	Ministry of Higher Education and Scientific Research - Iraq University of Tikrit College of Petroleum Process Engineering Department of Petroleum and Gas Refining Engineering	

MODULE DESCRIPTOR FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	MATHEMATICS II			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	PGR123				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	PGR		**College**	PPE	
Module Leader	Hiba Alaa Abdulkareem		**e-mail**	Heba.alaa@tu.edu.iq	
Module Leader's Acad. Title	Asst. Lect.		**Module Leader's Qualification**	Msc	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	1.0	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Mathematics I	**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	Provide the students with the required basics of mathematics, functions, integration, trigonometric functions, transcendental functions, matrices, and determinants and their engineering applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Ability to learn different methods of integration and its applications 2. Ability to deal with transcendental functions, matrices, and determinants 3. Ability to treated with matricies
Indicative Contents المحتويات الإرشادية	1-Integration (Anti-derivatives), Rules of Integration, Differential equations, Indefinite integration.(4hr) 2- Area under a curve (as a limit of summation) and their finding by using definite integral (8hr) 3-First fundamental theorem of integral, Rules of indefinite integral.(2hr) 4-First fundamental theorem of integral, Rules of definite integral. (2hr) 5-Second fundamental theorem of integral (differential of integral). (2hr) 6- Applications on definite integral: Areas, volumes, surfaces area, arc length. (10hr) 7-Approximate of definite integral. And Transcendental functions (In(x), e^x, a^x, log(x)) and Hyperbolic Functions. (8hr) 8-The Inverse of Trigonometric functions: Domain, Range, properties and their graphs.(6hr) 9-Methods of integration: (by parts, partial fractions, reduction formulas, by substitution) and improper integrals. (10hr) 10-Determinants and their applications (Matrices). (4hr)

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	The students will be actively engaged in the tasks, which will help them develop and hone their critical thinking abilities. This will be accomplished via lectures, interactive tutorials, and assignments incorporating fascinating tasks. The course includes: 1- Numerous examples worked out in detail to illustrate the mathematics. 2- A consistent strategy for problem solving that can be applied to any problem.

	3- Figures, sketches, and diagrams to provide a detailed description and reinforcement of what you read. 4- Self-Assessment Tests at the end of each section, with answers so that you can evaluate your progress in learning. 5- Many problems will be discussed and solved in the tutorial classes, which offer working with one or more classmates to exchange ideas and discuss the material

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	59	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	91	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	30%	8,13	LO # 1-7,8-12
	Assignments	4	10%	continous	
	Projects / Lab.	-			
	Report	-			
Summative assessment	**Midterm Exam**	3	10%	12	#1-11
	Final Exam	3	50%	16	all
Total assessment			100%		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Integration (Anti-derivatives), Rules of Integration, Differential equations, Indefinite integration
Week 2	Area under a curve (as a limit of summation) and their finding by using definite integral.

Week 3	Area under a curve (as a limit of summation) and their finding by using definite integral.
Week 4	First fundamental theorem of integral, Rules of indefinite integral.
Week 5	First fundamental theorem of integral, Rules of definite integral.
Week 6	Second fundamental theorem of integral (differential of integral).
Week 7	Applications on definite integral: Areas, volumes, surfaces area, are length.
Week 8	Applications on definite integral: Areas, volumes, surfaces area, are length.
Week 9	Approximate of definite integral. Transcendental functions (In(x), e_x, a_x, log(x)).
Week 10	Hyperbolic Functions and its inverse
Week 11	The Inverse of Trigonometric functions: Domain, Range, properties and their graphs.
Week 12	Methods of integration: (by parts, partial fractions, reduction formulas, by substitution) and improper integrals.
Week 13	Methods of integration: (by parts, partial fractions, reduction formulas, by substitution) and improper integrals.
Week 14	Determinants and their applications.
Week 15	**Preparatory Week**
Week 16	**Final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Calculus – Thomas 2012	yes
Recommended Texts	James and Stewart, 2003	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.