

DEPARTMENT OF MATHEMATICS SYLLABUS

Course # & Name: MAT 150C: Introduction to Abstract Algebra

Recommended Text(s) & Price: Michael Artin's "Algebra, 1st Edition"
 (\$114.00)

Prepared by: Mulase/Fuchs/Li/Schwarz UPC Approval Spring 2003
 (Updated by Vazirani, Date: (Updated
 Kuperberg, and Schwarz) 5/18/2006)

Lecture(s)	Sections	Comments/Topics
Week 1		Definition of a group representation (review some of Chap. 5 of Artin if needed); G-invariant subspaces and irreducible representations.
Week 2		Permutation representations and the regular representation; Characters.
Week 3		Orthogonality relations; One-dimensional representations; Schur's Lemma.
Week 4		SU(2); Abstract fields; matrix groups and linear algebra over abstract fields (from Chap. 3 of Artin); Adjunction of Elements (Chap. 10).
Week 5		Examples of fields; Real quadratic fields (Chap. 11).
		MIDTERM
Week 6		Algebraic and transcendental elements; Field extensions.
Week 7		Constructions with ruler and compass; Finite fields (recall we can do linear algebra over finite fields); Function fields.
Week 8		Algebraically closed fields; Fundamental theorem of Galois theory.
Week 9		Cubic equations; Primitive elements; Symmetric functions.
Week 10		Cyclotomic extensions.

Additional Notes:

The class is based primarily on Chapters 9, 12-14 of Artin's book.