Computer Science 52

Fundamentals of Computer Science

Fall Semester, 2018

Time and place  TTh 9:35–10:50, Edmunds Hall 114.


Prerequisite  Computer Science 51 or equivalent, or instructor’s permission.

Overview  The goal of this course is to give you a broad view of Computer Science, including the topics of algorithms and complexity, computer architecture and organization, programming languages with a solid understanding of functional programming and recursion, and finite automata and computability. These topics fall into three sometimes-overlapping parts; the list below shows typical topics within each part.

- Programming in the functional paradigm, including abstraction, correctness, recursion, efficiency.
- Methods of formal reasoning, including EBNF notation, logic, type inference, and encryption.
- Models of computation, including data representation, circuits, finite automata, turing machines, and random-access machines.

We intend to give you a serious introduction to each of these items. At the end of the course, you may not have mastered a topic in all its glory, but you will have a solid foundation on which to build in subsequent courses.

Keep in mind that many of the topics are new to everyone in the class, even those of you who have extensive programming experience. You may find the material confusing at first, but with some careful attention, that feeling will pass.

We will use the programming language SML for most of the work in the class. In addition, we will use Logisim to study circuits, the CS52 Machine for machine-level programming, and JFLAP for models of computation.

Requirements  Assignments will be approximately weekly. They are due at the time and date specified. No late work will be accepted except for serious illness or similar emergencies.
Grades in the course are based on three components:

- Eight assignments (36% total)
- Three midterm examinations (13% each, 39% total)
- Final examination (25%)

The examinations will be held in our regular classroom on the days shown to the right. The midterms will be at the usual class time.

Course Resources

Textbooks There is no printed textbook for the course. The Resources page on the course web site contains on-line texts and other material for the course. Make frequent use of those resources!

Computer systems We will be using the systems of the Computer Science Department. Most of you who preregistered already have accounts; passwords for new accounts will be distributed to you. If you need to set up an account, see our system manager, Corey LeBlanc, in Edmunds 218.

Web pages Pay particular attention to the course Calendar—it will direct you to assignments, due dates, lecture slides, and other material. Any changes to assignments or schedules will be posted on the Calendar page.

Sakai Your assignment scores will also be posted on Sakai. A few resources for the course will be posted on Sakai as well.

Piazza We will use a Piazza site for discussions and questions. You have, or soon will, receive an invitation to join the class site. The course assistants will post mentoring hours there. Piazza is a convenient place to ask questions outside of class and mentor sessions. Here are some guidelines for posing questions.

- Be specific. You are not likely to get a useful answer if you say simply “I got an error message” or “It doesn’t work.”
- Whenever possible, frame your question in a conceptual way that will be of general interest to the class.
- Try to avoid posting your own code. If you must include part of your program, make the message private.
- No screenshots! Piazza handles them poorly. Instead, paste code or error messages into the code block environment.

Submitting assignments Follow the link at the top of the course web pages to the website where you will submit assignments. You log in using your home campus account and password—not your credentials for the Computer Science labs. The first time you log in, you will be asked to join the course, cs052.

Important: The code in the files you submit must compile and run without errors. The only permitted warning in SML is “calling polyEqual.” No partial credit will be given for a submission that does not compile.

Midterms examinations:
- Tuesday, September 25
- Tuesday, October 16
- Tuesday, November 13

Final examination:
- Monday, December 18, 2:00–5:00 PM

www.cs.pomona.edu/classes/cs052

sakai.claremont.edu/portal

piazza.com/pomona/fall2018/csci052

submit.cs.pomona.edu/2018fa/cs052
Mentors  There will be regularly-scheduled mentor sessions several times during the week. See Piazza for the times and place. Sometimes the sessions can be crowded. Here are a few suggestions for making the best use of mentor sessions.

- Complete the background reading and understand the assignment before arriving at a mentor session. Whenever possible, come prepared with specific questions.
- Plan to spend considerable time on assignment working independently, away from a mentor session.
- Expect the mentors to be familiar with the material and to give you useful guidance as you solve problems. In rare cases, there may be a problem that neither you nor the mentors can solve. Take those cases to the instructor or the Quantitative Skills Center.

Quantitative Skills Center  The QSC offers peer-led tutoring, and drop in study sessions for many courses, including this one. It is in Smith Campus Center, Room 228. See the QSC web page for schedules and appointments.

Your own computer for assignments  You may use your own computer for your work in the course. All of the software we use is freely available; see the pointers on the course Resources page. Please understand that the Computer Science department and faculty cannot support computers other than those in the department’s laboratories. The mentors may be able to give some limited advice, but you must take responsibility for installing software and maintaining your own system. “Computer failure” is not an acceptable reason to be late with an assignment.

Your own devices in class  For now, you may use your laptop or other device during lecture to take notes. This policy may change if computer use becomes distracting. Resist the temptation to use your cell phone or device for other purposes—like email, web browsing, games, texting, and so on. Electronic devices are not permitted during examinations.

Course Policies

Disability accommodations  Pomona College is committed to providing equal opportunity for participation in all programs, services and activities. Requests for accommodations may be made by contacting the Disability Coordinator on your home campus. At Pomona College, that person is Associate Dean of Students Jan Collins-Eaglin. Pomona College’s policy on disability accommodations can be found at the Dean of Student’s website.
Accommodation forms must be submitted and accommodations agreed upon by the last day to add classes, or within five days of the date on which the form was signed by an appropriate dean, whichever comes later. Many accommodations will be handled through the Student Disability Resource Center in the Tranquada Student Services Center. Due to the nature of the course, extensions on assignments are not possible.

**Policy on academic honesty** Pomona College’s academic honesty policy appears in the catalog on the college’s main web pages, and the Computer Science Department’s policy is linked at the right. Please read them carefully.

Most of your work in this course is to be done independently; any exceptions will be explicitly announced. However, some discussion is permitted. You may discuss approaches to solving problems with anyone in the class, including faculty members and mentors. As specified in the department policy, you may request help—or respond to a request for help—in using systems and tools, in debugging code, and in working with high-level design issues.

However, the files that you submit must be your own work, completed independently. Using material from any external source—web page, person, or book—is forbidden. Except for material from class or an assignment, you may not copy, retype, view, or share a copy of any file.

If you have any questions about what is appropriate or inappropriate collaboration, please speak with the instructor. When in doubt, credit your sources. There will be stringent penalties for violations of academic honesty, up to failure in the course.

**Use of course material** The course materials, graded assignments, and solutions that are distributed in class, in Sakai, and on the web are provided for students in Computer Science 52. You are encouraged to use them to the fullest extent, but you are not to publish them or distribute them to other people or organizations. Textbooks, journal articles, and material on external websites are the property of their respective copyright holders. Computer Science faculty members hold copyright to the material developed locally for this course.

In particular, avoid working in close proximity with another student and frequently “cross checking” your work. That will certainly produce a joint product that is not the independent work of either participant.