

Instructor: Dr. Chris Black
Office: Snoqualmie Hall #302B
Office Hours: Tuesdays 12:30 - 1:30, and by arrangement
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Required Text: *A First Course in Abstract Algebra*, 7th edition, John B. Fraleigh,
Addison-Wesley, 2003

GOALS FOR COURSE:

MATH 361 students will:

- ... improve their ability to think abstractly and critically;
 - ... be able to communicate in precise written mathematical language, using correct logic and notation;
 - ... be able to identify groups with certain properties, and provide concrete examples;
 - ... have a firm grasp on the basic concepts of group theory, and the facility to apply them to particular groups;
 - ... actively participate in the classroom dialogue, both as an individual and as a member of a small group, and be an active partner during in-class exercises.
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COURSE PHILOSOPHY:

In this course, we continue our ascent up Algebra Mountain. From the top of Algebra Mountain, one can see for miles in every direction: polynomials & solutions to polynomial equations, complex numbers, geometry, number theory, discrete mathematics, and even a corner of calculus. We will continue our journey into abstract algebra with the study of rings and fields which are particularly relevant to secondary teaching as they are abstractions of the already familiar number systems of the integers and the real and complex numbers. During this second quarter of algebra, you will start to see how the high school algebra that you know and love fits into the mathematical landscape. Instead of seeming foreign, this material should eventually seem comfortingly familiar.

There are two types of problems in this course: computational problems (which are becoming more concrete than in Math 360), and proofs. We will continue to develop proof-writing ability. In this course, however, proofs can be tricky since there is rarely a picture you can draw to get yourself started. We will see that many of the methods and topics studied in Math 260 are used in extensively in this course.

PROBABLE COURSE TOPICS:

- ▷ Rings, Fields and Integral Domains
- ▷ Homomorphisms and Factor Rings
- ▷ Prime and Maximal Ideals
- ▷ Extension Fields

GRADING:

Homework:	Scale to 300 points
Take-Home Exams:	100 points each (2)
Final Exam:	150 points

HOMEWORK:

There are two types of homework problems in this course: computational problems and proofs. Proofs will be graded out of 10 points according to the *Proof Writing Guidelines*. Computational problems will have varying point values. The majority of collected problems will be proofs, and often the problems I have chosen to collect present an important part of the theory of the course. If necessary, proofs may be re-written and re-graded within one week of receiving the work back from me, but computational problems cannot be resubmitted. **It is considered plagiarism to find solutions to proofs assigned as homework in other texts or on the internet.** You are invited to come see me for hints on homework problems if you get stuck. As we will meet only briefly, you will find that reading the textbook will be critical to your success in this course. The homework total will be scaled to 300 points for the final grade calculation.

EXAMS & FINAL EXAM:

Exams will be given as take-home exams, during which the only allowed sources are the professor and the textbook. Use of the internet, any other written source, or any person other than the professor is considered plagiarism and will result in a score of 0 on the exam. The final exam will take place on **Thursday, 6/6/13** from 9:00 -11:00 am (concurrent with the Math 355 final exam). The 100-point final exam will be scaled to 150 points for the final grade calculation.

HONOR AND RESPECT:

Each of us should consider our placement at this institution to be a privilege. We need to have respect for one another, and for ourselves. In light of these facts, cheating in any form will not be tolerated. You are encouraged to work together on homework problems, however anything you turn in with your name on it should have been written by you alone (or with members of your assigned group). In a course where much of your grade is determined by your proof writing and take-home exams, plagiarism is a concern. The word “plagiarize” is defined by Merriam-Webster as “to steal and pass off (the ideas or words of another) as one’s own: use (another’s production) without crediting the source.” This is a very serious offense.