MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	**Measure Theory**		**Module Delivery**	
Module Type	Core		☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	**MS 308**			
ECTS Credits	**6**			
SWL (hr/sem)	**150**			
Module Level	3	**Semester of Delivery**		2
Administering Department	Type Dept. Code	**College**	Type College Code	
Module Leader	Rana hazim Jasim	**e-mail**	Rana.hazim@tu.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**		
Module Tutor	Rana hazim Jasim	**e-mail**	Rana.hazim@tu.edu.iq	
Peer Reviewer Name		**e-mail**		
Scientific Committee Approval Date		**Version Number**	1.0	

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

	Module Aims, Learning Outcomes and Indicative Contents
	أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية
Module Aims أهداف المادة الدراسية	• To introduce students to the fundamental concepts of measure theory. • To emphasize deep understanding of concepts rather than memorization and rote learning. • To include a variety of practical examples and applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learning Outcomes for the Measure Theory Course: 2. Knowledge: 3. Define sets and their types (empty, finite, infinite). 4. Define countability and types of countable and uncountable sets. 5. Define the characteristic function and its properties and uses. 6. Define the σ–field and its properties and its relation to measure spaces. 7. Define the measure and properties of its types (Lebesgue measure and Riemann measure). 8. Define the measurable space and properties of measurable spaces. 9. Define the measure space and properties of measure spaces. 10. Define the outer measure and properties of the outer measure. 11. Define measurable sets and properties of measurable sets. 12. Define the measurable function and measure space and properties of the measurable function and measure space. 13. Knowledge of some applications of measure theory in various fields such as probability theory, statistics, and mathematical analysis.
Indicative Contents المحتويات الإرشادية	

	Learning and Teaching Strategies
	استراتيجيات التعلم والتعليم
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)			
الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	15% (15)	5,8 ,10	LO #1, 2 and 3
	Assignments	3	15% (15)	2,7, 11	LO # 1-4
	Projects / Lab.				
	Report	2	10%(10)	5, 10	LO# 1-5 and 8-10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	8	LO # 1-3
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Definition of Ring, σ-ring, field, σ, with examples and applications - field
Week 2	D-system, α field, examples and applications
Week 3	Linking between the previous concepts
Week 4	α- σ-field
Week 5	Definition of α- σ-field with examples
Week 6	Definition of β-field with examples and theorems
Week 7	Theorems Linking the Previous Concepts
Week 8	Linking β-field with the previous concepts

Week 9	Definition of β- σ-field with examples and theorems
Week 10	Definition of δ-field, λ-field with examples and theorems
Week 11	Definition of measure space, probability measure with illustrative examples and theorems
Week 12	Definition of Countably additive
Week 13	Definition of μ-null set, complete measure with theorems
Week 14	Definition of Weekly null additive, countably weekly null additive
Week 15	Definition of Finitely null additive with examples and applied theorems
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	•Stein, E. M. and Shakarchi, R., 2005, Real Analysis: measuretheory, integration and Hilbert spaces, Princeton University Press, United Kingdom • Measure Integral and probability	No
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.