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 I	**Module Delivery**	
Module Type	BASIC	☒ Theory ☐ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	PGR113		
ECTS Credits	6		
SWL (hr/sem)	150		

Module Level	UGI	**Semester of Delivery**	1	
Administering Department	PGR	**College**	PPE	
Module Leader	Ali Mohammed Hussein	**e-mail**		
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	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	Provide the students with the required basics of mathematics, functions, derivatives and its engineering applications , trigonometric functions and conic sections
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Ability to deal with functions and graphs. 2. Ability to find the domain and range in addition to continuity. 3. Ability to find the limits and derivatives of ordinary and trigonometric. 4. Ability to learn many applications of differentiation 5. Ability to find the limits of a functions
Indicative Contents المحتويات الإرشادية	1-Review for secondary Algebra,Numbers, Sets, Intervals, Absolute value. (2hr) 2- Functions: Domain, Range, Methods of representation, Types of functions and their graphs. Relations: Domain, Range, Symmetry and graphs. (8hr) 3-Analytical Geometry : Coordinate system in plane , linear function Equations of a line , distance formula , Midpoint formula ,distance between point and line , parallel and perpendicular lines , angle between tow lines. (6hr) 4-Trigonometric function: Types of trigonometric function, Trigonometric relation, Identities, Domain, Range and graphs of trigonometric functions. (8hr) 5-Limits,Continuous and discontinuous functions and their theorems.(8hr) 6- The derivatives, rules of derivatives, higher order derivatives,Chain rule ,Implicit differentiation, Differentials Parametric equations. (8hr) 7-derivative applications (slope , related rate of change, optimization, curve sketching, Lahopetal rule for limit)(12hr) 8- Sections of a cone : (circle , parabola , Ellipse , Hyperbola) (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%	7,13	LO # 1-6,7-12
	Assignments	4	10%	continous	
	Projects / Lab.	-			
	Report	-			
Summative assessment	**Midterm Exam**	3	10%	10	#1-9
	Final Exam	3	50%	16	all
Total assessment			100%		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Review for secondary Algebra (Solve some examples by using English language). Numbers, Sets, Intervals, Absolute value.
Week 2	Functions: Domain, Range, Methods of representation, Types of functions and their graphs. Relations: Domain, Range, Symmetry and graphs.

Week 3	Analytical Geometry : Coordinate system in plane , linear function Equations of a line , distance formula , Midpoint formula ,distance between point and line , parallel and perpendicular lines , angle between tow lines.
Week 4	Trigonometric function: Types of trigonometric function, Trigonometric relation, Identities, Domain, Range and graphs of trigonometric functions.
Week 5	Limits
Week 6	Continuous and discontinuous functions and their theorems
Week 7	The derivatives, rules of derivatives, higher order derivatives
Week 8	Chain rule Implicit differentiation, Differentials Parametric equations
Week 9	Slope, derivative applications (speed, acceleration). Hospitals rule (for Limit)
Week 10	Related Rates of change
Week 11	Maximum and Minimum problems, Critical and Inflection points.
Week 12	Maximum and Minimum problems, Critical and Inflection points.
Week 13	Curve sketching.
Week 14	Sections of a cone : (circle , parabola , Ellipse , Hyperbola)
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.