وزارة التعليم العالي والبحث العلمي جـــهاز
الإشـــراف والتقـــويم العلـمي
دائرة ضمان الجودة والاعتماد الأكاديمي

استمارة وصف البرنامج الاكاديمي للعام الدراسي ٢٠٢٤_٢٠٢٥ للكليات والمعاهد

الجامعة : جامعة شط العرب الاهلية
الكلية /المعهد : الكلية التقنية الهندسية
القسم العلمي : قسم هندسة تقنيات الأجهزة الطبية
تاريخ ملء الملف : 2025/8/4

التوقيع :
اسم رئيس القسم : أ.م.د. نبيل حسين
التاريخ : 2025/8/4

التوقيع :
اسم المعاون العلمي: أ.د. كامل حسين السوداني
التاريخ : 4/8/2025

الاستاذ الدكتور
كامل حسين السوداني
كيمياء تحليلية

الكلية التقنية الهندسية
اللجنة الامتحانية
هندسة تقنيات الاجهزة الطبية

دقق الملف من قبل
شعبة ضمان الجودة والأداء الجامعي
اسم مدير شعبة ضمان الجودة والأداء الجامعي: التاريخ
/ /
التوقيع

مصادقة السيد العميد

أ.م.د. مازن عبدالاله علوان
عميد الكلية التقنية الهندسية

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Integral Mathematics			**Module Delivery**	
Module Type	Support			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	MIET1204				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level		UGI	**Semester of Delivery**		2
Administering Department		MITE	**College**	EETC	
Module Leader	Awss Jabbar Majeed		**e-mail**	awss_alogaidi@mtu.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Ph.D.
Module Tutor			**e-mail**		
Peer Reviewer Name		Saleem Lateef Mohammed	**e-mail**	Saleem_lateef_mohammed@mtu.edu.iq	
Scientific Committee Approval Date		15/11/2023	**Version Number**		2.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Differential Mathematics	**Semester**	1
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. To develop problem solving skills and understanding of Integral calculus through a broad range of Integration techniques. 2. To understand theory and methods of integrations and apply it on various types of functions. 3. This is the basic subject for all engineering fields 4. Demonstrate basic knowledge and understanding of a core of linear algebra and applied mathematics. 5. Introduce student to integration of trigonometric functions and their inverses.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Identify the integration. 2. Interpret definite and indefinite integrals. 3. Integrate functions resulting in inverse trigonometric functions. 4. Integrate functions involving exponential and logarithmic functions. 5. Learn approximation techniques for integration. 6. Calculate the areas of curved regions by using integration methods. 7. Find the volume of a solid of revolution using various integration methods. 8. Learn how to find the length of a plane curve for a given function. 9.Teaching students how to calculate the inverses of matrices and how to identify them. 10. Teaching students how to find the solution of a homogeneous system of linear equations. 11. Teaching students how to find the eigenvalues of a matrix and the corresponding eigenvectors of a matrix. 12. Determine the diagonalizability of a given matrix.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction to integration. Methods of integration and Basics of Definite and indefinite Integration, Integration of trigonometric and inverse functions.Integration of the exponential functions, Integration of logarithmic functions. Integration of Hyperbolic and inverse hyperbolic functions, numerical integration and applications of the definite integrals. [30 hrs] Area of surface, Volume of revolution, Length of plane curve, Matrices and Inverse of matrix, Matrix DiagonalizationSolution of homogeneous systems, Eigenvalues, and Eigenvectors[40 hrs] Revision problem classes [3 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The major approach used to offer this module will be to promote student engagement in the exercises while also enhancing and broadening their critical thinking abilities. Classes and interactive lessons will be used to achieve this.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	47	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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	10% (10)	5 and 12	LO #1- #4 and #6 - #12
	Online assignments	2	10% (10)	3 and 13	LO #1- #4 and #6 - #12
	Report	1	10% (10)	14	LO #1- #6 and #8 - #11
	OnSite assignment	1	10% (10)	4 and 11	LO #1- #9
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #5
	Final Exam	3hr	50% (50)	16	LO #1- #12
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to integration.
Week 2	Methods of integration and Basics of Definite and indefinite Integration.
Week 3	Integration of trigonometric and inverse functions.
Week 4	Integration of the exponential functions.
Week 5	Integration of logarithmic functions.
Week 6	Integration of Hyperbolic and inverse hyperbolic functions.
Week 7	**Mid-term Exam** + numerical integration and applications of the definite integrals.
Week 8	Area of surface.
Week 9	Volume of revolution.
Week 10	Length of plane curve.
Week 11	Matrices and Inverse of matrix.
Week 12	Matrix Diagonalization
Week 13	Solution of homogeneous systems
Week 14	Eigenvalues and Eigenvectors
Week 15	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Notes on Calculus II Integral Calculus Miguel A. Lerma	No
Recommended Texts	Thomas ' Calculus (pdf) Fouteenth edition Based on the original work by GEORGE B. THOMAS, JR.	No
Websites	https://sites.math.northwestern.edu/~mlerma/courses/math214-2-02f/notes/c2-all.pdf http://dl.konkur.in/post/Book/Paye/Thomas-Calculus-14th-Edition-%5Bkonkur.in%5D.pdf	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group	**A -** Excellent	امتياز	90 - 100	Outstanding Performance

(50 - 100)	**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.