

Math 236 Introduction to Abstract Algebra

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COURSE HOME PAGE:	www.math.ilstu.edu/hjordan/Math236/

Text: *Abstract Algebra an Introduction, Second Edition*, by Thomas W. Hungerford.

Course Content: This course will focus on Chapters 1–7, as well as additional topics pertaining to class. We will study rings, integral domains, and fields. We will study these fundamental number systems and algebraic objects introduced in high school algebra from a higher viewpoint. We will also study quotient rings, polynomial rings, homomorphisms, and ideals.

Prerequisites: Math 175 with a grade of C or better is recommended. This class will involve writing proofs; therefore you will learn proof techniques such as direct proof, proof by contrapositive, proof by contradiction, and induction. You will also be able to understand the structure of logical statements, including quantifiers, and the need to prove both directions of an equivalence. Your success in this course depends on having the necessary prerequisites.

Homework: Daily homework assignments from the text will be made. These homework assignments will be collected several times a week, usually by section, although not all problems will be graded. You will be given an opportunity at the beginning of each class period to ask questions over the previous class period's homework assignment. Therefore, it is **imperative** that you attempt all homework problems as soon as they are assigned, **before** these problems are discussed in class, even though not all problems will be graded. Problems similar to the those assigned (although not necessary graded) could appear on exams. Daily homework assignments will be posted on the course web site.

The daily homework assignments will give 200 points towards your final grade, with each collected homework assignment giving 5–15 points towards your homework grade. **Late homework will not be accepted under any circumstances.** If you are unable to come to class, send your homework with another student or arrange to have your homework placed in my mailbox in the Math Department Office by class time, 11 A.M.

A word about homework . . .Staple your assignment if it is more than one page. You want to show me your best work on the collected problem sets. Therefore, make it **neat** and **readable**. Problems must appear **in order**, i.e., 1, 2, 3, etc. Write in pencil so that you can erase your mistakes. **Points will be deducted for homework that does not follow the above guidelines.** Do not wait until the last minute to start your homework! These problems can be challenging and if you wait until the day before an assignment is due to **begin** the assignment, you will not be successful.

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, to respond to prior to class. Your responses will 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. Daily reading assignments will also be posted on the course web site.

Exams: There will be **three** exams, each worth 100 points. Exams will be given on the following dates:

15 February, 21 March, 25 April

You are expected to take all exams. Generally, there are no make-up exams. In the event of an emergency and with **prior** notification, alternatives can be discussed.

Final Exam: The final exam will be **comprehensive** and will be worth 200 points. There are no make-ups on the final exam, unless there is an emergency. The final exam is scheduled for Monday, 5 May at 7:50–10:30 A.M.

Withdrawal: The last day to withdraw and receive a grade of WX is Friday, 7 March 2008.

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:

Homework Assignments	200
Reading Assignments	50
Exams	300
Final	200
Total	750

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)

Class Etiquette: Please be on time to class. It is disrupting to the flow of class when students arrive late. Please do not get up and leave during class time. Class meets for 50 minutes; whatever it is you need to do can wait. Please turn off your cell phone. Please do not eat in class.

Email Etiquette: During the semester it is likely that you will contact me by email with a question about something from class. Please address your email with “Dr. Jordon”. Also, you must sign your email, i.e., “John Smith,” so that I know who the email is from. Your email responses to the daily reading do not need to be addressed nor signed. Please don’t ask questions whose answers can be found on the course handouts or web site.

General Advice: Attend every class period! **Attendance** and **active participation** in this course are expected and encouraged. **You** are responsible for all material presented and all announcements made on the days you are absent. (The course web site is an excellent source of information if you must miss a class.) Attending class and participating in class discussions will be very helpful in preparing for exams and in doing the homework. MATH IS NOT A SPECTATOR SPORT. To succeed in this course, you will most likely require **twelve** or more hours per week in class attendance, daily study, and homework. If you find that you are having trouble with a particular section or topic, act quickly to catch up. If you have any problems or questions, please seek extra help from me. Make use of my office hours, or if that is not possible for some reason, make arrangements to see me at another time. It is also very helpful to have a “study buddy.” Get to know someone in class and arrange to study/do homework together. Often times we really learn something when we explain it to others.

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.

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.