| COURSE TITLE | ENGLISH CODE /NO | ARABIC CODE/NO. | CONTACT HOURS /WEEK | | | C.U. |
			TH.	PR.	TR.	TCU
Computer Programming	EEN 170	هن ك 170	-	4	-	2
PRE-REQUISITES		MATH 110, CPIT 100				
Introduction to computers. Simple 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.						

All departments in the Faculty of Engineering

Objectives:
On successful completion of this course, student will be able to:
1. define the basics of Matlab
2. apply Matlab to solve engineering problems
3. express the fundamentals of programming
4. complete a simple programs
5. act with the programs using functions.

Contents:
1- Engineering Problems and the Need for Computer Solutions
2- Basics of MatLab
3- Arrays, Matrices and Matrix Operations.
4- User-Defined Functions.
5- Working with Data Files.
6- Basics of Programming
7- Program Design and Development.
8- Relational Operations and Logical Variables.
9- Logical Operators and Functions.
10- Conditional Statements
11- Loops
12- Debugging MatLab Programs.
13- Graphing Functions
14- Introducing Simulink.

Course Outcomes:

A- Knowledge:
On successful completion of this course, student will be able to:
1. Classify Computer hardware and software
2. Identify computer algorithm, flow charts and programs
3. Name different programming function
4. Define decisions and logical operations
5. Recognize looping and branching

B- Cognitive Skills:
On successful completion of this course, student will be able to:
1. Design computer algorithms
2. Apply flow charts in program solving
3. Analyze Engineering problems and set-up the solution with suitable program
4. Apply looping and branching in solving engineering problems

C- Interpersonal skills and responsibilities:
On successful completion of this course, student will be able to:
1. Access the internet and search for information to obtain knowledge about a specific problem.
2. Complete a technical report
3. Work for building an accurate computer program
4. Participate in a project using MATLAB programming

D-Analysis and communication:
On successful completion of this course, student will be able to:
1. Communicate effectively.
2. Seek appraise information from a wide range of sources.
3. Collaborate and innovate in problem solving.
4. Use general IT tools such as word processors, spreadsheets.
5. Manage time and resources

Assessment methods for the above elements
1. Written exams (mid-term and final) to assess understanding and scientific knowledge.
2. Assignments and quizzes to assess ability to solve problems and analyze results independently.
3. Scientific report to assess practical, and presentation skills

Weighting of assessments

Quizzes	20 %
Midterm Exam	25 %
Lab Performance	15 %
Final exam	40 %
Total	**100 %**

Text book:

1. Brian H. Hahn, and Daniel T. Valentine, "*Essential MATLAB for Engineers and Scientists*", 4th ed.
   Academic Press, 2010.

Supplementary references

1. William J. Palm III, Introduction to MatLab 7 for Engineers, McGraw-Hill International Edition, 2005.

Time table for distributing Practical course contents		
week	**Practical course contents**	**Remarks**
1	Engineering Problems and the Need for Computer Solutions	
2	Basics of MatLab: Menus – Toolbars – Computing with MatLab – Script Files and the Editor/Debugger – MatLab help System.	
3	Arrays, Matrices and Matrix Operations.	
4	User-Defined Functions.	
5	Working with Data Files.	
6	Basics of Programming: Algorithms - Pseudo Code - Flow Charts – Programming Structures.	
7	Program Design and Development.	
6	Relational Operations and Logical Variables.	
9	Logical Operators and Functions.	
10	Conditional Statements: if – else – elseif - switch	
11	Loops: for – while – break – continue.	
12	Debugging MatLab Programs.	
13	Graphing Functions: XY Plots – Sub-Plots	
14	Introducing Simulink.	
15	Final exam.	