	Ministry of Higher Education and Scientific Research - Iraq Al-Mustaqbal University College of Sciences Cyber Security Science Department	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	MATHEMATICS			**Module Delivery**	
Module Type	BASIC			**Theory** **Lecture** **Lab** **Tutorial** **Practical** **Seminar**	
Module Code	UOMU033012				
ECTS Credits	8				
SWL (hr/sem)	200				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Mohammed Jabbar Obaid		**e-mail**	mohammed.jabbar.obaid@uomus.edu.iq	
Module Leader's Acad. Title	Lecture		**Module Leader's Qualification**	MSc	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**		

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	1. To learn how solve and develop problem solving skills		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Learning how solve equations by hand without computer. 2. Develop the brain ability.		
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. ➢ Mathematical background ➢ Matrix • Types of matrix • Matrix addition, subtraction, and multiplication • Determinant, transpose, and rank of matrix • Inverse of matrix, absolute value, and polynomials ➢ Functions • Function Definition • Domain and range of functions ➢ Derivation • Mathematical definition of derivation, rule of derivation • Derivation of trigonometric, inverse trigonometric, logarithm, exponential . ➢ Series ➢ integration • Integration Indefinite integral • Rules of integral • Method of integration -Partial derivative Partial derivative of two variables, total differential. -Differential equations First order differential equations Variable separable, homogeneous differential equation, Exact differential equation, first order linear differential equation. ➢ Second order differential equation		

	Homogeneous second order with constant coefficient, non Homogeneous second order with constant coefficient, Variation of parameter. -Laplace transformation Definition, Laplace transformation of some function, Laplace transformation of differential Properties of L.T (1) Shifting (2) L.T of integrals Multiplication by t^n. -Inverse laplace transformation Properties of inverse L.T 1- Partial fraction,2- Application of Laplace transformation Linear(D.E) with constant coefficient.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their mathematical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	110	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7.3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	90	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	200		

Module Evaluation

تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	1	5% (5)	5, 10	LO #1, 2
	Assignments	1	3% (3)	2, 12	LO # 1, 2
	Projects / Lab.	1	15%(15)	15	LO # 1, 2
	Report	1	2%(2)	13	LO # 1, 2
Summative assessment	**Midterm Exam**	2 hr	15% (15)	7	LO # 1, 2
	Final Exam	3hr	60% (60)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	➢ Mathematical background ➢ Matrix Types of matrix, Matrix addition, subtraction, and multiplication, Determinant, transpose, and rank of matrix
Week 2	Inverse of matrix, absolute value,
Week 3	➢ Functions , Function Definition, Domain and range of functions and polynomials,
Week 4	➢ Derivation Mathematical definition of derivation, rule of derivation Derivation of trigonometric, inverse trigonometric, logarithm, exponential.
Week 5	➢ Series
Week 6	➢ Integration Indefinite integral, Rules of integral.
Week 7	Method of integration
Week 8	Partial derivative Partial derivative of two variables, total differential.
Week 9	Differential equations First order differential equations Variable separable, homogeneous differential equation
Week 10	Exact differential equation, first order linear differential equation.
Week 11	➢ Second order differential equation ➢ Homogeneous second order with constant coefficient, non Homogeneous second order with constant coefficient.

Week 12	Variation of parameter
Week 13	Laplace transformation Definition, Laplace transformation of some function, Laplace transformation of differential Properties of L.T (3) Shifting (4) L.T of integrals (5) Multiplication by t^n.
Week 14	Inverse laplace transformation Properties of inverse L.T 2- Partial fraction
Week 15	3- Application of Laplace transformation 4- Linear(D.E) with constant coefficient.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	➢ How to use Matlab ➢ matrix Types of matrix, Matrix addition, subtraction, and multiplication, Determinant, transpose, and rank of matrix
Week 2	Inverse of matrix, absolute value,
Week 3	Functions , Function Definition, polynomials,
Week 4	Derivation Mathematical definition of derivation, rule of derivation Derivation of trigonometric, inverse trigonometric, logarithm, exponential.
Week 5	Series
Week 6	Integration Indefinite integral, Rules of integral.
Week 7	Method of integration
Week 8	Partial derivative Partial derivative of two variables, total differential.
Week 9	Differential equations First order differential equations

	Variable separable,
Week 10	homogeneous differential equation
Week 11	Exact differential equation, first order linear differential equation.
Week 12	Second order differential equation
Week 13	Homogeneous second order with constant coefficient,
Week 14	non Homogeneous second order with constant coefficient.
Week 15	Laplace transformation

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**Thomas,G. Calculus and Analytic Geometry,Fifth Edition,Addition Wesly,1999**	Yes
Recommended Texts		
Websites	https://youtube.com/@soraali5120	

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