زانکۆی پۆلیتەکنیکی هەولێر
ERBIL POLYTECHNIC UNIVERSITY

Module (Course Syllabus) Catalogue

2022-2023

College/ Institute	Erbil Technical Engineering College	
Department	Mechanical and Energy Engineering	
Module Name	Computer Application - MATLAB	
Module Code	CAM603	
Degree	Technical Diploma Bachler	
	High Diploma Master PhD	
Semester	Sixth Semester	
Qualification		
Scientific Title	Lecturer	
ECTS (Credits)	5	
Module type	Prerequisite Core Assist.	
Weekly hours	3	
Weekly hours (Theory)	(0) hr Class	(0)Total hrs Workload
Weekly hours (Practical)	(3) hr Class	(3)Total hrs Workload
Number of Weeks	16	
Lecturer (Theory)		
E-Mail & Mobile NO.		
Lecturer (Practical)	Mr. Mohammed A. Sulaiman	
E-Mail & Mobile NO.	Mohammed.sulaiman@epu.edu.iq & 0772 214 9090	
Websites		

Course Book

Course Description	This course provides students with the best amount of knowledge about computer Software (MATLAB). The students will be learned how to use computer language and doing their math especially variables like vectors and matrixes. **Prerequisites:** computer application (MATLAB)
Course objectives	At the end of this course, the student will be provided with a fair amount of knowledge that regards to MATLAB program. They will be learned how to encode mathematical equations and make programs and simulations using MATLAB.
Student's obligation	Throughout the academic year, students will be assessed with the following duties: 1. Home works 2. Class works 3. Assay 4. Group debates 5. Quizzes In addition, the attendance and participation in the lectures are mandatory.
Required Learning Materials	Computer software (MATLAB) to be installed on student's laptop.

Evaluation		Task	Weight (Marks)	Due Week	Relevant Learning Outcome
Evaluation		Paper Review			
	Assignments	Homework	10%	3,6	
		Class Activity	2%		
		Report	8%	5	
		Seminar			
		Essay	8%	10	
	Quiz		8%	4,9	
	Lab.				
	Midterm Exam		24%		
	Final Exam		40%		
	Total		100%		

Specific learning outcome:	Students who successfully complete the course should demonstrate the provided knowledge gradually according to the lectures by tests and assignments.
Course References:	1. 1. Basics of MATLAB and Beyond, Andrew Knight 2. www.mathworks.com 3. Lecture notes.

Course topics (Practical)	Week	Learning Outcome
MATLAB Definitions	1	
Vector Generation	2	
Functions Used with Vectors	3	
Algebraic Processes on Vectors	4	
Applications on Vectors	5	
Matrixes	6	
Function Used with Matrixes	7	
Algebraic Processes on Matrix	8	
Application on Matrix	9	
Two-Dimensional Plots	10	
Loop Control	11-12	
Addition, Multiplication, and Division of Polynomials	13-14	
Simulink	15-16	

Questions Example Design

Ministry of Higher Education & Scientific Research	رانكۆی پۆلیتەكنیكی ھەولێر ERBIL POLYTECHNIC UNIVERSITY	Class: Third
		Subject: Com. App. (MATLAB)
Erbil Polytechnic University		Time: 3 hrs
Erbil Technical Eng. College		Date: 11/6/2017
Mechanical and Energy Eng.Dept.	2017 - 2018	Code:
Note:	Final Exam	1st Attempt

Q1/ (36 Marks)

A// Generate the bellow matrix in MATLAB program then execute the following requirements:

X=

```
   0    5   44   -6    0
   1   -3   65    7    2
  10   33   87   93   11
  -4   23  -40   12   -5
   0   21    4   90    0
```

1. Create matrix $M = 21\ \ 4\ \ 90$ from matrix X.
2. Display the reverse diagonal of matrix X.
3. Transpose matrix X and assign the result in matrix U.
4. Multiply each element of matrix U by matrix X and assign the result in matrix A.

B// Draw the following functions each individually using the *figure* command:

$E=\cos(f)$ $4 < f < 20$
$G=\sin(h)$ $0 < h < 6\pi$
$I=\sinh(i)$ $\pi < i < 9\pi$

1) Draw the 1st function with blue color, dot dash line, and pentagram symbol.
2) Draw the 2nd function with black color, sold line, and circle symbol.
3) Draw the 3rd function with red color, dotted line, and star symbol.
4) Set the line width to 2 and marker size to 5 for all the drownings.
5) Put the title (Individual Plotting) with bold font.
6) Put the x and y labels with script (ranges of the functions).
7) Put the legend at the bottom right corner in the plotting area.
8) Put the status of the grid to on.

Q2/ (32 Marks)

A// Write a MATLAB Program to find the variables v, w, x, y, and z for the following linear equations: (Use all three methods)

$-7 = v$ ------------- (1)
$x + 30 = 3v$ ------------- (2)
$z - 12 = w$ ------------- (3)
$y = 4z$ ------------- (4)
$4 = v - 2w$ ------------- (5)

B// Plot the flowchart for if-elseif-else-end structure

Q3/ (32 Marks)

A// Answer the following questions:

1. Count the existing windows of MATLAB program.
2. Count the Display formats in MATLAB program.
3. Count the elementary math functions.
4. Count the ready matrixes in MATLAB program and show their cods.

B// Write down the cods for the following commands:

1. Linspace
2. Fplot
3. Axis scaling

Good Luck

Examiner
Mr. Mohammed A. Sulaiman

External Evaluator

I hereby confirm that the syllbus is sufficient & for the subjcet.