

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Advanced Object Oriented Programming		Module Delivery
Module Type	C	☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	AI202		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	GII		Semester of Delivery
Administering Department	AI	College	CIT
Module Leader	Basem Mahmed	e-mail	Basem.Mohmed@uofallujah.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Master
Module Tutor	Mohammed A.S. Al-Hitawi	e-mail	al_hitawe@uofallujah.edu.iq
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Scientific Committee Approval Date	1/06/2026	Version Number	2.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		Semester	
Co-requisites module		Semester	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Introduce the principles of object-oriented programming in a higher-level programming language in c++. 2. Analyze a problem statement to develop a mental model of objects necessary to create a software architecture 3. Utilize object-oriented programming to frame software architectures, with care towards separation of concerns and abstraction 4. Gain skills in designing, and programming software for reuse of code. 5. Establish development methods in object-oriented programming to qualify students for teaching the language in other settings
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	• Explain the motivation for and development of object-oriented programming languages. • Produce a set of use cases given a problem statement. • Produce class diagrams, object interaction diagrams and object state transition diagrams for a given problem. • Describe the essential features of an object-oriented programming language. • Produce and/or debug code fragments that illustrate principles of object-oriented software development. • Describe the principles for testing object-oriented software and derive sets of test data given a specification.
Indicative Contents المحتويات الإرشادية	✓ Structured programming ✓ Procedural programming ✓ Abstract data types (ADTs) ✓ Type of variable and range of applicable operations ✓ Use of classes in object-oriented programming ✓ How coupling and cohesion are implemented in OOP ✓ Abstraction and Encapsulation ✓ Data hiding/information hiding ✓ Classes and objects instances

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	There are different teaching and learning activities including lectures and laboratories. The concepts, process, and applications of data science will be discussed in lectures. Students will also learn computer programming knowledge and the skills of manipulating, processing, retrieving, storing, and plotting data. Students will develop small programs and learn different in laboratories.

Student Workload (SWL)			
الحمل الدراسي للطلاب محسوب ل ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	93	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	82	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	175		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	All
	Assignments	1	5% (5)	2 and 12	All
	Projects / Lab.	1	15% (15)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Fried function
Week 2	Polymorphism Based on Overloaded Methods
Week 3	Polymorphism, Type Conversion, Casting, Etc.
Week 4	Abstract class.
Week 5	Exception Handling
Week 6	Event Handling
Week 7	Using (try, catch, throw and final) with Exception

Week 8	Interface
Week 9	Inner class
Week 10	Static Members
Week 11	Encapsulation
Week 12	Mid exam
Week 13	Purpose of Framework Interfaces
Week 14	File
Week 15	OOP Project
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المناهج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: write a program to implement inline function
Week 2	Lab 2: write a program to implement all types of constructors
Week 3	Lab 3: write a program to implement multiple inheritance
Week 4	Lab 4: write program to demonstrate pointer to object
Week 5	Lab 5: write a program to demonstrate pointer to derived class
Week 6	Lab 6: write program to demonstrate function overloading
Week 7	Lab 7: write program to read and write data to and from a file

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Object-oriented programming with C++ by E.Balagurusamy, 2nd Edition, TMH.	Yes
Recommended Texts	1. Object Oriented Design by Rumbaugh (Pearson publication) 2. Object-oriented programming in Turbo C++ By Robert Lafore, Galgotia Publication.	No
Websites	https://www.coursera.org	

Grading Scheme مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.