MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية				
Module Title	**Calculus (1)**		**Module Delivery**	
Module Type	Core		☒Theory	
Module Code	**Math-101**		☒Lecture ☐Lab	
ECTS Credits	5		☒Tutorial ☐Practical	
SWL (hr/sem)	125		☐Seminar	
Module Level	UG1	**Semester of Delivery**		1
Administering Department	MATH	**College**	UNI	
Module Leader		**e-mail**		
Module Leader's Acad. Title		**Module Leader's Qualification**		
Module Tutor		**e-mail**		
Peer Reviewer Name		**e-mail**		
Scientific Committee Approval Date	01/06/2023	**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 provide students with a solid understanding of real numbers, functions, and their properties. 2- To introduce the concept of limits and continuity and develop the skills to evaluate them. 3- To explore the fundamental principles of differentiation and apply them to various functions. 4- To understand and apply Rolle's theorem and the mean value theorem in the context of calculus. 5- To develop the knowledge and techniques required for indefinite and definite integration. 6- To familiarize students with transcendental functions and their properties. 7- To equip students with different integration methods for solving a variety of problems. 8- To introduce the concept of improper integrals and their evaluation techniques.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of this module, students should be able to: 1- Demonstrate a clear understanding of real numbers, functions, and their properties. 2- Evaluate limits and analyze the continuity of functions. 3- Apply differentiation techniques to find derivatives of various functions. 4- Utilize Rolle's theorem and the mean value theorem to solve problems involving rates of change. 5- Solve problems involving indefinite and definite integrals. 6- Apply transcendental functions and their properties in problem-solving. 7- Utilize different integration methods to find antiderivatives. 8- Evaluate improper integrals and apply appropriate techniques for their solution.
Indicative Contents المحتويات الإرشادية	1- Real numbers and their properties 2- Functions, including domain, range, and graphing 3- Limits and continuity 4- Differentiation and its applications 5- Rolle's theorem and the mean value theorem 6- Indefinite integrals and basic integration techniques 7- Definite integrals and their applications 8- Transcendental functions (such as exponential, logarithmic, and trigonometric functions) 9- Integration methods (such as substitution, integration by parts, and partial fractions) 10- Improper integrals and their evaluation techniques

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1- Lectures to introduce and explain key concepts and techniques. 2- Class discussions and problem-solving sessions to enhance understanding. 3- Practical examples and applications to connect theory with real-world scenarios. 4- Group work and collaborative learning activities to promote active engagement. 5- Use of technology, such as graphing calculators and mathematical software, for visualization and analysis. 6- Homework assignments and practice exercises to reinforce learning. 7- Regular assessments and quizzes to gauge progress and provide feedback. 8- Office hours and individual consultations to address specific questions and concerns.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	62	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	63	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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**	4	5% (5)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	30% (30)	2 and 12	LO #3, #4, #5 and #6, #7
	Projects / Lab.				
	Report	1	5% (5)	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	Introduction to real numbers and their properties
Week 2	Functions: definition, domain, range, and basic operations
Week 3	Graphing functions
Week 4	Limits: definition and basic evaluation techniques
Week 5	Continuity of functions
Week 6	Intermediate value theorem
Week 7	Differentiation: definition, rules, and techniques Applications of differentiation
Week 8	Rolle's theorem and the mean value theorem
Week 9	Indefinite integrals and antiderivatives Basic integration techniques: power rule, substitution
Week 10	Definite integrals and their properties
Week 11	Transcendental functions: exponential, logarithmic, and trigonometric functions Integration techniques for transcendental functions
Week 12	Integration by parts
Week 13	Partial fractions decomposition
Week 14	Improper integrals: definition and convergence tests
Week 15	Techniques for evaluating improper integrals
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	1- Calculus Tomas 1990
	2- Calculus and Analytic Geomatry Thomas. G. B.4th
	   1984
	3- Advanced Calculus and analysis MA 1002 Craw. I.
	   2000
		yes

Recommended Texts	4- Calculus and Analytic Geometric Durfee. W.H 1971 New York	no
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.