Lecture Hours

MW 11:30 - 12:45
in MH-044

Instructor

Dr. Charles H. Lee

Office

MH 182 E

Office Hours

MW 11:00-11:30
MW 14:15-13:15

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Text Book

MATLAB: *An Introduction with Applications,*

Amos Gilat, 6th Edition by John Wiley & Son 2017

Withdrawal deadlines:
Sep 06 (without a "w")
Oct 06 (without doc.)
Nov 10 (Doc. required)

Class Attendance/ Participation (CAP):
Make every effort to be in class on time. Perfect attendance and actively participating in class will earn you 100 CAP points. You are allowed to have one absence. Each absence thereafter will cost you 5 points. Being tardy twice is equivalent to one absence.

Software: *It's recommended that you visit CSUF's IT website and install MATLAB on your computer for this course.*

Goals: This course is intended to help you become comfortable using personal computers to solve quantitative problems, as well as to experiment with mathematical concepts and techniques. A variety of problems from mathematics, science and engineering will be considered to illustrate the problem-solving process. In addition, various topics from the four-semester calculus and linear algebra sequence will be studied from a computational viewpoint. You will gain experience in the use of MATLAB, a state-of-the-art software package for interactive numerical and symbolic computation, as well as in writing programs of your own. What you learn will prove to be useful in many of your future courses in mathematics, particularly those involving numerical computation, mathematical modeling, and simulation. The skills you will develop here are also invaluable for **any** career in mathematics, science or engineering, including teaching.

Course Description: Introduction to problem-solving on the computer using modern interactive software. Numerical and symbolic computation. Variety of problems arising in mathematics, science and engineering. Also serves as preparation for subsequent computer-based courses in mathematical modeling.

Corequisite: MATH 250B.

Homework: Homework will be an incredibly important component of the course, so be sure to allow sufficient time to compact and efficient code. Start early! You are encouraged to work together on Homework assignments, but be sure that the work turned in is your own. This means written by you, not copied from another student, or any other source. You are encouraged to discuss the method of solution with your classmates, but then use that information to write a complete solution individually. Homework must be carried step by step. Solutions alone are not acceptable. Homework is due at the beginning of class on Wednesdays. To guarantee your work are promptly graded and returned, NO late homework will be accepted. There are 15 equally weighted homework assignments listed in the course schedule. One lowest score will be dropped.

Quizzes & In-class Assignments: A quiz or a programming assignment is given almost every lecture. Be sure to show up to class everyday as no make-up assignments will be given.

Computer Programming Assignments: MATLAB programming assignments must be executed and the outputs must be included immediately following the scripts as comments.

Exams

- There will be 2 midterms and a final comprehensive exam.
- **NO** make-up exams except in very special circumstances.

Grade Distribution

Homework	10%
Quizzes & In-Class Assignments	10%
Midterm Exam I	20%
Midterm Exam II	20%
CAP	5%
Final Exam	35%
Total	100%

Grade Scale

93%-100%	A
90%-92.9%	A-
87%-89.9%	B+
83%-86.9%	B
80%-82.9%	B-
77%-79.9%	C+
70%-76.9%	C
60%-69.9%	D
0%-59.9%	F

Important Remarks

- **In the Event of an Emergency such as Earthquake or Fire:** *Take all your personal belongings and leave the classroom. Use the stairways located at the east, west, or center of the building. Do not use an elevator. They may not be working once the alarm sounds. Go to the lawn area towards Nutwood Avenue. Stay with class members for further instruction. For additional information on exits, fire alarms, and telephones, building evacuation maps are located near each elevator. Anyone who may have difficulty evacuating the building, please see me at the beginning of the semester.*

- **Academic Integrity:** *Students who violate university standards of academic integrity are subject to disciplinary sanctions, including failure in the course and suspension from the university. Since dishonesty in any form harms the individual, other students, and the university, policies on academic integrity are strictly enforced. You should familiarize yourself with the academic integrity guidelines found in the current student handbook.*

- **Cheating** *– obtaining or attempting to obtain credit for work by the use of any dishonest, deceptive, fraudulent, or unauthorized means. Helping someone commit an act of academic dishonesty. (UPS 300.021). Examples include, but are not limited to:*

    1. Unacceptable examination behavior – communicating with fellow students, copying material from another student's exam or allowing another student to copy from an exam, possessing or using unauthorized materials, or any behavior that defeats the intent of an exam.

    2. Plagiarism – taking the work of another and offering it as one's own without giving credit to that source, whether that material is paraphrased or copied in verbatim or near-verbatim form.

    3. Unauthorized collaboration on a project, homework or other assignment where an instructor expressly forbids such collaboration.

    4. Documentary falsification including forgery, altering of campus documents or records, tampering with grading procedures, fabricating lab assignments, or altering medical excuses.

