4.Students will implement method overloading in their code.
C5.Students will be able to demonstrate reusability with the help of inheritance.
C6.Students will be able to make more efficient programs.

Teaching and Learning Methods

Assessment methods

Seminar -- 5%
Quizzes --10%
Lab -- 20
Midterm --15%
Final -- 50%

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Ability to design and conduct experiments.
D2. Ability to design a system, component or process to meet desired needs

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1.	3		**Introduction to Object Oriented Design**	Classroom with Lab	Quizzes + Assignments
2.	3		**Classes** • Classes and Data Abstraction • Variables (Objects)Declaration • Accessing class members • Assignment operator and classes	Classroom with Lab	Quizzes + Assignments
3.	3		• Functions and Classes • Reference parameters and classes objects (variables) • Implementation of member functions	Classroom with Lab	Quizzes + Assignments
4.	3		• Order of public and private members of a class • Constructors	Classroom with Lab	Quizzes + Assignments
5.	3		• Abstract Data Type (ADT) • Static members of a class	Classroom with Lab	Quizzes + Assignments
6.	3		**Inheritance and Composition** • Inheritance • Member functions of the base class • Constructors of Derived and Base class •	Classroom with Lab	Quizzes + Assignments
7.	3		• Inheritance as public, protected, or private • Accessing members in a Derived class • Composition (Aggregation)	Classroom with Lab	Quizzes + Assignments
8.	3		**Pointers ,Classes** • Pointer data type and pointer variables • Declaring pointer variables • Classes, Structs, and pointer variables • Operator new and delete • Dynamic arrays	Classroom with Lab	Quizzes + Assignments
9.	3		**Overloading** • Operator overloading Syntax for operator functions • Pointer this • Friend functions of classes	Classroom with Lab	Quizzes + Assignments

10.	3		• Overloading Binary operators • Overloading the assignment operator(s) • Overloading Unary operators	Classroom with Lab	Quizzes + Assignments
11.	3		Managing console input /output operations • Introduction • C++ streams • C++ streams classes • Unformatted I/O Operations	Classroom with Lab	Quizzes + Assignments
12.	3		• Formatted console I/O Operations • Managing output with manipulators • Design Our Own Manipulators	Classroom with Lab	Quizzes + Assignments
13.	3		**Templates** • Template Functions. • Template Classes	Classroom with Lab	Quizzes + Assignments
14.	3		**Exception Handling** • Principles of Exception handling • Exception handling mechanism • Throwing mechanism	Classroom with Lab	Quizzes + Assignments
15.	3		• Catching mechanism Re-throwing an Exception • Specifying Exception	Classroom with Lab	Quizzes + Assignments

11. Infrastructure	
Required reading: · CORE TEXTS · COURSE MATERIALS · OTHER	• **Text book 1**: C++ Programming: An Object-oriented Approach. Front Cover. Behrouz A. Forouzan, Richard F. Gilberg. McGraw-Hill Education, 2019 • **Text book 2:** C++ Programming from problem analysis to program design , D.S Malik 2011. • **Text book 3:** Deitel, P. J., & Deitel, H. M. (2016). C++: how to program/Paul Deitel, Harvey Deitel..

Special requirements (include for example workshops, periodicals, IT software, websites)	1. https://www.youtube.com/channel/UCkhIUSUR70COFhV9KT3dfQA
Community-based facilities (include for example, guest Lectures , internship , field studies)	Summer training, Scientific visits.