MAT 632-Introduction to Algebra II
Spring 2013

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Lecture:	MW 3:45–5:05, Carnegie 316.
Office hours:	MW 10:00–11:30.
	Also by appointment, and any time my door is open.
Text:	Dummit and Foote: *Abstract Algebra, 3d ed.*, ISBN 978-0-471-43334-7

Course Description: MAT 632 is a continuation of MAT 631. We will cover rings (including factorization and module theory) and fields (including Galois theory).

Approximate syllabus: The plan is to cover the following topics from the book:

- ✓ **Introduction to Ring Theory** (Chapter 7). Definitions, examples, homomorphisms, ideals and quotient rings. Integral domains and rings of fractions. The Chinese Remainder Theorem.
- ✓ **Factorization** (Chapters 8 and 9). Euclidean Domains, Principal Ideal Domains, and Unique Factorization Domains. Gauss Lemma. Polynomial rings, irreducibility and roots.
- ✓ **Modules** (Chapters 10 and 12). Definitions and examples, homomorphisms and quotient modules. Free modules, the fundamental theorem of finitely generated abelian groups, canonical forms.
- ✓ **Fields** (Chapter 13). Definitions and examples, algebraic and transcendental extensions, algebraic closure and separability. Straightedge and compass constructions.
- ✓ **Galois Theory** (Chapter 14). The Fundamental Theorem of Galois Theory. Finite fields, insolubility of the quintic.

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 his/her 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 that you are not ignoring the crux of the problem.

Exams: There will be one midterm exam during the semester probably the week before Spring Break, and a two hour final exam in Exam Period 16 (Tuesday May 7, 12:45-2:45).

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

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.

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Students with Disabilities: If you believe that you need accommodations for a disability please contact the Office of Disability Services (ODS) at

http://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. Making arrangements with ODS takes time. Do not wait until just before the first test.