

**Applied and industrial algebra (Math 127), Spring 2022**  
**San José State University**  
**MacQuarrie Hall 233, MW 10:30–10:45am (Sec. 01, code 22688)**

**Instructor:** Dr. Tim Hsu (pronounced “shoe”).

**Office hours:** By Zoom, M noon–1pm, TR 1:30–2:30pm.

**E-mail:** [tim.hsu@sjsu.edu](mailto:tim.hsu@sjsu.edu). I can be reached by e-mail at many times of the day, and will try to respond within 48 hours.

**Course web page:** <http://www.timhsu.net/courses/127/>

**Text:** Course notes available online.

**Grading:** Homework 20%; Exam 1 14%; Exams 2 and 3 18% each; Final exam 30%.

**Goals of this course.** In this course, we define applied math to be math that you can use to make money in the real world (e.g., in the tech industry). Specifically, our choice of topics is aimed at teaching you ideas that you can go out and use in industry.

So in contrast with Math 128A, which teaches you to do proofs in abstract algebra, the goal of this class is to teach you enough of the ideas of abstract algebra to be able to understand practical applications like encryption, error-correcting communication, and the Fast Fourier Transform. In short, the goal is for you not to become a *producer* of abstract algebra (i.e., someone who does proofs and comes up with new theorems), but an *enlightened consumer* of abstract algebra: someone who can use the tools of abstract algebra for practical purposes without having to treat them as a black box.

**No proof or abstract algebra experience is expected.** While the homework will occasionally involve proof, and will deal with abstract algebra, you do not need to have experience with either proofs or abstract algebra, and Math 108 and Math 128A are not prerequisites. (Of course, I hope you will then go on to take Math 108 and Math 128A, to become an even more enlightened consumer, or even a producer, of algebra.)

**Class is a cell-free zone.** Please turn off all cellphones before you get to class.

**Homework.** Homework will be due roughly once a week, with an outline of problem set 01 due **Wed Feb 02**, and the final version due **Mon Feb 07**. For more details on homework content and the process of doing homework, see the handout on homework.

Specific homework assignments will be determined as the term progresses. For a complete list of all homework assigned to date, and downloadable versions of almost all handouts from class, you can always check the course web page.

**Problem sessions.** In addition to my regular office hours, starting on **Fri Feb 04**, I will also hold problem sessions for this class every **Fri**, from **10:00am–noon** online. These sessions are completely optional, and you should be fine without them, but the time is available for those who can make it.

**Checkins.** Because we only meet two days each week, it is *crucial* that you do substantial work in the long gap between Wed and Mon. To that end, I will require you to “check in” with me each week in that time period. See the handout on check-ins for more details.

**Exams.** We will discuss this topic in more detail before the first exam, but briefly, the material on exams will mostly resemble the material from the homework. For each exam, you will be allowed one page of notes (both sides).

**Calculators.** You will *not* be allowed to use calculators for *any* in-class exams. The numerical work on exams will be simple enough that a calculator shouldn’t be necessary, and even if you make numerical mistakes, you won’t lose a lot of points on them.

On the other hand, you are encouraged to use a calculator or computer to help with the homework, especially when the homework involves a fair amount of arithmetic.

**Exam dates.** The dates of our three in-class exams and final exam are found on the syllabus below. In particular, the final exam will be held on **Thu May 19**, from **9:45am–noon**. Please make sure that you are still on campus at that time (e.g., don’t buy a plane ticket that leaves town on May 18).

**How to add this course.** If you are not registered for this course, and you would like to add it, you must first put a full effort into completing all of the work in the course. Second, if you are a graduating senior, you need to produce documentation to verify that.

I'll make a waiting list, which you get on by filling out and turning in the information form for the course. I'll give out add codes starting **Mon Feb 07** (or possibly earlier), mainly based on completeness of homework, and as long as there is room, I will continue to give out add codes until add date (**Mon Feb 14**). Note, however, that graduating seniors have the highest priority, and that Open University students have the lowest priority.

**How to drop this course.** Until **Mon Feb 07**, you can drop at my .sjsu.edu. Nothing will appear on your transcript, but please let me know if you drop.

To drop after Mon Feb 07, you must go to the student services center and submit a Course Drop form to the Director of Academic Services. Dropping under these circumstances is only allowed for "serious and compelling reasons" (course catalog). A low grade is not a serious and compelling reason.

**Academic integrity.** Your commitment to learning (as shown by your enrollment at SJSU) and SJSU's Academic Integrity Policy require you to be honest in all of your academic course work. Faculty are required to report all infractions to the Office of Student Conduct and Ethical Development. See: [www.sjsu.edu/studentconduct](http://www.sjsu.edu/studentconduct)

**Disabilities.** If you need course adaptations or accommodations due to a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities register with the Accessible Education Center (formerly the Disability Resources Center) to establish a record of their disability.

**COVID Safety:** All students registered for this class must view the CoS COVID-19 Training slides and the SJSU Phased Adapt Plan website and acknowledge reading them according to their instructor's directions. Students who do not follow COVID-19 Safety practice(s) outlined in the training, the SJSU Phased Adapt Plan, or instructions from their instructors, TAs or CoS Safety Staff may be dismissed from CoS buildings, facilities or field sites. Please review this training as needed throughout the semester, as updates will be implemented as changes occur (and posted to the same links).

Date	Activity	Date	Activity
Wed Jan 26	2.1-2.2	Mon Mar 28	<b>SPRING BREAK</b>
Mon Jan 31	2.3-2.4	Wed Mar 30	<b>NO CLASSES</b>
Wed Feb 02	2.5-2.6	Mon Apr 04	7.3
Mon Feb 07	3.1	Wed Apr 06	7.4-7.5
Wed Feb 19	3.2-3.3	Mon Apr 11	7.6-7.7
Mon Feb 14	3.4-3.5	Wed Apr 13	8.3
Wed Feb 16	3.6, 4.1	Mon Apr 18	8.4
Mon Feb 21	<b>Exam 1</b>	Wed Apr 20	8.5
Wed Feb 23	4.2, 5.1	Mon Apr 25	9.2-9.4
Mon Feb 28	5.2-5.3	Wed Apr 27	9.4-9.5
Wed Mar 02	5.4-5.5	Mon May 02	<b>Exam 3</b>
Mon Mar 07	5.5	Wed May 04	10.1, 10.3
Wed Mar 09	5.6, 6.1	Mon May 09	FFT
Mon Mar 14	6.2-6.3	Wed May 11	FFT
Wed Mar 16	6.4	Mon May 16	FFT
Mon Mar 21	7.1-7.2	<b>Thu May 19</b>	<b>Final exam,</b>
Wed Mar 23	<b>Exam 2</b>		<b>9:45am-noon</b>