MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information		
معلومات المادة الدراسية		
Module Title	**Mathematics**	**Module Delivery**
Module Type	**Support**	☒ **Theory**
Module Code	**Che-1106**	☒ **Lecture**
ECTS Credits	**4**	☒ **Lab**
SWL (hr/sem)	**100**	☐ **Tutorial** ☐ **Practical** ☐ **Seminar**

Module Level	1	**Semester of Delivery**	1
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Suhad Kareem Hamid	**e-mail**	suhadkareem@uodiyala.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	MSc
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	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	Teaching the student functions and the concept of continuity for functions and inequalities, as well as derivation, methods of integration and operations on them, and how to use them in various scientific subjects and harness them to solve mathematical problems that they face in various scientific subjects. Teaching and educating students on all the necessary and necessary information related to mathematics, which qualifies them to model scientific concepts into mathematical equations..
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Cognitive goals A1- Enabling students to obtain knowledge and understanding of modern mathematics A2- Enable students to obtain knowledge and understanding of the structure of functions and equations, test their properties, and perform integrations and differentials on them. A3- Enabling students to obtain knowledge and understanding of mathematical integrations and differentials of functions. A4- Enabling students to obtain knowledge and understanding of numerical analysis methods and types of equations B - The soft skills objectives of the course B1 - the skill of knowing - remembering B2 - Memory and analysis skills B3 - Use and modeling skills
Indicative Contents المحتويات الإرشادية	Subtraction-minus, greater than, take away, fewer than, less than, subtract, decreased by. Multiplication-product, multiply, multiplied by, times. Division-quotient, dividend, divide, divided by, each, per, average, divided equally. Equal-the same, equals, the same as, equivalent, is equal to.

	Learning and Teaching Strategies
	استراتيجيات التعلم والتعليم
Strategies	

	Power point lecture method using data show and whiteboard.
	Explanation and clarification.
	Providing students with the basics and additional topics related to the outputs of inorganic chemical thinking and analysis.
	Forming discussion groups during lectures to discuss inorganic chemistry topics that require thinking and analysis.
	Asking students a set of thinking questions during the lectures such as what, how, when and why for specific topics.
	Giving students homework that requires self-explanations in causal ways.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل		**100**	

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
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #7

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

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Limits and continuity ,Estimating limits from graphs, Estimating limits from tables Formal definition of limits (epsilon-delta),Properties of limits,Limits by direct substitution, Limits using algebraic manipulation, Strategy in finding limit
Week 2	Continuity at a point, Continuity over an interval, Removing discontinuities, Infinite limits , Limits at infinity, Intermediate value theorem
Week 3	Derivatives: definition and basic rules, Estimating derivatives, definition and basic rules Differentiability, definition and basic rules, Power rule, chain rule and other More chain rule practice,chain rule and other advanced topic
Week 4	Implicit differentiation, Implicit differentiation (advanced examples), Differentiating inverse functions, Derivatives of inverse trigonometric function
Week 5	Second derivatives, Disguised derivatives, Logarithmic differentiation, exponentials differentiation
Week 6	Applications of derivatives,Approximation with local linearity, Applications of derivatives L'Hôpital's rule, L'Hôpital's rule, composite exponential functions
Week 7	Integrals ,Indefinite integrals of common functions, Integrals .Definite integrals of common Integrating with u-substitution,
Week 8	Midterm Exam
Week 9	Integrating using long division and completing the squares Integrating using trigonometric identities

Week 10	Integration of rational function, Integration by parts, Integration by fraction partition
Week 11	Sequences, Series and the integral test, Comparison tests
Week 12	Alternating Series, absolute convergence, ratio and root tests
Week 13	Strategy for testing series, Power series, representations of functions as power series
Week 14	Taylor and Maclaurin series
Week 15	Applications of Taylor polynomials
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus)	
المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	*Foundations of the Calculus*, DeBaggis, Henry F.; Miller, Kenneth S. (1966) Differential and Integral Calculus, Philip Franklin ·	Yes
Recommended	Limits and Continuity, Teddy C. J. Leavitt	No

Texts	
Websites	https://www.cuemath.com/calculus/

<table>
<tr><td colspan="5" align="center">Grading Scheme
مخطط الدرجات</td></tr>
<tr><td>Group</td><td>Grade</td><td>التقدير</td><td>Marks %</td><td>Definition</td></tr>
<tr><td rowspan="5">Success Group
(50 - 100)</td><td>A - Excellent</td><td>امتياز</td><td>90 - 100</td><td>Outstanding Performance</td></tr>
<tr><td>B - Very Good</td><td>جيد جدا</td><td>80 - 89</td><td>Above average with some errors</td></tr>
<tr><td>C - Good</td><td>جيد</td><td>70 - 79</td><td>Sound work with notable errors</td></tr>
<tr><td>D - Satisfactory</td><td>متوسط</td><td>60 - 69</td><td>Fair but with major shortcomings</td></tr>
<tr><td>E - Sufficient</td><td>مقبول</td><td>50 - 59</td><td>Work meets minimum criteria</td></tr>
<tr><td rowspan="2">Fail Group
(0 – 49)</td><td>FX – Fail</td><td>راسب (قيد المعالجة)</td><td>(45-49)</td><td>More work required but credit awarded</td></tr>
<tr><td>F – Fail</td><td>راسب</td><td>(0-44)</td><td>Considerable amount of work required</td></tr>
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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.