

## CS3L General Information

<http://inst.eecs.berkeley.edu/~cs3/>  
<http://bspace.berkeley.edu/>  
<http://www.ucwise.org/>  
<http://wla.berkeley.edu/main.php?course=cs3>  
<http://inst.eecs.berkeley.edu/~scheme/>

Welcome to CS3L, "Introduction to Symbolic Programming". This course will introduce you to computer programming, using the Scheme programming language (a dialect of Lisp). Examples and programming assignments will be drawn from non-numeric ("symbolic") applications.

The only prerequisite to CS3L is high school algebra: more specifically, familiarity with variables and simple functions. We don't assume that you have had any previous computing experience. If you have done some programming, especially involving the technique of recursion, you should seriously consider taking CS61A instead of CS3L. Many people, however, find CS3L a good precursor to CS61A.

You learn programming by doing it rather than by listening to us talk about it. Thus, CS3L is organized to maximize your time designing and writing programs and experimenting with the programming environment. You'll work hard, but learn a lot. The lab sections and online activities are designed to help you get feedback at the time you need it; we hope to ensure that you're working productively rather than flailing around.

### Books and other course material

There are two required books for the course. *Simply Scheme*, by Brian Harvey and Matt Wright (second edition, MIT Press, 1999), is available at local bookstores. There is NO printed reader this year (to save you \$ and trees), it's online only (see website above).

### Class activities and scheduling

There is a single lecture each week. It meets in room 390 Hearst Mining on Mondays, from 4 pm to 5 pm. There will be no video streams of lectures available on the Internet, but we do have an archived CS3 lecture (some material may have changed a bit, but most is still current):

- Dan teaching CS3 in the fall of 2001:  
<http://wla.berkeley.edu/main.php?course=cs3>

You are each assigned to a lab section that meets twice a week for three hours each meeting. That's right, 6 hours a week. The schedule is on our webpage above.

All sections will meet in room C30 Hearst Field Annex, between Barrows Hall and Bancroft Street. You must attend the section to which you are assigned; if you want to move to another lab section, you need only get the approval of the TAs in the one you wish to transfer to.

For most of the semester, the typical lab period will involve a variety of activities, the majority provided online. It will start with a short quiz based on topics covered on the homework or in the preceding class. Each start-of-period quiz will count toward your course grade, and you have to take the majority of these in the lab classroom: we'll count up to 4 quizzes taken outside of lab. Following this, you'll be reading, experimenting, programming, brainstorming, debugging, evaluating each other's ideas, and sometimes working with partners. In the Thursday and Friday sections, TAs may set up impromptu discussion sections to clarify student confusion they've seen earlier in the week; please tell us what you would prefer on this issue, since we will respond to feedback. There will be three "mini-projects" during the semester, to which some of the lab meetings will be devoted. The last several weeks of the semester will be less structured, as you'll be working on a large programming project.

A short set of homework exercises will be typically be assigned at the end of each lab. The exercises will involve writing or analyzing programs and contributing to online discussions about typical programming misconceptions. Answers to the programming exercises and contributions to the discussions will be submitted online. You should expect to put in three or five hours of work per week outside of class. If you finish the online exercises early, you may leave early or work on your homework. Some of the work later in the course, along with all the mini-projects and the final project, may be done in partnership with other students in your section. (Cross-section partnerships are generally not allowed, we want you to build a community within your section.)

Lectures will introduce and motivate new material or review confusion noticed during the previous week's lab sections.

There will also be three exams whose dates are in the schedule online: one Quest (in class during week 4), one Midterm (in the evening around week 9-10 after we've introduced  $\lambda$ ) and one Final Exam.

In CS3L, you will be using programming tools and course material devised by a research group of computer science and education researchers. To determine the effectiveness of these tools and material, we are gathering data on your background and performance, via questionnaires, interviews, and analysis of your work. You will be expected to complete several surveys through the course of the semester.

## **Computing**

Most of your work for this course will be done in class in C30 Hearst Field Annex. Outside of class, you may work in any EECS lab room in which a lab section is not meeting. You may also work at home, outside of lab hours. You may obtain a card key to

work in C30 on weekends or late at night by going to 387 Soda Hall and filling out the relevant forms.

To do work for this course on your own computer, you will need to use a recent Firefox browser. Internet Explorer will not work (or at least work well).

You can run scheme by connecting to the lab machines via a secure shell (ssh) connection, or by getting a scheme environment for you home computer: Check the course website for more information on getting your computer setup properly. Use the bspace forums to ask questions.

## Grading

The various course activities will contribute points to your grade as follows.

activity	course points	percent of total grade
project	60	15%
all mini-projects	48 (16 each)	12% (4% each)
all other homework	scaled to 48	12%
all on-line quizzes	scaled to 32	8%
EPA	12	3%
quest	20	5%
midterm	80	20%
final exam	100	25%

You are expected to keep up with the classwork! There will occasionally be time devoted in lab to helping you catch up or solidify your understanding of the material. Homework assigned on Tuesday/Wednesday is due at the start of the Thursday/Friday lab section; homework assigned on Thursday/Friday is due at the start of the Tuesday/Wednesday lab section. You will at most earn half-credit for homework turned in after the due date but before the next lab meeting; you will not earn any credit for any homework exercise submitted more than one class meeting after it is due.

