MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information
معلومات المادة الدراسية

Module Title	**Calculus II**	**Module Delivery**	
Module Type	**Basic**	☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT108**		
ECTS Credits	**7**		
SWL (hr/sem)	**175**		

Module Level	UG1	**Semester of Delivery**	2
Administering Department	STAT	**College**	CSM
Module Leader	Dr. Heyam Abed Al-Majeed Hayawi	**e-mail**	he.hayawi@uomosul.edu.iq
Module Leader's Acad. Title	Assistant Prof.	**Module Leader's Qualification**	Ph.D.
Module Tutor	Dr. Noorsal Ahmed Zeenalabiden	**e-mail**	zeennorsal@uomosul.edu.iq
Peer Reviewer Name		**e-mail**	E-mail
Scientific Committee Approval Date	10/06/2023	**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	The goal of this course is to the goal of this course is to further your understanding and appreciation of calculus as calculus I.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Being able to use the integration techniques such as integration by parts, trigonometric Substitution, and partial Fractions. 2. Gaining the ability to evaluate improper integrals where one of the limits of integration is infinite or not continuous. 3. Understanding the moments and centers of mass. Being able to find the balancing point of a planar area, or lamina. 4. Understanding the infinite series and their connection to the functions. 5. Defining infinite series is perhaps the most important topic in Calculus II. The concept of infinite series is based on sequences. 6. Being able to approximate a function with a polynomial to linear form. 7. Defining vectors and their properties.
Indicative Contents المحتويات الإرشادية	**Part A - Techniques of Integration** In this part, students learn various techniques to evaluate integrals more effectively. They explore methods such as integration by substitution, integration by parts, and trigonometric and hyperbolic substitutions. They also delve into partial fraction decomposition, which involves breaking down rational functions into simpler fractions. [42 hrs.] **Part B - Infinite Series** Infinite series plays a significant role in Calculus II. Students investigate the convergence and divergence of series and learn about important series, such as geometric series. Additionally, they encounter power series and Taylor series, which expand functions as infinite polynomials. [30 hrs.] **Part C - Vectors** Vectors and their properties are examined in this part. Students learn about vector operations, including addition, subtraction, and scalar multiplication. They explore the dot product and cross product, understanding their geometric and algebraic interpretations. [12 hrs.] **Part D - Moments, Centers of Mass** The students understand how to calculate moments using the cross-product and explore the concept of moments in different contexts. Students study the definition of the center of mass.[6 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Preparing Prerequisite Knowledge, begin each topic with real-world examples and applications to demonstrate the relevance and practicality of calculus to Encourage students to explore how calculus concepts are applied in various fields, such as statistics and computer science. Providing timely feedback on student work to identify, address errors, and reinforce learning through quizzes. Promoting collaborative learning by assigning problem-solving tasks. Encourage students to work together, explain concepts to their peers, and engage in collaborative problem-solving.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
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	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	15% (15)	5, 12	LO #1- #4
	Assignments	4	15% (15)	3,6,10, and 13	LO #3, #4
	Report	1	10% (10)	13	All
	Midterm Exam	2hr	10% (10)	7	LO #1 - #7

Summative assessment	**Final Exam**	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	**Material Covered**
Week 1	Basic Functions of Calculus and Limits.
Week 2	Trigonometric Integrals
Week 3	Integration by Parts,
Week 4	Integration by Trigonometric Substitution
Week 5	Integration by Partial Fractions
Week 6	applications of Integration methods
Week 7	Mid-term Exam + Improper Integrals
Week 8	Moments, Centers of Mass, and Centroids
Week 9	Sequences and Limits
Week 10	Infinite Series—Geometric Series
Week 11	Series, Divergence, and
Week 12	Taylor Polynomials and Approximations
Week 13	Power Series and Intervals of Convergence
Week 14	Vectors in the Plane
Week 15	The Dot Product of Two Vectors
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	NO	No
Recommended Texts	Understanding Calculus II: Problems, Solutions, and Tips, by Professor Bruce H. Edwards, University of Florida, 2013.	No
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	(قيد المعالجة) راسب	(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.