

Syllabus

If you have any questions after reading this Syllabus, post on our discussion forum, or email the course instructors and TA.



Course Description

Introduction to the engineering of computer applications emphasizing modern software engineering principles: program design, decomposition, encapsulation, abstraction, and testing. Emphasis is on good programming style and the built-in facilities of respective languages. Uses the Python programming language. No prior programming experience required.

Canvas

We will use Canvas in CS106A this quarter only to post recordings of course videos. The Canvas website for our class is: <https://canvas.stanford.edu/courses/193262>

All other information relevant to the class will be posted on the class web page, described below.

Discussion sections

Section sign-ups

In addition to lecture, you will also be attending a weekly 50-minute section. In order to take CS 106A, you must sign up for a section before 5PM on Tuesday, June 25th. The signup form will be available on the [CS198 website](#), which is our section portal. You can also use this website to sign up late or switch sections early on in the quarter.

Section sign-ups are not first-come first-serve, so don't worry about rushing to fill out your preferences as soon as the form opens. After a matching process, your section assignments will be emailed out to you by the evening of Tuesday, June 25th. Sections begin the first week of classes. Note that you should only sign up for sections at the URL above (you should not sign-up for sections on Axess).

Section attendance

Attendance and participation in section will be graded and will make up 10% of your final grade in the class, so this is a required component of the class.

You are welcome to attend a different section from the one you are assigned on any given week of the quarter, with no advance permission required. If you need to miss your usual section, you can use this [list of section times and locations](#) to find another one that works. To ensure that you get attendance credit, when you visit the section, let that section leader know you're visiting and they'll alert your usual section leader. Telling them in person is fine.

Getting help at LaIR

CS106A provides extensive assistance for students. We offer nightly in-person help hours Sunday through Thursday from 5 to 9 p.m. to help with assignments - we call this the LaIR. You can sign up for the LaIR at this link: <https://cs198.stanford.edu/lair>

Units

If you are an undergraduate at Stanford, you are required to take CS106A for 5 units. If you are a graduate student, you may enroll in CS106A for 3 or 4 units if it is necessary for you to reduce your units for administrative reasons. Taking the course for reduced units does not mean any change in the course requirements.

Texts and reference material

There is one required text for this class, entitled Karel the Robot Learns Python. It's a short interactive tutorial that introduces the major concepts in programming in the context of an extremely simple robot world. This text is available for free on the class website. In addition to this text, we will also have reference material on Python available via the class webpage.

Programming assignments

There will be five programming assignments (not including Assignment 0) in this class. The assignments will become slightly more difficult and require more time as the quarter progresses. Thus, the later assignments will be weighed slightly more than the earlier ones. With the exception of Assignment #5, which is due at the end of the quarter, each assignment is graded during an interactive, one-on-one session with your section leader, who rates it according to the following scale:

- ++ An absolutely fantastic submission of the sort that will only come along a few times during the quarter. To ensure that this score is given only rarely, any grade of ++ must be approved by the instructor and TA. Since your section leader would almost certainly want to show off any assignment worthy of a ++, this review process should not be too cumbersome.
- + A submission that is "perfect" or exceeds our standard expectation for the assignment. To receive this grade, a program often reflects additional work beyond the requirements or gets the job done in a particularly elegant way.
- ✓+ A submission that satisfies all the requirements for the assignment, showing solid functionality as well as good style. It reflects a job well done.
- ✓ A submission that meets the requirements for the assignment, possibly with a few small problems.

- ✓ – A submission that has problems serious enough to fall short of the requirements for the assignment.
- – A submission that has extremely serious problems, but nonetheless shows some effort and understanding.
- -- A submission that shows little effort and does not represent passing work.

From past experience, we expect most grades to be ✓+ and ✓. Dividing the grades into categories means that your section leader can spend more time talking about what you need to learn from the assignment and not have to worry about justifying each point. The overall goal is to maximize the learning experience in doing the assignments, and we have found the "bucket" grading system to work much better for programming assignments than assigning numeric grades from a pedagogical perspective over many quarters of experience.

After submitting each assignment, you will sign up for an interactive grading session with your section leader. Your section leader will explain in section or over email how to schedule these sessions.

Late policy

Each of the assignments is due at 11:59 p.m. on the dates specified in the schedule (on the website under Course). The program code for your assignments must be submitted electronically to a website called [Paperless](#). Anything that comes in after 11:59 p.m. will be considered late.

