

## SCHOOL OF MATHEMATICAL & NATURAL SCIENCES SYLLABUS

**COURSE:** Abstract Algebra, MATH 3543

**SEMESTER:** Fall 2011

**INSTRUCTOR:** Farrokh Abedi, Science Center A 9. Ext. 1216

**OFFICE HOURS: OFFICE HOURS**

MW 9:00-11:30, MTWT 2:00-3:30

TTH 9:30-11:00, and by appointment

**REQUIRED TEXT & MATERIAL:**

Thomas W. Hungerford, *Abstract Algebra* (2nd edition). Saunders College Publishing.

**PREREQUISITE:** Completion of the Calculus sequence

**OBJECTIVES:** The objectives of this course are to provide students with:

1. Familiarity with algebraic properties of systems that appear in the high school curriculum: number systems, operations on numbers, mapping, symmetries, matrices;
2. Knowledge of definitions, examples and basic properties of certain algebraic structures: groups, rings, fields;
3. Experience in abstract reasoning, making and testing conjectures and proving theorems;
4. \*Awareness of applications of algebra in geometry, combinatorics, physics and computer science;
5. Acquaintance with the historical development of modern algebra and of its relation to what is called high school algebra.

**COURSE CONTENT & SCHEDULE OUTLINE:**

- SETS

Basic Properties of Sets, Power Set and Cartesian Product of Sets.

- MAPPING AND EQUIVALENCE RELATIONS

One-to-One and Onto Mapping, Equivalence Classes, Integers Modulo  $n$ .

- RINGS

Ring of Integers, Rational, Real and Complex Numbers, and Integers Modulo  $n$ ; the Ring of Matrices; Polynomial Rings, Ideals, Integral Domain and Homomorphisms.

- INTEGRAL DOMAIN AND MORPHISMS

Ordered Integral Domains; Isomorphisms, Homomorphisms, and Kernels.

\* FIELDS

Definitions, Examples, and Field Extension.

\* GROUPS AND SEMIGROUPS

Integers, Rational, Real and Complex Number Systems: Cyclic groups, Symmetric Group, Subgroups, Homomorphisms and Normal Subgroups, and Sylow's Theorem.

**GRADING:** There are three components to your grade: homework & quizzes, tests, and the final examination. These are weighted in the following manner:

Homework & quizzes & Class Representation	20%
Chapter Exams (Four exams)	65%
Final Examination	15%

Grades are assigned on the following basis:

A	90-100%
B	80-89%
C	70-79%
D	60-69%.
F	below 60%

**SPECIAL POLICIES:**

Missed and Late Work

1. No late homework will be accepted and there are no make-up tests. If you miss a unit exam, the grade that you make on the final will be substituted for the missed exam grade.

Grading and Tests

2. If no tests are missed and the percentage grade on the final examination is greater than the lowest test grade then the final examination percentage grade will be substituted for the lowest test grade.

3. To prevent distractions to others, all cell phones, beepers, etc. should be turned off in class.

4. Cheating and plagiarism are violations of the Student Conduct Code, and as such are

unacceptable behaviors. Any student guilty of cheating or plagiarism will receive a grade of "0" for the assignment and will be referred to the Vice Chancellor for Academic Affairs for possible other actions

**EXPECTATIONS OF THE STUDENT:** Abstract Algebra is the most valuable and interesting undergraduate mathematics course you will study. It is said that there are three vital things you must do to pass a mathematics course: First do exercises, second exercises and third (you guessed it) do exercises. Complete the homework assignment before the next class meeting and have questions prepared for the problems that gave you difficulty. Read the textbook by using paper, pencil and work through the examples, theorems and proofs. Get help as soon as difficulties arise, come by my office and study with your colleagues.

**IMPORTANT DATES:**

Wednesday, August 24	First day of classes
Tuesday, August 30	Last day to register or add classes
Monday, September 5	Labor Day Holiday
Friday, October 7	Deadline to apply for May graduation
Wednesday, November 9	Last day to drop a class with W
November 7 - 18	Preregistration for Spring, 2012
November 23 – 25	Thanksgiving Holiday
Tuesday, December 6	Last day to withdraw from class
Friday, December 9	Last day of classes
December 12 - 16	Final exam period
Friday, December 16, 8:00 – 10:00	Final Exam

**Conduct Code:**

Disorderly Conduct: Any behavior which disrupts the regular or normal functions of the University community, including behavior which breaches the peace or violates the rights of others.

**Students with Disabilities:**

It is the policy of the University of Arkansas at Monticello to accommodate individuals with disabilities pursuant to federal law and the University's commitment to equal educational opportunities. It is the responsibility of the student to inform the instructor of any necessary accommodations at the beginning of the course. Any student requiring accommodations should contact the Office of Special Student Services located in Harris Hall Room 120; phone 870 460-1026; TDD 870 460-1626; Fax 870 460-1926.

For assistance on a College of Technology campus contact:

McGehee: Office of Special Student Services representative on campus; phone 870 222-5360; fax 870 222-1105.

Crossett: Office of Special Student Services representative on campus; phone 870 364-6414; fax 870 364-5707.

UAM will no longer mail grade reports to all students. You may access your grades through Campus Connect on the UAM homepage, <http://www.uamont.edu/>. To have your grades mailed to you, complete the grade request form available in the Registrar's Office in Monticello or the Student Services offices in Crossett and McGehee.