Syllabus
Algebraic Structures
Math 441, Fall 2006

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Honor Code: For the tests in this class you must not give or receive any aid. For the homework and workshops you are encouraged to work with other students, but the work you turn in should be in your own words and should be understood by you.

Textbook: The book is *A Book of Abstract Algebra*. The book will be a useful reference, but we will not rely on it, and the class will be self-contained.

Additional material: 1. Articles. I will assign some reading about history and/or the mathematicians who created some of what we're studying.

2. LaTeX guide. There will be two guides in the computer lab KH318.

Grade Breakdown: Your grade will be based on the following percentages for each category of the course.

Homework	Quizzes	Reading	LaTeX	Midterm	Final exam
25%	10 %	10 %	5%	20%	30%

To calculate your grade you take your average in each category, multiply it by the percentage that category is worth, and add these up. Here's an example

	HW	Quizzes	Reading	LaTeX	MT	FX	
Your scores	83%	75%	80%	88%	75%	90%	
Your grade	$.25(.83)$	$+ .1(.75)$	$+ .1(.8)$	$+ .05(.88)$	$+ .2(.75)$	$+ .3(.9)$	$= .8265$

So what do I do with the total percentage? Here's how the breakdown works:

A ≥ 93	B+ ≥ 87	C+ ≥ 77	D ≥ 60
A− ≥ 90	B ≥ 83	C ≥ 73	F ≥ 0
	B− ≥ 80	C− ≥ 70	

Homework:

The homework for this course will be fairly standard: written solutions of problems and proofs of logical statements. As a rule everything should be logically complete. Thus, every statement should be justified, complete sentences should be used, "proofs by example" do not get full credit and assertions that something is *not* true should be backed up with an example. I will try to make it due every week.

I will allow one problem to be rewritten for credit on each assignment. This will replace your original score on a problem with the re-written score. To get full credit, the re-write must be done in LaTeX and turned back in to me within two business days of you getting back the first graded version.

Quizzes: The quizzes are going to be on statements of results and definitions. These things form the basic vocabulary of algebra and the quizzes will help you master this. They should be pretty easy.

Readings: I have put together a reading packet for this class. (It was a huge amount of fun, but also a lot of work! Finding material for next semester might make a nice extra credit project . . .)

Each week I'll assign something from the reader. Your task will be to (1) read the assignment, (2) Write a paragraph about it, (3) be prepared to discuss it in class. I think this material is really interesting, and a lot of it is entertaining too! I'll provide more details later.

LaTeX: LaTeX is a computer package for making beautiful mathematics (and other documents, like this one). It is a language, kind of like html, which describes the document. No prior experience with LaTeX is assumed, I will hand out a complete guide, and help you learn it.

As far as the grading goes, there's a good chance that everyone will get 100% on the LaTeX. I will probably have you do one problem per week in it, as well as contributing to the class notes. For the first assignments, you will get full credit just for producing anything that looks right. After a few assignments, I will start requiring that you do things "right"; of course, I'll explain what this means.

Tests: We will have one midterm and a final exam. I will try to write them so that most problems are similar to homework problems. However, I might have one "new" type problem on each test, just to "test" you.

Office Hours: I'll have regularly scheduled office hours, but at first I'll wait and see what time you guys like to come to my office.

Disabilities: I will happily accommodate any needs you have based upon a disability that is registered with the office of Disability Support Services (DSS). You need to contact me ahead of time for this accommodation. You can contact DSS at 410-617-2062, or mwiedefeld "at" loyola.edu .

Course outline: We're going to learn about the integers $\mathbb{Z}$, the modular integers $\mathbb{Z}_n$, rings, the complex numbers $\mathbb{C}$, polynomial rings $\mathbb{F}[x]$, and some applications of these ideas, especially to cryptography.