MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Calculus I**			**Module Delivery**	
Module Type	**basic**			☒**Theory** ☐**Lecture** ☐**Lab** ☒ **Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**UOMU0207013**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level		UGI	**Semester of Delivery**		1
Administering Department			**College**		
Module Leader	Hiba Mohsen Abdul Ali Aboud		**e-mail**	hiba.mohsin.abd@uomus.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Nasir Hussein Selman	**e-mail**	Coj.nas@atu.edu.iq	
Scientific Committee Approval Date		01/01/2026	**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 Objectives أهداف المادة الدراسية	1. To develop problem solving skills and understanding of functions and their differentiation. 2. To understand differentiation and its geometric meaning. 3. To understand differentiation applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the meaning of functions and their properties 2. Combining functions. 3. Understanding shifting and scaling of functions. 4. Definition of Trigonometric and exponent functions. 5. Basic understanding of rates of changes and tangent of curves. 6. Limit of functions and limits laws. 7. Continuity of functions. 8. Tangent and derivative of a point. 9. The derivative as a function. 10. Differentiation rules. 11. The chain rule. 12. Implicit differentiation, the inverse function and logarithms 13. Inverse trigonometric functions 14. Application of derivatives
Indicative Contents المحتويات الإرشادية	Functions, types of functions, graph of the functions, domain and range of function Trigonometric function: graph of trigonometric function, range and domain of trigonometric functions, identities. Limits and Continuity: Properties, limits involving infinity, continuity. Transcendental functions: Inverse function, graph of inverse function, Logarithmic and exponential functions, inverse trigonometric functions, hyperbolic functions, inverse hyperbolic functions. Derivatives: Definition, rules of derivative, Implicit differentiation, Applications of derivatives: rate of change problems, derivative, Linearization, Mean value theorem, Initial value problem.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategies that will be adopted in delivering this module is to encourage students to engage in exercises, while at the same time honing and expanding their critical thinking skills. Teaching methods include interactive lectures, where basic mathematical principles are explained in detail. Regular formative assessments will be conducted to monitor students' understanding of the material, and immediate feedback will be provided to guide their learning process. Emphasis will be placed on linking mathematical concepts to real-world engineering applications to make the learning experience more relevant and engaging.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Home Work	2	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Understand the meaning of functions and their properties
Week 2	Combining functions.
Week 3	Understanding shifting and scaling of functions.
Week 4	Definition of Trigonometric and exponent functions.
Week 5	Basic understanding of rates of changes and tangent of curves.
Week 6	Limit of functions and limits laws.
Week 7	Continuity of functions.
Week 8	Tangent and derivative of a point.
Week 9	The derivative as a function.

Week 10	Differentiation rules.
Week 11	The chain rule.
Week 12	Implicit differentiation, the inverse function and logarithms
Week 13	Inverse trigonometric functions
Week 14	Application of derivatives
Week 15	Application of derivatives
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Thomas' Calculus 14th edition	Yes
Recommended Texts	Calculus 10th edition by Anton, Bivens, and Davis	Yes
Websites	https://www.lboro.ac.uk/departments/mlsc/student-resources/helm-workbooks/	

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.