Math 230a: Algebra
Fall 2015 Course Information and Syllabus
Nathan Kaplan, Rowland 540c, nckaplan@math.uci.edu

Lectures: M,W,F 11:00 - 11:50 in Rowland Hall 306.
Office Hours: Monday 1:30 - 3:30 PM, RH 540c.
Also, please feel free to email me to set up an appointment.

Course Goals

Algebra is one of the fundamental areas of mathematics and will almost certainly play an important
role in whatever research area you choose to pursue during your time in graduate school. The goal
of the Math 230 sequence is to provide a broad overview of algebra and to give you with a strong
foundation that prepares you to pursue more advanced topics in the future. You will develop
your algebraic intuition by working with many examples, solving lots of problems, and doing many
proofs. Another key goal of this course is to prepare students for success on the Qualifying Exam
in Algebra.

In 230a we will begin with a review of group theory and then move on to more advanced topics
in the subject. In the latter part of the course we will focus on ring theory. The plan is to cover
Chapters 1-9 of Dummit and Foote, but not every section. In addition, I find Keith Conrad’s
expository notes on groups and rings to be excellent supplemental material for the course:
http://www.math.uconn.edu/~kconrad/blurbs/
Math 230b will study modules and field theory, and Math 230c will focus on Galois theory and
representation theory.

We assume that you have already taken a standard undergraduate course in abstract algebra and
proof-based linear algebra. You will have seen some of the course material before, so we plan to
review the basics quickly in order to move on to new and challenging topics. We will definitely not
have enough time to cover everything in detail in lecture so you will be expected to do a significant
amount of reading outside of class.
Grading

- Homework: 20%
- First Midterm Exam (in class- Oct. 23): 15%
- Second Midterm Exam (in class- Nov. 16): 15%
- Final Exam (Friday, December 11th 8:00 - 10:00 AM) 50%

Weekly homework will be a big part of this course. The best way to become comfortable with a new and challenging subject is to do lots of problems. In particular, we will do many of the problems from recent algebra qualifying exams from UCI and other universities.

I have always found that I think better about mathematics when I can discuss it with others and that I only really understand a problem when I can explain its solution to somebody else. You are encouraged to work together on problem sets, but write up your solutions individually. If you use outside sources (other textbooks, websites, etc.) for your homework, you must acknowledge them. If you have any questions about this policy, or about academic integrity issues within the course, please feel free to email me.

Textbook