

E7 Spring 2013 Syllabus

Course Title

Engineering 7: Introduction to Computer Programming for Scientists and Engineers

Course Description

Elements of procedural and object-oriented programming. Induction, iteration, and recursion. Real functions and floating-point computations for engineering analysis. Introduction to data structures. Representative examples are drawn from mathematics, science, and engineering. The course uses the MATLAB programming language.

Course Format

Two hours of lecture (Required)

One hour of discussion (Optional)

Four hours of laboratory per week (Strongly Recommended)

Prerequisites

Mathematics 1B (may be taken concurrently)

Website

The course website will be on bSpace (<http://bspace.berkeley.edu>). The website will be used to post announcements, lab assignments, grades, and other course materials. The website will also be used for lab assignment submission, and a live chat room. It is your responsibility to check the website frequently, since important information about the course may be posted without being announced in lecture, lab, or discussion.

Software

The MATLAB software environment will be used in this course. MATLAB is available on the computers in the labs, or you may purchase your own copy if you wish to work on your personal computer. A student version of the software can be purchased directly from

<http://www.mathworks.com> at the steeply discounted price of \$99; the standard price is over \$2000! You only need to buy “MATLAB & Simulink Student Version”; there is no need to purchase the optional toolboxes.

Reader

An electronic version of the course reader *An Introduction to MATLAB Programming and Numerical Methods for Engineers* by Siau & Bayen [SB] will be posted on the course website. The reader provides valuable background and step-by-step exercises for you to follow. Reading will be regularly assigned from [SB]. For topics not included in the reader we will post supplementary notes to bSpace.

Lab Sections

Lab section is where you can work on the weekly lab assignments and get programming help from the GSIs. When attending lab section, you must go to the lab section to which you are assigned.

Discussion Sections

Discussion section is where course material will be reviewed and you will have an opportunity to ask questions in a structured setting. New material will occasionally be presented in discussion section. When this is to occur, it will be announced in lecture and on bSpace.

Chat Room

The chat room on the course website is where you can discuss course material with other students. GSIs will also monitor the chat room and help facilitate discussions as indicated on the schedule below.

Office Hours

Office hours are where you can get more in-depth personal help from the GSIs and the professor. Please do not show up to office hours outside of the scheduled hours. In extenuating circumstances, appointments can be scheduled outside of the posted hours.

Lab Assignments

Lab assignments will be posted weekly on Sunday and are due the following Sunday at 7pm. Late assignments will be accepted until 8pm to account for computer and submission delays; the 8pm deadline is absolute, so do not wait until the last minute. Lab assignments will be submitted electronically as individual .m files (not zipped) using the course website.

All submitted files must have the exact filename and function declaration specified in the assignment, including correct spelling and case. Lab assignments will be graded manually as well as using an automated system and grades will be posted on the course website, along with a description of which problems were incorrect. If you think your assignment was graded incorrectly, you must submit a regrade request within one week of the graded assignment being posted. To request a regrade, send an email to e7sp13.grades@gmail.com with your name, student ID, the assignment and problem to be regraded, and a short but specific description of the reason for your regrade request.

Cheating

It is acceptable and instructive to discuss lab assignments with classmates, but you are required to complete the assignments on your own. **All materials that you submit must be your own work. Copying a classmate's work, or allowing your work to be copied, constitutes cheating and will result in a two letter grade decrease in your final course grade for your first violation. A second violation will result in an F for the course.** All instances of cheating will also be report to The Center for Student Conduct. For further reference, see the Berkeley Campus Code of Student Conduct at <http://campuslife.berkeley.edu/code-of-conduct>.

Exams

Exams will be multiple choice; you must bring a green Scantron form and a #2 pencil to all exams. During exams, you will be allowed only a Scantron form, a pencil, an eraser, and blank scratch paper. You are not allowed to use notes, the reader, a calculator, or any other electronic devices. Exam grades will be posted on the course website. If you think your exam was graded incorrectly, you must submit a regrade request within one week of the graded exam being posted. To request a regrade, send an email to e7sp13.grades@gmail.com with your name, student ID, the problem to be regraded, and a short but specific description of the reason for the regrade.

Grading

Your course grade will be determined by lab assignments, the midterm exam, and the final exam, according to the following weights:

Lab Assignments: 50%

Midterm Exam: 20% (March 13 at 1-2pm in 2050 VLSB)

Final Exam: 30% (May 14 at 8-11am)

Lecture, Discussion, and Lab Schedule

Type	Section	Days	Hours	Room	Building	Instructors
Lecture	001	M W	1-2pm	2050	Valley LSB	Prof. Govindjee
Discussion	101	F	2-3pm	60	Evans	Angela
Discussion	102	F	11-12pm	141	McCone	Nate
Discussion	103	F	10-11am	2	LeConte	Gerd
Discussion	104	F	3-4pm	2	LeConte	Toby
Lab	011	Tu Th	8-10am	1109	Etcheverry	Bruno, Toby
Lab	012	M W	10-12pm	1109	Etcheverry	Delphine, Myles
Lab	013	M W	2-4pm	1109	Etcheverry	Danny, Myles
Lab	014	M W	4-6pm	212	Wheeler	Angela, Brian
Lab	015	M W	4-6pm	1109	Etcheverry	Bertrand, Delphine
Lab	016	M W	8-10am	1109	Etcheverry	Angela, Brian
Lab	017	Tu Th	10-12pm	1109	Etcheverry	Bruno, Nate
Lab	018	Tu Th	12-2pm	1109	Etcheverry	Rui, Sabrina
Lab	019	Tu Th	2-4pm	1109	Etcheverry	Bertrand, Gerd
Lab	020	Tu Th	4-6pm	1109	Etcheverry	Danny, Gerd
Lab	021	Tu Th	10-12pm	212	Wheeler	Rui, Sabrina
Lab	023	Tu Th	2-4pm	212	Wheeler	Nate, Toby

