

Course Syllabus
 Math 455 Abstract Algebra
 Fall Semester 2010 New Mexico Tech

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Text: Contemporary Abstract Algebra by Joseph A. Gallian, 7th Edition, Houghton Mifflin Company, 2010

Course Content: Chapters 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 31, 32

Prerequisites: Math 352 passed with a grade of C- or better.

Course Description: A study of abstract algebraic structures, semi-groups, groups, rings, ideals, integral domains, fields, vector spaces, field extensions.

Course Objectives: The objective of this course is for students to understand essential properties of and be able to calculate effectively in fundamental structures of abstract algebra: groups, rings, fields. A student who successfully completes this course will

- * know the basic definitions for fundamental algebraic systems: groups, rings, fields;
- * be familiar with many simple examples of such systems;
- * be able to decide if a set (with operations) is such a system;
- * be familiar with the symmetric and alternating groups and be able to make effective calculations with permutations;
- * be familiar with cyclic and abelian groups;
- * be able to use the Euclidean algorithm effectively;
- * be able to test if a subset of a group is a subgroup, a normal subgroup;
- * be able to test if a subset of a ring is a subring, an ideal;
- * be able to test if a mapping is a homomorphism (of groups, of rings);
- * understand the construction of factor groups and factor rings;
- * be able to calculate effectively in quotient rings of the integers and of polynomial rings over a field;
- * understand the basic structure of finite fields
- * be able to construct finite fields.

Grading:	Tests		300	450 - 500	A
	Homework	100 points	100	400 - 449	B
	Final Exam	100 points	100	350 - 399	C
				300 - 349	D
		Total	500	below 300	F

Math 455 Assignments Fall 2010

Due dates will be assigned during the semester. Please write all of your calculation, steps, and reasons. Answer only won't get full credits.

Assignment 1

- Chapter 1 1, 2, 4, 7, 13
 Chapter 2 3, 4, 5, 7, 17, 18, 25, 26