

Math 336 Advanced Abstract Algebra

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Text: *Contemporary Abstract Algebra*, Sixth Edition, by Joseph A. Gallian.

Course Content: This course will focus on Chapters 1-11 and 24, as well as additional topics pertaining to class. We will study cyclic groups, symmetric groups, dihedral groups, subgroups, permutation groups, homomorphisms, isomorphisms, cosets and Lagrange's Theorem, normal subgroups and factor groups, the Fundamental Theorem of Finite Abelian Groups, and the Sylow theorems.

Prerequisites: Math 175 with a grade of C or better; Math 236 recommended.

Homework: Daily reading and homework assignments will be given. These will almost always be posted on the course web site. **You should make every attempt to complete the daily homework assignments in a timely manner, i.e., before the next class period.** From the daily homework assignments, selected problems will be collected and graded. There will be **ten** of these collected problem sets collected throughout the semester (usually every week). These problem sets will be worth 15 points, each giving 150 points towards your final grade. **When a problem has been selected to be turned in, you are not to discuss it with anyone but me.** It may be the case that you have already discussed an individual problem set with another student before it was assigned. In this case, you must state on your write-up the student(s) you have worked with. **Late homework will be accepted one class period after it is due at a 50% discount.**

Problems similar to the those assigned although not necessary collected could appear on exams. **Therefore, you should make every attempt to complete all problems assigned, regardless of whether or not they were collected and graded.**

A word about collected problem sets ... problems assigned for collection should be placed **in order**, i.e., if problems 4, 9, and 13 are assigned, then your assignment should have the problems in that order. **Staple** your assignment if it is more than one page. **No raggedy edges**, i.e., pages torn out of a notebook should be trimmed. Remember, you want to show me your best work on the collected problem sets. Therefore, make it **neat and readable**. Points will be deducted for not following the above guidelines.

Reading Assignments: A major portion of this course will involve reading your textbook. For almost every meeting we have, you will be given a reading assignment, together with a few short questions, sent via email, to respond to prior to the next class period. Your responses will also be sent via email, and the details of this process are given in the handout “Reading Assignment Guidelines.” For each submission, you will receive a grade of 0 or 1 depending on whether the questions were answered completely and submitted on time. The total of these scores will count 50 points towards your final grade.

Exams: There will be **two** exams and a final exam. The exams will be worth 100 points each, and the final will be worth 200 points and will be comprehensive. These exams will **probably** be take-home exams.

Withdrawal: The last day to withdraw and receive a grade of WX is Friday, 9 March 2007.

Academic Honesty: You are strongly encouraged to form study groups to assist in learning the material and completing the daily homework assignments. **However, once an homework problem has been selected for individual grading, you are to no longer discuss it with your peers** (you may discuss it with me), and the write-up of your solution **must** be your own. If you had discussed a particular homework problem with another student before it was selected for grading, your write-up must include a statement like the following “I worked on this problem with Suzy Q.” **Take-home exams are obviously not to be discussed with anyone except me.** You are also only allowed to use only your book as a resource for take-home exams.

Special Needs: If you need an accommodation for which you are eligible, please inform me at the beginning of the semester (during the first two weeks of class) so that this can be implemented.

Grades: A breakdown of the points is as follows:

Reading Assignments	50
Homework Assignments	150
Exams	200
Final	200
Total	600

Grading Scale: Grades for the course are **based** on the following percentages:

A [90, 100] **B** [80, 90) **C** [70, 80) **D** [60, 70) **F** [0, 59)

General Advice: This is a course in abstract algebra, but it is also a course that emphasizes careful expression of logical arguments. Homework problems and test questions require clear and concise explanations of why something is true. Words like “construct”, “show”,

“obtain”, “determine”, etc., explicitly state that a proof is required. Use *complete sentences* that accurately state your ideas. Results covered in class can be used without proof if you state them correctly. *Mean what you say.* Be honest with yourself. If you haven’t completed a proof or don’t understand how the conclusion follows, then don’t claim the conclusion. Examples given where the conclusion holds usually do not constitute a proof. Statements with a number as the parameter must be proved for all possible instances. *Say what you mean.* State your ideas accurately. Omitting words can lead to sentences that mean something other than you intended. Define any terminology you introduce. Be careful not to use the same notation or terminology for more than one mathematical object.

After every class period and before attempting the homework assignment, recopy your notes. This is probably the single most important thing you can do to ensure that you understand the material. *Start the homework early.* If the statement of an exercise, or what needs to be done to complete it, is unclear, thinking about it early allows time to ask for clarification, by email or in person. If you are having trouble understanding or proving something, please come say “here is what I was trying, but it doesn’t seem to work; what am I doing wrong?” Also, trying to explain a proof orally to another person is a valuable way to find a better proof or expose gaps in an incorrect proof.