

Engineering 7

Introduction to Computer Programming for Scientists and Engineers

Lecture Times: Monday and Wednesday, 1-2 pm, 2050 Valley Life Sciences Building

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Office Hours: Monday & Wednesday 2-3 at 2050 VLSB (after lecture), Thursday 4-5p at McLaughlin 112

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Additional GSI Staff:

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Course Readers:

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Course Material:

Recommended Text: An Introduction to MATLAB Programming and Numerical Methods for Engineers, Siau & Bayen. The textbook is available in the campus bookstore.

Recommended Software: You will have access to the latest version of MATLAB in the lab sections and drop-in hours (see lab information below for information on drop-in hours). You may also install your own copy if you wish to be able to work on your personal computer. The latest version of MATLAB (2015) is provided free of cost to you by the university. Please see Matlab folder on bcourses for installation instructions.

I. Course Objectives

E7 is an introductory course on computer programming for lower-division students in science and engineering. The principal goal of the course is to teach basic computer programming concepts and apply them to computer-based problem-solving methods. The course stresses hands-on computer programming using MATLAB, a powerful high-level programming environment.

The prerequisite for this course is Math 1B, which may be taken concurrently.

II. Course Format

Each E7 student will attend two hours of lecture, four hours of computer laboratory, and one hour of discussion per week. Professor Sengupta will teach the lectures, while the GSI staff leads labs and discussions.

Lab sections will begin on the second week of instruction (Monday, January 26th). You must not attend a lab or discussion section in which you are not officially enrolled.

III. Course Website

The course website is hosted at bcourses.berkeley.edu. The E7 bcourses site is where you can access course announcements, homework assignments, grades, and other documents pertaining to course material. You will also be required to upload your homework assignments via bcourses. Additionally, you will have access to a chat room and discussion forum where you can communicate with the instructor, GSI's, and fellow classmates about technical questions in the coursework. While you may post questions about the course material, under no circumstances may you post code or copy another student's work. Violations of the honor code will be severely punished. It is your responsibility to check the website frequently, as important information about the course will be routinely posted without being announced in lecture.

IV. Grading and Examinations

The course grade will be assigned based on the following percentages:

- 50% Homework Assignments
- 12.5% Midterm 1 (Wednesday, March 4) Room: TBD
- 12.5% Midterm 2 (Wednesday, April 15) Room: TBD
- 25% Final Examination (Exam Group 5: 8:00 AM, Tuesday, May 12) Room: TBD

Homeworks will be returned to you typically via bcourses. If you feel that a problem was graded incorrectly, you may submit a re-grade request within one week of receiving the graded assignment. To do this, you must first consult with your Lab GSI and if approved, write a short paragraph outlining your stance and submit it to the Head GSI. It will then be passed on to an official E7 Reader for evaluation. **Please note that your entire assignment will be re-graded, so it is possible that your score will be lowered for problems other than the one you are targeting.**

Exams will be held during the normal lecture times, with rooms to be announced as the exam draws nearer. If you are a DSP student and require accommodations for the exam, please notify the instructor and head GSI within the first three weeks of class so that we can provide the necessary accommodations for you. Attendance at all examinations is mandatory unless cleared in advance with the professor and head GSI.

V. Assignments

There will be 10 assignments, generally posted on Thursday of each week. Your lowest score on any individual assignment will be dropped. Assignments must be turned in no later than 5 am (early morning) on Friday of the week they are due. **No late assignments will be accepted.**

Assignments are to be worked on, both outside of class and during lab/dis sections. There are precise formatting requirements for submitting assignments that will be explained in the first assignment and in lab section.

It is acceptable to discuss with your classmates the material contained in the assignments. However, you are required to complete all assignments on your own. **All material that is turned in must be your own original work. Copying someone else's work or allowing your work to be copied constitutes cheating, and will result in zero credit for the entire assignment, as well as possible disciplinary action from Student Judicial Affairs.** For further reference, see the Berkeley Campus Code of Student Conduct at: <http://students.berkeley.edu/sas/conduct.shtml>

VI. Lab and Course Policies

All students are required to attend only the lab they are officially enrolled in. If a student attends a lab different from the one they are enrolled in, they may be kicked out of the lab if there are no available seats.

No food, drink, or cell phones are permitted in lab. If you choose to receive a call or wish to eat, you should step outside of the lab to do so. We strongly encourage that you bring a removable storage device/flash drive to lab sections to save your work from labs. All data saved to the lab computers will be erased upon logging out, so it is critical that you either back up your work on a flash drive or email you work to yourself. We will give you login information on the first day of E7 lab, which will be used to keep track of the course printing allocation. **Login information is confidential and should not be shared with students outside E7. If the printing allocation is exceeded, each student in the class will be charged \$12 to refill it.**

The following lists the current drop-in hours for the labs. Drop-in hours are available for any student in the class to use but will not be staffed by GSI's. You may attend a drop-in for either lab even if it is not the one that you have section in.

