MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	**Calculus (II)**		**Module Delivery**
Module Type	**B**		• ☐ **Theory** • ☒ **Lecture** • ☐ **Lab** • ☐ **Tutorial** • ☐ **Practical** • ☐ **Seminar**
Module Code	**CREQ**		
ECTS Credits	**4**		
SWL (hr/sem)	**100**		
Module Level		**Semester of Delivery**	2
Administering Department	Type Dept. Code	**College**	Type College Code
Module Leader	Name	**e-mail**	E-mail
Module Leader's Acad. Title	Professor	**Module Leader's Qualification**	Ph.D.
Module Tutor	Name (if available)	**e-mail**	E-mail
Peer Reviewer Name	me	**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 Aims **أهداف المادة الدراسية**	The aim of this course is to introduce the concept of integration, study various techniques of integration, test improper integrals for convergence and illustrate some applications of integration. Student will gain proficiency to use integration to solve real world problems such as area and volumes problems.
Module Learning Outcomes **مخرجات التعلم للمادة الدراسية**	After completing the course, students have the ability 1. To determine proper integral of one variable functions. 2. To determine integral involving the fundamental theorem of Calculus and method of substitution. 3. To determine the solution of problems involving the integral of one variable function. 4. To compute integral involving transcendental functions. 5. To compute integral with advanced integration techniques. 6. To demonstrate ability to think critically by recognizing patterns and determining and using appropriate techniques for solving a variety of integration problems. 7. To solve indeterminate forms and improper integral problems. 8. To solve the parametric representation of curves in the plane, calculate the length of a plane curve and solving area and volume application problems. 9. To sketch the graph of a polar equation and the area problems in the polar coordinate system. 10. To demonstrate an intuitive and computational understanding for integral applications by solving a variety of problems from physics, engineering and mathematics.
Indicative Contents **المحتويات الإرشادية**	1. Proper integral, Fundamental Theorem of Calculus, basic rules of integration. 2. Methods of integrations, method of substitution, partial integration method, trigonometry integral and integral of rational function with partial fraction. 3. Improper integrals, test for convergence and divergence of improper integrals. 4. Application of Definite Integrals, Mean value theorem of integration, Area, solid revolution volume and Arc length. 5. polar coordinates, Moments and center of mass and Average value of functions.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The module will be presented to the students through a specified series of lectures, supported by problem solving practice carried out in interactive tutorials. These tutorials will be supported by practice and directed study outside the classroom. Formative assessment takes place throughout the module during tutorials and feedback is given during these tutorials.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) **الحمل الدراسي المنتظم للطالب خلال الفصل**	47	**Structured SWL (h/w)** **الحمل الدراسي المنتظم للطالب أسبوعيا**	3
Unstructured SWL (h/sem) **الحمل الدراسي غير المنتظم للطالب خلال الفصل**	53	**Unstructured SWL (h/w)** **الحمل الدراسي غير المنتظم للطالب أسبوعيا**	3.5333
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)	6, 10	LO #1, 2, and 6
	Assignments	2	10% (10)	7, 12	LO # 3 and 7
	Projects / Lab.	1	10% (10)	continuous	
	Report	1	10% (10)	14	LO # 5, 7 and 8
Summative assessment	**Midterm Exam**	2	10% (10)	5,11	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Indefinite integrals, Definite integrals, The fundamental theorems of integrals, Basic Integration Formulas.
Week 2	Integration by substitution
Week 3	Integration of certain powers of trigonometric and hyperbolic functions
Week 4	Integrals involving trigonometric substitutions, Integrals involving hyperbolic substation .
Week 5	Mid-Term Exam + Integrals involving quadratic Function
Week 6	Integration by parts
Week 7	Integration of Rational Functions
Week 8	Integration of Irrational Functions, Integration of Rational Functions of Trigonometric
Week 9	Improper integrals: Definition of improper integral and examples
Week 10	Application of Definite Integrals: Area under the curve
Week 11	Mid-Term Exam + Area between two curves
Week 12	Volume of solid of revolution
Week 13	Arc length, Area of surface of revolution
Week 14	Area in polar coordinates
Week 15	Average value of functions, Moments and center of mass
Week 16	**Preparatory week before the final Exam**

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

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Calculus and Analytic Geometry by Thomas	Yes
Recommended Texts	Calculus with application brief version	No
Websites	www.mathhandbook.com	

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.