

	<p>Ministry of Higher Education and Scientific Research - Iraq</p> <p>University of Warith Al_Anbiyaa.... College of Engineering Oil and Gas Department</p>	
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### Module Information

معلومات المادة الدراسية

Module Title	<b>Calculus II</b>		Module Delivery	
Module Type	<b>Basic</b>		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	<b>ENG123</b>			
ECTS Credits	<b>6</b>			
SWL (hr/sem)	<b>150</b>			
Module Level	UGI	Semester of Delivery		2
Administering Department	OGE	College	Engineering	
Module Leader	Nihad Abdul Jalil		e-mail	Nihad.Abduljalil@uowa.edu.iq
Module Leader's Acad. Title	Pro.	Module Leader's Qualification		Ph.D
Module Tutor	2	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	ENG113	Semester	1
Co-requisites module	None	Semester	

## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<p>1-The main objective is to understand the process of integration and its benefits in practical life and to enable the student to solve various problems of integration</p> <p>2-Study different matrices and explain the usefulness of matrices in petroleum industry</p> <p>3-Study and draw complex numbers so that the student can understand the purpose of complex numbers</p>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>1- Teaching the student, the scientific basis and the benefits of integration</p> <p>2- Carry out the integration process using integration methods</p> <p>3- Integration of trigonometric and quadrilateral functions</p> <p>4- Study definite integration and its applications in calculating areas and volumes</p> <p>5- Studying matrices, knowing their properties, mathematical operations related to them, and how to benefit from them in practical life</p> <p>6- Studying Complex Number, knowing their properties, mathematical operations related to them, and how to benefit from them in practical life</p>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <p><b>Part I: fundamentals of integration</b></p> <p>Technique of Integral, Defined integral, Mode of Integral, Integral the Odd and even powers of sine and cosine. (10 hrs)</p> <p><b>Part II: method of integration</b></p> <p>Method of integration: Integration by Part, Integral by trigonometric substitutions, Integral by completing the square, Integral by reducing an improper fraction, Integral by partial fraction</p> <p>Integral by Rational function. (30 hrs)</p> <p><b>Part III: Definite Integral</b></p> <p>Application of Definite Integral, Areas and Volume. (5 hrs)</p> <p><b>Part IIII: Matrices</b></p> <p><b>Determinants and Introduction to Matrices, Determine the inverse of matrices.</b> (10 hrs)</p> <p><b>Part IIIII: Complex Number</b></p> <p>Polar Coordinates, Complex Number, Complex Variables, Draw the complex function. (20 hrs)</p>

## Learning and Teaching Strategies

## استراتيجيات التعلم والتعليم

<b>Strategies</b>	The major technique for delivering this module will be a lot of homework and solved exercises, as well as attempting to connect mathematical operations to real life for the purpose of enhancing interest and solidifying knowledge.
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## Student Workload (SWL)

## الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	78	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	150		

## Module Evaluation

## تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	10% (10)	4, 11	1,2,3,4 and 5
	<b>Assignments</b>	2	10% (10)	3, 10	1,2,3,4 and 5
	<b>Projects /</b>	1	10% (10)	Continuous	All
	<b>Report</b>	1	10% (10)	13	1,2,3,4,5 and 6
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	10% (10)	8	1,2, and 3
	<b>Final Exam</b>	2hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

## Delivery Plan (Weekly Syllabus)

## المنهاج الاسبوعي النظري

	Material Covered
Week 1	Technique of Integral, Defined integral, Mode of Integral
Week 2	Method of integration: Integration by Part
Week 3	Integral the Odd and even powers of sine and cosine
Week 4	Integral by trigonometric substitutions
Week 5	Integral by completing the square
Week 6	Integral by reducing an improper fraction
Week 7	Integral by partial fraction
Week 8	Integral by Rational function
Week 9	Application of Definite Integral, Areas and Volume
Week 10	Determinants and Introduction to Matrices
Week 11	Determine the inverse of matrices
Week 12	Polar Coordinates
Week 13	Complex Number
Week 14	Complex Variables
Week 15	Draw the complex function
Week 16	Preparatory week before the final Exam

## Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Strang, G. (2017). Calculus. United States: Wellesley-Cambridge Press.	yes
Recommended Texts		
Websites	<a href="https://www.geogebra.org/3d?lang=en">https://www.geogebra.org/3d?lang=en</a> <a href="https://www.wolframalpha.com/">https://www.wolframalpha.com/</a>	

## 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.