# Course Syllabus

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E7 is an introductory course on computer programming for lower-division students in science and engineering. The principal goal of the course is to introduce 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.

# Teaching staff

**Professor Reza Alam** (reza.alam@berkeley.edu (mailto:reza.alam@berkeley.edu) )

**Professor Grace O'Connell** (g.oconnell@berkeley.edu (mailto:g.oconnell@berkeley.edu) )

**Head GSI: Alyssa Novelia** (a.novelia@berkeley.ed (mailto:a.novelia@berkeley.edu) u (mailto:a.novelia@berkeley.edu) )

# Course format

The popular course discussion forum Piazza is integrated into bCourses (see the left sidebar). The instruction team will monitor and contribute to this forum, and you are encouraged to use it to seek help from the instructors and your peers. You are also encouraged to contribute not only questions, but also answers to questions that you are comfortable with.

### Laboratory Assignments

### Online Quizzes

Short quizzes are available online and are designed to help you prepare for the midterms and final exam (5% of total grade). You can take the quizzes as many times as you'd like up until 2 days before the midterm. That is, if the first midterm is on Friday October, 10th, you will be able to submit answers for the available quizzes until 11:59pm on Tuesday October 7th. On October 8th the correct answers for all available quizzes will be available to prepare for the midterm. It is strongly recommended that you complete the quiz shortly after the corresponding lecture rather than waiting until the week before the exams.

## Midterms and Final Examinations

The 3-hour final examination is on **Wednesday, December 17, 7-10 pm**. You will be required to provide ID before entering the examination rooms.

# Course Text and Requirements

In E7, you are going to learn Matlab. We require that you gain access to Matlab (you may obtain the latest Student Version of Matlab, which can be purchased from the Mathworks web site, **Student Version of MATLAB)** (http://www.mathworks.com/academia/student_version/) . The Matlab software comes with extensive built-in help, and tutorials can be found on the **Mathworks website** (http://www.mathworks.com/) . Among other things this website hosts documentation, including manuals that you can download.

There is no required textbook for this course. The Matlab application has ample built-in help and tutorials; the same help and tutorials can be also found on the Mathwork web site, along with detailed manuals that you can download for free. If you are still interested in a textbook, we suggest exploring the Amazon site for latest editions; you may find there, for instance, a MATLAB Primer, Eighth Edition, or Matlab, Second Edition: A Practical Introduction to Programming and Problem Solving. You are welcome to ask for the instructor's opinion.

# Academic Honesty

It is acceptable to discuss with your classmates the material contained in the quizzes and laboratory assignments. *However, we require that your submissions represent your own 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. In addition, Berkeley students who are found to cheat in assignments or exams will be referred to Student Judicial Affairs. For details, see the website of the **Berkeley Center for Student Conduct** (http://sa.berkeley.edu/conduct) .

# Grades and Grading

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

35% Homework Assignments

5% Quizzes

15% Midterm 1

15% Midterm 2

30% Final

If you find any discrepancies between the issued grades and the grades posted on bCourses, please bring them to the attention of one of your laboratory GSIs immediately. Alternatively you visit the head GSI during her office hours.

If you feel that a midterm problem is graded incorrectly, write a short paragraph outlining your stance and turn it to your laboratory GSI or the head GSI, along with the original examination. You have one week from the date that exams are first returned to submit a re-grade request. Any re-grades request submitted after the deadline will not be accepted.

