

Mathematics 500 — Abstract Algebra I

Fall 2022

(11–12 MWF, in 347 Altgeld)

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Homework: Weekly homework assignments. (50% of grade.)

Tests: Two midterms (10% each) and a final (30%), in class. The final exam will resemble a Comp Exam.

Texts: The primary text will be:

- Dummit & Foote, *Abstract Algebra*, (3rd edition). Wiley, ISBN 978-0-471-43334-7.

Course topics: The course will cover approximately chapters 1–8, and 10–14 of Dummit and Foote. It will be assumed that students are familiar with basic material from an undergraduate algebra class, such as in Math 417 (this material will be reviewed). We will cover the topics on the standard syllabus for 500, including:

- Free groups and presentations of groups.
- Group actions.
- The Sylow theorems.
- Basic ring theory.
- Basic module theory.
- Classification of modules over a PID.
- Fields and field extensions.
- Galois theory.