Introduction to analysis (Math 131A), Spring 2024
San José State University
MacQuarrie Hall 320, MW noon–1:15pm (Sec. 01, code 21491)

Instructor: Dr. Tim Hsu (pronounced "shoe").

Office and phone: MacQuarrie Hall 316, (408)924-5071.

Office hours: MW 9:30–10:20am and 1:30–2:30pm, in **MacQuarrie Hall 426**.

E-mail: `tim.hsu@sjsu.edu`. I can be reached by e-mail at many times of the day, and will try to respond within 24 hours.

Course web page: `http://www.math.sjsu.edu/~hsu/courses/131a/`

Required text: *Elementary Analysis: The Theory of Calculus*, Ross (2nd ed., 2013, blue and yellow cover).

Optional texts: *Writing Proofs*, Hsu, downloadable from course web page.

Grading: Your semester grade consists of: Homework 20%; Exam 1 14%; Exams 2 and 3 18% each; Final exam 30%.

Goals of the course. In this course, we will examine two questions: (1) How can we be *sure* that calculus works? (2) What are the key properties that make the real numbers work? In answering those questions, we will encounter some of the deepest ideas of mathematics, including *convergence*, *continuity*, and *topology*.

Prerequisites. Besides the formal prerequisites (Math 32 and 108), you need to realize that this course is one of the most difficult undergraduate courses we offer. If you have never taken a course in which you spent most of your time writing proofs, you must talk with me immediately, and at least take Math 108 this semester as a co-requisite.

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 Jan 31**, with problem set 01 due **Mon Feb 05**. For more details on homework content and the process of doing homework (including outlines and revisions), 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 02**, I will also hold problem sessions for this class every **Fri**, at a time and a place to be announced. 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 on two days each week, it is *crucial* that you do substantial independent work in the long gap between Wed and Mon. To that end, I will reqire 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. All exams are closed-book.

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.

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 **Fri May 17**, 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 16).

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 one week before **Mon Feb 19**, mainly based on completeness of homework, and as long as there is room, I will continue to give out add codes until add/drop date (**Mon Feb 19**). 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 19**, 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 19, 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`

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.

Tentative syllabus

Date	Reading		Date	Reading
			Mon Mar 25	Sect. 20
Wed Jan 24	Sects. 1–3		Wed Mar 27	**Exam 2**
Mon Jan 29	Sect. 4		Mon Apr 01	**SPRING BREAK**
Wed Jan 31	Sect. 5		Wed Apr 03	**NO CLASSES**
Mon Feb 05	Sect. 7		Mon Apr 08	Sect. 28
Wed Feb 07	Sect. 8		Wed Apr 10	Sect. 29
Mon Feb 12	Sect. 9		Mon Apr 15	Riemann integral 1
Wed Feb 14	Sect. 9		Wed Apr 17	Riemann integral 2
Mon Feb 19	Sect. 10		Mon Apr 22	Sect. 34
Wed Feb 21	Sect. 11		Wed Apr 24	Sect. 23
Mon Feb 26	**Exam 1**		Mon Apr 29	Sect. 24
Wed Feb 28	Sect. 12		Wed May 01	**Exam 3**
Mon Mar 04	Sect. 14		Mon May 06	Sect. 25
Wed Mar 06	Sect. 15		Wed May 08	Sect. 26
Mon Mar 11	Sect. 17		Mon May 13	Review
Wed Mar 13	Sect. 17			
Mon Mar 18	Sect. 18		**Fri May 17**	**Final exam,**
Wed Mar 20	Sect. 19–20			**9:45am–noon**