CS 106X — General Information

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Lectures: Monday, Wednesday, Friday, 12:30PM – 1:20PM in 300-300

Course Overview

CS 106X is an accelerated successor to the prerequisite CS 106A. It covers advanced programming topics such as recursion, algorithmic analysis, and data abstraction using the C++ language. CS 106X assumes that you already have significant prior programming experience and already know the material of CS 106A, and that you can use this understanding as a foundation on which to tackle new topics in programming and data abstraction.

Course Placement

This course covers similar material to CS 106B but in a more challengeing manner, and at a faster pace. It does not cover material of 106A and assumes that you already know that material. For more information, see the Course Placement handout on the course website.

CS 106L: CS 106X is taught in C++, but is not an in-depth study of the language. If you want to learn much more about C++, consider additionally signing up for CS 106L this quarter. 106L is an optional one-unit lab companion course to dedicated to exploring C++ in depth. See: `https://cs106l.stanford.edu.`

Units

If you are a matriculated Stanford graduate student, you may enroll in CS 106X for 3-5 units based on your schedule. Otherwise, you are required to enroll in CS 106X for 5 units. Taking the course for reduced units does not alter the course requirements.

Class Website

The website for CS 106X is located at `https://cs106x.stanford.edu`.
Please check the course website regularly as we will post important announcements there, as well as the course schedule, lecture materials, handouts, assignments, etc.

Email

A Stanford email account is required for important communication from the course staff. Information on obtaining one is available at `https://email.stanford.edu`. Please note

that your assigned section leader is your primary point of contact for the course; please only email the instructor or Head TA for topics such as extensions (discussed later), OAE accommodations (discussed later), etc.

Textbook

> Roberts, Eric. *Programming Abstractions in C++*. ISBN 978-0133454840.

This book is available from the Stanford Bookstore, as well as other retailers. Assigned readings will be from this textbook, which also contains references for topics covered in the class, as well as practice problems. Moreover, our exams are **open-book** but **closed-electronic-device**; in particular, you will *not* be able to use any digital versions of these textbooks during the exams. See the *Exams* section for more information. NOTE: In previous quarters, a preliminary "course reader" version of the textbook was available. We do not recommend using this because the assigned problems may not match.

Grading

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

45%	Programming assignments
10%	Section participation
20%	Midterm examination (11/1 7-9PM)
25%	Final examination (12/10 8:30-11:30AM)

Programming Assignments

There will be roughly seven programming assignments throughout the quarter. Assignments are due at **11AM sharp** on the dates specified on the course website, and are written electronically via the **Qt Creator** open-source program; it is free and compatible with macOS and Windows. Qt Creator installation instructions are on the course website. All cluster machines on campus also have Qt Creator pre-installed. You submit work electronically using the **Paperless** website, `https://cs198.stanford.edu/paperless`.

Your section leader grades each assignment on *functionality* (is the program's behavior correct?) and *style* (is the code well-written and elegant?). Rather than being scored on a direct point-based scoring system, we map homework scores to the following scale; from past experience, most grades will be ✓ or ✓+.

++   An absolutely fantastic submission that will only come along a few times during the quarter. Any grade of ++ must be approved by the instructor and Head TA.

+   Exceeds our standard expectations for the assignment; reflects additional work beyond the requirements.

✓+   Satisfies all the requirements for the assignment, showing solid functionality as well as good style. It reflects a job well done.

✓   Meets the requirements for the assignment, with a few small problems.

✓ – Has problems serious enough to fall short of the requirements for the assignment.

– Has extremely serious problems, but nonetheless shows some effort and understanding.

– – Shows little effort and does not represent passing work.

An assignment's style score may be capped at a given maximum if its functionality score is particularly low. Using these categories means that your section leader can focus on the assignment's learning goals rather than spending time justifying each point. Our 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. Disputes about homework grading must be submitted to the Head TA within 1 week of receiving your grade.

LaIR Helper Hours

CS 106X provides extensive assistance for students. Starting on Sunday, September 30, Section Leaders and Course Helpers are available from Sunday through Thursday evenings 7PM-11PM each week in Tresidder Union (first floor, in the food court area) to help with assignments or review course material. There is a link in the sidebar of the course homepage to view the latest helper schedule. Sign up at the computer in the back and we will help you as soon as possible.

Working in Pairs

Some assignments may allow you to *optionally* work in a pair with a partner. Each assignment will specify if it is to be done individually or allows working in pairs. Note that you are not required to work with a partner on assignments that allow it, but you are encouraged to do so. Working in pairs can improve student learning by giving you someone to talk to when you are stuck, or by letting you see a different way of approaching the same problem. You can also change pairings between assignments. In other words, you don't have to keep the same pairing for every assignment that allows pairs, and can choose to do some in pairs and others individually.

If you choose to work with a partner, you must pair with another student who is currently enrolled in the course and is in your section. If you have a friend you want to work with, request the same section or request a section swap if necessary. Students auditing or sitting in on the course may not work in a pair with a student who is taking the course.

