Introduction to proof (Math 108), Spring 2016, San José State University
MacQuarrie Hall 234, MW 10:30–11:45am (Sec. 01, code 20556)

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

Office and phone: MacQuarrie Hall 419, (408)924-5071.

Office hours: MW 9:30–10:30 and noon–1:00. Current schedule available at: `http://www.math.sjsu.edu/~hsu/courses/generic/sched.pdf`

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/108/`

Required texts: *Reading, Writing, and Proving*, Ulrich Daepp and Pamela Gorkin (2nd ed., 2011); *What Is the Name of This Book?*, Raymond Smullyan; *Writing Proofs*, Hsu (download or photocopy).

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

Goals of the course. Throughout your mathematical career, you've dealt with theorems, definitions, and other mathematical "facts," and you may have even dealt with proofs of those theorems. The goal of this class is to give you a firm foundation for working with definitions, theorems, and proofs that will serve you well in future classes dealing in abstract mathematics. Specifically, by the end of this class, you should be able to: **tell** the **difference between a definition and a theorem**, and how the two concepts are related; **divide** a theorem into **assumptions** and **conclusions**; **outline** the proof of a theorem; **work with sets**, especially those **defined by properties**; and **devise and write proofs** of straightforward theorems.

Prerequisites. You should have already completed Calculus I and II (Math 30 and 31) and Discrete Math (Math 42); if you haven't, please speak with me as soon as possible.

Class is cell-free. Please turn off all cellphones, etc., in class.

Homework. The first few homeworks (Problem sets 01a and 01b) will be atypical in format and due on **Wed Feb 03** and **Mon Feb 08**, respectively. After that, homework will be due roughly once a week, with an outline of problem set 02 due **Wed Feb 10**, and the final version due **Mon Feb 15**. For more details on homework content and the process of doing homework, including 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.

Presentations. Throughout the semester, you will be required to give a 5 minute presentation at the board of either one or two proofs or a survey of a mathematical subject area. In the last few weeks of the semester, you will each be required to lecture on a piece of "Section One" of some upper-level course. These presentations will be graded as part of your homework grade. More details can be found in the handout an presentations.

Problem sessions. In addition to my regular office hours, starting this **Fri**, **Feb 05**, I will also hold problem sessions for this class **every Fri**, **11:00am–noon**, in a room to be announced (probably on the 3rd floor of MacQuarrie Hall). These sessions are completely optional, but the time is available for those who can make it.

Exams. We will discuss exams in more detail later, 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.

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 **Tue May 24**, 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 23).

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 **Tue Feb 09** (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 (**Tue Feb 16**). Note, however, that graduating seniors have the highest priority, and that Open University students have the lowest priority.

How to drop this course. Until **Tue Feb 09**, you can drop at `my.sjsu.edu`. Nothing will appear on your transcript, but please let me know if you drop.

To drop after Tue Feb 09, 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

All reading is from Daepp and Gorkin unless otherwise noted.

Date	Reading	Date	Reading
Mon Feb 01	Intro; Logic	Mon Apr 04	Ch. 18
Wed Feb 03	Ch. 6	Wed Apr 06	Ch. 18
Mon Feb 08	Ch. 7	Mon Apr 11	Ch. 19–20
Wed Feb 10	Ch. 8	Wed Apr 13	Ch. 20
Mon Feb 15	Ch. 9	Mon Apr 18	Ch. 20–21
Wed Feb 17	Ch. 10	Wed Apr 20	Ch. 21
Mon Feb 22	Ch. 10–11	Mon Apr 25	Ch. 22–23
Wed Feb 24	**Exam 1**	Wed Apr 27	Ch. 23
Mon Feb 29	Ch. 11	Mon May 02	**Exam 3**
Wed Mar 02	Ch. 12	Wed May 04	Projects
Mon Mar 07	Ch. 12	Mon May 09	Projects
Wed Mar 09	Ch. 12, 14	Wed May 11	Projects
Mon Mar 14	Ch. 14–15	Mon May 16	Projects
Wed Mar 16	Ch. 15–16		
Mon Mar 21	Ch. 16–17	**Tue May 24**	**Final exam,**
Wed Mar 23	**Exam 2**		**9:45am–noon**
Mon Mar 28	**SPRING BREAK**		
Wed Mar 30	**NO CLASSES**		