MA560: Algebra I
Syllabus

This course is a rigorous introduction to abstract algebra focusing on structures and problems relevant to the secondary mathematics curriculum: elementary number theory, rings of polynomials and rational expressions, factorization in Euclidean domains, field extensions, and Euclidean construction.

Text

There is one required text for the course: *Rings, Fields, and Vector Spaces: An Introduction to Abstract Algebra via Geometric Constructibility*, by B. A. Sethuraman. The text is on reserve at the Reserve Desk on the third floor of Healey Library.

Grading

Course grades are based on homework assignments (50%), an in-class test (20%), and a cumulative final exam (30%).

Reading and class preparation

There is a reading assignment associated with each class period. Although it is not generally possible to discuss every topic in class, students are responsible for the entire content of the reading assignment. *Test and exam questions may cover reading material not discussed explicitly in class.* Consequently it is very important to complete the reading assignments on time and to come to class prepared with questions.

Make-up tests

Tests may be rescheduled only in cases of serious illness, bereavement, or other circumstances of similar gravity. Whenever possible, arrangements for make-up tests must be made *in advance* of the regularly scheduled testing time.

Student conduct

Students are required to adhere to the University Policy on Academic Standards and Cheating, to the University Statement on Plagiarism and the Documentation of Written Work, and to the Code of Student Conduct as delineated in the catalog of Undergraduate Programs, pp. 44–45 and 48–52. The Code is available online at the following web site:

`http://www.umb.edu/student_services/student_rights/code_conduct.html`

Course Calendar

Weeks 1–2: Divisibility in the integers.

Weeks 3–4: Rings and fields.

Weeks 5–6: Vector spaces.

Weeks 7–8: Midterm exam. Field extensions.

Weeks 9–10: Polynomials.

Weeks 11–12: The field generated by one element.

Weeks 13–14: Straightedge and compass constructions.

Week 15: Review and final exam.