5MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Calculus 2**			**Module Delivery**	
Module Type	**Basic**			☒**Theory** ☐**Lecture** ☐**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**ATU11209**				
ECTS Credits	5				
SWL (hr/sem)	**125**				
Module Level		UGI	**Semester of Delivery**		2
Administering Department			**College**	NETC	
Module Leader	Ahmed Mohammed Zeki		**e-mail**	Ahmed.alhilli@atu.edu.iq	
Module Leader's Acad. Title		Assist. Professor	**Module Leader's Qualification**		Ph.D.
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		01/10/2024	**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 integration. 2. To understand integrations and antiderivatives. 3. This course deals with the basic concept of calculus. 4. To understand integral applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The Definite Integral, the Fundamental Theorem of Calculus 2. Indefinite Integrals and the Substitution Method 3. Definite Integral Substitutions and the Area Between Curves 4. Volumes Using Cross-Sections, Volumes Using Cylindrical Shells 5. Arc Length and Areas of Surfaces of Revolution 6. The Logarithm Defined as an Integral 7. Using Basic Integration Formulas 8. Integration by Parts 9. Trigonometric Integrals 10. Trigonometric Substitutions 11. Integration of Rational Functions by Partial Fractions
Indicative Contents المحتويات الإرشادية	- Integration - Method of integration - Application of definite integrals - Hyperbolic Functions

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

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
	Homework	1	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	Indefinite Integrals and the Substitution Method, Integration of Trigonometric and Hyperbolic functions
Week 2	Integration methods, 1) Integration by parts
Week 3	Trigonometric Integrals, Integrating powers of Trigonometric functions
Week 4	Integration by Trigonometric substitutions
Week 5	Integration by partial fraction
Week 6	Integration of rational function of sinx and cosx
Week 7	Integration of rational functions contains $\sqrt[n]{x}$
Week 8	Definite Integral, the Fundamental Theorem of Calculus

Week 9	Applications of definite Integral: a) The area under the curve, b) Area between two curves
Week 10	Volumes; Volumes Using Cross-Sections, Volumes Using Cylindrical Shells
Week 11	Complex Numbers, Complex Arithmetic; Argand Diagrams and the Polar Form
Week 12	The Exponential Form of a Complex Number; De Moivre's Theorem
Week 13	Matrices; Introduction to Matrices; Matrix Multiplication
Week 14	Determinants; The Inverse of a Matrix
Week 15	Matrix solution of equations; Solution by Cramer's Rule; Solution by Inverse Matrix Method
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.