Course Information

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Email The course staff can be reached at cs103-spr1112-staff@lists.stanford.edu. Please don't hesitate to send us emails! We're here because we genuinely love this material and want to share it with you. If you have any questions on the material, or if you're interested in exploring more advanced content, please get in touch with us. We'd be happy to help out.

Lectures Mondays, Wednesdays, and Fridays, 2:15PM – 3:30PM in Nvidia Auditorium. Lectures will be recorded for SCPD, and we'll post a link to the videos on the course website.

Units If you are an undergraduate, you should be enrolled for five units. If you are a graduate student, you may enroll for anywhere between three and five units, depending on what best fits into your schedule. Regardless of how many units you are enrolled for, the course content and requirements will be the same.

Prerequisites This course has CS106A as a prerequisite. We want you to have at least a familiarity with computer programming before taking the course, since many of the results we'll be exploring will be intimately connected to computers, computing, and programming. That said, there will be no actual programming assignments in this course. If you have not taken CS106A but are still interested in taking this course, I would suggest dropping by office hours so that we can chat about whether the course is a good fit for you.

Website The course website is cs103.stanford.edu and it's loaded with resources for this course. There, you'll find all the handouts for this course, lecture slides, and additional links that you may find useful. I would suggest periodically polling the website to stay abreast of any important developments in the course.

Office Hours We will try to hold office hours for at least four hours a day, six days a week. We'll announce the office hours schedule later this week.

Problem Sessions This course will have an optional problem session that meets once a week to work through additional exercises. Although session attendance is not mandatory, we **strongly suggest** that you attempt to attend each section. The problems covered in these sessions will mirror what will be asked on the homeworks and exams.

Each week, we will distribute a handout containing section problems. The solutions will be distributed at the problem session, as well as on the course website.

Problem sessions will run on Mondays from 7:00PM – 8:00PM in Y2E2 111. There will be no problem session during the first week (we have a bit of ground to cover before we can get to the really exciting results!), so the first problem session will be next Monday, April 9.

Readings This course has two required readings:

> Chapter one of ***Discrete Mathematics and Its Applications, Sixth Edition*** by Kenneth Rosen. This book is an excellent introduction to the mathematical techniques that we will be using over the course of the quarter and we will use it extensively in the first few weeks of the class. You don't need the whole book for this course, and the chapter that we'll be using is available in the bookstore as the CS103 course reader.
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> ***Introduction to the Theory of Computation, Second Edition*** by Michael Sipser. Sipser's excellent introduction to computation, computability, and automata theory stands as one of the best textbooks on the subject. We will be using this textbook all through the latter half quarter.

There are also online course notes for the first few lectures of CS103. These course notes are still in a draft form, but may prove useful in the first few weeks of the course. Please let us know if you have any suggestions for how to improve them!

In addition to these readings, we'll be periodically distributing handouts in class. These handouts, which will also be available online, should help supplement the treatment of the material given in the other readings.

Problem Sets CS103 is a course designed to teach you the mathematical foundations of computation, along with the techniques necessary to reason about structures that appear throughout computer science. Accordingly, the assignments in this course are designed to give you the chance to play around with the material and sharpen your skills with mathematical proofs, computability theory, and complexity theory. There will be **nine** homework assignments this quarter, each of which is weighted approximately evenly.

In order to help you learn how to write proofs, we will split each of the first three problem sets into two pieces – a set of "checkpoint" problems and a set of graded problems. You will submit the checkpoint portion of the problem set earlier than the rest of the problem set, and it will be graded on whether or not you have made a good honest effort to solve the problems, rather than on correctness. The TAs will then comment on the structure of the proofs in your checkpoint submission (looking at clarity, correctness, etc.) and return your solutions within a few days. We hope that this feedback will enable you to write better proofs for the remainder of the problem set, which will be graded on correctness.

Grading

In addition to the problem sets, there will be a midterm and a final exam. The midterm exam will be held on **Tuesday, May 8** from **7:00PM – 10:00PM**, location TBA. The final exam will be held on **Friday, June 8** from **12:15PM – 3:15PM**, location TBA. If you have a conflict that will prevent you from taking the exam, we'd be happy to try to find an alternate time. However, you must let us know about this no later than **one week** in advance.

Overall, your grade for this course will be determined as

Written Assignments:	**60%**
Midterm:	**15%**
Final Exam:	**25%**

Late Policy

This course is fast-paced and we'll be moving through material quickly. Because of the diversity of the material we'll be exploring, you may find that some homework assignments are easier or harder than others. To give you some extra flexibility, you may submit up to **three** assignments 24 hours past the due date without penalty. You don't need to let us know that you'll be turning in the assignment late, though we'd appreciate a heads-up just so that we know to expect it. While you may use these late days on any assignments that you would like, **you may use at most one late day per assignment**. Late days may be used on the checkpoint assignments, though we would strongly prefer if you tried to get them in on time since they're designed to help prepare you for the rest of the problem set.

If you submit late homework (either because you've run out of late days or because you're using a late day but submitting more than a day late), we will assess a 33% penalty on your assignment per day late.

If you have any extenuating circumstances, such as a family or medical emergency, and need extra time to complete the assignments, please contact us. We're more than happy to accommodate. However, please let us know before the assignment comes due.

Regrade Requests

Everyone makes mistakes, and if we make a grading error on one of the homeworks or an exam, please let us know and we'll take a second look. Just hand the exam or problem set to one of us with a coversheet describing what error you believe we've made. However, if you submit an exam or assignment for a regrade, we reserve the right to regrade all problems on it, not just the ones you've indicated. Additionally, all regrade requests must be made within three days of when we return the graded exam or assignment.

Honor Code

One of the major goals of CS103 is to teach you to think mathematically rigorously. Just as you have to write a lot of code to become a good programmer, you need to work through a lot of problems to become a good mathematician. Consequently, when doing the homework assignments, it is extremely important that you do as much of the work as possible on your own without consulting anyone else or any other outside resources. It's surprisingly easy to fall into a trap where you learn to follow proofs without having any idea how to synthesize them on your own. As much as possible, please try to work on the assignments individually.

That said, I understand that you may want to work on the problem sets in groups. If you'd like to do this, that's totally fine. However, please be sure that on your problem set you include the names of the other people in the group. Additionally, **you must write up your own solutions** to all the problems. It is a violation of the Honor Code to copy answers from another student.

Some of the questions on the problem sets may have been used in past quarters (especially if they're really cool problems!) Because of this, **it is a serious violation of the Honor Code to consult graded problem sets or solution sets from previous quarters**. More generally, you **must not** copy solutions from any source. That's just dishonest.