1109 Etcheverry: Mon/Wed 12-1 pm, Fri 8 am-5 pm

1535 Tolman: Mon/Wed 5-6p, Tu/Th 4-6p

Contact your Lab/Discussion GSIs and the Professor for all questions regarding the course material (lectures, assignments and so on). Contact the Head GSI only for administrative matters that include course conduct, enrollment, grading concerns, examinations and other special accommodations. Please do not expect to get course material or assignment related questions answered by the Head GSI.

VII. Lab Schedule

Section	Times	Location	Instructors	
			M/Tu	W/Th
Lab 011	MW 8-10 am	1109 Etcheverry	Andrea Ninh	Andrea Ninh
Lab 012	MW 10-noon	1109 Etcheverry	Christiaan Mogeng	Christiaan Mogeng
Lab 013	MW 2-4 pm	1109 Etcheverry	Christiaan Maxime	Christiaan Maxime
Lab 014	MW 4-6 pm	1109 Etcheverry	Andrea Maxime	Andrea Maxime
Lab 015	TuTh 8-10 am	1109 Etcheverry	Cyril Mogeng	Cyril Mogeng
Lab 016	TuTh 10-noon	1109 Etcheverry	Cyril Florian	Cyril Florian
Lab 017	TuTh 12-2 pm	1109 Etcheverry	Jordan Florian	Jordan Florian
Lab 018	TuTh 2-4 pm	1109 Etcheverry	Bassel Cyril	Bassel Cyril
Lab 019	TuTh 4-6 pm	1109 Etcheverry	Maxime Ninh	Maxime Ninh
Lab 020	TuTh 6-8 pm	1109 Etcheverry	Florian Zhi	Florian Zhi
Lab 021	MW 6-8 pm	1109 Etcheverry	Andrea Christiaan	Andrea Christiaan
Lab 022	MW 3-5 pm	1535 Tolman	Howie Mogeng Ninh	Howie Mogeng Ninh

VIII. Discussion Schedule

Sections	Time	Location	Instructor
101	F 8-9	241 Cory	Bassel
102	F 9-10	247 Cory	Bassel
103	F 10-11	247 Cory	Bassel
104	F 11-12	247 Cory	Howie
105	F 12-1	247 Cory	Howie
106	F 3-4	310 Hearst Min	Howie
107	F 2-3	150 GSPP	Howie
108	F 11-12	534 Davis	Bassel
110	F 1-2	534 Davis	Bassel

IX. Lecture Schedule

Content subject to change. Labs are posted the evening before

Class	Date	Day	Subject
1	Mon	19-Jan	<i>No Class - Martin Luther King Day</i>
	Wed	21-Jan	Course Introduction
	Fri	23-Jan	Discussion/Lab Intro Lab 0 assigned
2	Mon	26-Jan	Matlab Basics
	Wed	28-Jan	Arrays, Data Structures
	Fri	30-Jan	Discussion/Lab Intro Lab 0 due, Lab 1 assigned
4	Mon	2-Feb	Vector Operations
	Wed	4-Feb	I/O, if-then-else, Boolean operators
	Fri	6-Feb	Discussion/Lab Intro Lab 1 due, Lab 2 assigned
6	Mon	9-Feb	Recursion 1
	Wed	11-Feb	Recursion 2
	Fri	13-Feb	Discussion/Lab Intro Lab 2 due, Lab 3 assigned
8	Mon	16-Feb	<i>No Class - President's Day</i>
	Wed	18-Feb	Big (O)
	Fri	20-Feb	Discussion/Lab Intro Lab 3 due, Lab 4 assigned
9	Mon	23-Feb	Iteration/Fractals/Graphics
	Wed	25-Feb	Computational Errors/Loss of accuracy
	Fri	27-Feb	MT Review Lab 4 due
11	Mon	2-Mar	Linear Equations
	Wed	4-Mar	Midterm 1 (Material up to Lecture 9)
	Fri	6-Mar	Discussion
13	Mon	9-Mar	Least Squares Regression
	Wed	11-Mar	Curve fitting, interpolation
	Fri	13-Mar	Discussion/Lab Intro Lab 5 assigned
15	Mon	16-Mar	Numerical root finding - first order
	Wed	18-Mar	Numerical root finding - second order
	Fri	20-Mar	Discussion/Lab Intro Lab 5 due, Lab 6 assigned
	Mon	23-Mar	<i>Spring Break</i>
	Wed	25-Mar	<i>Spring Break</i>
	Fri	27-Mar	<i>Spring Break</i>
17	Mon	30-Mar	Numerical differentiation
	Wed	1-Apr	Numerical integration
	Fri	3-Apr	Discussion/Lab Intro Lab 6 due, Lab 7 assigned
19	Mon	6-Apr	ODE
	Wed	8-Apr	ODE
	Fri	10-Apr	MT Review Lab 7 due
21	Mon	13-Apr	ODE
	Wed	15-Apr	Midterm 2 (material up to Lecture 18)
	Fri	17-Apr	Discussion Lab 8 assigned
23	Mon	20-Apr	Sorting/search
	Wed	22-Apr	Lists
	Fri	24-Apr	Discussion/Lab Intro Lab 8 due, Lab 9 assigned
25	Mon	27-Apr	Trees
	Wed	29-Apr	Probability/Queues
	Fri	1-May	Discussion Lab 9 due
Week of 4-May to 8-May – Review			