MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**MATHEMATICS I**			**Module Delivery**	
Module Type	**B**			☒**Theory** ☒**Lecture** ☐**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	ENVC101				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level		Bachelor's Degree	**Semester of Delivery**		1
Administering Department		Climate Change	**College**		Environmental Science and Technology
Module Leader	Marwan Jameel		**e-mail**		marwan.jameel@uomosul.edu.iq
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor	Name (if available)		**e-mail**		E-mail
Peer Reviewer Name		Name	**e-mail**		E-mail
Scientific Committee Approval Date		01/06/2023	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. The aim of this course is to give an introductory course on basics concepts of analysis, to teach limit, derivative, integral concepts and their applications. 2. To develop problem solving skills and understanding of calculus theories through the application of techniques.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define basic functions, take the limit of functions and investigate their continuity, 2. Take the derivatives of functions, using derivative a student can sketch and interpret the graph of functions, 3. Solve maximum and minimum problems, 4. Classify integrals, use techniques of integration, 5. Define and classify improper integrals, 6. Apply derivative and integral concepts to his/her profession. 7. Define sequences, analyze the convergence of sequences, can recognize series and use convergence tests for series, can find Taylor and Maclaurin series expansion of given functions.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Functions general overview, Limit and continuity, limits involving infinity, asymptotes.[20 hrs] Derivative and its applications-Chain rule, Mean Value theorem, Rolle?s theorem. [20 hrs] Curve sketching-Concavity, concave up, concave down, Maximum and minimum problems, Sequences and series-convergence and divergence [20 hrs] Introduction to integration, Definite integrals and fundamental theorem of calculus [15 hrs] Techniques of integration- Integration by parts, trigonometric integrals, integration of Rational functions, Improper integrals and Applications of integration. [25 hrs] Sequences and series-convergence and divergence, Convergence tests for series-Integral test, comparison test, the root and ratio test, Alternating series, Taylor and Maclaurin series.[15]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Activities are given in detail in the section of "Assessment Methods and Criteria" and "Workload Calculation" 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 type of simple experiments involving some sampling activities that are interesting to the students in order to introducing the basic topics of analysis, to teach the concepts of limit, derivative, integration and their applications.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**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**	2	10% (10)	4, 12	LO #1, 2, 10 and 11
	Assignments	All	10% (10)	Per week	All
	Home Work	All	10% (10)	Per week	All
	Projects / Lab.				
	Report and seminar	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hrs.	10% (10)	7	LO # 1-7
	Final Exam	2 hrs.	50% (50)	16	All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Functions general overview
Week 2	Limit and continuity, limits involving infinity, asymptotes
Week 3	Derivative and its applications-
Week 4	Chain rule, Mean Value theorem, Rolle's theorem
Week 5	Curve sketching-Concavity, concave up, concave down
Week 6	Maximum and minimum problems
Week 7	Introduction to integration
Week 8	Definite integrals and fundamental theorem of calculus
Week 9	Techniques of integration
Week 10	Integration by parts, trigonometric integrals
Week 11	Midterm exam
Week 12	integration of Rational functions
Week 13	Improper integrals and Applications of integration
Week 14	Sequences and series-convergence and divergence
Week 15	Taylor and Maclaurin series
Week 16	**Final exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Thomas, Calculus and Analytic Geometry, Addison-Wesley 1996.	Yes

Recommended Texts	Silverman R.A, Calculus with analytic geometry, Prentice-Hall Inc. 1985. Adams, R.A, Calculus, a complete course, Addison-Wesley 2003.	No
Websites	https://www.youtube.com/playlist?list=PLF797E961509B4EB5	

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.