

Math 100 – Introduction to Proof and Problem Solving
Mon/Wed, 6:00-9:30pm, Engineering 2 Room 192

Prof Name : Robert Hingtgen

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Office Location : McHenry 1266 (sometimes in 1261 for OH)

Office Hours: Mon/Wed 4:45 – 5:45 pm and Tues 4–5pm and by appointment

TA : Fatemeh Yarahmadi, email: fyarahma@ucsc.edu

Section : Tues 4-5pm, Social Sciences 1 Room 145

Office Hours : Tues 1–3:30pm, McHenry 4112

This syllabus may be subject to change in the future.

Course Description: Students learn the basic concepts and ideas necessary for upper-division mathematics and techniques of mathematical proof. Introduction to sets, relations, elementary mathematical logic, proof by contradiction, mathematical induction, and counting arguments.

Prerequisite(s): Satisfaction of the Entry Level Writing and Composition requirements and course 21 and course 11A or 19A or 20A.

Credit Hours: 5

Text(s): *Book of Proof*, 2nd Edition

Author(s): Richard Hammack; **ISBN-13:** 978-0-9894721-0-4

Supplementary Texts: *Chapter Zero*, 2nd Edition

Author: Carol Schumacher

Mathematical Reasoning: Writing and Proof, 2nd Edition

Author: Ted Sundstrom

Grade Distribution:

Homework	30%
Written Assignment	10%
Midterm Exam	25%
Final Exam	35%

Course Policies:

- **Homework**

- Students are expected to submit individual assignments. Discussion amongst students is encouraged, but when in doubt, ask questions to the professor or TA. It is imperative that you write your own solutions. Learning to write proofs involves conveying you understand a concept and communicating an idea to another human, and as such you must learn to do it in your own words.
- Homework will typically be assigned on Mondays and Wednesdays and expected to be handed in exactly one week later in class.
- **Late assignments will be accepted only under extenuating circumstances.**

- You will be graded on the presentation and clarity of your assignments as well as the viability of the solution. I will NOT require homework assignments to be typed, but I expect solutions to be written neatly (as legible as possible) and with adequate space for solutions. I will not grade an assignment with work cramped into a corner. For at least this course, live by the paradigm that what you are submitting is neat and clear enough for a future employer.

- **Written Assignment**

- There will be one written assignment. It will be due the last week in class on Monday. I will post the sufficient information for starting the project on canvas before the second week.
- The written assignment is required to be typed. Specifically typed in L^AT_EX. L^AT_EX is a typesetting program that is incredibly useful for typesetting mathematical formulae in a professional setting. It is a free program, and can be downloaded or used online. Most, if not all, of the code you will require can be found in “The Not so short introduction to LaTeX” by *Tobias Oetiker*. This .pdf can be found online for free download. Chapters 2 and 3 will contain everything you require.
- I will post templates on canvas by the second week to help you get up and running with LaTeX. If you are having trouble getting code to compile, or framing an equation in a way you’d prefer, then you are more than welcome to ask me these questions in office hours. Once you gain proficiency LaTeX you may find that you use it for most anything.
- Start Early. 3 weeks will pass faster than you think.

- **Attendance and Absences**

- Attendance is expected. Posted lecture notes will include examples gone over in class, but not worked out in detail in most cases. Thus lecture attendance is heavily suggested to get those details.
- Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee’s responsibility to get all missing notes or materials.

Academic Honesty Policy Summary:

The full text of the Academic Honesty Policy is in the *Student Handbook & University Policies Section 100*.

DRC Accommodations: If you qualify for classroom accommodations because of a disability, please get an Accommodation Authorization from the Disability Resource Center (DRC) and submit it to me in person outside of class (e.g., office hours) within the first two weeks of the quarter. Contact DRC at 459-2089 (voice), 459-4806 (TTY), or <http://drc.ucsc.edu> for more information on the requirements and/or process.

Tentative Course Outline:

The weekly coverage might change as it depends on the progress of the class. Given time, extra topics such as beginning graph theory and the real numbers may be discussed.

Day	Content
7/31	• Logic, Statements, Methods of Proof
8/2	• Sets
8/7	• Relations, Orderings
8/9	• Orderings (cont.), Induction, Review
8/14	• Midterm,
8/16	• Equivalence Relations
8/21	• Functions, Cardinality
8/23	• Cardinality (cont.), Basic Number Theory
8/28	• Number Theory (cont.), Review
8/30	• Final Exam