MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

<table>
<tr><td colspan="4" align="center">Module Information
معلومات المادة الدراسية</td></tr>
<tr><td>Module Title</td><td colspan="2" align="center"><strong style="color:red">Mathematics II</td><td>Module Delivery</td></tr>
<tr><td>Module Type</td><td colspan="2" align="center">Basic Learning Activity</td><td rowspan="4">☒Theory
☐ Lecture
☐ Lab
☒Tutorial
☐Practical
☐Seminar</td></tr>
<tr><td>Module Code</td><td colspan="2" align="center"><strong style="color:red">Math122</td></tr>
<tr><td>ECTS Credits</td><td colspan="2" align="center">5</td></tr>
<tr><td>SWL (hr/sem)</td><td colspan="2" align="center"><strong style="color:red">125</td></tr>
<tr><td>Module Level</td><td>UGI</td><td>Semester of Delivery</td><td>Two</td></tr>
<tr><td>Administering Department</td><td>Type Dept. Code</td><td>College</td><td>Type College Code</td></tr>
<tr><td>Module Leader</td><td>Sarmad A. Jameel Altaie</td><td>e-mail</td><td>sarmad.a.altaie@uotechnology.edu.iq</td></tr>
<tr><td>Module Leader's Acad. Title</td><td>Senior Lecturer</td><td>Module Leader's Qualification</td><td>M.Sc.</td></tr>
<tr><td>Module Tutor</td><td>Sarmad A. Jameel Altaie</td><td>e-mail</td><td>sarmad.a.altaie@uotechnology.edu.iq</td></tr>
<tr><td>Peer Reviewer Name</td><td>Azhar Malik</td><td>e-mail</td><td>120020@uotechnology.edu.iq</td></tr>
<tr><td>Scientific Committee Approval Date</td><td>01/06/2023</td><td>Version Number</td><td>1.0</td></tr>
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<tr><td colspan="4" align="center">Relation with other Modules
العلاقة مع المواد الدراسية الأخرى</td></tr>
<tr><td>Prerequisite module</td><td>Math112</td><td>Semester</td><td>One</td></tr>
<tr><td>Co-requisites module</td><td>None</td><td>Semester</td><td></td></tr>
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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To understand the Integration of a function and its relation to the derivative. 2. To develop problem solving skills using Indefinite integration formulas. 3. To get a good grip on various Integration Techniques. 4. To have a full grasp of definite integrals. 5. To be able to deal with Applications of definite Integral.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize aspects about Integration Fundamentals and list various Integrals. 2. Being able to deal with Integration by Substitution technique. 3. Evaluating complex integrals using Integration by Parts technique. 4. Analyzing Integrals Involving Trigonometric Functions. 5. Using Trigonometric Substitution to evaluate the Integrals. 6. Evaluate Rational Functions Integrals using Partial Fractions technique. 7. Discuss Integrals Involving Quadratics. 8. Describe completing the square process to solve Integrals Involving Roots. 9. Explain Definite Integral. 10. Discuss the Average value of a function by definite Integral. 11. Being able to use definite Integral in order to evaluate the Length of a curve. 12. Apply definite Integral to find an Area under a Curve. 13. Apply definite Integral to find an Area between two Curves. 14. Identify Voltage across a Capacitor using definite Integral. 15. Explain the Work by a Variable Force using definite Integral.
Indicative Contents المحتويات الإرشادية	**Part A – Pre Differential Calculus.** This part will discuss Integration Fundamentals and Basic formulas to provide background to proceeding two parts. [2 hrs] Revision problem tutorial sessions [1 hrs] **Part B – Differential Calculus.** This part will discuss several important Integration Techniques (Integration by Substitution, Integration by Parts, Integrals Involving Trigonometric Functions, Integration by Trigonometric Substitution, Integration of Rational Functions by Partial Fractions, Integrals Involving Quadratics, Integrals Involving Roots, Definite Integral.) [16 hrs] Revision problem tutorial sessions [8 hrs] **Part C – Interpretations of the derivative.** This part will take the knowledge provided in the previous parts and employ it to analyze various applications to definite integral such as, Average value of a function, Length of the curve, Area under a Curve, Area between two Curves, Voltage across a Capacitor, Work by a Variable Force.) [12 hrs] Revision problem tutorial sessions [6 hrs]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The primary approach for presenting this module will be encouraging students to participate in the activities, as well as enhancing and improving their critical thinking abilities. This will be accomplished through lectures, tutorials, debates, and assessing activities.

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	77	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
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	5% (5)	5 and 11	LO #1 - #4 and #5 - #10
	Assignments	2	5% (5)	6 and 13	LO #1 - #5 and #6 - #12
	Projects / Lab.	N/A	N/A	N/A	
	Report	N/A	N/A	N/A	
Summative assessment	Midterm Exam	2hr	20% (20)	8	LO #1 - #7
	Final Exam	3hr	70% (70)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Introduction to Integrations (**Integration Fundamentals, Basic formulas.**)**
Week 2	**Integration Techniques (**Integration by Substitution.**)**
Week 3	**Integration Techniques (**Integration by Parts.**)**
Week 4	**Integration Techniques (**Integrals Involving Trigonometric Functions.**)**
Week 5	**Integration Techniques (**Integration by Trigonometric Substitution.**)**
Week 6	**Integration Techniques (**Integration of Rational Functions by Partial Fractions.**)**
Week 7	**Integration Techniques (**Integrals Involving Quadratics.**)**
Week 8	**Integration Techniques (**Integrals Involving Roots.**)**
Week 9	**Integration Techniques (**Definite Integral.**)**
Week 10	**Applications of definite Integral (**Average value of a function.**)**
Week 11	**Applications of definite Integral (**Length of the curve.**)**
Week 12	**Applications of definite Integral (**The Area under a Curve.**)**
Week 13	**Applications of definite Integral (**The Area between two Curves.**)**
Week 14	**Applications of definite Integral (**Voltage across a Capacitor.**)**
Week 15	**Applications of definite Integral (**Work by a Variable Force.**)**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Tutorial)
المنهاج الاسبوعي للدرس التدريبي

	Material Covered
	Each weak a questions sheet will be solved and discussed related to the material covered in the theoretical lecture.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Joel R. Hass, Christopher E. Heil, Maurice D. Weir, "Thomas' Calculus: Early Transcendentals", Pearson Education, 14th Edition, (January 1, 2017), ISBN-13 : 978-0134439020.	Yes
Recommended Texts	Anthony Croft, Robert Davison, "Mathematics for Engineers: A Modern Interactive Approach", Prentice Hall, 3rd edition, (January 1, 2008), ISBN-13 : 978-0132051569.	No
Websites	https://www.khanacademy.org/math/integral-calculus/ic-integration	

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.