Module Information
معلومات المادة الدراسية

Module Title	COPUTING FOR BME	**Module Delivery**	
Module Type	BASIC	✓ **Theory**	
Module Code	UOMU0101034	**Lecture**	
ECTS Credits	4	✓ **Lab** **Tutorial** **Practical** **Seminar**	
SWL (hr/sem)	100		

Module Level	UGII	**Semester of Delivery**	4
Administering Department	Biomedical Engineering Dept.	**College**	College of Engineering
Module Leader	Hamza Walid Hamza	**e-mail**	hamzah.waleed.hamzah@uomus.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Msc
Module Tutor	None	**e-mail**	None
Peer Reviewer Name		**e-mail**	
Review Committee Approval	2025\9\1	**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	This course aims to provide a comprehensive detailed introduction to the MATLAB program, with a focus on its use in numerical analysis, programming, and data analysis. Identify courses that provide the skills needed to apply MATLAB to solve engineering and scientific problems. 1. Main contents Introduction to MATLAB: Learn the MATLAB user interface. - Learn the basics of programming in MATLAB. 2. Arithmetic operations - Perform basic and advanced arithmetic operations. - Deal with matrices and vectors. -Matrices Mathematical Operation 3. Programming - Writing script functions. - Using control structures such as loops and conditionals. 4. Graphs -MATLAB has extensive facilities for displaying vectors and matrices as graphs, as well as annotating and printing these graphs.
Module Learning Outcomes	Creating Module Learning Outcomes for a MATLAB course can help clarify

مخرجات التعلم للمادة الدراسية	what students should achieve by the end of the module. 1. Fundamental Concepts Understand the basic syntax and structure of MATLAB programming. Demonstrate proficiency in using MATLAB's built-in functions and toolboxes. 2. Data Manipulation Import, export, and manipulate data using MATLAB. Create and modify arrays, matrices, and tables effectively. 3. Programming Skill Write efficient MATLAB scripts and functions to solve engineering or scientific problems. Implement control flow structures (loops, conditionals) and error handling in MATLAB programs. 4. Problem-Solving Apply MATLAB to solve real-world problems in engineering, physics, or other relevant fields. Develop critical thinking skills to approach complex problems systematically.
Indicative Contents المحتويات الإرشادية	Introduction of MATLAB(3hrs) MATLAB EXPRESSIONS(3hrs) VECTORS, MATRICES and ARRAYS in MATLAB(3hrs) Matrices Mathematical Operation(3hrs) Matrix Algebra(3hrs)

	Polynomials(3hrs) Examples of MATLAB Applications(3hrs) MATLAB Graphics 1(3hrs) MATLAB Graphics 2(3hrs) MATLAB Control Statement 1(3hrs) MATLAB Control Statement 2(3hrs) Examples of MATLAB Applications(3hrs) Creating A Function File(3hrs) Structure of A Function File(3hrs) Examples of MATLAB Applications(3hrs) Final Exam

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 experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem)	78	Structured SWL (h/w)	5

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	32	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	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

	Material Covered
Week 1	Introduction of MATLAB
Week 2	MATLAB EXPRESSIONS
Week 3	VECTORS, MATRICES and ARRAYS in MATLAB
Week 4	Matrices Mathematical Operation

Week 5	Matrix Algebra
Week 6	Polynomials
Week 7	Examples of MATLAB Applications
Week 8	MATLAB Graphics 1
Week 9	MATLAB Graphics 2
Week 10	MATLAB Control Statement 1
Week 11	MATLAB Control Statement 2
Week 12	Examples of MATLAB Applications
Week 13	Creating A Function File
Week 14	Structure of A Function File
Week 15	Examples of MATLAB Applications
Week 15	
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to MATLAB
Week 2	Lab 2: MATLAB EXPRESSIONS
Week 3	Lab 3: VECTORS, MATRICES and ARRAYS in MATLAB
Week 4	Lab 3: solve exercise
Week 5	Lab 4: Matrices Mathematical Operation

Week 6	Lab 4: Matrix Algebra
Week 7	Lab 4: solve exercise
Week 8	Lab 5: Polynomials
Week 9	Lab 6: MATLAB Graphics 1
Week 10	Lab 6 MATLAB Graphics 2
Week 11	Lab 7: MATLAB Control Statement 1
Week 12	Lab 8: MATLAB Control Statement 2
Week 13	Lab 9: Creating A Function File
Week 14	Lab 9: Structure of A Function File

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. Modern Control Engineering by Katsuhiko Ogata. GILAT, Amos. MATLAB: An introduction with Applications. John Wiley & Sons, 2017.	Yes
Recommended Texts		No
Websites	http://bh0.physics.ubc.ca/210/Doc/matlab/matlab2.ps	

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

Note:	

NB 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.