

**DEPARTMENT OF ELECTRICAL ENGINEERING
COURSE SYLLABUS**

EE 201: Structured Computer Programming

<i>COURSE TITLE</i>	<i>ENGLISH CODE/NO</i>	<i>ARABIC CODE/NO.</i>	<i>CREDITS</i>			
			<i>Th.</i>	<i>Pr.</i>	<i>Tr.</i>	<i>Total</i>
Structured Computer Programming	EE 201	هك ٢٠١	1	3	-	2
<i>Pre-requisites:</i>	MATH 110, CPIT 100					
<i>Course Role in Curriculum</i> <i>(Required/Elective):</i>	Required Course					
<i>Catalogue Description:</i>						
Introduction to computers. Algorithms and flowcharts. Solving engineering and mathematical problems using a mathematically-oriented programming language. Programming concepts: I/O, assignment, conditional loops, functions and subroutines. Programming selected numerical and non-numerical problems of mathematical and engineering nature.						

Textbooks:

W.J. Palm III, *Introduction to MATLAB 7 for Engineers*, McGraw-Hill International Edition, 2005.

Supplemental Materials:

Course slides (published at the course website: <http://ece.goto-school/>)

Course Learning Outcomes:

By the completion of the course the student should be able to:

1. Describe the engineering problems and need for computer solutions.
2. Describe the structured programming and choosing MATLAB as a mathematically-oriented programming language.
3. Express basic operations, how to use menus, Help System, and different tools in MATLAB.
4. Compute simple mathematical expressions, and manage variables in Interactive mode of operation.
5. Create, address, edit arrays, and perform array and matrix operations including addition, subtraction, multiplication, division, and exponentiation.
6. Apply the most common mathematical functions stored in MATLAB to create and use user defined functions including storing them in a function file and plotting those using graphing functions: XY plots - subplots.
7. Describe the fundamentals of programming design and development, using Algorithms, and program documentations like Flowcharts and pseudo-code.
8. Design programs that perform decision-making procedures using Relational and Logical operators, and conditional IF statements and SWITCH structure.
9. Design programs that repeat calculation a specified number of times, and/or until some condition is satisfied using MATLAB loop structures.
10. Debug programs and use simulations in engineering applications.

<u>Topics to be Covered:</u>	<u>Duration in Weeks</u>
1. Engineering Problems and the Need for Computer Solutions	0.5
2. Basics of MATLAB: Menus – Toolbars – Computing with MATLAB – Script Files and the Editor/Debugger – MATLAB help System.	0.5
3. Arrays, Matrices and Matrix Operations.	2.5
4. User-Defined Functions.	1
5. Basics of Programming: Algorithms - Pseudo Code - Flow Charts – Programming Structures.	1.5
6. Program Design and Development.	1
7. Relational Operations and Logical Variables.	0.5
8. Logical Operators and Functions.	0.5
9. Conditional Statements: if – else – elseif – switch	2
10. Loops: for – while – break – continue.	2
11. Debugging MATLAB Programs.	1
12. Working with Data Files, and Graphing Functions: XY Plots – Sub-Plots	1

Student Outcomes addressed by the course: (Put a ✓ sign)

(a) an ability to apply knowledge of mathematics, science, and engineering	✓
(b) an ability to design and conduct experiments, as well as to analyze and interpret data	
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
(d) an ability to function on multidisciplinary teams	
(e) an ability to identify, formulate, and solve engineering problems	
(f) an understanding of professional and ethical responsibility	
(g) an ability to communicate effectively	
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i) a recognition of the need for, and an ability to engage in life-long learning	
(j) a knowledge of contemporary issues	
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	✓

Key Student Outcomes assessed in the course: ()

Instructor or course coordinator: Dr. Wassim Zouch

Last updated: September 2013