Office Hours and Chat Room Schedule

Type	Days	Hours	Room	Building	Instructor
Office Hours	Tu	1-3pm, F 9-11am	779	Davis	Prof. Govindjee
Office Hours	W	11-12pm	537	Davis	Travis
Office Hours	Tu	4-5pm	537	Davis	Nate
Office Hours	Th	1-2pm	537	Davis	Gerd
Office Hours	F	12-1pm	537	Davis	Angela
Office Hours	F	2-3pm	537	Davis	Toby
bSpace Chat	M	12-1pm	-	-	Myles
bSpace Chat	M	6-7pm	-	-	Brian
bSpace Chat	Tu	6-7pm	-	-	Gerd
bSpace Chat	Tu	7-8pm	-	-	Bruno
bSpace Chat	Tu	8-9pm	-	-	Sabrina
bSpace Chat	W	12-1pm	-	-	Danny
bSpace Chat	W	6-7pm	-	-	Bertrand
bSpace Chat	Th	1-2pm	-	-	Toby
bSpace Chat	Th	6-7pm	-	-	Nate
bSpace Chat	Th	7-8pm	-	-	Delphine
bSpace Chat	Th	9-10pm	-	-	Angela
bSpace Chat	F	9-10am	-	-	Rui

Instructor Email Addresses

Instructor	Title	Email Address
Prof. Govindjee	Professor	s_g@berkeley.edu
Travis Walter	Head GSI	twalter@berkeley.edu
Nate Butler	Discussion/Lab GSI	butler@berkeley.edu
Gerd Brandstetter	Discussion/Lab GSI	gerd@berkeley.edu
Angela Cheng	Discussion/Lab GSI	acheng9321@gmail.com
Toby Mitchell	Discussion/Lab GSI	tobymitchell@berkeley.edu
Myles Iribarne	Lab GSI	myles.iribarne@berkeley.edu
Danny Wernicke	Lab GSI	dwernicke@berkeley.edu
Bruno Burtschell	Lab GSI	bruno.burt@gmail.com
Sabrina Hodali	Lab GSI	snhodali@gmail.com
Rui Wang	Lab GSI	ruì.wang@berkeley.edu
Brian Shams	Lab GSI	shams@berkeley.edu
Bertrand Paul	Lab GSI	paul.bertrand@berkeley.edu
Delphine Cai	Lab GSI	delphine.cai@berkeley.edu

Lecture Schedule

Day	Date	Topic	Reading
W	Jan 23	Course Introduction, MATLAB Basics	Syllabus, [SB] Chpt. 1
M	Jan 28	MATLAB Basics, Data Types	[SB] Chpt. 1,2
W	Jan 30	Arrays, Cells, Structures, Boolean Operations	[SB] Chpt. 1,2
M	Feb 4	Functions	[SB] Chpt. 3
W	Feb 6	Branching	[SB] Chpt. 4
M	Feb 11	Iteration	[SB] Chpt. 5
W	Feb 13	Recursion	[SB] Chpt. 6
M	Feb 18	No Lecture - President's Day	-
W	Feb 20	Recursion and Complexity	[SB] Chpt. 6,7
M	Feb 25	Data Structures	bSpace Notes
W	Feb 27	Object-Oriented Programming	bSpace Notes
M	Mar 4	Object-Oriented Programming	bSpace Notes
W	Mar 6	Representation of Numbers	[SB] Chpt. 8
M	Mar 11	Linear Equations	[SB] Chpt. 12
W	Mar 13	Midterm Exam	-
M	Mar 18	Least Squares Regression	[SB] Chpt. 13
W	Mar 20	Linear and Polynomial Interpolation	[SB] Chpt. 14
M	Mar 25	No Lecture - Spring Break	-
W	Mar 27	No Lecture - Spring Break	-
M	Apr 1	Root Finding	[SB] Chpt. 16
W	Apr 3	Root Finding	[SB] Chpt. 16
M	Apr 8	Numerical Differentiation	[SB] Chpt. 17
W	Apr 10	Numerical Integration	[SB] Chpt. 18
M	Apr 15	Numerical Integration	[SB] Chpt. 18
W	Apr 17	Ordinary Differential Equations	[SB] Chpt. 19
M	Apr 22	Ordinary Differential Equations	[SB] Chpt. 19
W	Apr 24	Sorting and Searching	bSpace Notes
M	Apr 29	Sorting and Searching	bSpace Notes
W	May 1	Handle Graphics, GUIs, Callbacks	bSpace Notes

Assignment Schedule

Lab	Assigned	Due
0	Jan 27	Feb 3
1	Feb 3	Feb 10
2	Feb 10	Feb 17
3	Feb 17	Feb 24
4	Feb 24	Mar 3
5	Mar 3	Mar 10
6	Mar 10	Mar 17
7	Mar 17	Mar 24
No Assignment - Spring Break		
8	Mar 31	Apr 7
9	Apr 7	Apr 14
10	Apr 14	Apr 21
11	Apr 21	Apr 28
12	Apr 28	May 5