Mathematics FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematics**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOMU0302014**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	الأنظمة الطبية الذكية		**College**	العلوم	
Module Leader	م.م. ريام ثائر احمد		**e-mail**	Reyam.Thair.Ahmed@uomus.edu.iq	
Module Leader's Acad. Title	Assistant lecturer		**Module Leader's Qualification**	master	
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Scientific Committee Approval Date	**11/06/2025**		**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	1. To understand the basic concept of Functions 2. To understand Trigonometric Functions-even and odd functions. Limits and Continuity 3. To understand Differentiation: Gradients, Differentiation from first principles, Table of derivatives, Evaluating derivatives, Higher derivatives, Differentiating products and quotients, Chain rule, Parametric differentiation, Implicit differentiation 4. To understand Applications of Differentiation& Integration: Maxima and minima Table of integrals, Rules of integration, Definite integrals, Area bounded by curves 5. To understand Invers functions & Invers Trigonometric Functions 6. This course deals with the basic concept of logarithm & Exponentiation Functions 7. To understand Invers of Trigonometric and hyperbolic Functions 8. Explain Derivatives & integral hyperbolic Functions 9. To understand Techniques of Integration
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how use mathematics in real life. 2. Improve mathematics Skills. 3. To provide sufficient practice in the mathematical methods presented.. 4. To promote a deeper learning environment. 5. To emphasis the relevance of mathematics to the degree programmers. 6. To potentially develop other non-disciplinary skills such as professional, personal and interpersonal skills.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A- Functions Functions (Domain and Range)- Shifting graphs-composition of functions Trigonometric Functions-even and odd functions Limits and Continuity Differentiation-Higher Derivatives- Derivatives Trigonometric Functions –The chain rule Application Differentiation, Increasing - decreasing and inflection points. Integration- Integration by substitutions ,the definite Integral Application of definite Integral-Volumes [15 hrs] Part(2) Invers functions & logarithm functions Invers functions & Invers Trigonometric Functions logarithm & Exponentiation

	Part(3) Hyperbolic Functions& Techniques of Integration Derivatives Hyperbolic Functions, Integration of Hyperbolic Functions Techniques of Integration Making a simplifying substitution& Completing the Square, Eliminating a Square Root Separating a fraction[15] hrs

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Basic necessity for the foundations of Technology being mathematics ,the main aim is to teach mathematical methodologies and models develop mathematical skills and enhance thinking power of students

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	3 hr	10% (10)	7	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	Functions (Domain and Range)
Week 2	Shifting graphs-composition of functions
Week 3	Trigonometric Functions-even and odd functions
Week 4	Limits and Continuity
Week 5	Introduction - Invers functions (Def of one-to-one function & invers function) Finding invers function &Invers Trigonometric Functions
Week 6	Differentiation-Higher Derivatives, Derivatives Trigonometric Functions
Week 7	**Mid-term Exam**
Week 8	Application Differentiation, Increasing - decreasing and inflection points, Chain rule Maxima and minima
Week 9	Integration- Integration by substitutions The definite Integral
Week 10	Application of definite Integral Area of the surface Volumes
Week 11	logarithm & Exponentiation Functions
Week 12	Invers of Trigonometric and hyperbolic Functions
Week 13	Derivatives Hyperbolic Functions, Integration of Hyperbolic Functions
Week 14	Techniques of Integration Making a simplifying substitution& Completing the Square,
Week 15	Techniques of Integration Eliminating a Square Root Separating a fraction
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	The MATALB Environment Overview of the user Interface commend Windows and basic Arithmetic Basic Mathematical Definition
Week 2	Completion the MATALB Environment Overview of the user Interface commend Windows and basic Arithmetic Basic Mathematical Definition
Week 3	Plotting and Graphic Basic 2D Plotting More 2D Plotting

Week 4	Completion Plotting and Graphic Basic 2D Plotting More 2D Plotting
Week 5	Basic Symbolic Calculus Calculating Limits
Week 6	Computing Derivatives& Finding Definite Integral Using MATLAB
Week 7	Exam
Week 8	MATLAB computation of Inverse functions & Invers of Trigonometric
Week 9	Completion MATLAB computation of Inverse functions & Invers of Trigonometric
Week 10	MATLAB computation Derivatives & Integration Hyperbolic Functions& Exponentiation Functions
Week 11	Completion MATLAB computation Derivatives & Integration Hyperbolic Functions& Exponentiation Functions
Week 12	MATLAB computation Infinite and improper integrals
Week 13	Review
Week 14	Exam

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Calculus Ron Larson (Author), Bruce H. Edwards	No
Recommended Texts	Essential Calculus Skills Practice Workbook with Full Solutions Chris McMullen MATLAB for Beginners A Gentle Approach Peter I. Kattan	No
Websites	https://ocw.mit.edu/courses/18-01-single-variable-calculus-fall-2006/pages/lecture-notes/ https://www.tutorialspoint.com/matlab/index.htm	

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.