

# Math 230a: Algebra

Fall 2015 Course Information and Syllabus  
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**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

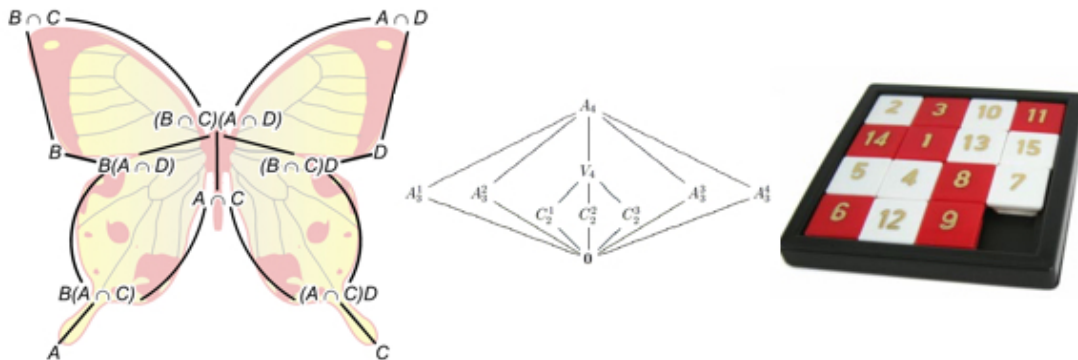
Algebra is one of the fundamental areas of mathematics and will almost certainly play an important role in whatever research area you choose to pursue during your time in graduate school. The goal of the Math 230 sequence is to provide a broad overview of algebra and to give you with a strong foundation 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

*Abstract Algebra, Third Edition*, D. Dummit and R. Foote. ISBN: 978-0-471-4334-7