

Math 351: Algebra I - Spring 2015

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Instructor and General Information

Instructor: [Luís Finotti](#)
Office: Ayres Hall 251
Phone: 974-1321 (don't leave messages! – [e-mail](#) me if I don't answer!)
e-mail: finotti@math.utk.edu
Office Hours: MW 9-10 or by appointment.

Textbook: J. Rotman, “[A First Course In Abstract Algebra](#)”, 3rd Edition, Prentice Hall, 2006.
Prerequisite: Math 300/307 (and 251/257).
Class: MWF 10:10-11:00 at Ayres Hall 121. (Section 1.)
Exams: Midterms: 02/18 (Wed), 04/01 (Wed)
[Final:](#) 04/29 (Wednesday) from 8am to 10am, in our regular classroom.
Grade: 25% for HW + 25% for each midterm + 35% for the Final.
Note the weight of the HWs!

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Course Description and Information

Course Content

This course is a one-semester introduction to [Abstract Algebra](#). (Math 455/456 and 457/458 are year long courses on the same subject, and hence cover much more.) The emphasis will be given to [integers](#) and [polynomials](#), which are examples of [commutative rings](#). The other main topic to be covered (at least superficially) is [groups](#).

This course might be a bit of a shock to many students, as up to now most will not have dealt with [discrete](#), rather than continuous (in the calculus sense) structures and proofs, which is what you usually deal with in calculus, differential equations, and when working with real numbers. So, it might take a little time for you to get use to the ideas and techniques used in this course.

Being an upper level course for math majors, most of the course will be spent on proofs (as in Math 300), and you will have to read and write many. *I will assume you are comfortable doing both.* We will also deal with induction and set theory (again from Math 300.) Other than that, there is really very little in terms of background knowledge necessary.

Chapters and Topics

The goal is to cover the following: Sections 1.3 to 1.5 (1.1 and 1.2 are prerequisites), 3.1 to 3.7 (likely skipping some parts) and 2.1 to 2.5. Note that we will cover Chapter 3 (Ring Theory) before Chapter 2 (Group Theory), as I find it would be better to make sure we have enough time to cover rings well. (Our text was designed to allow that.)

Homework Policy

Homeworks will be posted regularly at the section **Homework** of this page. No paper copy of the HW assignments will be distributed in class. **It is your responsibility to check this page often!**

The HWs will be collected on Wednesdays. 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 here. Note that not all of the problems turned in will be graded, but you won't know which until you get them back.

Problems likely to be assigned are posted below, but are subject to change. So, you can always start early, even if the assignment is not posted. (The list is likely incomplete, but chances of changing an assigned problem are small.)

Note that I might sometimes get too ambitious in posting problems, i.e., I might think we will cover a section during the week, put exercises from it in the next assignment, and then end up not being able to finish it. In this case I might have to take a few problems off the assignment. The bottom line is the following: *the assignment is not final until I remove the "More to come" from it.* (If you've done problems which were removed, just saved them for the following week.)

Finally, if there is still a "More to come" in an assignment on a Friday, please **write me** right away so that I can update it. If I delay in replying, you can proceed with the **Problems Likely To Be Assigned**.

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.

In my opinion, doing the HW is one of the most important parts of the learning process, so the weight for them is greater than 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-Mail Policy

I will assume you check your e-mail at least once a day. I will use your e-mail (given to me by the registrar's office) to make announcements. (If that is not your preferred address, please make sure to [forward](#) your university e-mail to it!) I will assume that any message that I sent via e-mail will be read in less than twenty four hours, and it will be considered an *official* communication.

Blackboard and Feedback

In [Blackboard](#) you will be able to ask questions, answer surveys and send me feedback.

There are forums where you can post questions about math or the course structure. (I've created a different forum for each. Please use the appropriate one!) All other students will also be able to read these and offer help. **I strongly recommend you subscribed to all, to receive email updates when a new post appears!** Things of interest to all might appear there.

I'd much prefer you'd ask your questions there than e-mailing me directly. Of course, some topics cannot or should not be discussed in a public forum! But in other instances, please use the appropriate forum instead of writing me, as others might also benefit from the answer.

You can ask for math help there, but, of course, nothing like "*How do I do problem X.X?*". You can ask for hints or suggestions, though.

Lastly, there is also a link for (general) Feedback. (Please, also subscribe to it.) Please, post all comments and suggestions there as often as you want. (I really appreciate your input.) *These can be posted anonymously (or not).* Just make sure to check the option before posting! **Others students and myself will be able to respond and comment.** If you prefer to keep the conversation

private (between us), you can send me an [e-mail](#), but then, of course, it won't be anonymous.

