ME 1311/C56 - MATLAB for Engineers with Applications
Course Syllabus – Fall 2017

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Office Hours: T R 1:45 PM – 2:30 PM (by appointment only)
W 10:30 AM – 2:00 PM (by appointment only)

Meeting Locations, Days and Times: Q-303, T Th 12:30 AM – 1:45 PM

Course Software/ Text:
The textbook "**Solving Mechanical Engineering Problems with MATLAB**" written by Simin Nasseri, **Linus Publications, 2016 (ISBN 10: 1-60797-675-7 or ISBN 13: 978-1-60797-675-2)** will be used for this course. It is a required textbook. Students should work on practice lab problems to get ready for tests and lab assignments. MATLAB has been installed on all Q Building labs' computers and it can be downloaded to be used at home as well.

Prerequisite: MATH 1113 (Pre-Calculus)

Course introduction:
This course provides an introduction to fundamental computing principles and programming concepts. Students use the high-level programming language, MATLAB to develop and implement programs to solve engineering problems. Basic programming concepts covered include: algorithm design, data types, flow control, functions, sorting, plotting, simulation, and numerical methods.

Course grade determination:
Your grade in this course will be determined from your performance on lab assignments (in-class assignments or quizzes), case study (includes the presentation of your project), and tests. The main emphasis of the course is on gaining practical skills. For this reason, the lab sessions are essential and should not be missed. Attendance is mandatory and points will be taken off for unexcused absence.

Attendance	5%
Assignments	15%
Midterm	30%
Final	30%
Project	20%
Total	100%

[90 - 100% = A, 80 - 89% = B, 70 - 79% = C, 60 - 69% = D, Below 60% = F]

Exams will be proctored and will be announced well before the testing dates.

Assignments will be based on materials taught in class. You need to prepare the list of MATLAB commands and use them during the assignments. During the allocated time, you answer the questions by typing appropriate commands and then print the assignment sheet in the lab.

Information about the project (case study) will be given in detail. You will use MATLAB to solve some engineering problems. You can make a GUI (Graphical User Interface) if you wish. A manual will be provided by me. This is actually a self-training step in finishing this MATLAB course via which you learn how to create a program that communicates with the user graphically. Besides, students are encouraged to choose the case studies related to sound and image processing if they wish and related course materials will be provided for them.

Course content- Topic coverage:

- MATLAB environment and commands
- Linear Algebra and matrices
- Fundamental engineering computing
- Save, load, display and fprintf commands
- Communication with Excel
- 2D and 3D plotting
- Solutions to systems of linear equations
- Conditional statements
- Loops
- MATLAB scripts and functions
- Polynomials, including differentiation and integration
- Using MATLAB for simple engineering problems

Course Outcomes:

By the end of this course, students will be able to:

- Introduce vectors and matrices in MATLAB,
- Apply basic concepts of Linear Algebra for vector and matrix operations,
- Perform 2D and 3D plotting,
- Formulate and solve systems of linear equations by Gaussian elimination, and matrix inversion,
- Write conditional statements and loops,
- Write Scripts and functions in MATLAB,
- Solve some engineering problems using MATLAB,
- Apply the fundamental knowledge of mathematics, science & engineering, to solve the real mechanical engineering problems (through case studies).

Academic Honesty:

Kennesaw State University has an Honor Code and a procedure for handling cases when academic misconduct is alleged. All students should be aware of them. Information about the Honor Code and the misconduct procedure may be found at: http://scai.kennesaw.edu/docs/KSU%20Codes%20of%20Conduct- 2015.pdf.

Disabilities:

Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the ATTIC counselor working with disabilities at (470) 578-7361, now in the Basement of the Student Center, as soon as possible to better ensure that such accommodations are implemented in a timely fashion. More info: http://sss.kennesaw.edu/sds/