



Jordan University of Science and Technology
Faculty of Engineering
Chemical Engineering Department

CHE254 Computer Applications Lab For Chemical Engineers I - JNQF Level: 7

Second Semester 2025-2026

Course Catalog

1 Credit Hours. Programming of chemical engineering problems using Excel and MATLAB

Teaching Method: On Campus

Text Book

Title	MATLAB: An Introduction with Applications
Author(s)	AMO GILAT
Edition	5th Edition
Short Name	Text Book
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Reference	Microsoft Excel documentation.	Faculty of Engineering at J.U.S.T	1st Edition	

Instructor

Name	Mr. SALAHEDDIN ABUYAHYA
Office Location	CH2 L-2
Office Hours	
Email	seabuyahya@just.edu.jo

Class Schedule & Room

Section 1:

Lecture Time: Tue : 14:00 - 17:00

Room: القاعة الذكية

Section 2:

Lecture Time: Thu : 14:00 - 17:00

Room: القاعة الذكية

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	Introduction to Excel: interface, formulas, functions, and charting.	From Reference
Week 2	Advanced Excel capabilities; Conditional formatting; Functions (Mathematical, IF, AND, OR, searching: match, search, vlookup) and Goal Seek	From Reference
Week 3	Introduction to MATLAB environment, basic operations, simple calculations.	From Text Book
Week 4	First Exam	
Week 5	Matrix computations, 2D plotting, if statement and advanced graphs.	From Text Book
Week 6	Solving systems of linear and nonlinear algebraic equations in MATLAB.	From Text Book
Week 7	Second Exam	
Week 8	Solving systems of ODEs using MATLAB (ode45, ode23).	From Text Book
Week 9	Linearization and regression (curve fitting, least squares) in MATLAB.	From Text Book
Week 10	Introduction to symbolic computation in MATLAB, including solving algebraic equations and ordinary differential equations (ODEs) analytically. Students will also learn how to generate and customize plots using symbolic expressions.	From Text Book
Week 11	Introduction to AI in Chemical Engineering: machine learning basics, supervised vs. unsupervised learning, case studies using MATLAB/Python.	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Use Microsoft Office Excel to Process and analyze data. [10SO1] [1L7K1]	10%	
Use Excel's built-in features and functions to analyze engineering data . [10SO1] [1L7S1]	10%	

Use the main features of MATLAB. [5SO1] [1L7S1]	5%	
Define vectors and matrices in MATLAB, [10SO1] [1L7S1]	10%	
Write Scripts and functions in MATLAB [10SO1] [1L7S3]	10%	
Solve systems of linear and non-linear algebraic equations. [15SO1] [1L7S1]	15%	
Solve systems of linear differential equations using ODE45 algorithm [15SO1] [1L7S1]	15%	
Perform Data Analysis using MATLAB. [15SO6] [1L7S3]	15%	
Use process simulator to solve simple chemical engineering problems. [10SO6] [1L7S2]	10%	

Relationship to Program Student Outcomes (Out of 100%)						
SO1	SO2	SO3	SO4	SO5	SO6	SO7
75					25	

Relationship to NQF Outcomes (Out of 100%)			
L7K1	L7S1	L7S2	L7S3
10	55	10	25

Evaluation	
Assessment Tool	Weight
First Exam	30%
Second Exam	30%
Final Exam	40%

Policy	
Attendance Policy:	Attendance will be checked at the beginning of each class. University regulations will be strictly followed for students exceeding the maximum number of absences.
Authorized Tools and Academic Integrity Policy	All laboratory work must be completed independently. The use of AI tools, code generators, or any external assistance is strictly prohibited unless explicitly approved by the instructor. Only MATLAB commands and techniques taught in class are allowed. The use of any command not delivered during class will be considered cheating and will be penalized according to university regulations.