MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer Programming and Applications I**			**Module Delivery**	
Module Type	**Support**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOMU024026**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level		UGII	**Semester of Delivery**		3
Administering Department		MIET	**College**	EETC	
Module Leader	ALI Kareem obied		**e-mail**	ali.kareem.obaid@uomus.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		M.Sc
Module Tutor	ALI Kareem obied		**e-mail**	ali.kareem.obaid@uomus.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	19/11/2023		**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	1. Understanding the fundamental concepts of MATLAB programming language environment. 2. The students will understand and learn how to use MATLAB as an effective programming language. 3. The students will be able to solve different mathematical and engineering problems as well as using plotting functions and design projects using codes or GUI. 4. Students will acquire the knowledge of basic MATLAB syntax such as: variables, input, output, vectors, matrices, functions, plotting, and GUI, 5. The students will gain the necessary skills to design and implements appropriate algorithms that solve problems dealing with different mathematical and engineering applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the MATLAB environments and windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window). 2. The students learn how to write first program and learn Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns. 3. Explain how to use variables and assignment statement, logical operator. 4. Practice on using Arrays, Built in functions, Basic Matrix Functions(sum, max, min, mean, magic, diag, length, size, median, prod, sort). 5. Learn how to perform basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits). 6. Understand arguments and return values, M-file, input-output statement. 7. Train on using control Statements (Conditional statements: If, Else, Elseif, switch case) 8. Identify the repetition statements: (While statement, For statement). 9. Learn how to use combination of conditional and repetition statements. 10. Understand the procedures and functions (a custom-made MATLAB function, define the name of the function, the input and the output variables, Calling Functions). 11. Learn how to handle graphics and user interface. 1.pre-defined dialogs 2. Handle graphics a) Graphics objects b) Properties of objects c) Modifying properties of graphics objects. 12. Train of GUI Interface (Attaching buttons to actions, Getting Input, Setting Output).
Indicative Contents المحتويات الإرشادية	1. Window, Workspace Window, Command History window, Help Window, Editor Window. (3 hr) 2. Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns. (5 hr) 3. variables and assignment statement, logical operator. (5 hr)

	4. sum, max, min, mean, magic, diag, length, size, median, prod, sort. (2 hr) 5. Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits. (2 hr) 6. M-file, input-output statement. (2 hr) 7. Conditional statements: If, Else, Elseif, switch case. (3 hr) 8. While statement, For statement. (4 hr) 9. conditional and repetition statements. (4 hr) 10. accustom-made MATLAB function. (4 hr) 11. GUI. (4 hr) 12. GUI attaching buttons to actions, Getting Input, Setting Output. (4 hr)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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 critical 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. Moreover, motivate the creative side by posing various problems to students and urging them to find appropriate solutions. Also forming work teams to assess the results of their work and change their structure periodically to develop the spirit of cooperation and development and motivate students to make intensive efforts to work different roles.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	49	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	26	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
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
Formative assessment	**Quizzes**	2	15% (20)	5, 10	LO #1, 2, 3, 4,7,8,9 and 10
	Assignments	2	15% (20)	6, 13	LO # 9 and 10
	Projects / Lab.	10	10% (10)		
	Report	N/A			
Summative assessment	**Midterm Exam**	3hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction, MATLAB Environment, MATLAB Windows(Command Window, Workspace Window, Command History window, Help Window, Editor Window).
Week 2	A First Program, Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns.
Week 3	Variables and assignment statement, logical operator.
Week 4	Arrays, Built in functions, Basic Matrix Functions (sum, max, min, mean, magic, diag, length, size, median, prod, sort).
Week 5	Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).
Week 6	Arguments and return values, M-file, input-output statement,+ + Control Statements (Conditional statements: If, Else, Elseif, switch case)
Week 7	Mid-Exam
Week 8	Repetition statements: (While statement, For statement)
Week 9	Combination of conditional and repetition statements I
Week 10	Combination of conditional and repetition statements II
Week 11	Procedures and Functions (a custom-made MATLAB function, define the name of the function, the input and the output variables, Calling Functions)
Week 12	Handle graphics and user interface. 1.pre-defined dialogs 2. Handle graphics a) Graphics

	objects b) Properties of objects c) Modifying properties of graphics objects
Week 13	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) I
Week 14	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) II
Week 15	**Preparatory week before the final exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction, MATLAB Environment, MATLAB Windows (Command Window, Workspace Window, Command History window, Help Window, Editor Window).
Week 2	A First Program, Expressions, Constants, Entering Matrices, Useful Matrix Generators, Subscripting, End as a subscript, Colon Operator, Transpose Deleting Rows or Columns.
Week 3	Variables and assignment statement, logical operator.
Week 4	Arrays, Built in functions, Basic Matrix Functions (sum, max, min, mean, magic, diag, length, size, median, prod, sort).
Week 5	Basic Plotting (Multiple Data Sets in One Graph, Specifying Line Styles and Colors, Multiple Plots in One Figure, Setting Axis Limits).
Week 6	Arguments and return values, M-file, input-output statement
Week 7	Control Statements (Conditional statements: If, Else, Elseif, switch case)
Week 8	Repetition statements: (While statement, For statement)
Week 9	Combination of conditional and repetition statements I
Week 10	Combination of conditional and repetition statements II
Week 11	Procedures and Functions(a custom-made Matlab function, define the name of the function, the input and the output variables, Calling Functions)
Week 12	Handle graphics and user interface. 1.Pre-defined dialogs 2. Handle graphics a) Graphics objects b) Properties of objects c) Modifying properties of graphics objects
Week 13	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) I
Week 14	GUI Interface (Attaching buttons to actions, Getting Input, Setting Output) II

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introduction to MATLAB for Engineers William J. Palm III	yes
Recommended Texts	INTRODUCTION TO MATLAB FOR ENGINEERING STUDENTS ,David Houcque	
Websites		

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	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.