| Date | Details | |
|---|---|---|
| Fri Sep 5, 2014 | HW0 (https://bcourses.berkeley.edu/courses/1242422/assignments/5208772) | due by 12pm |
| Fri Sep 12, 2014 | HW1 (https://bcourses.berkeley.edu/courses/1242422/assignments/5208773) | due by 11:59am |
| Fri Sep 19, 2014 | HW2 (https://bcourses.berkeley.edu/courses/1242422/assignments/5499400) | due by 11:59pm |
| Fri Sep 26, 2014 | HW3 (https://bcourses.berkeley.edu/courses/1242422/assignments/5547099) | due by 11:59am |
| Fri Oct 3, 2014 | HW4 (https://bcourses.berkeley.edu/courses/1242422/assignments/5566498) | due by 11:59am |
| Fri Oct 10, 2014 | 1D Arrays: construction (https://bcourses.berkeley.edu/courses/1242422/assignments/5208686) | due by 12pm |
| | 2D Arrays: construction (https://bcourses.berkeley.edu/courses/1242422/assignments/5208687) | due by 12pm |
| | 2D Arrays: linear indexing (https://bcourses.berkeley.edu/courses/1242422/assignments/5208699) | due by 12pm |
| | Code cells and publishing (https://bcourses.berkeley.edu/courses/1242422/assignments/5208712) | due by 12pm |
| | Expressions: arithmetic operations (https://bcourses.berkeley.edu/courses/1242422/assignments/5208682) | due by 12pm |
| | Expressions: format (https://bcourses.berkeley.edu/courses/1242422/assignments/5208739) | due by 12pm |
| | Functions: Analysis (https://bcourses.berkeley.edu/courses/1242422/assignments/5208698) | due by 12pm |
| | Functions: elementary analysis (https://bcourses.berkeley.edu/courses/1242422/assignments/5208735) | due by 12pm |
| | Logical Operators: Truth Tables (https://bcourses.berkeley.edu/courses/1242422/assignments/5208689) | due by 12pm |
| | Matlab environment layout (https://bcourses.berkeley.edu/courses/1242422/assignments/5208713) | due by 12pm |
| | Script file basics (https://bcourses.berkeley.edu/courses/1242422/assignments/5208700) | due by 12pm |
| | Subfunctions: Analysis (https://bcourses.berkeley.edu/courses/1242422/assignments/5208751) | due by 12pm |
| | The Matlab Editor (https://bcourses.berkeley.edu/courses/1242422/assignments/5208754) | due by 12pm |
| Sat Oct 11, 2014 | HW5 (https://bcourses.berkeley.edu/courses/1242422/assignments/5592267) | due by 11:59am |
| Fri Oct 17, 2014 | HW6 (https://bcourses.berkeley.edu/courses/1242422/assignments/5608629) | due by 11:59am |

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| Fri Oct 24, 2014 | HW7 (https://bcourses.berkeley.edu/courses/1242422/assignments/5629191) | due by 11:59am |
| Fri Oct 31, 2014 | HW8 (https://bcourses.berkeley.edu/courses/1242422/assignments/5644514) | due by 11:59am |
| Fri Nov 7, 2014 | HW9 (https://bcourses.berkeley.edu/courses/1242422/assignments/5655698) | due by 11:59am |
| Fri Nov 14, 2014 | Disadvantages of Structs (https://bcourses.berkeley.edu/courses/1242422/assignments/5208727) | due by 12pm |
| | Matrix multiplication (https://bcourses.berkeley.edu/courses/1242422/assignments/5208690) | due by 12pm |
| | Matrix-vector multiplication (https://bcourses.berkeley.edu/courses/1242422/assignments/5208677) | due by 12pm |
| | Probability and the normal distribution (https://bcourses.berkeley.edu/courses/1242422/assignments/5208664) | due by 12pm |
| | Probability in Matlab (https://bcourses.berkeley.edu/courses/1242422/assignments/5208770) | due by 12pm |
| | Properties of solutions to linear inverse problems (https://bcourses.berkeley.edu/courses/1242422/assignments/5208756) | due by 12pm |
| | Quiz: 3D plots (https://bcourses.berkeley.edu/courses/1242422/assignments/5208711) | due by 12pm |
| | Quiz: Cell arrays as contents of cell arrays (https://bcourses.berkeley.edu/courses/1242422/assignments/5208746) | due by 12pm |
| | Quiz: Handles to graphics objects (https://bcourses.berkeley.edu/courses/1242422/assignments/5208665) | due by 12pm |
| | Solving square linear systems of equations with backslash (https://bcourses.berkeley.edu/courses/1242422/assignments/5208658) | due by 12pm |
| Sun Nov 16, 2014 | HW10 (https://bcourses.berkeley.edu/courses/1242422/assignments/5669114) | due by 11:59am |
| Fri Nov 21, 2014 | HW11 (https://bcourses.berkeley.edu/courses/1242422/assignments/5684083) | due by 11:59am |
| Wed Nov 26, 2014 | HW12 (https://bcourses.berkeley.edu/courses/1242422/assignments/5702020) | due by 11:59am |
| Mon Dec 15, 2014 | Extra (https://bcourses.berkeley.edu/courses/1242422/assignments/5705840) | due by 5pm |
| Wed Dec 17, 2014 | Bisection (https://bcourses.berkeley.edu/courses/1242422/assignments/5208714) | due by 8am |
| | Linear regression with polynomials in Matlab (https://bcourses.berkeley.edu/courses/1242422/assignments/5208671) | due by 8am |
| | Polynomial interpolation (https://bcourses.berkeley.edu/courses/1242422/assignments/5208766) | due by 8am |
| | HW14 (https://bcourses.berkeley.edu/courses/1242422/assignments/5723164) | due by 11:59am |
| | Final (https://bcourses.berkeley.edu/courses/1242422/assignments/5789396) | |
| | Midterm 2 (https://bcourses.berkeley.edu/courses/1242422/assignments/5684492) | |
| | Midterm1 (https://bcourses.berkeley.edu/courses/1242422/assignments/5610910) | |