



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية



Module Information			
معلومات المادة الدراسية			
Module Title	Probability and Statistics		Module Delivery
Module Type	Basic		☒ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	Cys2104		
ECTS Credits	4		
SWL (hr/sem)	100		
Module Level	UGII	Semester of Delivery	3
Administering Department	Cybersecurity	College	College of Computer Science and Information Technology
Module Leader	Elaf Ali Safooq	e-mail	elaf.safooq@uowa.edu.iq
Module Leader's Acad. Title	Assist Lecturer	Module Leader's Qualification	M.Sc. in Mathematics
Module Tutor	M.Sc Elaf Ali Safooq	e-mail	elaf.safooq@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	None	Semester	...
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	
Module Objectives أهداف المادة الدراسية	<p>This course provides a foundational understanding of statistics, covering the principles of permutations and combinations. Students will explore how to calculate the probabilities of events arising from various experiments. Additionally, the curriculum includes an in-depth study of discrete and continuous probability functions, alongside diverse probability distributions.</p>
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>A - Cognitive Goals</p> <p>A1: Comprehend the fundamental concepts and principles of statistics. A2: Master the methods for calculating permutations and combinations in various contexts. A3: Develop the ability to determine and calculate the probabilities of diverse events. A4: Identify and differentiate between types of probability functions and distributions for random variables.</p> <p>B - Soft Skills & Practical Objectives</p> <p>B1: Enhance the ability to organize, calculate, and interpret data using systematic statistical methods. B2: Apply probabilistic reasoning to solve practical problems and experimental scenarios.</p>
Indicative Contents المحتويات الإرشادية	<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

	<ul style="list-style-type: none"> 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
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>The lecturer's strategy is to give lectures and conduct short tests with the adoption of giving open assignments and grades as encouragement to students.</p>

Student Workload (SWL) الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	100		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3, 6,9,12	A1, A2, A3
	Assignments	5	10% (10)	2,5,7,10	A2, A3, A4, B1
	Onsite Assignments	2	10% (10)	4,11	A3, A4, B1, B2
	Reports	2	10% (10)	4,11	A1, A4, B1, B2
Summative assessment	Midterm Exam	2hr	10% (10)	7	A1, A2, A3, A4
	Final Exam	3hr	50% (50)	16	A1, A2, A3, A4, B1, B2
Total assessment			100% (100)		

Delivery Plan (Weekly Syllabus)	
المناهج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Statistics
Week 2	Frequency tables and charts
Week 3	Statistical operations
Week 4	Permutations and combinations
Week 5	set theory
Week 6	Introduction to probabilities
Week 7	Definitions of probability
Week 8	Random experiment, event, and sample space
Week 9	probability rules
Week 10	Conditional probability
Week 11	Independent and non-independent events
Week 12	Random variables, both discrete and continuous
Week 13	Discrete probability functions
Week 14	Continuous probability functions
Week 15	Discrete probability distributions

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Introduction to Probability and Statistics Using R	No
Recommended Texts	1- Permutations and combinations. 2- All statistics and probability books are useful for this article	No
Websites	https://www.khanacademy.org/math/statistics-probability	

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.				