- **Email Policies:** *Only emails sent from CSU Fullerton accounts will be addressed. All emails must be professionally written (e.g., no texting-language). Emails will be given a response within 2 business days and only during regular business hours (i.e., M – F, 9 AM – 5 PM). If emails require a lengthy reply, the instructor may suggest coming into office hours as a response.*

- **Class Policies:** *Cell phone use is prohibited (no emailing, texting, web surfing, playing games, etc.). Smart Watch use is prohibited. Failure to attend class on days with a quiz, exam, or in-class assignment will result in a zero grade. If you would like to contest a grade on an assessment, you must notify the instructor within 24 hours of receiving the graded work.*

- **Disability Support Services (DSS):** *The university requires students with disabilities to register with the Office of Disability Support Services (DSS), located in UH-101 and at (714) 278-3112, in order to receive prescribed accommodations appropriate to their disability. Students requesting accommodations should inform the instructor during the first week of classes about any disability or special needs that may require specific arrangements/accommodations related to attending class sessions, completing course assignments, writing papers or quizzes/tests/examinations.*

Course Schedule

Math 320 — Introduction to Mathematical Computation — Fall 2018 — Dr. Charles H. Lee

Week of		Monday	Wednesday	Homework
08/22/22	08/24/22	1.1 Starting MATLAB, MATLAB windows 1.2 Working in the command window 1.3 Arithmetic operations with scalars	1.4 Display formats 1.5 Elementary math built-in functions 1.6 Defining scalar variables	**Due Weekly on Wednesday**
08/29/22	08/31/22	1.7 Useful commands for managing variables 1.8 Script files 1.9 Examples of MATLAB Applications	2.1 Creating a one dimensional array (vector) 2.2 Creating a 2 dimensional array (matrix) 2.3 Notes about variables in MATLAB	**HW-1** Ch. 1: 1-20 (even)
09/05/22	09/07/22	Labor Day	2.4 The transpose operator 2.5 Array addressing 2.6 Using a colon: in addressing arrays 2.7 Adding elements to existing variables	**HW-2** Ch. 1: 20-40 (even) Ch. 2: 2-10 (even)
09/12/22	09/14/22	2.8 Deleting elements to existing variables 2.9 Built-in functions for handling arrays 2.10 Strings and strings as variables 3.1 Addition and subtraction	3.2 Array multiplication 3.3 Array division 3.4 Element-by-element operations 3.5 Using arrays in MATLAB built-in functions	**HW-3** **Ch. 2:** 20-30 (even) **Ch. 2:** 31-37 (part a) **Ch. 2:** 38-44 (even)
09/19/22	09/21/22	3.6 Built-in functions for analyzing arrays 3.7 Generation of random numbers 3.8 Examples of MATLAB Applications	4.1 Workspace and workspace window 4.2 Input to a script file 4.3 Output commands	**HW-4** Ch. 3: 4, 8,12,16,20 Ch. 3: 24, 28, 32, 36
09/26/22	09/28/22	4.4 The save and load commands 4.5 Importing and exporting data 4.6 Examples of MATLAB Applications	Midterm Exam I (Chapter 1-3)	
10/03/22	10/05/22	5.1 The plot command 5.2 The fplot command 5.3 Plotting multiple graphs in the same plot	5.4 Formatting a plot 5.5 Plots with logarithmic axes 5.6 Plots with error bars 5.7 Plots with special graphics	**HW-5** Ch. 4: 1, 3, 5, 7, 9 Ch. 4: 11,15,19,23,27 Ch. 5: 1-20 (even)
10/10/22	10/12/22	5.8 Histograms & 5.9 Polar plots 5.10 Plotting multiple plots on the same page 5.11 Multiple figure windows 5.12 Examples of MATLAB Applications	6.1 Relational and logical operators 6.2 Conditional statements 6.3 The switch-case statement 6.4 Loops	**HW-6** Ch. 5: 24,28,32,36,40
10/17/22	10/19/22	6.5 Nested loops, nested conditional statements 6.6 The break and continue commands 6.7 Examples of MATLAB Applications	7.1 Creating a function file 7.2 Structure of a function file 7.3 Local and global variables	**HW-7** Ch. 6: 1,3,5,7,9,11
10/24/22	10/26/22	7.4 Saving a function file 7.5 Using a user-defined function 7.6 Examples of simple user-defined functions	7.7 Comparison between script/function files 7.8 Anonymous and inline functions 7.9 Function functions	**HW-8** **Ch. 6:** 16,20,24,28,32 **Ch. 7:** 1,5,9,13
10/31/22	11/02/22	7.10 Subfunctions 7.11 Nested functions 7.12 Examples of MATLAB Applications	8.1 Polynomials 8.2 Curve fitting 8.3 Interpolation	**HW-9** Ch. 7: 17,21,25,29,33 Ch. 7: 22, 27, 34, 40
11/07/22	11/09/22	9.1 Solving an equation with one variable 9.2 Finding min/max of a function 9.3 Numerical integration 9.4 Ordinary differential equations	Midterm Exam II (Chapter 1-7)	**HW-10** Ch. 8: 5,10,...,35
11/14/22	11/16/22	10.1 3D Line plots 10.2 Mesh and surface plots 10.3 Plots with special graphics 10.4 The view command	11.1 Symbolic Objects & Expressions 11.2 Symbolic Manipulations 11.3 Solving Algebraic Equations	**HW-11** Ch. 9: 5,10, … 40
11/21/22	11/23/22	Fall Recess	Fall Recess	
11/28/22	11/30/22	Computer Programming Proficiency Assignment Due	11.4 Differentiation 11.5 Integration 11.6 Solving ODEs	**HW-12** Ch. 10:1,5,9,13,17,21
12/05/22	12/07/22	11.7 Plotting Symbolic Expressions 11.8 Num. Calculations of Symbolic Expressions 11.9 Examples of MATLAB Applications	Review	**HW-13** Ch. 11: 2-24 (even)
12/12/22	12/14/22		Comprehensive Final Exam 11:00- 12:50	