Math 455: Abstract Algebra I – Fall 2006

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Office Hours:	MWF 9:00am-10:00am (*subject to change!*) or by appointment
Course Web Page:	`http://www.math.utk.edu/~finotti/f06/M455.html` (Careful with lower and upper case letters!)
Textbook:	M. Artin. "Algebra", 1st Edition. Prentice Hall, 1991.
Prerequisite:	Math 300 and Math 251 or 257.
Class:	MWF 10:10pm-11:00am at Ayres 214. (Section 1.)
Midterms:	09/29 (F) and 11/06 (M) during regular class time.
Final:	12/08 (F) from 10:15am to 12:15am.
Grade:	20% for homeworks, 20% for each midterm, 40% for the final. **Note the weight of the HWs!**

Course Information

In this course (and in its sequel, Math 456) you will be introduced to algebraic structures such as groups, rings, and fields. It is very important that you already have some practice with writing proofs (which was covered in Math 300) and familiarity with matrices and vector spaces (which was covered in Math 251 or 257). You will have to write many proofs in this course, and many of the examples we will look into will be related to matrices. Therefore, **I will assume you have the proper background from both Math 300 and Math 251/257.** If you had difficulty in those courses, you might need to review the material. (I would gladly try to help you with that if you come to my office hours.)

Homeworks

Homeworks will be assigned after every class and will be posted at the course home page at

`http://www.math.utk.edu/~finotti/f06/M455.html`

No paper copy of the HW assignments will be distributed in class. **It is your responsibility to check the course page often!**.

The HWs will be collected on Mondays (except on Labor's Day week, when it will be due on Wednesday). Each HW will have problems from the previous week (Monday, Wednesday and Friday lectures). The problems to be turned in, as well as due dates, will be clearly posted on the course page. Note that not all of the problems turned in will be graded, but you won't know which until you get them back.

No late HWs will be accepted, except in extraordinary circumstances which are properly documented.

It is your responsibility to keep all your graded HWs and Midterms! It is very important to have them in case there is any problem with your grade.

I will do my best to post solutions. Please check the course page.

In my opinion, doing the HW is one of the most important parts of the learning process, so the weight for them is equal to the weight of a single midterm, and I will assume that you will work very hard on them.

Also, you should try to come to my office hours if you are having difficulties with the course. I will do my best to help you. Please try to come during my *scheduled* office hours, but feel free to make an appointment if that would be impossible.

E-Mails

You will have to check your e-mail at least once a week, preferably daily. I will use your e-mail (given to me by the registrar's office) to make announcements. If that is not your preferred address, write me an e-mail letting me know ASAP. I will assume that any message that I sent via e-mail will be read in a week or less, and it will be considered an *official* communication.

Due to privacy issues, I cannot send grades via e-mail, unless you sign a document saying that you are aware that e-mails are not secure and not necessarily private. If you want to sign such document, please let me know. (I will post a form at the course web page.)

Feedback

I have an *On-line Feedback Form* at

`http://www.math.utk.edu/~finotti/php/feedback.html`

where you can anonymously send me your comments and suggestions. I will consider your comments and try to do whatever I can to resolve possible problems before it is too late. So, please, feel free to use it whenever you have any constructive comment or suggestion. (In fact, I would greatly appreciate it.) If you don't want you comments to be anonymous, just send me an e-mail or come by my office and we can discuss the problem.

Course Structure (tentative)

We will likely cover the following portions from the text:

- Quick overview of **Chapter 1**. (You should have seen this material in Math 251 or 257.)
- **Chapter 2**: all sections.
- **Chapter 5:** Sections 5-7 and part of section 3 (dihedral groups) towards the end.
- **Chapter 6**: Sections 1, 3, 4, 6, 7, 8.
- **Chapter 10**: as much as time allows. (Sections 10.1 and 10.3 likely.)

Chapters 2, (parts of) 5, and 6 give an introduction to basic concepts of *Group Theory*. (Chapter 5 also deals with the particular case of *Symmetry Groups* in details.) We will likely start Chapter 10, which deals with *rings*, but we might have to finish it in Math 456.

Additional Bibliography

Here are some other books you might find helpful:

- J. Fraleigh "A First Course in Abstract Algebra", 7th Ed., 2002. Addison Wesley.
- J. Gallian, "Contemporary Abstract Algebra", 6th Ed., 2005. Houghton Mifflin Co.

- I. Herstein, "Topics in Algebra", 2nd Ed., 1975. Wiley.

The first two books are considered "easier" books, and although they also have a somewhat different approach, they have most of the topics we will cover and may be of good help if you have difficulty reading Artin's book.

The last one is a "standard" text for a first course in abstract algebra, but might have a higher level of difficulty. (It's been used for the honors section of this course.) Nevertheless, it is a very good reference.

Legal Issues

Conduct. All students should be familiar and maintain their "Academic Integrity": from *Hilltopics 2006/2007* (`http://web.utk.edu/~homepage/hilltopics/HILLTOPICS2006-07.pdf`) pg. 40:

> ***Academic Integrity***
>
> *The responsibility for learning is an individual matter. Study, preparation and presentation should involve at all times the student's own work, unless it has been clearly specified that work is to be a team effort. Academic honesty requires that all work presented be the student's own work, not only on tests, but in themes, papers, homework, and class presentation. There is a clear distinction between learning new ideas and presenting them as facts or as answers, and presenting them as one's own ideas. It is part of the learning process to incorporate the thoughts or ideas of others into one's own mind and presentations with the purpose of learning and enlarging on personal boundaries of knowledge.*

You should also be familiar with the "Classroom Behavior Expectations" found at

`http://www.math.utk.edu/Undergraduate/undergrad/Expectations.pdf`.

Disabilities. Students with disabilities that need special accommodations should contact the "Office of Disability Services" (`http://ods.utk.edu/`) and bring me the appropriate letter/forms.

Sexual Harassment and Discrimination. For *Sexual Harassment* and *Discrimination* information, please visit the *Office of Equity and Diversity* at `http://oed.admin.utk.edu/` and check

`http://oed.admin.utk.edu/docs/complaint_sex_harass.pdf` (Sexual Harassment)

`http://oed.admin.utk.edu/docs/DiscrimCompProc.pdf` (Discrimination)