Official Syllabus

Math 320: Introduction to Algebraic Structures

(Adopted - Fall 2008; Committee: Drs. J. Parish, G. Pelekanos, G.S. Staples, C. Traub)

Catalog Description: [Dist.NSM] Introduction to group theory. Groups, subgroups, cyclic groups, cosets and Lagrange's theorem, homomorphisms, factor groups. Prerequisites: Math 223 with a grade of "C" or better or consent of instructor.

Textbook: *A First Course in Abstract Algebra 7th Edition*, John B. Fraleigh, 2002, Addison-Wesley

Course Outline and Topics

I	**Groups and Subgroups**
1	Introduction and Examples
2	Binary Operations
3	Isomorphic Binary Structures
4	Groups
5	Subgroups
6	Cyclic Groups
7	Generating Sets and Cayley Digraphs
II	**Permutations, Cosets, and Direct Products**
8	Groups of Permutations
9	Orbits, Cycles, and the Alternating Groups
10	Cosets and the Theorem of Lagrange
11	Direct Products and Finitely Generated Abelian Groups
12†	Plane Isometries
III	**Homomorphisms and Factor Groups**
13	Homomorphisms
14	Factor Groups
15	Factor-Group Computations and Simple Groups
16†	Group Action on a Set
17†	Applications of G-Sets to Counting
18	Rings and Fields

† Optional alternatives.

Any instructor should cover all of the required sections.
It is recommended that one optional topic also be included.