

EMAT 4000 Connections to Abstract Algebra Syllabus, Fall 2008

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Office hours: TBA or by appointment.

Seminar purposes

- (1) to revisit high school mathematics on a deeper level, and
- (2) to support you in your mathematics courses

The intent is that with the support of these seminars you will learn undergraduate mathematics in ways that will help you in your future work as mathematics teachers. Please send me questions about the ideas in your mathematics courses, as those questions will help me organize the seminar to be partly responsive.

Many of the homework problems will be intended to give you sufficient “calculation experience” to be able to see the ideas embedded in the theorems and necessary for the proofs.

Seminar Goals

- To learn mathematics deeply and with understanding
- To see mathematics as more than knowing “what to do”
- To develop internal conviction about how mathematical ideas work and why certain statements are true
- To develop habits of working together, asking and pursuing questions, looking for connections, and looking for multiple explanations
- To develop precision (rigor) in use of mathematical language and notation
- To develop intuitive understandings of abstract ideas

Seminar requirements

- **Homework** – Assignments on the following topics
 1. Modular arithmetic
 2. $\mathbf{Z}/n\mathbf{Z}$
 3. Complex numbers
 4. Field Extensions
 5. Ideals
 6. Groups
- **Attendance** – You are expected to attend each regularly scheduled class and to be on time. The maximum number of times you may miss is two absences, no exceptions! Your grade will be lowered by one letter grade for each additional absence. Participation in discussions will be taken into consideration when final grades are determined.

Homework

The homework problems are intended to help you develop good explanations for mathematical ideas. Thus, an answer alone will receive little credit, and an algebra-only solution will be considered incomplete. Use words in between the symbols, write in complete sentences, and be sure to include enough explanation so that a classmate could understand your reasoning.

You are encouraged to collaborate with your classmates on the homework, but when you sit down to write up a problem, you should work on your own. And as you collaborate, be sure to give yourself plenty of time to think through each problem yourself. The point is that you will often deepen your understanding as you try to write a careful explanation, and you will learn little by merely reading someone else's solution.

Grading

The homework assignments will be worth 10 points each. Class participation/attendance and professionalism will account for 10 points of your grade. Total points = 70.

Disclaimer

The class requirements and corresponding number of points assigned may change during the course of the semester, as may the topics covered.