To subscribe to the forums, go to [Blackboard](#), click on each of the three forums (“Q&A (Math Related)”, “Q&A - Course Structure” and “Feedback”), click on the link to the forum and then “Subscribe”. This way you will get e-mail notifications when new questions/comments are posted.

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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](#)”, 7th Ed., 2009. Brooks Cole.
- M. Artin. “[Algebra](#)”, 2nd Ed., 2011. Pearson.
- I. Herstein, “[Topics in Algebra](#)”, 2nd Ed., 1975. Wiley.

The first two books are considered “easier” books. The Artin’s book is of a bit higher level (and has a slightly different focus). The last one is a “standard” text for a first course in abstract algebra, but have a higher level of difficulty than the previous two. It’s been used for the honors section of the undergraduate algebra course here at UT.

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Legal Issues

Conduct

All students should be familiar and maintain their *Academic Integrity*: from [Hilltopics](#), pg. 46:

Academic Integrity

The university expects that all academic work will provide an honest reflection of the knowledge and abilities of both students and faculty. Cheating, plagiarism, fabrication of data, providing unauthorized help, and other acts of academic dishonesty are abhorrent to the purposes for which the university exists. In support of its commitment to academic integrity, the university has adopted an Honor Statement.

All students should follow the *Honor Statement*: from [Hilltopics](#), pg. 16:

Honor Statement

“An essential feature of The University of Tennessee is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.”

You should also be familiar with the [Classroom Behavior Expectations](#).

We are in a honor system in this course!

Disabilities

Students with disabilities that need special accommodations should contact the [Office of Disability Services](#) 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](#).

Campus Syllabus

Please, see also the [Campus Syllabus](#).

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Links

- [UT Knoxville Home](#)
- [UTK's Math Department](#).
- My course page for [Math 351 \(Fall 2009\)](#).
- [Blackboard](#) – Announcements, feedback and grades for this course.
- [Services for Current Students](#) and [MyUTK](#) (registration, view your grades, etc.).
- [Office of the Registrar](#)
- [Academic Calendars](#), including dates for add and drops, other deadlines, final exam dates, etc.
- [Hilltopics](#).
- [Office of Disability Services](#)
- [Office of Equity and Diversity](#) (includes sexual harassment and discrimination).
- [Catalog and Course Descriptions](#).
- [Student Success Center](#).
- [My homepage](#).

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Handouts

- [Campus Syllabus](http://www.math.utk.edu/~finotti/files/campus_syllabus.pdf)(http://www.math.utk.edu/~finotti/files/campus_syllabus.pdf).

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Problems *Likely To Be Assigned*

This list is subject to change without prior notice. The official assignments will be posted [below](#).

Section 1.3: 1.46, 1.50, 1.53, 1.55(i), 1.57, 1.58, 1.60, 1.62.

Section 1.4: 1.68, 1.69(i), 1.70(i), 1.71, 1.75.

Section 1.5: 1.77, 1.78(ii), (iii), (iv), 1.79, 1.81, 1.82(i), 1.85, 1.86, 1.87, 1.88, 1.91, 1.95.

Section 3.1: 3.1 except (v) and (viii), 3.3(i) and (iii), 3.5, 3.6, 3.12, 3.13.

Section 3.2: 3.17 except (v) and (vi), 3.19, 3.20, 3.26.

Section 3.3: 3.29, 3.30, 3.32, 3.35 (if you are not familiar with complex numbers, replace them with real numbers, i.e., take alpha to be real), 3.37 (you can use 3.36 without proving it).

Section 3.5: 3.56, 3.58, 3.62, 3.64, 3.67.

Section 3.7: 3.86 except (i), 3.87 except (ii), (v), (vii), (viii), 3.90(i), 3.91.

Section 2.2: 2.21, 2.22, 2.23, 2.25, 2.26, 2.27, 2.34. (Note that I took off 2.29, which is too long.)

Section 2.3: More to come!

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Homework

HW1 - Due on Wednesday 01/14:

Section 1.3: More to come!

PLEASE, HIT “REFRESH” (OR “RELOAD”) IN YOUR BROWSER WHEN VISITING THIS PAGE!!!!!! I usually get messages asking for the update in the HW when it has already been updated. Since I change this page often, some times the browser don't see the changes. But, if you hit refresh and there is still problems missing, feel free to write me.

If it is already **Friday** afternoon and there still is a “More to come” after the HW assignment due on the coming Wednesday, write me an e-mail at fnotti@math.utk.edu, and I'll update it and let you know.

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