There will be more than 48 points worth of scaled homework points and more than 32 points worth of scaled online quizzes to earn; your homework and quiz score, however, will be capped at 48 and 32 respectively. This translates to “once you have earned 90% of the credit for these activities, you will earn the full points”. As such, you can miss some homework assignments and quizzes and still earn the full amount that homework and quizzes can count towards your final grade. Don’t pay much attention to the actual points the homework and quizzes are worth, just focus on the % of points you earned on each. For example, if we decided on particularly long quiz should be out of 32 and you earn 32, don’t think you can skip the remaining quizzes!

Here’s how we calculate quizzes (similarly for homework). We’re going to take the total points of all the quizzes, sum that up, and we’ll call that Q. Then everyone’s score is

scaled by  $(32 \cdot 10/9 \cdot 1/Q)$ , yielding a score from 0 to  $35 \frac{5}{9}$ ths. Then everyone's score is compared to 32, and we take the smaller of the two. That way anyone who earned at least 90% of the quiz points (a score from 32 to  $35 \frac{5}{9}$ ths) gets 32 full quiz points.

Quizzes are online, and while they may be taken outside of the lab room, you will receive credit for at most four quizzes taken outside of your lab section. You will not receive any credit for quizzes taken after the lab-section in which they were assigned, whether or not you take them in the lab room or out of the lab room.

**EPA:** You will also receive a small number of points for *Effort*, *Participation* and *Altruism*. This grade will not be given until the semester is over, and is a confidential value determined by the course staff. *Effort* is a measure of how hard you “try”. E.g., Do you come to lab? Do you attend review sessions? Do you come to office hours? Do you keep up with the lab activities (whether or not you get them right)? *Participation* measures whether you speak up in lab and lecture and help make the class dynamic and interactive. Do you contribute to the “community” in your lab section? *Altruism* measures how much you help your fellow students learn. We've organized the seating in lab to encourage small group discussions – make use of it, and teach each other!

Your letter grade will be determined by total course points, as shown in the table to the right. There is no curve; your grade will depend only on how well you do, not on how well everyone else does.

Points	Grade
390-400	A+
370-390	A
360-370	A-
350-360	B+
330-350	B
320-330	B-
310-320	C+
290-310	C
280-290	C-
240-280	D
< 240	F

Incomplete grades will be granted only for dire medical or personal emergencies that cause you to miss the final exam, and *only if your work up to that point is satisfactory*. Copying and presenting another person's work as your own constitutes cheating. Both “giver” and “receiver” are equally culpable! All involved will be penalized by negative points on the work in question (or more if it's particularly egregious) and notification of the incident will be sent to the Office of Student Conduct.

### Approximate topic/activity schedule

This is available on our course web page. Make sure to regularly check the announcements calendar on the UCWISE course portal for the latest information, as topics and sequences may change somewhat.

### Alternative courses

Other alternative introductory computing courses include CS3S, CS4, E7, IDS110, and CS61A.

CS3S is the self-paced version of CS3L. Students may enroll for fewer than four units of CS3S, in order to take only a portion of the course or to spread the complete course over more than one semester. (You need only three units of CS3S to prepare for CS61A, and two units would probably suffice.) The textbook used in CS3S differs from ours, so if there's a chance you might want to switch, you should think about switching sooner rather than later. For further information, contact the Self-Paced Center, 642-9920, in room C10 Hearst Field Annex, and <http://inst.eecs.berkeley.edu/~selfpace/>

CS4 is an introductory programming course for science and engineering students, and is similar to CS3 in scope. Programming exercises and class examples are drawn mostly from numeric applications (as opposed to the non-numeric applications covered in CS3L). The programming language is Java. It is not being offered this semester, however, and departmental politics may keep it on the shelf for a while.

E7 is “Introduction to Computer Programming for Scientists and Engineers”, and like CS4, focuses on numeric problems from mathematics, science and engineering. It is taught in MATLAB. It has Math 1B as a prerequisite (may be taken concurrently).

IDS110 is “Introduction to computers”, but the question they wish to answer is “what is the effect of *computing* on society”, and takes a macro view of our field. It is NOT a programming class. It satisfies the computing course requirement for entry into the School of Business Administration.

CS61A is the first of a sequence of courses aimed at students with a particular interest in computer science. Its prerequisite is computing experience roughly equivalent to the first half of CS3L; thus students with no previous experience often take CS3L or 3S to prepare for CS61A. Scheme is also used for programming in CS61A. If you've done more than a little programming, particularly if your experience includes exposure to recursion, you should probably take CS61A rather than CS3L. If you are thinking of becoming a computer science major, you should think about taking CS61A. It covers more material, and in a more rapid fashion, than CS3L.