

Math 200a Fall 2016: Graduate Algebra I.

MWF 11-11:50am, 5402 AP&M

Professor D. Rogalski

1. CONTACT INFORMATION

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Office hours: Tu 4-5pm, Th 3:30-4:30pm

2. BASIC COURSE INFORMATION

- **Course description** This is a first course in graduate level abstract algebra. At least one course at the undergraduate level in abstract algebra covering some group and ring theory is a prerequisite.

The main aim of the course is to give PhD and masters students in mathematics sufficient background for their further studies. Consequently the pace of the course is quite fast, and homework assignments are designed to be challenging. Graduate students from other departments who have a particular interest in pure mathematics sometimes find this course to be a good fit for them, but I stress again that this course is not designed as a first course in abstract algebra. Students with minimal prior background should consider taking the undergraduate algebra course Math 100a instead. If you are not sure if you should take this course, please discuss it with me.

- **Office hours** Professor Rogalski and the TA will have several scheduled office hours where you can ask questions about the course material or get advice on how to approach the homework problems. If you cannot make either Professor Rogalski's or your TA's scheduled office hours, feel free to make an occasional appointment to talk to one of us at a different time.

- **Qualifying exam** The three quarter sequence 200a-c is preparation for the qualifying exam in algebra which will be given in May 2017, and again in September 2017. These exams will be tailored to the topics covered in the course this year. Since Math 200 is being taught jointly among several faculty this year, the qualifying exams will also be written jointly.

Copies of some relatively recent qualifying exams in algebra can be found on the math department's website as part of the mathematics department graduate student handbook, see

<https://www.math.ucsd.edu/handbook/graduate/academics/qualifying-exams/>

- **Textbook** The main textbook for Math 200a is *Abstract Algebra* by Dummit and Foote, 3rd edition. I will not always follow the presentation in Dummit and Foote closely and may order some topics differently, but I will try not to conflict with Dummit and Foote's notation. Other good textbooks you could consult for reference include *Algebra* by Hungerford and *Algebra* by Isaacs. We may cover a few selected topics at the end of the quarter not from the textbook.

- **Homework** Homework will be assigned weekly and due on Fridays by 3pm. The first homework will be due on Friday September 30. Homework handed in after 3pm will receive no score.

Homework may be handed in at Friday morning's class, may be put in TA Francois Thilmany's mailbox in the mailroom on the 7th floor of AP&M (if you have access to the mailroom), or may be brought to Francois's office by 3pm on Friday (if he is not there, slip it under the office door).

Only selected problems will be scored, but you are responsible for completing and understanding all problems, and exam problems are often modeled on homework problems. You are free to discuss the homework problems with the professor, the TA, or each other, but your final write-up of the problems must be your work alone. Submitting solutions that are not your own work, for example copying from an online solution bank, is academically dishonest.

- **Exams** There will be one in-class midterm, scheduled for Friday October 28 (week 5). No homework will be due the week of the midterm. The final exam will be Tuesday, December 6, 2016 from 11:30am-2:30pm. No notes, books, or other aids can be used during exams.

- **Grading** Your grade will be based roughly on the following percentages: Homework 25%, Midterm 25%, Final Exam 50%. Your grade in this class is meant to suggest how your current performance corresponds to your likely result on the qualifying exam to be held next year: A = PhD Pass, A- = Provisional PhD Pass, B+/B = Master's Pass, C or less = not likely to pass the qual.

- **Topics** The main topics for the fall quarter will be group and ring theory, Chapters 1-9 in the text. Occasionally I may cover some topics not in those chapters.

Because group theory is covered in almost every first undergraduate abstract algebra course, this is the subject I will assume every student has seen the basics in. For this reason, we will review the topics in Chapters 1-3 of Dummit and Foote very quickly.