If you submit an assignment as a pair, each of you is expected to make a **significant contribution** toward solving that assignment. You should not claim to be part of a pair submission if you did not contribute significantly to help solve that program. **If you submit an assignment as a pair, you should make ONE submission and make sure that the names of both members of the pair are entered when submitting on Paperless, and listed in the comments of the solution.** Both members will receive the same grade.

Regardless of pairs, every student is still responsible for learning all course material. In particular, all exams are completed individually. More details about working in pairs is available on the class website; please make sure that you follow all listed guidelines.

Interactive Grading

Except for the final assignment (which is due at the very end of the quarter), each assignment is returned during a one-on-one "Interactive Grading" session, or "IG," with your section leader. Your section leader will explain in section how to schedule these sessions. During IGs, your section leader will go over your assignment grade with you and provide feedback on what you did well and where you can improve. **If you are in a pair, both you and your partner should be present for the IG.** You and/or your partner may also be asked to explain some details about your program to verify your understanding of the submitted work. IGs must be scheduled within two weeks of the due date. After the IG, your feedback will be accessible on Paperless.

Late Policy

Every student begins the quarter with **three free "late days."** Each late day allows you to submit a program up to one lecture day late without penalty. For example, if a program is due on Wednesday at 11AM, using 1 late day allows you to submit it until the next lecture day (e.g. Friday) at 11AM without penalty, and 2 late days allows you to submit it until the next-next lecture day (e.g. Monday) at 11AM without penalty. **We will not accept assignments more than 3 class days late, and will not accept late submissions for the last assignment.**

After the late days are exhausted, programs that come in late will be assessed a late penalty of one grade "bucket" per additional late day for functionality and style (e.g., a ✓+ turns into a ✓).

If you are working in a pair and turn in an assignment late, both members of the pair will be individually assessed "late days". For example, if you turn in your assignment as a pair one lecture day late, then each member of the pair incurs one "late day." If you are out of free "late days" but your partner isn't, then your assignment grade is penalized one grade "bucket", but your partner would simply use one free late day (and thus not be penalized one grade "bucket"). Note: you cannot transfer free late days to your partner.

You should think of 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 provided free late days will generally not be granted. In *very special* circumstances (primarily extended medical problems or other emergencies), extensions may be granted beyond the free late days, but this is very rare. **Only the Head TA will be able to approve extensions.** In particular, do not ask your section leader. All extension requests must be received no later than 12 hours before the due date.

Discussion Sections

In addition to lecture, you must also sign up for a weekly 50-minute section. Your section will be run by the same section leader who will also grade your work. In section, we answer questions, go over common errors in homework solutions, and go over practice problems in more detail than we can in lecture. Part of your course grade comes from attending and participating in your section on a regular basis. Participating includes taking part in the discussion, asking questions, suggesting answers, helping solve problems alone or as a group, etc.

You must sign up for a section using the link in the "Section" dropdown on the course website **between 5:00PM on Thursday, September 27, 2018 and 5:00PM on Sunday, September 30, 2018.** Note that signups are **not** first-come-first-serve. After a matching process, your section assignments will be e-mailed out to you. Sections begin **the second week of classes**. Note that you **must** sign up for sections via the course website (you do not sign-up for sections on Axess).

Examinations

The midterm examination will be administered **outside of class from 7-9PM on Thursday, 11/1**. If you have an academic or University conflict with this time, and **absolutely** cannot make the regularly scheduled midterm, you must send a request by email to the Head TA by 5PM on Thursday 10/25 to arrange an alternate exam time.

The final examination is scheduled for **Monday, December 10th from 8:30-11:30AM**. For a variety of reasons (including university policy), **there will be no alternate time for the final exam**. Please make sure that you can attend the final exam at the specified time before enrolling in the class.

All examinations are **open-book** (class course reader and textbook only), **closed-notes** and **closed-electronic-device**. A syntax reference sheet of common commands will be provided to you during each exam, as well as beforehand for studying.

In general, NO MAKE-UP EXAMS are granted. Make-up exams will be given only in rare cases of emergency or student athlete conflicts. We will not approve any exam rescheduling requests for students who take another class whose lectures or final exams occur at the same time as those of our class, or that is a prerequisite for this class. If you need to miss an exam due to a sudden severe illness, injury, traumatic event, etc., after consultation with the instructor it is possible that you will be given an Incomplete (I) in the course and asked to complete the course in a future quarter. The instructor reserves the right to fail a student who does not take the final exam or scores under 10% on the final exam.

Students with Documented Disabilities

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. Unless the student has a temporary disability, Accommodation letters are issued for the entire academic year. Students should contact the OAE as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: 723-1066, URL: **https://oae.stanford.edu**).

The Honor Code

Academic conduct for students at Stanford is governed by the Honor Code. Part of the Honor Code is a pledge and expectation to participate in class without seeking inappropriate help on graded work such as assignments and exams. Please read the **<u>separate Honor Code handout</u>** posted on the course website. You are responsible for following the Honor Code in this course.