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OFFICE HOURS: Posted on my webpage

COURSE MATERIALS: *Contemporary Abstract Algebra, Seventh Edition* by Joseph Gallian; a 1" loose-leaf binder. The student solutions manual is optional.

OVERVIEW

Abstract Algebra is based on learning about various systems you're not used to, by comparing them to the number systems you *are* used to – integers, rational numbers, and real numbers. We investigate which characteristics carry over and which don't, then generalize (i.e.e *abstract*) information from the results. Abstract Algebra arose from the attempt to expand the quadratic formula to higher order polynomials, and has become one of the most important branches of math, with applications both outside and within mathematics. Abstract Algebra has evolved into the study of different broad types of algebraic systems, (groups, rings, and fields, for instance). This introductory course will mainly focus on group theory, concluding with an introduction to ring theory.

In addition to getting an introduction to the beauties of Abstract Algebra, you will gain further insight into what pure mathematics is all about by creating an entire complex structure from a few (relatively) simple definitions.

The goals of this Abstract Algebra course are to introduce you to group and ring theory, provide you with concrete examples of different groups, and give you plenty of opportunities to hone your ability to write both expository mathematics and mathematical proofs. This class will be challenging, and should help you develop mathematically. The abstract nature of the material may intimidate you at first, but I hope you come to find it elegant, absorbing, and even fun.

Plan to spend at least 9-12 hours a week outside of class working on this course. As usual, some weeks you will spend more time on this class than others.

CLASS PARTICIPATION

As with any class, you will get more out of it if you actively participate. I am therefore including class participation in your overall grade. This includes asking and answering questions in class, working with classmates to investigate problems when asked to, giving helpful feedback to classmates, and other similar aspects of good academic citizenship. It's usually not an issue in a class of this sort, but be aware that poor attendance or repeated tardiness do count against you.

ASSIGNMENTS:

- **PROBLEM SETS:** You will (of course) have weekly problem sets, generally due on Wednesdays. You will also have the opportunity to rewrite once any problem you truly tried to do but didn't do to my or your satisfaction – this should help you improve

your proof-writing as well as helping you understand the material.

Late problem sets are not accepted

See http://acunix.wheatonma.edu/jsklensk/Abstract_Fall110/321homework.pdf for further details.

- **PORTFOLIO:** Keeping track of the definitions and theorems we cover helps considerably with problem sets and exams. To encourage you in this study technique, I ask you to copy (by hand, or by typing) each definition and each theorem, and to collect these in a binder dedicated to this purpose, which will be collected most Mondays. Please divide the binder into two different sections: *Definitions* and *Theorems*. Since examples and counter-examples are crucial for really understanding what's going on, I will give extra points when you include an example or counter-example beyond what's in the text. Please label such examples prominently, so I'm sure to see it.

ADOPTED GROUP PROJECT

One key to really getting a grip on both the basics and on the subtleties of Abstract Algebra is to see it applied to specific examples. To help you with this, you each will focus on a specific group this semester, thoroughly investigating aspects of it. This semester-long project will consist of several milestones along the way, culminating in a final paper.

Late intermediate stages will be accepted, at the same penalties as homework.
The final stages may not be turned in late.

If an intermediate stage is less than 24 hours late, I will deduct 20%; if it is between 24 and 48 hours late, I will deduct 50%. I will not accept anything more than 48 hours late.

More information will be provided (in due time) on the course webpage.

EXAMS

You will have two open-book, open-note take-home exams during the semester. I will give you four days (Monday to Friday) to work on each exam. See the syllabus for the due dates.

The final will consist of a take-home exam, and possibly also an in-class portion (I will decide on the necessity for an in-class portion as the semester progresses). The take-home portion will be due by 4:00pm on Friday, December 17.

EVALUATION

I expect to use the weights below, although I may have to make adjustments if the semester does not go as expected.

Class Participation	2%
Portfolio	3%
Problem Sets	37%
Adopted Group Project	15%
Two Takehome Exams	26% (13% each)
Comprehensive Takehome Final Exam	17%

HONOR CODE

I expect you to abide by the Honor Code. *Remember: If you see a violation of the Honor Code occurring, you are bound by the Honor Code to report it.* As part of the honor code, you are required to write *I have abided by the Wheaton College Honor Code in this work*, followed by your signature, on all written assignments. Every time you do, ponder the question "how exactly does the honor code apply to *this* assignment, and did I *really* abide by it?" If, upon consideration, you do not feel you can truthfully write and sign the pledge, please come speak to me immediately! So, specifically, how does the Honor Code apply in this class?

For all assignments: You may discuss the work with classmates, and you may use references that help you figure out how to do a problem, but you may not use any references (people, other people's projects or assignments, books, the web) which give you the answer *or* which lead you directly to the solution. When you do use references, you *must* cite them.

For all group work: You must make every effort to meet with your group at all meetings. You may not purposely exclude any member from a meeting.

You may not divide the work!
Each of you must participate in the solution of each problem.

You must make every effort to participate and aid in finding the solutions. If you don't understand what someone else is saying, you must ask them to explain it. If someone asks you to explain your ideas, you must take the time to explain it. In the end, you must understand all the work that is being submitted under your name.

When dividing the points, do not give or take credit that is not due.

Portfolio: As I mentioned above, you must hand-write or type up the definitions and theorem statements yourself. Scanning, photocopying, or using another person's work is not acceptable.

Homework: For the individual problem sets, you must write the results on your own, in your own words. For the group problem sets, after your group has jointly figured out every problem, one person will be responsible for recopying your work. This primary author must change from week to week.

Adopt-a-Group Project: As with the homework, you may use references, but you must not plagiarize (copy work, or only re-phrase in a simplistic manner).

Midterm and Final Exams: You may use *your* book and *your* notes. If you are sharing a textbook with someone else (which I strongly discourage), please come to my office to discuss how you can share the book in a way which does not corrupt the fairness of the exam. You may *not* borrow anybody's notes during the exam, and of course you may not discuss the exam in any way with anybody but me.