MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mathematics I**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☐**Lecture** ☐**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**CIV11203**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level			**Semester of Delivery**	1	
Administering Department	Civil Engineering		**College**	Al-Mansour University Colloge	
Module Leader	Dr. Adel Naher		**e-mail**	adil.abed@muc.edu.iq	
Module Leader's Acad. Title	assistant professor		**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	12/9/2023		**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. Introduce students to some basics of mathematics, which contribute to understanding some of the theories Based on solutions to some engineering problems 2. Solving some engineering problems using basic mathematics theories 3. The ability to find solutions to problems through mathematical methods and drawing.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. knowledge of Algebraic and trigonometric functions, their types, properties, and graph. 2. knowledge of the limits and continuity of the functions. 3. Teaching students to evaluate the limits of algebraic and trigonometric functions and to benefit from their definition in solving some Engineering problems and also finding the solutions. 4. Teaching students to define derivatives, find their solutions, and benefit from them in some applications. 5. The ability to Drawing functions and extracting the optimization, as well as the meaning of the rate of change by using derivatives. 6. knowledge the concept of integrals and finding the results of definite and indefinite integrals. 7. The ability to calculate the area under a curve or between two functions, curve length, as well as finding volumes using integration applications
Indicative Contents المحتويات الإرشادية	***Prerequisites for Calculus*** Trigonometric Functions, Function and their Graphs, Even and Odd Functions, Equation of Lines and Circles. [10hr] ***Limits and Continuity*** Limits, Definition, Limits Involving Infinity, Limits Involving (sin θ)/θ, Continuous Functions. [10hr] ***Differentiation*** Differentiation of a function *f(x)*, Differentiation Rules, Derivatives of Trigonometric Functions, Second and higher order derivative, Chain Rule, Implicit Differentiation. [10hr] ***Applications of Derivatives*** Maximum and minimum, Equation of the line, Applied Optimization, The Mean Value Theorem, Concavity and Curve Sketching. [10hr] ***Integration*** Indefinite Integrals, Integration of Trigonometric Functions, The Definite Integral, Properties of define integral. [10hr] ***Application of Define Integrals*** Area between Curves, Arc length (length of the Curve), Surface Area for Revolution, volumes. [10hr]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.13
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	20% (20)	5 and 10	LO #1, #2 and #7
	Online Assignments	2	10% (10%)	3 and 12	LO #1, #7
	Onsite Assignments	1	5% (5)	7	All
	Report	1	5% (5)	9	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	6 & 11	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	Trigonometric Functions
Week 2	Function and their Graphs, Even and Odd Functions,
Week 3	Equation of Lines and Circles. Limits, Definition
Week 4	Limits Involving Infinity, Limits Involving $(\sin \theta)/\theta$
Week 5	Continuous Functions, Differentiation of a function *f(x)*
Week 6	Differentiation Rules, Second and higher order derivative,
Week 7	Derivatives of Trigonometric Functions,
Week 8	Chain Rule, Implicit Differentiation
Week 9	Maximum and minimum, Equation of the line.
Week 10	Applied Optimization, The Mean Value Theorem
Week 11	Concavity and Curve Sketching
Week 12	Indefinite Integrals, Integration of Trigonometric Functions,
Week 13	The Definite Integral, Properties of define integral
Week 14	Area between Curves, Arc length (length of the Curve),
Week 15	Surface Area for Revolution, volumes
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**George B. Thomas, JR. and Ross L. Finney** ***"Calculus"***,11th Ed. 2010.	yes
Recommended Texts	**THOMAS'CALCULUS** *Based on the original work by* George B. Thomas, Jr. Twelfth Edition	yes
Websites		

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.