	Ministry of Higher Education and Scientific Research - Iraq University of Warith Alanbyaa Aircraft engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Mathematics II II رياضيات			**Module Delivery**	
Module Type	CORE			**Theory**	
Module Code	MATH122				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Aircraft		**College**	Engineering	
Module Leader	Asst. Lec. Hawraa Badri		**e-mail**	bhawraa660@gmail.com	
Module Leader's Acad. Title	Asst. Lec.		**Module Leader's Qualification**	Masters	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval	03/04/2024		**Version Number**	1.0	

Relation With Other Modules العالقة مع المواد الدراسية ألخرى			
Prerequisite module	MATH112	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To provide a course of high academic quality in Mathematics in a challenging and supportive learning environment that encourages students to reach their full potential, personally and academically. 2. To provide a course that is suitable both for students aiming to pursue research and for students going into other careers. 3. To provide an integrated system of teaching which can be tailored to the needs of individual students. 4. To develop in students the capacity for learning and clear logical thinking. 5. To continue to attract and select students of outstanding quality. 6. To provide an intellectually stimulating environment in which students have the opportunity to develop their skills and enthusiasm to their full potential.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Knowledge and Understanding: This Course will develop learners' ability to: 1. Understand and use mathematical concepts and relationships 2. Select and apply operational skills in algebra, geometry, trigonometry and statistics within mathematical contexts 3. Select and apply skills in numeracy 4. Use mathematical models 5. Use mathematical reasoning skills to interpret information, select a strategy to solve a problem, and communicate solutions. Subject-specific skills: It is expected that learners will develop the following: 6. Broad, generic skills through this Course. 7. Skills for Learning, and drawn from the main skills areas listed below. 8. Skills for Life 9. and Skills for Work These must be built into the Course where there are appropriate opportunities.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **Integration:** Definite integration, basic integration formulas, integration by parts, trigonometric functions integrals, odd and even powers of sine and cosine, trigonometric functions substitutions, completing the square method, integration of rational functions by partial fractions. [34 hrs] **Applications of definite integrals:** The area under the graph of nonnegative functions, mean value theorem for definite integrals, definite integral, polar coordinates, double integral,

	distance, velocity and acceleration, volumes by slicing and rotation about an axis, volumes by cylindrical shells, lengths of plane curves, areas of surfaces of revolution. [25 hrs] **Complex numbers:** Algebra of complex numbers, Argand diagrams, Euler's formula, De Moivre's theorem. Roots. [12 hrs] **Curve fitting:** Simple linear regression, Polynomial regression. [12 hrs] **General Applications** [4 hrs]
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	All lectures reflect the higher values, purposes and principles. They offer flexibility, provide more time for learning, focus on skills and applying to learn, and scope for personalization and choice. In this Course, and its component Units, there will be an emphasis on skills development and the application of those skills. Assessment approaches will be proportionate, fit for purpose and will promote best practices, enabling learners to achieve the highest standards they can. This course provides learners with opportunities to continue to acquire and develop the attributes and capabilities of the four capacities, as well as skills for learning, skills for life and skills for work.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خالل الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خالل الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خالل الفصل	150		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	20% (20)	3, 6, 9, 12	LO #1, 2, 3,4 and 9
	Assignments	2	10% (10)	5, 10	LO #6, 7
	Projects / Lab.	-	-	-	-
	Report	1	10% (10)	13	LO #8
Summative assessment	Midterm Exam	1.5 hr	10% (10)	7	LO # 1-5
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج االسبوعي النظري

	Material Covered
Week 1	**Integration:** Definite integration. Basic integration formulas.
Week 2	**Methods of Integration:** Integration by parts.
Week 3	Trigonometric functions integrals.
Week 4	Odd and even powers of sine and cosine.
Week 5	Completing the square method.
Week 6	Partial fractions.
Week 7	**Applications of definite integrals:** The area under the graph of nonnegative functions. Mean value theorem for definite integrals. Definite integral. Double integral.
Week 8	Distance, velocity and acceleration. Volumes by slicing and rotation about an axis.
Week 9	Volumes by cylindrical shells. Lengths of plane curves. Areas of surfaces of revolution.
Week 10	**Polar coordinates**
Week 11	**Complex numbers:** Algebra of complex numbers. Argand diagrams. Euler's formula.
Week 12	De Moivre's theorem. Roots.
Week 13	**Curve fitting:** Simple linear regression.
Week 14	Polynomial regression.
Week 15	**General Applications**
Week 16	**Preparatory week before the Final Exam**

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

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	George B. Thomas, Jr., Maurice D. Weir and Joel Hass, Thomas' calculus, 12th edition, Addison Wesley, 2010.	Yes
Recommended Texts	H.S. Gangwar, Prabhakar Gupta. A textbook engineering mathematics-I. Second edition, 2010.	No
Websites		

APPENDIX:

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB 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.