

MAT 632 — INTRODUCTION TO ALGEBRA II — SPRING 2009

instructor: Graham Leuschke
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text: Dummitt & Foote, *Abstract Algebra*, 3rd ed., Wiley 2004
see also M. Artin, *Algebra*, Prentice Hall 1991

place: Carn 219

times: MWF 10:35–11:25

office hours: MW 1:30–4:00, R 10:30–12:00.

Also by appointment, and any time my door is open

course web page: <http://www.leuschke.org/Teaching/Math632Spring2009>

Course Description: This is the second course in a two-semester sequence. The course will cover rings (including factorization and module theory) and fields (including Galois theory).

Approximate syllabus:

Commutative Ring Theory	definitions and examples; homomorphisms and quotient rings; ideals; integral domains and rings of fractions; Chinese Remainder Theorem	Chapter 7
Factorization	UFDs, PIDs, and EDs; polynomial rings and Gauss's Lemma; irreducibility and roots	Chapter 8
Modules	definitions and examples; homomorphisms and quotient modules; free modules; generators and relations; FTFGAG; canonical forms	Chapters 10, 12
Fields	definitions and examples; algebraic and transcendental extensions; straightedge and compass constructions; algebraic closures and separability	Chapter 13
Galois Theory	the Fundamental Theorem of Galois Theory and applications; finite fields; insolubility of the quintic	Chapter 14

Grades: I will use the following rubric to calculate final grades.

Problem sets	30%
Midterm exam	35%
Final exam	35%

Homework: Problem sets will be assigned each week, due generally on Wednesdays. You are encouraged to work together on the problem sets, but each student must submit their own writeup. I will be grading on mathematical correctness, and also on the clarity, concision, and completeness of your presentation. If something is obvious or trivial, you should say so, but be sure you aren't ignoring the crux of the problem.

Academic Integrity: The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see <http://academicintegrity.syr.edu>.

Students with disabilities: Students who are in need of disability-related academic accommodations must register with the Office of Disability Services (ODS), 804 University Avenue, Room 309, 315-443-4498. Students with authorized disability-related accommodations should provide a current Accommodation Authorization Letter from ODS to the instructor and review those accommodations with the instructor. Accommodations, such as exam administration, are not provided retroactively; therefore, planning for accommodations as early as possible is necessary. For further information, see the ODS website, Office of Disability Services <http://disabilityservices.syr.edu>.