Ministry of Higher Education and Scientific Research - Iraq
Al-Mansour University College
Department of Communication Engineering

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**MATLAB Programming**			**Module Delivery**	
Module Type	**Core**				
Module Code	**COM 23105**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	UGII		**Semester of Delivery**	1	
Administering Department	BSc - COMM		**College**	Al-Mansour University College	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	2024/9/1		**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 Objectives أهداف المادة الدراسية	1. The student learns about the basic construction and operation programing language. And be able to apply appropriate biasing to secure operation in the active area. 2. The student learns about the MATLAB Interactive Sessions, Menus and the toolbar, computing with Mat lab, Script files and the Editor Debugger, and Mat lab Help System. 3. Identify and be able to explain the variables and how treat with its. 4. Being able to test and running the program to solve some equations. 5. The student will be able to write Arrays, Multidimensional, Arrays, Element by Element Operations, and Polynomial Operations Using Arrays. 6. be able to grate Elementary Mathematical Functions, User Defined Functions, Advanced Function Programming, Working with Data Files. 7. The student will also be able to Programming Techniques: Program Design and Development, Relational Operators and Logical Variables, Logical Operators and Functions, Conditional Statements, Loops, The Switch Structure, Debugging Mat Lab Programs. 8. Be able to Plotting: XY- plotting functions, Subplots and Overlay plots, Special Plot types, Interactive plotting, Function Discovery, 3-D plots. 9. The student will also be able to Linear Algebraic Equations: Elementary Solution Methods, solving system of linear equations. 10. Introduction Symbolic Processing with Matlab: Symbolic Expressions, Algebra, Calculus (Limits and series), Symbolic Linear Algebra, symbolic plotting.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Enabling student to know how to treat with mathematical equations and solve functions. 2. Enabling student to know how to plotting and display figures. 3. Enabling student to write array and treat with it. 4. Enabling to grate Mat lab file and function. 5. Enabling student to test and run the written program and display result and error. 6. Enabling student Design simple algorithms to solve problems
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following.** • Course introduction (4 hrs) • Working with Power point (8 hrs) • Theoretical lectures (15 hrs) • Lap (30 hrs)

Description	**MATLAB:** MATLAB Interactive Sessions, Menus and the toolbar, Computing with Matlab, Script files and the Editor Debugger, and Matlab Help System. **Arrays:** Arrays, Multidimensional Arrays, Element by Element Operations, Polynomial Operations Using Arrays. **Functions & Files:** Elementary Mathematical Functions, User Defined Functions, Advanced Function Programming, Working with Data Files. **Programming Techniques:** Program Design and Development, Relational Operators and Logical Variables, Logical Operators and Functions, Conditional Statements, Loops, The Switch Structure, Debugging Mat Lab Programs. **Plotting**: XY- plotting functions, Subplots and Overlay plots, Special Plot types, Interactive plotting, Function Discovery, 3-D plots. **Linear Algebraic Equations**: Elementary Solution Methods, solving system of linear equations. **Symbolic Processing With Mat lab**: Symbolic Expressions, Algebra, Calculus (Limits and series), Symbolic Linear Algebra, symbolic plotting. **Introduction to Simulink.**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	In this course, students are guided by: • Using different examples. • Using different styles of discussion that aim to connect the theoretical and practical sides. • Asking questions and giving exercises that require analysis and conclusions related to lectures. • Encourage students to participate in discussions and do the practical work. • Encourage students to work in groups.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**48**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**3.2**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**27**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**1.8**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
	Quizzes	**2**	**5% (10)**	**6 and 12**	**LO #1 to #6**
	Assignments	**2**	**5% (10)**	**2 and 13**	**LO #3 to #6**
	Projects / Lab.	**1**	**10% (10)**	**Continuous**	**All**
	Report	**1**	**10% (10)**	**13**	**LO #3, #4 and #6**
	Midterm Exam	**1hr**	**10% (10)**	**9**	**LO #1 - #5**
	Final Exam	**3hr**	**50% (50)**	**16**	**All**
Total assessment			**100% (100 Marks)**		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to MATLAB, MATLAB Interactive Sessions, Menus and the toolbar, Computing with Matlab, Script files and the Editor Debugger, and Matlab Help System.
Week 2	Programming Techniques: Program Design and Development, Relational Operators and Logical Variables, Logical Operators and Functions,
Week 3	Conditional Statements
Week 4	Loops
Week 5	The Switch Structure, Debugging Mat Lab Programs.
Week 6	Symbolic Processing With Matlab: Symbolic Expressions, Algebra, Calculus (Limits and series), Symbolic Linear Algebra,
Week 7	Linear Algebraic Equations: Elementary Solution Methods, solving system of linear equations
Week 8	Arrays: Arrays, Multidimensional Arrays, Element by Element Operations,
Week 9	Polynomial Operations Using Arrays
Week 10	Plotting: XY- plotting functions,
Week 11	Subplots and Overlay plots
Week 12	Special Plot types, Interactive plotting, Function Discovery, 3-D plots.
Week 13	Functions & Files: Elementary Mathematical Functions,
Week 14	User Defined Functions, Working with Data Files
Week 15	Introduction to Simulink.
Week 16	**Preparatory week before the final exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to MATLAB, MATLAB Interactive Sessions, Menus and the toolbar, Computing with Matlab, Script files and the Editor Debugger, and Matlab Help System.
Week 2	Programming Techniques: Program Design and Development, Relational Operators and Logical Variables, Logical Operators and Functions,
Week 3	Conditional Statements
Week 4	Loops
Week 5	The Switch Structure, Debugging Mat Lab Programs.
Week 6	Symbolic Processing With Matlab: Symbolic Expressions, Algebra, Calculus (Limits and series), Symbolic Linear Algebra,
Week 7	Linear Algebraic Equations: Elementary Solution Methods, solving system of linear equations
Week 8	Arrays: Arrays, Multidimensional Arrays, Element by Element Operations,
Week 9	Polynomial Operations Using Arrays
Week 10	Plotting: XY- plotting functions,
Week 11	Subplots and Overlay plots
Week 12	Special Plot types, Interactive plotting, Function Discovery, 3-D plots.
Week 13	Functions & Files: Elementary Mathematical Functions,
Week 14	User Defined Functions, Working with Data Files
Week 15	Introduction to Simulink.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	MATLAB Guide, 3e Desmond J. Higham, *University of Edinburgh*; Nicholas J. Higham, *University of Manchester*	Yes
Recommended Texts	• MATLAB Programming for Engineers Stephen J. Chapman	No
Websites	• https://www.mathworks.com/?s_tid=gn_logo	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
	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
	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks 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.