

SU DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE

SYLLABUS (*Tentative*)

MATH 507 *Seminar: Algebra*

Objective: To present students with an opportunity to study, in depth, this topic which best exemplifies abstract mathematics. To enhance their ability to formulate, test, and settle conjectures. To advance their ability to prove theorems and construct counterexamples. To enhance the ability of students who are teachers, prospective or in-service, to identify with the thought-processes and challenges of their students.

Intended for: Graduate students.

Prerequisite: Admission to graduate study or approval by the department.

Text: Abstract Algebra: A Geometric Approach, Shifrin, Theodore Shifrin, Hardcover, Book, ISBN: 0133198316, Science, Barnes & Noble.com.

Topics to be examined:

1. The Integers
2. From the Integers to the Complex Numbers.
3. Polynomials.
4. Homomorphisms and Quotient Rings.
5. Field Extensions.
6. Groups.
7. Group Actions and Symmetry.
8. Non-Euclidean Geometries.

Appendix A. A Logic Review, Sets and Functions, and Equivalence Relations.

Appendix B. Miscellaneous Facts from Linear Algebra.

EVALUATION

Problems to be turned in: 35%

Presentations at the Board 35 %

Midterm examination 15%

Final examination 15%

HWA 7/2008