

**MAT 631 — INTRODUCTION TO ALGEBRA I
FALL 2012**

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Lecture: TR 12:30–1:50, Carnegie 311
Office hours: MW 1:30–4:30, by appointment, and any time my door is open
Text: Dummit & Foote, *Abstract Algebra*, 3rd ed.; see also Artin, *Algebra*, 1st ed.

Course Description: This is the first course in a two-course graduate sequence. The topics covered will come from linear algebra and group theory.

Approximate syllabus:

Group Theory I	definitions and examples; homomorphisms and isomorphisms; subgroups; quotient groups; isomorphism theorems;	D&F Chapters 1, 2, 3
Vector Spaces	definitions and examples; bases; sums; linear operators; diagonalization	D&F Chapter 11 Artin Chapters 3, 4
Group Theory II	group actions; equation; Sylow theory; groups of small order; free groups; generators and relations	D&F Chapters 4, 5
Bilinear Forms and Linear Groups	definitions; symmetric forms; Gram-Schmidt; hermitian forms; the Spectral Theorem; classical groups	Artin Chapters 8, 9

Homework: Homework will be assigned in class. Some problems will be assigned to be turned in and graded. You are encouraged to work together to solve the problems, but each person must submit their own writeup. Writing mathematics is an important skill to acquire and will be taken into consideration in the grading. Your solutions should be clear, concise, and complete. If something is obvious or trivial, you should say so, but be sure you aren't ignoring the crux of the problem.

Exams: There will be one midterm exam during the semester probably the week of Oct. 22, and a two-hour final exam in Exam Block 13 (Thursday Dec 13, 3:00pm–5:00pm)

Grading: Your grade will be based 30% on homework, 30% on the midterm exam, and 40% on the final exam.

Students with Disabilities: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), disabilityservices.syr.edu, located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. You are also welcome to contact me privately to discuss your academic needs although I cannot arrange for disability-related accommodations.

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