

EMAT 4000 Connections to Abstract Algebra Syllabus, Spring 2008

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Office hours: TBA

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. 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

- Six regular homework assignments on the following topics:
 1. An introduction to modular arithmetic
 2. Algebraic properties of $\mathbf{Z}/n\mathbf{Z}$ and an introduction to complex numbers
 3. Complex numbers
 4. Field extensions
 5. Ideals
 6. Quotient rings
- One set of lesson plans to be used in a secondary mathematics classroom
- 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.

Grading

The homeworks will be worth 10 points each and each set of lesson plans will be worth 35 points. Class participation will account for 5 points of your grade.

Disclaimer: Topics, requirements and point distributions are subject to change.