

Math 456: Modern Algebra

Fall, 2007

Instructor:	Erin McNicholas	email: emcnicho@willamette.edu
	Office: Collins, Room 307	Phone: 503-370-6590
	Office Hours: M 11-12pm, Tu 1-2:30pm, Th 1-2:30pm	
Class Web Site:	http://www.willamette.edu/~emcnicho/courses/AbstractAlgebra/M456.html	
Class Listserv:	math-456-01@willamette.edu	
Class Meetings:	Class meets in Collins 306 every Monday and Friday from 1:50-2:40pm, and every Wednesday from 1:50-3:30pm	

Class Objectives/‘Big Questions’

Is there an abstraction of the ideas running through a number of disparate areas of mathematics which, when accurately defined, gives greater insight into these individual areas? Does this abstraction allow for discoveries which apply to the whole without consideration of the characteristics which distinguish the parts? By reaching the level of abstraction which Modern Algebra provides, we’ll explore some of the most beautiful and unifying results in mathematics. The objectives of this course include:

- Mastering the abstraction necessary for working with Groups and Rings
 - Strengthening our understanding by exploring concrete instances of abstract ideas
 - Gaining an appreciation for the power of abstract mathematics, and
 - Building upon our logic and proof writing skills
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Required Course Materials:

Contemporary Abstract Algebra, 6th ed., by Joseph Gallian

Course Grades:

Course grades will be based on a point system. Grade cut-offs will be determined at the end of the semester with the guarantee that:

- 90% of the points or more will be at least an A-
- 80% of the points or more will be at least a B-
- 70% of the points or more will be at least a C-
- And 60% of the points or more will be at least a D

Default Scheme: Grades are based on five components

- 1 Midterm (worth 100 points)
- 3 Group Exams (each worth 50 points)

Group Exams are done in groups of three, with each group member having a unique problem to work on. Group members proof-read each other's work and offer suggestions. Of the 50 points possible for each group exam, 40 will be based on your work and 10 will be based on your work proof-reading your team members' exams. Each team member is allowed one page, one-sided, of notes.

- 2 Take-Home Problem Packets (each worth 75 points)

Take-Home Problem Packets can also be thought of as take-home exams. Your solutions must be LaTeXed. You can choose to re-write one of your graded packets to earn back half of the lost points.

- 1 Cumulative Final Exam (worth 200 points)
- Miscellaneous Assignments, Labs, & Colloquium Talks

Throughout the semester we will explore new concepts using GAP labs and small assignments. In addition, students are expected to attend 4 of the Math Colloquium Talks given throughout the semester. These talks will be announced in class and a schedule can be found on the Math Department web site http://www.willamette.edu/~emcnicho/Math_Colloquium.htm. You need only show me your notes from the talk to get credit for going.

For more information, see the handouts 'Advice from Past Students to Future Students' and 'Group Tests', available from the class web site under Class Handouts & Notes.

Missed Exam Policy:

Students must contact the instructor prior to the missed exam. In most cases, if the student has a valid excuse the grade on the final will be used to replace the missed exam score.

Class Attendance and Cell Phone Policy:

Daily attendance is expected from every student. Students who miss the first day may be administratively dropped from the course. Electronic devices such as cell phones, pagers, i-pods, etc. must be turned off during class meetings. If your cell phone goes off during class you will be responsible for bringing treats for the entire class at the next class meeting. Papers should not be read during class, though I applaud your efforts to stay abreast of current events and tackle the latest crossword or sudoku puzzle.

Academic Integrity:

In accordance with Willamette University CLA catalog: "Plagiarism and cheating are offenses against the integrity of the courses in which they occur and against the College community as a whole... Ignorance of what constitutes plagiarism shall not be considered a valid defense. If students are uncertain as to what constitutes plagiarism for a

particular assignment, they should consult the instructor for clarification.” Cheating is unethical and I take it very seriously. The Deans Office will be notified if anyone is found cheating and appropriate sanctions will be given.

Student Responsibility:

Most of you already know this, but previous experience has shown that a friendly reminder is sometimes in order :). You are all adults and responsible for your own education. I will do everything in my power to help you learn. You should always feel free to stop by my office or make an appointment to meet with me. You should also feel free to ask me questions in class. Stop me if you are confused and ask me to explain things again. I welcome student questions! Although I will do everything in my power to help you through this class, you are ultimately responsible for your grade. The following is a list of things I expect from you.

1. **THINK CRITICALLY.** Your goal in this class should be to understand the concepts and strengthen your mathematical reasoning and proof writing skills. At all times you should be asking yourself “Why are we doing this? How is this related to other topics I’ve learned? How would this apply to a concrete example?”
2. **ASK QUESTIONS & SEEK HELP!** Ask questions in class, after class, during office hours, whenever! If you are confused or having problems with a certain section of the material see me **AS SOON AS POSSIBLE**. I am happy to help you but it is impossible to go over weeks worth of material right before an exam.
3. **DO THE ASSIGNMENTS.** Mathematics is not a spectator sport. You will only learn mathematics by practicing, that is what homework is for. I encourage you to work with your fellow students on homework assignments. Although these assignments will not be collected, they are designed to help you learn. Not doing the homework will have a negative impact on your exam scores and your final grade.
4. **STUDY & SHARE YOUR INTEREST.** You should invest some time and effort into this course. Set aside time for both homework and studying. Furthermore, Abstract Algebra contains some of the most beautiful and interesting theorems in mathematics. I think it would be wonderful if you discussed these concepts with your peers outside of class.