MATHEMATICS 471
ABSTRACT ALGEBRA I (3)
(EFFECTIVE FALL 2009)

PREREQUISITES: Math 310 and Math 314.

CATALOG DESCRIPTION: Equivalence relations and partitions. Properties of the integers. Elementary theory of groups and rings. Polynomial rings, integral domains,.divisibility, unique factorization domains, fields, vector spaces and linear transformations. Students are required to submit written work and make an oral presentation.

OBJECTIVES: The student will:

1. Understand and apply knowledge of basic set theory, mappings, properties of integers, and mathematical induction.
2. State and apply Lagrange's theorem, Cauchy's theorem, and the homomorphism theorems.
3. Distinguish the similarities and differences among various types of groups.
4. Identify and compare the properties of rings, ideals, quotient rings, integral domains, principal ideal domains, unique factorization domains, and fields.
5. Investigate various properties of factor groups and direct products.
6. Understand the relationships among polynomial rings, roots of polynomials, and field extensions.

TEXT: A First Course In Abstract Algebra, John B. Fraleigh, 7th Edition, Addison-Wesley

OUTLINE:

Chapters	Topics	Days
1-3	Groups (Review material in Chapter 0 as needed)	24
4-5	Rings and Fields	13
	Tests	4
		41