MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Data Analysis and Visualization			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits					
SWL (hr/sem)	**Its hours**				
Module Level			**Semester of Delivery**		
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**		Ph.D.
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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 Objectives أهداف المادة الدراسية	1. Enable the student to obtain knowledge and understanding of the material. 2.Enable the student to identify the nature of the software problems encountered 3.how to address them. 4.Enable the student to write programs.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the Knowledge and Understanding After successfully completing the course, students should be able to do the following: 1. Ability to apply knowledge of mathematics, science and engineering. 2. Ability to identify, formulate and solve engineering problems. 3. Ability to use the techniques, skills and modern engineering tools necessary for engineering practice. 4. General and Transferable Skills (other skills relevant to employability and personal development) 5. Ability to design and conduct experiments. 6. Ability to design a system, component or process to meet desired needs
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. • Starting with MATLAB [3hours] • Creating Arrays [6 hours] • Mathematical Operations with Arrays [6 hours] • Using Script Files and Managing Data [6 hours] • Two-Dimensional Plots [3hours] • Programming in MATLAB [6 hours] • User-Defined Functions and Function Files [3hours] • Applications in Numerical Analysis [6 hours] • Three-Dimensional Plots [3hours] • Summary of Characters, Commands, and Functions [3hours]

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 critical thinking skills. This will be achieved through classes,

	interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	36	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	20% (10)	5 and 12	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	1 and 12	LO #3, #4 and #6, #7
	Projects / Lab.				
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	20% (10)	7	LO #1 - #7
	Final Exam	3hr	40 % (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	STARTING MATLAB, MATLAB WINDOWS ,,WORKING IN THE COMMAND WINDOW , ARITHMETIC OPERATIONS WITH SCALARS , Order of Precedence , Using MATLAB as a Calculator , DISPLAY

	FORMATS , ELEMENTARY MATH BUILT-IN FUNCTIONS , DEFINING SCALAR VARIABLES , The Assignment Operator , Rules About Variable Names , Predefined Variables and Keywords , USEFUL COMMANDS FOR MANAGING VARIABLES , SCRIPT FILES , Notes About Script Files , Creating and Saving a Script File , Running (Executing) a Script File , Current Folder , EXAMPLES OF MATLAB APPLICATIONS , PROBLEMS ,
Week 2	CREATING A ONE-DIMENSIONAL ARRAY (VECTOR) , CREATING A Two-Dimensional ARRAY (MATRIX) , The zeros, ones and, eye Commands , NOTES ABOUT VARIABLES IN MATLAB , THE TRANSPOSE OPERATOR , ARRAY ADDRESSING , Vector , Matrix .
Week 3	USING A COLON: IN ADDRESSING ARRAYS, ADDING ELEMENTS TO EXISTING VARIABLES, DELETING ELEMENTS, BUILT-IN FUNCTIONS FOR HANDLING ARRAYS, STRINGS AND STRINGS AS VARIABLES PROBLEMS.
Week 4	Mathematical Operations with Arrays , ADDITION AND SUBTRACTION , ARRAYMULTIPLICATION ARRAY DIVISION , Contents , ELEMENT-BY-ELEMENT OPERATIONS
Week 5	USING ARRAYS IN MATLAB BUILT-IN MATH FUNCTIONS , BUILT-IN FUNCTIONS FOR ANALYZING ARRAYS , GENERATION OF RANDOM NUMBERS , EXAMPLES OF MATLAB APPLICATIONS
Week 6	Using Script Files and Managing Data
Week 7	IMPORTING AND EXPORTING DATA
Week 8	Two-Dimensional Plots
Week 9	FORMATTING A PLOT
Week 10	Programming in MATLAB
Week 11	LOOPS
Week 12	User-Defined Functions and Function Files
Week 13	Applications in Numerical Analysis
Week 14	Three-Dimensional Plots
Week 15	Symbolic Math

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	MATLAB® An Introduction Fifth Edition Amos Gilat Department of Mechanical and Aerospace Engineering The Ohio State University	yes
Recommended Texts	Beginning MATLAB and Simulink: From Beginner to Pro Book by Sulaymon Eshkabilov	yes

Websites	https://www.academia.edu/20361006/MATLAB_5th_Edition

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.