MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer programming**			**Module Delivery**	
Module Type	**B**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**MCT216**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level	3		**Semester of Delivery**	3	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Dr. Aymen Ahmed Salih		**e-mail**	aymen@kecbu.uobaghdad.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	PhD	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	10/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Computer programming	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The purpose of this course is to introduce topics specific to MATLAB (such as started with MATLA, creating matrices, using script files and managing data, 2D plots, programming in MATLAB, user defined functions and function files, polynomials, curve fitting, interpolation, Three-dimensional plots, symbolic mathematics) in addition to practical application in the laboratory.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of this course the students will be able to: 1. Explain fundamentals of scientic computing concepts. 2. Use skills to construct an algorithm and solve problems. 3. Apply a problem solver program in economic calculations. 4. Visualize the results and prepare the report.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. . **1-**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**Enter an expression like:**

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week No.	Material Covered
Week 1	Started with MATLAB: • WORKING IN THE COMMAND WINDOW • Arithmetic operations with scalars. • Order of Precedence • Using MATLAB as a Calculator
Week 2	**Defining scalar variables** •The Assignment Operator •Rules About Variable Names •Predefined Variables and Keywords
Week 3	**Script files** • Notes About Script Files • Creating and Saving a Script File • Running (Executing) a Script File • Current Folder
Week 4	**Creating Arrays** • Vectors • Matrices
Week 5	**Creating Arrays** •Using A Colon. •Adding elements to Existing Variables. •Deleting elements.

	• Built-In functions for handling arrays. • Strings and Strings as Variables.
Week 6	**Mathematical Operations:** • Addition and subtractions • Array Multiplication • Array Division
Week 7	**Mathematical Operations:** • Element-by-element Operations • Using arrays in mat lab built-in math functions • Built-in functions for analyzing arrays • Generation of random numbers
Week 8	**Using Script Files:** • the mat LAB workspace. • Input to a script file. • Output commands. • The disp Command. • The fprintf Command.
Week 9	**Two-Dimensional Plots:** • The plot command. • The fplot command. • Plotting multiple graphs in the same plot.
Week 10	**Two-Dimensional Plots:** • Formatting a plot. • Plots with logarithmic axes. • plots with error bars. • plots with Special graphics • Histograms. • Polar plots.
Week 11	**Two-Dimensional Plots:** • Putting multiple plots • MULTIPLE FIGURE WINDOWS 157 • PLOTTING USING THE PLOTS TOOLSTRIP 159 • EXAMPLES OF MATLAB APPLICATIONS
Week 12	**Programming in MATLAB** • Relational and logical operators. • Conditional Statements. • The switch-case statement. • Loops.
Week 13	**User-Defined Functions and Function Files:** • Creating a function file

	• Structure of a function file • local and global variables. • Saving a function file . • Using a user defined function.
Week 14	**User-Defined Functions and Function Files:** • Examples of simple user defined functions • Comparison between script files and function files. • Anonymous functions.
Week 15	**Polynomials, Curve Fitting, and Interpolation** • Polynomials. • Curve fitting. • Interpolation. • The basic fitting interface.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Apply command window.
Week 2	Creating and Saving a Script File , Running (Executing) a Script File and Current Folder .
Week 3	Apply Vectors and Matrices
Week 4	Apply addition ,subtractions ,Array Multiplication and Array Division
Week 5	Apply The plot command and fplot command 2D diminution.
Week 6	Apply Polynomials, Curve fitting and Interpolation
Week 7	Implement Three-Dimensional Plots.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• Dukkipati, Rao V. *MATLAB: an introduction with applications*. New Age International.2008 • Brandimarte, Paolo. *Numerical methods in finance and economics: a MATLAB-based introduction*. John Wiley & Sons, 2013.	Yes

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.