



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية



Module Information			
معلومات المادة الدراسية			
Module Title	Object Oriented Programming		Module Delivery
Module Type	Core		☒ Theory ☐ Lecture ☒ Lab ☒ Tutorial ☒ Practical ☒ Seminar
Module Code	Cys2111		
ECTS Credits	8		
SWL (hr/sem)	200		
Module Level	UGII	Semester of Delivery	3
Administering Department	Cybersecurity	College	College of Computer Science & Information Technology
Module Leader	Asst. Lec. Zakaria Hussain Al-Safar	e-mail	Zakaria.hu@uowa.edu.iq
Module Leader's Acad. Title	Asst. Lecturer	Module Leader's Qualification	
Module Tutor	Asst. Lec. Zakaria Hussain Al-Safar	e-mail	Zakaria.hu@uowa.edu.iq
Peer Reviewer Name	Dr. Ali Kareem	e-mail	alialmujab@uowa.edu.iq
Scientific Committee Approval Date	21/9/2026	Version Number	V1

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Cys1213	Semester	2
Co-requisites module	None	Semester	...

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Department Head Approval

Dean of the College Approval

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<p>Training the student on a set of advanced concepts in object oriented programming</p> <p>The skills of performing mathematical, logical and relational operations on entities.</p> <p>The skills of using the concept of inheritance in solving various problems.</p> <p>The skills of how to write functions and build classes that operate on different types of data.</p> <p>The skills of writing small projects and how to structure them, taking advantage of entity programming.</p> <p>Formulating the ideas put forward into practical projects aimed at solving a problem in society.</p> <p>The ability to acquire knowledge derived from practical experience.</p> <p>The student's ability to deliver and theorize his idea to a group of audience.</p> <p>The ability to complete all projects related to computer programming assigned to the graduate in his work circles</p>
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. Learn the basics and principles of Object-Oriented Programming (OOP) and its advantages. 2. Learn how to build classes and understand member access specifiers inside a class (private, protected, and public). 3. Understand object-oriented concepts such as encapsulation, privacy, data hiding, and visibility of class members. 4. Learn how to write constructor and destructor functions and understand the differences between constructor types. 5. Learn the principle of polymorphism through function overloading and operator overloading. 6. Learn how to create and define objects dynamically during execution time, define arrays of objects, and understand the advantages of dynamic memory allocation. 7. Learn how to use and apply inheritance to solve various problems.

	<ol style="list-style-type: none"> 8. Build a simple class hierarchy using subclassing to promote code reuse among different subclasses. 9. Learn about different types of inheritance (multiple, multilevel, hierarchical, etc.). 10. Use constructors and destructors with inheritance. 11. Learn about virtual functions. 12. Write generic functions or classes that work with different data types. 13. Learn about exception handling.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Part A: Encapsulation [35 Hours]</p> <ul style="list-style-type: none"> • Basics and principles of Object-Oriented Programming (OOP) • Classes and member access specifiers (private, protected, public) • Encapsulation, privacy, data hiding, and visibility of class members • Constructors and destructors <p>Part B: Polymorphism [40 Hours]</p> <ul style="list-style-type: none"> • Function overloading • Operator overloading • Virtual functions • Generic functions and classes <p>Part C: Inheritance [35 Hours]</p> <ul style="list-style-type: none"> • Concepts of inheritance • Types of inheritance (multiple, multilevel, hierarchical, etc.) • Class hierarchy and subclassing • Constructors and destructors with inheritance <p>Part D: Dynamic Allocation and Exception Handling [35 Hours]</p> <ul style="list-style-type: none"> • Dynamic object creation during execution time • Arrays of objects • Dynamic memory allocation • Exception handling

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>Throughout the module, effective learning and teaching strategies will be employed to ensure that students understand the concepts and develop the necessary skills. The main strategies adopted in delivering this module include:</p> <p>Delivering theoretical lectures.</p> <p>Conducting practical exercises in laboratories to provide students with hands-on experience and improve their programming skills.</p> <p>Conducting theoretical examinations to evaluate students' understanding of the course material.</p> <p>Assigning reports to students to develop their research and academic writing skills on specific topics.</p> <p>Assigning small projects to student groups using real-world examples and case studies to demonstrate the importance and applications of Object-Oriented Programming.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	122	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10%(10)	4 and 12	CLO1, CLO2, CLO3, CLO4, CLO5, CLO6, CLO7, CLO8, CLO9, CLO10
	Assignments	1	5%(5)	7	CLO1, CLO2, CLO3, CLO4, CLO5, CLO6
	Projects / Lab.	1	10%(10)	Continuous	CLO1–CLO13
	Projects / Pr.	4	10%(10)	4,8,11 and 15	CLO4, CLO8, CLO11, CLO12, CLO13
	Seminar	1	5%(5)	15	CLO7, CLO8, CLO9,

					CLO10, CLO11, CLO12, CLO13
Summative assessment	Midterm Exam	2hr	10% (10)	8	CLO1, CLO2, CLO3, CLO4, CLO5, CLO6
	Final Exam	3hr	50% (50)	17	CLO1–CLO13
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction To OOP & Definition Of Class
Week 2	Private, Protected and Public Members
Week 3	Constructors and Destructor Functions
Week 4	Overloading Functions
Week 5	Operator Overloading Functions
Week 6	Friend Functions
Week 7	Dynamic & Static Objects
Week 8	Mid Exam
Week 9	Introduction To Inheritance
Week 10	Types Of Inheritance
Week 11	Constructors & Destructor Functions With Inheritance
Week 12	Virtual Functions
Week 13	Template Functions And Classes
Week 14	Exception Handling
Week 15	Seminar Discussion

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Design and implementation simple Classes
Week 2	Private, Protected and Public Members
Week 3	Constructors and Destructor Functions
Week 4	Overloading Functions

Week 5	Operator Overloading Functions
Week 6	Friend Functions
Week 7	small project discussion
Week 8	Dynamic & Static Objects
Week 9	Introduction To Inheritance
Week 10	Types Of Inheritance
Week 11	Constructors & Destructor Functions With Inheritance
Week 12	Virtual Functions
Week 13	small project discussion
Week 14	Template Functions And Classes
Week 15	Exception Handling

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	the complete reference c++ fourth edition , Herbert schildt	
Recommended Texts		
Websites		

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.