Math 300A&B   Introduction to Mathematical Reasoning   Autumn 2017
COURSE DESCRIPTION

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	Office Hours: *TBA*
Class Meetings:	Math 300B: MWF 12:30–1:20, Loew 220
	Math 300C: MWF 1:30–2:20, Loew 220
Course Web site:	www.math.washington.edu/~lee/Courses/300-2017/

Required Textbook:

Mathematical Reasoning: Writing and Proof, Version 2.1, by Ted Sundstrom.
Available at these locations:

- A PDF copy can be downloaded freely online; see the link on the class website.
- A printed copy is on reserve in Odegaard.
- You can purchase a printed copy from the U Bookstore.

General description:

This course will probably be unlike any other math course you've taken. Most of your courses so far have concentrated on helping you learn algorithms for solving particular types of problems; most courses after this one will focus instead on deep conceptual understanding and deductive reasoning. This course is supposed to be the "bridge" between the two ways of approaching mathematics. It will give you tools for thinking mathematically, reading critically and with understanding, solving conceptual problems, and writing mathematical proofs. You will probably use these tools in every math course you take from now on (and potentially in many other courses as well!).

The primary goal of this course is to help you learn what mathematical proofs are, and to improve your ability to understand, write, and critically evaluate them. These skills are essential to many upper division mathematics courses. Through this course, you will learn how to (start to) think like a mathematician, and how to communicate effectively about mathematical ideas.

The mathematical topics we will cover include elementary mathematical logic, methods of proof, elementary set theory, properties of functions, and cardinality of sets. These topics provide a setting for working on proof skills, and also provide a complement to calculus by introducing ideas of discrete mathematics.

Registration Information:

Unless you are a Math, ACMS, or Stat major, you'll need permission from the Math Advising Office to register for this course. Contact advising@math.washington.edu if you'd like permission to register.

Requirements

Classes: Class attendance is required. In addition to providing lectures, discussions, and examples designed to clarify the reading and prepare you for the homework, I'll also be introducing some new concepts in class that are not covered in the textbook or the handouts. Although I mostly won't keep official attendance records, missing classes unnecessarily will dramatically reduce your chances of doing well in the course. If you must miss a class for some unavoidable reason, you should find someone who takes careful and complete notes, and arrange to get a copy of them.

Reading: After most classes, I'll assign part of the textbook for you to read, usually about the material that will be discussed in the next one or two lectures. There will also be a few handouts to read during the quarter. All reading assignments are required.

Homework Assignments: After most classes, I'll also assign some practice problems, and some written homework problems to turn in for a grade. Assignments and their due dates will be posted on the class website; usually a week's worth of homework will all be due on the same day. These assignments are the heart of the course. Most of them will take some time to think about, so I caution you against putting them off until the evening before they're due. Late homework will not be accepted except in extraordinary circumstances and with advance permission. More details about preparing your homework assignments will be given in an upcoming handout.

Portfolio: Some proofs will be assigned as *portfolio proofs*. These are will be turned in separately, and after receiving comments you'll have one or two more chances to rewrite them. The final portfolio proofs will be graded as part of your homework grade. More details to come.

Exams: There will be a 50-minute midterm and a 110-minute final. Both will be closed-book, closed-notes. You may not take exams other than at the scheduled times except for emergency or religious reasons. If you need to make special arrangements due to religious commitments, submit a written or email request to me at least two weeks before the exam. If you are unable to take an exam for medical reasons, contact me before the exam or as soon as medically possible thereafter, and you'll need to provide a written medical excuse.

Grading: Your course grade will be based on a weighted average of the following scores:

- homework (30%)
- quizzes (10%)
- midterm (25%)
- final exam (35%)