MODULE DESCRIPTOR FORM

Module Information			
Module Title	MATHEMATICS	**Module Delivery**	
Module Type	BASIC	☒ **Theory** ☒ **Tutorial**	
Module Code	MPH202		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	**Semester of Delivery**	2
Administering Department	Medical Physics	**College**	College Sciences
Module Leader	Saja Basim Ali	**e-mail**	Saja.b@uowa.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	**Module Leader's Qualification**	MS.c.
Module Tutor	Saja Basim Ali	**e-mail**	Saja.b@uowa.edu.iq
Peer Reviewer Name	Ali Nadhom Munif	**e-mail**	Ali.n@uowa.edu.iq
Review Committee Approval	2024-04-19	**Version Number**	V 1.0

Relation With Other Modules			
Prerequisite module	No	**Semester**	-
Co-requisites module	No	**Semester**	-

**Department Head
Approval**

**Dean of the College
Approval**

	Module Aims, Learning Outcomes and Indicative Contents
Module Aims	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	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	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	
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)			
Structured SWL (h/sem)	42	**Structured SWL (h/w)**	2.8
Unstructured SWL (h/sem)	105	**Unstructured SWL (h/w)**	7
Total SWL (h/sem)	147+ 3 final =150.		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative Assessment	**Quizzes**	2	10% (5)	3,8	1,3
	Projects	1	5% (5)	13	2,4,6
	Online Assig.	4	20% (5)	2,5,9,14	1,4,5,6
	Reports	1	5% (5)	5,6	2,4,5,6
Summative Assessment	**Midterm Exam**	1 hr.	10% (10)	8	1 – 7
	Final Exam	3 hrs.	50% (50)	15	All
Total Assessment		100			

Delivery Plan (Weekly Syllabus)	
	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		
	Text	**Available in the Library?**
Required Texts	Gilbert Strang, Calculus, Massachusetts Institute of Technology: Wellesley-Cambridge Press.	
Recommended Texts	James Stewart, McMaster University 2008. United States of America.	
Websites	• https://www.khanacademy.org/ • https://www.mathsisfun.com/ • https://www.mathsisfun.com/ • https://www.youtube.com/@DrTrefor	

APPENDIX:

GRADING SCHEME				
Group	**Grade**	**Marks**	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A -** Excellent	Excellent	90 - 100	Outstanding Performance
	B - Very Good	Very Good	80 - 89	Above average with some errors
	C - Good	Good	70 - 79	Sound work with notable errors
	D - Satisfactory	Satisfactory	60 - 69	Fair but with major shortcomings
	E – Sufficient	Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	Fail	(45-49)	More work required but credit awarded
	F – Fail	Fail	(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