	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al-Anbiyaa College of Advanced Technologies Department of Smart Digital Health Technologies	

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematics I**			**Module Delivery**	
Module Type	**Support**			☐Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	DHTC108				
ECTS Credits	5				
SWL (hr/sem)	150				
Module Level	Undergraduate		**Semester of Delivery**	1	
Administering Department	Smart Digital Health Technologies		**College**	College of Advanced Technologies	
Module Leader	Aida Mohammed Jawad		**e-mail**	aida.mohammed@uowa.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	2025/2026		**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 Aims أهداف المادة الدراسية	let students be able to identify the basic fundamentals in mathematics. 1. The course deals with differential and integral calculus. 2. developed problem solving skills and understanding of preliminaries to differential calculus. 3. understand differentiation, and differentiation methods. 4. perform applications using the derivative. 5. get a good grasp of Integrals, and Integration methods. 6. understand the relationship between differentiation and integration.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize Line and Circle Equation and related evaluating formulas. 2. List the various terms associated with Functions and their Types. 3. Discuss the Limit and Continuity of a Function. 4. Describe the Definition of a derivative as a limit, Differentiation Rules, and various types of Function's Derivatives. 5. Identify when to use different Differentiation Methods. 6. Discuss the Curve Sketching process, and the L'Hospital's Rule. 7. Analyze Taylor and Maclaurin Series. 8. Identify the Indefinite Integrals. 9. Explain the Integration Methods u-substitution, By parts. 10. Explain the Integration Methods Involving Trigonometric Functions, Trigonometric substitution. 11. Explain the Integration Method Rational Functions by Partial Fractions. 12. Explain the Integration Methods Functions Involving Roots, and Functions Involving Quadratics. 13. Recognize the Definite Integral and its Application Area Under a Curve. 14. Discuss e the Definite Integral Applications Arc Length, Average Value of a Function. 15. Discuss the Definite Integral Applications Areas Between Two Curves.
Indicative Contents **المحتويات الإرشادية**	<u>Subject-specific Knowledge:</u> • knowledge of key ideas related to mathematics in the university • knowledge of the National Curriculum for mathematics and the way in which it facilitates the development of mathematical understanding • an understanding of the way in which theory informs practice and vice versa. <u>Subject-specific Skills:</u> • an informed and critical awareness of research in mathematics education which can enhance the effectiveness of the university mathematics teacher

	• observe, record accurately and relate educational practice to theory in university and classrooms • critically analyses literature on a variety of contemporary education issues relating to advance mathematics. Key Skills: • communicate ideas, principles and theories effectively in written form • manage time and work to deadlines • construct and sustain a reasoned argument • evaluate and make use of information from a variety of advance sources.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	This module will primarily focus on encouraging students to participate in the activities, as well as refining and developing their critical thinking skills. This will be achieved through lectures, tutorials, discussions, and grading activities.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	51	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
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**	2	10 % (10)	5, 10	LO #1 - 4, LO # 5 - 9
	Assignments	2	10 % (10)	5,11	LO # 1 - 6, LO # 7 -13
	Lab.	N/A			
	Report	N/A			
Summative assessment	**Midterm Exam**	2 hr.	30% (30)	8	LO # 1-7
	Final Exam	3 hr.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Determinants, properties Grammar's rule, application of determinant.
Week 2	Trigonometric functions& relation Graphing of functions, Trigonometric equations.
Week 3	Vectors, vectors in space, unit vector Scalar product, vector product.
Week 4	Function of limits, Algebraic limit Trigonometric limit, Infinity as limit
Week 5	Derivative rule, Algebraic& Trigonometric derivative, Chain rule, velocity& acceleration.
Week 6	Inverse trigonometric functions& its derivative Logarithm& Exponential functions& its derivative
Week 7	Hyperbolic functions& its derivative. Inverse hyperbolic functions & its derivative.
Week 8	Integration, integrals of trigonometric & inverse functions, Integrals of logarithm& Exponential functions.
Week 9	Integrals of hyperbolic functions& its derivative L'Hopitals's rules
Week 10	Integration methods; Integration by parts, Integration by partial fraction
Week 11	Integration by trigonometric substitution Integration of $ax2 + bx + c$
Week 12	Application of Integration, Area under the curve& between two curves.
Week 13	Surface area generated Length of the curve.
Week 14	Volume generated by rotation of curve, Simple differential equations.
Week 15	Simpson rule for area, Trapezoidal rule for area, applications.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	" Calculus " , Ford , S.R. and Ford , J.R. , (1963) McGraw-Hill	Yes
Recommended Texts	"Principles of Mathenatics", Katherine A. Loop., (2015)	No
Websites	https://web.math.ucsb.edu/~agboola/teaching/2021/winter/122A/rudin.pdf	

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.

استاذ المادة

Dr. Aida Mohammed Jawad

التاريخ: 2026/1/22

رئيس القسم

Dr. Ruaa Majeed Dawood

التاريخ :