

EGN 2213 – COMPUTER APPLICATIONS IN ENGINEERING I
Common Course Syllabus

Catalog Data: 3 CREDITS. An introduction to programming in MATLAB, this course includes some matrix concepts, input/output statements, for and while loops, if and else if statements, built in functions, self written functions, some built in solvers, and projects illustrating applications to engineering topics.

Corequisite:

1. Calculus for Engineers II – MAC 2282 or equivalent (MAC 2312)

Goals:

1. To teach students the basic building blocks in writing a computer program, which are: the arithmetic statement, input/output statements, matrices, for and while loops, if and if-else-if statements, the switch statement, built-in functions, and selfwritten functions.
2. To teach students to write computer programs in MATLAB that can be used to solve simple engineering type problems.
3. To teach students to present results from MATLAB programs in a neat and clear manner, including the use of plots and tables when appropriate
4. To teach students to document their programs and write interactive program.

Topics:

1. Numerical modeling for engineers
2. Computer Organization
3. Building blocks in writing a computer program
4. Program documentation
5. Some matrix concepts
6. Programming in MATLAB
 - a. Starting a program
 - b. Several elementary commands
 - c. Input from key board and output to screen
 - d. Input from a file and output to a file
 - e. Arithmetic statement
 - f. Math operations
 - g. Commonly used math functions
 - h. The basic component in MATLAB
 - i. The colon operator
 - j. Loops
 - k. if and else if statements
 - l. While statement
 - m. Switch statement
 - n. Functions
 - o. Plot commands (2D and 3D)
 - p. Reading from and writing to files
 - q. Use of MATLAB built in functions

Course Outcomes: (numbers in parentheses indicate correlation of the outcome with the appropriate ABET program outcomes 1-7)

1. Students should be able to write simple engineering type programs in MATLAB, using *for* and *while* loops, *if* and *if else* statements, the *switch* statement, matrices, and user defined functions. (1,2,6)
2. Students should be able to present results from MATLAB programs in a neat and clear manner, including the use of tables when appropriate. (3)
3. Students should be able to document their programs and write an interactive program. (1,2,6)
4. Students should be able to use MATLAB in interactive mode. (1,2,6)
5. Students should be able to create plots in MATLAB. (1,2,3,6)

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