Because each of you will probably come upon some time during the quarter where you need a little extra time, every student begins the quarter with three free "late days." Each "late day" is a 24-hour period (i.e., from Friday at 11:59 p.m. to Saturday at 11:59 p.m. is one late day). Your free late days allow you to turn in assignments past the regular deadline without penalty (until you have used them all). After the three free late days are exhausted, programs that come in late will be assessed a late penalty of one grade "bucket" per day (e.g., a ✓+ turns into a ✓, and so forth). Please note that you're only allowed to use at most two late days per assignment. Assignments received later than two days following the due date will not be graded. Note that no late days may be used on the last assignment (Assignment 5) as we have a tight grading turnaround.

You should think of these free late days as extensions you have been granted ahead of time, and use them when you might have otherwise tried to ask for an extension. As a result, getting an extension beyond the three free late days will generally not be granted, so please be diligent with your late days. In very special circumstances (primarily medical problems or other emergencies), extensions may be granted beyond the late days. All extension requests must be directed to the head TA no later than 24 hours before the program is due. Only the head TA will be able to approve extensions. In particular, do not ask your section leader.

Examinations

There will be a midpoint exam and a final exam in this class. Both exams are in person.

The exam will be administered outside of class on Thursday, July 25th from 1:30 - 3:30 pm. If you have a conflict with this time, and absolutely cannot make the regularly scheduled diagnostic, you must send a request by email to the head TA by 5pm on Tuesday, July 2nd to arrange an alternate exam time. Any alternate diagnostic exams will need administered in person 24 hrs before the regular diagnostic time, so make sure you are available in that time window if you cannot make the regular exam.

The final exam is scheduled for Friday, August 16th from 3:30pm-6:30pm. For a variety of reasons (including university policy), there will be no alternate time for the final exam, except for OAE accommodations. Please make sure that you can attend the final exam at the specified time before enrolling in the class.

Grading

Final grades for the course will be determined using the following weights:

50% Programming assignments (weighted toward the later assignments)

15% Diagnostic examination

25% Final examination

10% Lecture and Section participation

IMPORTANT NOTE: We are strong believers in mastery learning - that is, students should show mastery of the course material by engaging in all of it. Therefore, to pass the class you are required to make a real effort on and submit all the assignments, take both exams, and attend/participate in section. Exceptions can be granted in special circumstances that are pre-approved by the head TA (e.g., medical or other emergencies). But, importantly, skipping some portion of the class because you think you “don't need it” to pass the class is taken as an indication of lacking mastery of the material and can lead to a non-passing grade. We want you to engage with all the material in the class, not aim to do the minimal amount that you think might be required for passing. Please take this to heart when doing the work for this class.

SCPD

SCPD students will attend a virtual section, unless they are near enough to campus to commute and would prefer an in-person section. SCPD students will take the midpoint diagnostic and final exam remotely with a monitor that they select through SCPD. Students must register a monitor in advance of exams, and this monitor will administer the exam within a 24 hour window before or after the exam.

Computer facilities

As in any programming course, the assignments in CS106A require extensive hands-on use of a computer. The preferred platform for doing the work is the PyCharm development environment which runs under both Mac OS and Microsoft Windows. Instructions on obtaining and using the PyCharm environment - which is free to download - will be available on the class website in a handout called Installing PyCharm, under the Course tab.

Affordability

Stanford University and its instructors are committed to ensuring that all courses are financially accessible to all students. If you are an undergraduate who needs assistance with the cost of course materials, you are welcome to approach the course staff directly.

If you would prefer not to approach the course staff directly, the First-Gen and/or Low Income (FLI) Office may be able to financially assist undergraduate students who are experiencing a temporary financial challenge from a hardship or who are seeking funds for an opportunity related to their academic, professional, and/or social development. Go to <https://fli.stanford.edu/>.

Academic accommodation

If you have an OAE letter, please send it via email to the head TA as soon as possible so that we can provide any accommodations necessary in CS106A. We cannot provide accommodations if they are shared less than a week before the exam.

Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Office of Accessible Education (OAE). Professional staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is being made. Students should contact the OAE as soon as possible since timely notice is needed to coordinate accommodations. The OAE has contact information on their web page: <http://oae.stanford.edu>.

Ongoing improvements

As part of our ongoing efforts to make this course an even better experience for students, our teaching team continually conducts research to improve our teaching methods. In this course, new teaching methods may be used and various aspects of student performance may be analyzed on an ongoing basis. Information about you and your personal performance in this course will be held strictly confidential, but aggregate information for the whole class may be reported. If you would like to opt out of participating in any new teaching methods or having your performance analyzed as part of this research, you may do so without penalty. For more information, please contact the instructors.

We're looking forward to a fun class!