Abstract Algebra (MATH 461)  
Autumn Quarter, 2002

Time/Place: MTWR 6:00-6:50 p.m. KRH 203

Instructor: Jonathan Duncan (duncjo@wwc.edu)
Office: Kretchmar Hall 330, phone: 527-2097
Office Hours: MWF 10:00-11:00 a.m., TR 12:00-1:00 p.m., or by appointment

Text: Contemporary Abstract Algebra, 5th Edition,  
Webpage: http://math.wwc.edu/courses/461/

This course introduces abstract algebra, including groups; finite and cyclic groups; subgroups; permutation groups; group isomorphisms; and other selected topics in group theory. We will attempt to cover chapters 0-11 in your text, in order, with possible supplementary material from chapters 24-30. The deadline for withdrawing from the course is Tuesday, 19 November and the final will be given on Monday, 16 December.

Topics

1. Integers and Equivalence Relations:  
   Properties of integers, modular arithmetic, mathematical induction, equivalence relations, mappings.

2. Groups:  
   dihedral groups, formal definition, properties of groups, finite groups, subgroups, cyclic groups, permutation groups, isomorphisms, cosets, direct products, normal subgroups, factor groups, group homomorphisms, fundamental theorem of finite abelian groups.

3. Possible Supplementary topics:  
   sylow theorems, finite simple groups, generators and relations, symmetry groups, symmetry and counting, cayley digraphs of groups.

Objectives

Upon completion of this course, students will have

1. developed demonstrable understanding of the topics outlined above.
2. successfully engaged in mathematical reasoning and creative problem solving.
3. become proficient in expressing clear and accurate mathematical proofs to problems drawn from the topics outlined above.

The following requirements encourage and measure the successful completion of these objectives.

Exams (01,02)

There will be three exams during the course of the quarter, including two mid-terms and a comprehensive final. The first two exams will be taken during the normal class meeting time, unless otherwise specified, and will be announced at least one week in advance. Make-ups will only be given for written, verifiable excuses, with notification given in advance. The mid-term exam dates given below are approximate, and may be changed in class.

<table>
<thead>
<tr>
<th>Exam</th>
<th>Chapter/Event</th>
<th>Date</th>
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<tbody>
<tr>
<td>Exam I</td>
<td>Chapter 0 - ?</td>
<td>22 October</td>
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<tr>
<td>Exam II</td>
<td>After Exam I - ?</td>
<td>21 November</td>
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<tr>
<td>Final</td>
<td>Comprehensive, emphasis on untested material</td>
<td>Mon, 16 Dec 7:00 p.m.</td>
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Homework (O2,O3)

Assignments will be due on a weekly basis. Problems will be assigned regularly in class, and will be due on Tuesday of the following week. Late work will be penalized at a rate of 20% of the points possible per class day late. Please observe the following guidelines when preparing your homework for submission.

1. Use letter (8.5 × 11) sized paper with clean edges. Engineering paper is ideal.
2. Multi-page assignments must be stapled or paper-clipped together.
3. Fold the assignment lengthwise with the front of the paper on the inside and your name and the assignment number on the outside near the top.
4. Use a pencil, write legibly, and organize your proofs in a logical manner.
5. Show all essential steps in your proofs. Even if a step seems obvious, you should include it in your write-up.

Grades

Your final letter grade will be assigned based on your quarter average, as shown below. Your quarter average is made up of four scores: your homework average, two mid-term exams scores, and your final exam score. Weights for each of these are shown below. Appropriate (to your instructor) modifications of the final letter grade, including the assignment of pluses and minuses, may be made based on class performance as a whole, or in individual cases for progress, unusual circumstances, etc.

<table>
<thead>
<tr>
<th>Score Weights</th>
<th>Letter Grades (lowest percent)</th>
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<tbody>
<tr>
<td>Exam I 20%</td>
<td>A  90%</td>
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<tr>
<td>Exam II 20%</td>
<td>B  80%</td>
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<tr>
<td>Final 30%</td>
<td>C  65%</td>
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<tr>
<td>Homework 30%</td>
<td>D  55%</td>
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<td>F  &lt;55%</td>
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Disabilities

Students with a physical and/or learning disability who require accommodations should contact the instructor or Disability Support Services at 527-2366. This syllabus is available in alternative print formats upon request.