SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
SYLLABUS *(Tentative)*
MATH 442/562 ***Abstract Algebra II***

Objective: To develop the foundations for modern algebra. The primary focus will be on constructing proofs and writing in mathematics. The standard theory of a second semester algebra course will be presented.

Intended for: All majors in the mathematical sciences and any students who wish to pursue graduate study in mathematics or its applications, physics or computer science.

Prerequisite: MATH 441 with a grade of C or better.

Texts: "A First Course in Abstract Algebra," by John Fraleigh; Addison Wesley, 7th edition, 2003.

	Weeks
Groups and the Structure of Groups	2.0
Additional topics on group structure.	
Introduction to Rings	3.0
Mathematical theory of a ring, subring, integral domain, field and division ring. Interconnections between these algebraic structures. Commutative and noncommutative rings. Zero Divisors, characteristic and other fundamental ring theoretic topics.	
Polynomials	3.0
Polynomials, division algorithm, factorization, units, associates, unique factorization domains.	
Quotient Rings	3.0
Ring homomorphisms, ideals, and quotient rings. Fundamental Homomorphism Theorem for Rings. Quotients of polynomial rings.	
Field Theory	2.0
Vector Spaces, Extension Fields, Finite Fields, Polynomial Roots, an introduction to Galois Theory**,** Solvability by Radicals, the Insolvability of the Quintic, Impossible Geometric Constructions.	
Tests / Additional Topics	1.0
	14.0

EVALUATION

Homework	60% - 100%
Tests	0% - 40%
Final	0% - 25%

MJB/axr 9/2010