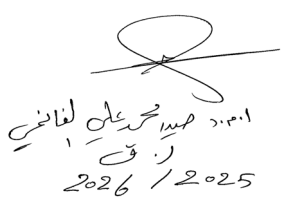
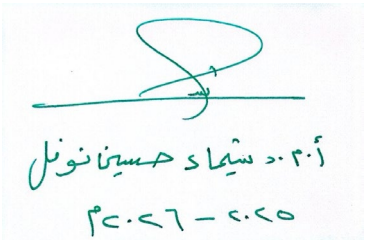
MODULE DESCRIPTION FORM

Module Information					
Module Title	**Calculus I**			**Module Delivery**	
Module Type	**Basic**			☒ **Lecture**	
Module Code	IT105				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level		UG1	**Semester of Delivery**		1
Administering Department		Information Technology	**College**	College of Science	
Module Leader	**Elaf Ali Sfoog Sweif**		**e-mail**	elaf.safooq@uowa.edu.iq	
Module Leader's Acad. Title		Assistant Lecturer	**Module Leader's Qualification**		MS.C
Module Tutor	**Elaf Ali Sfoog Sweif**		**e-mail**	elaf.safooq@uowa.edu.iq	
Peer Reviewer Name		Asst. Lecturer Nabeel Sadeq	**e-mail**	nabeel.alshreefy@uowa.edu.iq	
Scientific Committee Approval Date		2025-12-20	**Version Number**		1.0

Relation with other Modules			
Prerequisite module	-	**Semester**	-
Co-requisites module	-	**Semester**	-





Department Head Approval **Dean of the College Approval**

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1-Understand the concept of the derivative of a function and its geometrical and mechanical significance. 2- Criticize the basic rules of differentiation and be able to apply them to find first and higher derivatives of functions. 3- Know the elementary properties of the trigonometric functions, the inverse trigonometric functions, the exponential and logarithmic functions. Be able to differentiate expressions involving these functions. 4- Know about critical points of differentiable functions and their use in determining maxima and minima. Be able to apply these ideas in simple problems in optimization. 5- State the different methods of integration and their applications. 6- Understand the essential mathematics relevant to computer science. 7- Demonstrate basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.
Module Learning Outcomes	1- Handle techniques of differentiation and integration in solving practical problems 2- Use of standard numerical recipes and mathematical libraries in problem solving. 3-Explore, and where feasible solve, mathematical problems, by selecting appropriate techniques. 4- Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem. 5- Prove and disprove assertions using a variety of techniques
Indicative Contents	1-Summarize the proposed solutions and their results. 2- Verifying solutions. 3- Observing results and attitudes. 4 - Setting goals towards solving traditional and non-traditional problems. 5- Defining problems in precise scientific way. 6- Restrict solution methodologies upon their results. 7- Identify a range of solutions and critically evaluate and justify proposed design Solutions. 8- Criticize the methods of differentiation and integration.

Learning and Teaching Strategies	
Strategies	1- Manage time effectively. 2- Present a clear, logical argument. 3- Work independently. d4- Solve practical problems in course projects. 4- Speeding up the computation of conventional mathematical problems such as sorting, recursion, and matrix multiplication. 5- The ability to evaluate systems in terms of general and specific quality attributes. 6- Work within and contribute to a team, apply management skills such as coordination, project design and evaluation and decision processes.

Student Workload (SWL)			
Structured SWL (h/sem)	45	**Structured SWL (h/w)**	4
Unstructured SWL (h/sem)	74	**Unstructured SWL (h/w)**	5
Total SWL (h/sem)	122 + 3 (Final Exam) = 125		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	10% (10)	3,6 and 9	1,2,3,4
	Assignments	2	5% (5)	4, 12	1,2,3,4
	H. W	5	10% (10)	2,4,6,8,10	1,2,3,4
	Attendance	1	10% (10)	Continues	1,2,3,4
Summative assessment	**Midterm Exam**	2hr	15% (15)	5,11	
	Final Exam	3hr	50% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Numbers and Sets. Representations of Functions.
Week 2	Domain; Codomain; Range of Functions. Test for Even and Odd Functions.
Week 3	Types of Functions and their Graphs.
Week 4	Definition of Limit.
Week 5	Finding Limits Graphically and Numerically
Week 6	Limit Laws
Week 7	One-Sided Limits
Week 8	Infinite Limits
Week 9	Continuity
Week 10	Introduction to Differentiation
Week 11	The Derivative of a Function
Week 12	Differentiability and Continuity
Week 13	basic derivative theorems
Week 14	Implicit Differentiation
Week 15	Applications of Differentiation
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	1. Calculus. Thomas. book 2. Calculus I. Paul Dawkins book	Yes
Recommended Texts	Ron Larson and Bruce Edwards 11 Edition	No
Websites	https://tutorial.math.lamar.edu/Classes/CalcI/CalcI.aspx	

Grading Scheme				
Group	**Grade**	**Mark**	**Marks %**	**Definition**
Success Group (50 - 100)	**A -** Excellent	Excellent	90 - 100	Outstanding Performance
	B - Very Good	Very Good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Sound work with notable errors
	D - Satisfactory	Fair / Average	60 - 69	Fair but with major shortcomings
	E - Sufficient	Pass / Acceptable	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	Fail (Pending)	(45-49)	More work required but credit awarded
	F – Fail	Fail	(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.