Abstract Algebra I  
MATH 340  
Syllabus

Time: 11:30-12:20 MWF  
Classroom: Alter 110  
Instructor: Dr. Dena Morton  
Office: Hinkle 108  
Phone: x3674 (Note: I do not check my voice mail very often.)  
Office Hours: By appointment and  
  Monday 10:45-11:15, Wednesday 10:45-11:15, 1:30-3:30, Friday 1:30-2:30  
e-mail: morton@xavier.edu  
  Note: this is the best way to reach me – I check my e-mail on a regular basis.  
Web Page: http://cerebro.xu.edu/~morton/aclases.html  
  Note: I update my webpage every day – all homework assignments and readings are always posted online. Also, check out the beautiful mathematical pictures!

Prerequisites: MATH 240 (Linear Algebra).

Purpose and Content:Abstract algebra (also known as modern algebra) is the branch of mathematics that studies the general algebraic structures of various sets (such as real numbers, complex numbers, matrices, and vector spaces) on which operations have been defined. This includes the rules and procedures for manipulating the individual elements of these algebraic systems. Algebraic systems include groups, rings, fields, modules, vector spaces, loops, and other algebras. We will develop all the important concepts of abstract algebra within the context of groups. Toward the end of the course, we will meet rings and, if time permits, fields and loops.

Texts: Contemporary Abstract Algebra, seventh edition by Joseph A. Gallian

Homework: Problem sets will be assigned weekly. Each student will be allowed to turn in one late homework set during the semester without penalty (to be turned in by the next class period).

Class Activities: Classes will consist of group activities, discussion, individual activities, and lectures.

Quizzes: Weekly quizzes on algebraic definitions and examples will be given on Wednesdays. I will grade these on a 5-point scale. The lowest quiz score will be dropped, so makeup quizzes will not be given. Quizzes will not be given during exam weeks. Note: These quizzes are invaluable - if you don't know the definitions, you cannot possibly expect to do the mathematics.

Exams: There will be three exams given throughout the semester, each consuming an entire class period and also having a take-home component. There will also be a comprehensive final exam. If you must miss an exam for religious or academic reasons, or in cases of illness or emergency, you must submit a written excuse. A makeup may be scheduled -- this will be decided on a case-by-case basis.

Grading:  
  Weekly quiz performance: 7%  
  Three exams: 12% each  
  Weekly graded problem sets: 30%  
  Research paper: 7%  
  Final exam (cumulative): 20%
Each exam will be curved separately and assigned a number grade between 0.0 (the lowest possible F) and 5.0 (the highest possible A). I will announce the cutoffs when returning the exam. If, for example, the cutoff for an A is 87 and the cutoff for a B is 71 and you get an 83, then the number grade corresponding to your 83 would be a 3.75 (B corresponds to 3.0 and you are $12/16 = .75$ of the way to the next cutoff). The homework and quizzes will be treated similarly. The total course grade may be curved further (that is, a 3.9 might result in an A or A- in the course), but the resulting curve will never lower your grade (that is, a 4.1 would always result in at least an A- in the course). I reserve the right to assign a grade of “F” to any student who earns less than 50% on the final exam.

**Important Dates (Exams are Tentatively Scheduled):**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>Wednesday, Aug. 26</td>
<td>First day of class</td>
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<tr>
<td>Monday, Sept. 7</td>
<td>Labor Day Holiday (no classes)</td>
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<tr>
<td>Monday, Sept. 28</td>
<td>Exam I</td>
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<tr>
<td>Friday, Oct. 9</td>
<td>Fall Holiday (no classes)</td>
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<tr>
<td>Wednesday, Nov. 4</td>
<td>Exam II</td>
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<tr>
<td>Monday, Nov. 23</td>
<td>Last day to withdraw</td>
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<tr>
<td>Wednesday, Nov. 25-Friday, Nov. 27</td>
<td>Thanksgiving Holiday (no classes)</td>
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<tr>
<td>Friday, Dec. 4</td>
<td>Exam III</td>
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<tr>
<td>Friday, Dec. 11</td>
<td>Last day of classes</td>
</tr>
<tr>
<td>Monday, Dec. 14</td>
<td>Study Day</td>
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<tr>
<td>10:30-12:20 Friday, Dec.18</td>
<td>Final Exam</td>
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**Attendance:** Class attendance is crucial. Lectures include the introduction and explanation of new topics, explorations of proofs, and solutions of discrete mathematics problems. Class notes are to be used in conjunction with the text, in order to elicit a fuller understanding of discrete mathematics.

*Please be courteous and come to class on time!*

University policies on attendance are stated on p. 45 of the undergraduate catalog.

**Missed Classes:** If you must miss a class due to illness or an emergency, you must first get a copy of the notes from one of your classmates. (If you do not know anyone in the class, I will help you contact someone to get notes.) Review the missed notes, and write detailed questions as you are reading them. I will be happy to answer all of your questions (as many as you would like to ask!), but I cannot re-lecture for you. As noted above, quizzes cannot be made up.

**Group Work:** Working in a group can be beneficial for everyone involved, provided that you do not abuse the privilege. Make sure that everyone in your group is making a contribution. **Do not copy answers from one another, as this will only backfire against you come test-time and is also cheating!** Instead, let concepts gel after group discussion, and then write up the solutions by yourself.

**Academic Honesty:** You are expected to conduct yourself with integrity in this course. Cheating will be dealt with as harshly as University regulations permit; measures will be taken during exams to prevent cheating. Students are directed to p. 50 of the undergraduate bulletin for further information. Note: talking during an exam (to anyone other than me) is grounds for a failing grade on the exam. **Using (uncited) web-pages to write your critique is cheating and plagiarizing!** The best critiques are written from your own experience.

**Calculators:** You will need some sort of calculator – a TI-83 is suggested. **Cell phone calculators are not allowed.** You may not have any programs on your calculator. If you have old programs, you must transfer them to a disc and reset all calculator memories at the beginning of exams.
Cell phones: Please turn all cell phones off during class (no texting either, please). Cell phones must be away during exams.

How to Do Well in this Course: Come to class! Come visit me during office hours! Read the books and articles! Try the problems! Smile! Study hard! Read your class notes! Make sure you keep up with the material in class! Review your class notes! Don't Panic! Enjoy! Most important of all, if you feel that you are falling behind, or that you do not understand a certain topic, or if you would just like to discuss a mathematical idea (or anything else), come to visit me in my office. That's why I am here!☺