

## MATH 300-B: MATHEMATICAL REASONING, WINTER 2017

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**COURSE DESCRIPTION.** Everything you've done so far? That was fake math. This is a real math class. Here, you will learn how to write mathematical proofs and develop your skills with logical reasoning while studying a variety of topics.

**CLASS MEETINGS.** Mondays, Wednesdays, and Fridays, 11:30 AM – 12:20 PM, Condon Hall room 711-B.

**TEXTBOOK.** Early in the quarter I'll be roughly following *An Introduction to Mathematical Reasoning* by Conroy and Taggart, available here:

<http://www.math.washington.edu/~taggart/m300/m300text.pdf>

After a few weeks we'll take a hard left turn and veer off book into graph theory, number theory, social choice theory, and other subjects as determined by your interests. I won't use a particular book for these, but I'll send out links (to free resources) if I think there's something you should read.

**GRADES.** Your grade in the course will be based on the following:

**20% Snack Problems**

**20% Stew Problems**

**25% Midterm**

**35% Final**

**LECTURES.** Lectures are held on Mondays, Wednesdays, and Fridays. Since there's no book or quiz sections, you should definitely show up! PDF slides of everything I write on the board will be posted to the course website after each class, but it's hard to learn just from those.

**HOMEWORK.** Homework is an essential component of this course, so I've decided to give you two different *kinds* of homework!

**Snacks:** These assignments will be due every Friday (starting January 14th), and will consist of mechanical tests of your understanding. The assignments consist of bite-sized proofs that are easily digestible if you are comfortable with the material, but you should still take them seriously as an opportunity to practice writing proofs. It can be deceptively challenging to explain something that feels obvious.

**Stews:** These assignments will be due less frequently, roughly once every two or three weeks. Unlike Snacks, these will require clever insights. Each assignment will consist of five problems, and you will need to solve three of them. Stews need a long time to simmer, and they might require many different ingredients you've seen in class. Look at them early and ponder them when you're walking across campus, taking a shower, or falling asleep. Give your brain time to stumble upon a solution, and then more time to express it as clearly as you can.

You may discuss Snack problems with your classmates, and you should feel free to ask me or anyone else for help, but you should write up the solutions *by yourself*. Think of it like a paper for an English class: you might discuss your ideas with someone else, but you wouldn't write your paper with them, because that's a recipe for plagiarism.

On the other hand, you may *not* work together on Stew problems. The only resources you may use for Stew problems are me (to ask clarifying questions) and your notes. If I suspect you of collaborating with classmates or seeking answers on the internet, I *will* report you for academic misconduct. Please take this seriously.

Snack problems may be handed to me in class on their due date, or turned in online beforehand. Stew problems should always be turned in online. I encourage you to type your solutions.

**EXAMS.** There will be one midterm and one final:

- Midterm: Wednesday, February 1st (in class).
- Final Exam: Wednesday, March 15th, 2:30–4:20 PM (in our usual classroom).

The exams will be closer in flavor to Snack problems, since it's difficult to produce great mathematical insights in a hurry. You may *not* use a calculator on exams (not that you would want one) or a cheat sheet.

**OFFICE HOURS.** My general office hours are on Thursdays, 3:00 – 5:00 PM in Padelford C-548. You can always show up at this time without an appointment to ask questions. If that time doesn't work for you, or if you'd prefer to avoid running into Math 125 students, send me an email; I'm usually able to set up appointments at other times.

**WEBSITE.** We have a website! It's really sparse, and doesn't contain much more than what you see here, but I'll probably post more to it as the quarter progresses:

[www.math.washington.edu/~ostroff/courses/2017/math300-win17](http://www.math.washington.edu/~ostroff/courses/2017/math300-win17)

**ACADEMIC HONESTY.** I take cheating very seriously, and will report any instances to the department of Community Standards and Student Conduct.

**STUDENTS WITH DISABILITIES.** The University of Washington is committed to providing access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation, contact the Disability Services Office at least ten days in advance at: 206-543-6450/V, 206-543-6452/TTY, 206-685-7264 (FAX), or [dso@u.washington.edu](mailto:dso@u.washington.edu).