	Ministry of Higher Education and Scientific Research - Iraq **University of WARITH ALANBIYAA** **College of Sciences** **Departments of Medical Physics**	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	MATHEMATICS			**Module Delivery**	
Module Type	BASIC			☒ **Theory** ☒ **Tutorial**	
Module Code	MPH1208				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	ONE		**Semester of Delivery**	2	
Administering Department	MPH1208		**College**	College Sciences	
Module Leader	Saja Ali Basim		**e-mail**	Saja.b@uowa.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	MS.c.	
Module Tutor			**e-mail**		
Peer Reviewer Name	-		**e-mail**	-	
Review Committee Approval	-		**Version Number**	1	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	No	**Semester**	-
Co-requisites module	No	**Semester**	-
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	This course aims at: 1- Developing a solid understanding of fundamental mathematical concepts and their applications. 2- Fostering critical thinking and problem-solving abilities by engaging students in analyzing complex mathematical problems and applying appropriate strategies and techniques to arrive at logical solutions. 3- Enhancing students' ability to communicate mathematical ideas effectively, both orally and in written form, through clear explanations, rigorous proofs, and mathematical modeling. 4- Promoting a deep understanding of mathematical concepts, principles, and relationships by encouraging students to explore mathematical structures, patterns, and connections within and across different areas of mathematics. 5- Cultivating mathematical reasoning and logical thinking skills by providing opportunities for students to construct and evaluate mathematical arguments, justify mathematical claims, and make conjectures. 6- Encouraging students to appreciate the beauty and elegance of mathematics by exposing them to diverse mathematical topics, including geometry, algebra, calculus, statistics, and discrete mathematics. 7- Promoting mathematical literacy and numeracy by helping students develop a practical understanding of mathematical concepts and their applications.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The student would be able to: 1- Master the proficiency in applying differential calculus concepts, including derivatives and rates of change. 2- Have the competence in utilizing integral calculus techniques to find areas, volumes, and solve related problems. 3- Analyze mathematical models involving differentiation. 4- Master the solving of practical problems using integral calculus. 5- Improve critical thinking and problem-solving skills through the study of differential mathematics. 6- Develop mathematical reasoning and logical thinking abilities in the context of calculus.		

Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Introduction to differentiation: limits, derivatives, and their basic properties. Applications of differentiation: rates of change, optimization, and related rates. Introduction to integration: antiderivatives, definite and indefinite integrals. Techniques of integration: substitution, integration by parts, and partial fractions. Applications of integration: areas under curves, volumes, and solving practical problems.
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lectures: Engaging and interactive lectures to introduce new concepts, theories, and problem-solving techniques. Tutorials: Small group sessions where students can actively participate in solving mathematical problems, reinforcing their understanding and receiving feedback. Practical Exercises: Assignments and homework that provide opportunities for students to practice and apply the learned mathematical principles. Collaborative Learning: Group projects and discussions that encourage peer-to-peer interaction and collaborative problem-solving, fostering a deeper understanding of mathematical concepts. Technology Integration: Utilizing mathematical software, computer simulations, and online resources to enhance visualization and exploration of mathematical concepts.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45 hrs.	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6 hrs.
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	105 hrs.	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	39 hrs.
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150 hrs.		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative Assessment	**Quizzes**	2	5	3, 8	1, 3
	Reports	1	5	5, 6	2, 4, 5, 6
	Project	1	5	13	2, 4, 6
	Homework	4	5	2, 5, 9, 14	1, 4, 5, 6
Summative Assessment	**Midterm Exam**	1	10	8	
	Final Exam	1	50	15	
Total Assessment			100		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Reviewing of Algebraic Concepts, Algebraic Expressions, Exponents and Logarithms.
Week 2	Differentiation, Techniques of Differentiation, Functions and Graphs, H.W_1.
Week 3	More Differentiation, Optimization Problems Using Derivatives, Problem-Solving.
Week 4	Techniques of differentiation, Limits and Continuity, Class participation.
Week 5	Applications of Derivatives, Solving First-Order Ordinary.
Week 6	Continuity of functions H.W_2, Class participation.
Week 7	Differential Equations, Applications of Differential Equations, Problem-Solving.
Week 8	Mid-Term Exam.
Week 9	Integration, Class Participation.
Week 10	Antiderivatives and Indefinite Integration.
Week 11	Techniques of Integration, Problem-Solving.
Week 12	Applications of Integration, Class Participation.
Week 13	Exponential and Logarithmic Functions.
Week 14	Review and Assessment, Problem-Solving
Week 15	Final Exam

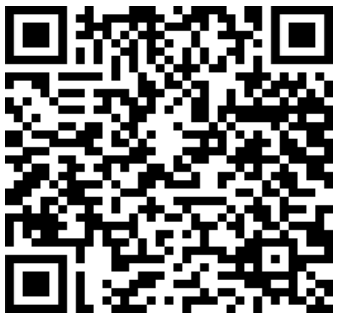
Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Gilbert Strang, Calculus, Massachusetts Institute of Technology: Wellesley-Cambridge Press.	No
Recommended Texts	James Stewart, McMaster University 2008. *United States of America*.	No
Websites	- https://www.khanacademy.org/ - https://www.mathsisfun.com/ - https://brilliant.org/ - https://www.youtube.com/@DrTrefor	

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.



ملاحظة: هذا النموذج تم وضعه وتقديمه من قبل مديرية ضمان الجودة في وزارة التعليم العالي والبحث العلمي