

Syllabus for Math 351, Fall 2019

Instructor information

Instructor Name: Cartwright, Dustin

Office Hours and Location: Mon 1–2, Tue 11–12, Tue 2–3, (the least popular of these times will likely be dropped) and by appointment, in Ayres 210

Email: cartwright@utk.edu

Course Webpage: Further information, including this syllabus, is on the Canvas webpage for this course.

Course Communications: Announcements and updates will be posted to Canvas, sent by email, or given in class, depending on the circumstances.

The best way to reach me is by email. I will reply within 24 hours during the work week and usually much faster, especially during the work day.

Student Learning Objectives

Upon completion of this course, students should:

- know the basic properties of groups and rings, including factorization of integers, polynomials and Gaussian integers; and
- be able to construct simple proofs using the abstractions introduced in this course.

Learning Environment

I expect you to attend lecture, pay attention, and participate in discussions. During class, you should not use your laptop, phone, or other electronic devices.

I would like everyone to participate in classroom discussions and to be respectful of others' contributions.

Text

Introduction to Abstract Algebra: With Applications by Thomas Judson. A printed copy is available from the bookstore. In addition, you may download a PDF from Canvas (note that this has different page numbers than the printed version) or read it online.

Course Assessment

- 20% homework
- 5% group work
- 30% two in-class midterms (15% each)
- 15% take-home midterm
- 30% final

Each component of your course grade will have a separate grading scale, to be decided after the component is finalized, i.e. the exam is graded, all homework turned in, etc. The cut-offs for the course grading scale will be determined by averaging together the component grading scales according to the same proportions as your grades.

Homework: Homework is due at the beginning of class each Wednesday. Assignments will be posted on Canvas at least a week in advance. It is important that you write your own solutions and that you acknowledge any sources you consulted.

More specifically, you are *encouraged* to discuss your homework with other people in class. You should actually discuss the problems and not just look at someone else's answers. You must write your answers in your own words. *In addition, you must credit all the people you worked with, either on the problems you worked together or at the top of the homework if you worked on many problems together.*

You may use resources such as the Internet or textbooks other than the assigned one. If you do so, you still need to make sure you understand the solution and write it in your own words, using the conventions and notation from the course. Some sources may use different conventions and terminology and so you may find solutions which are correct in their context, but not for this course. Under no circumstances are you allowed to copy an answer from another source, either verbatim or making small changes in wording. *You must credit Internet and book resources on the specific problem you use them.*

Your homework grade will be based on a representative subset of the problems.

On some Wednesdays, we may begin by giving peer feedback on the homework. You will trade homeworks with someone else and give them feedback on what you did or did not understand about their proof.

Group work: I will sometimes assign in-class group assignments. In some cases, group work will appear on the class schedule, but it may also be

unannounced. You will work in groups of 2–4 people. You will hand in your group work with the names of all group members as well as indicating who wrote each part.

- Group work will be graded on effort, but you do not need to complete all the problems.
- In order to receive full credit, each member of the group must write up at least one problem or part of a problem.
- All members of a group will receive the same grade on that assignment.

In-class exams: The second in-class midterm will cover material since the first in-class, but of course you may need to know foundational material in order to understand it. The final will be cumulative.

The in-class midterms and final must be completed without any books, notes, or electronic devices.

Take-home midterm: The take-home midterm will be cumulative.

For the take-home midterm, unlike the homework, you may not use outside resources. You may use your own notes and the course textbook, but you can not consult with other students, any other resources, or the Internet. The take-home midterm will be due in class in lieu of a homework and posted on Canvas 47 hours in advance.

Make up Policy

No late homework will be accepted and there is no make-up group work. Instead, I will drop the lowest homework score and your lowest group work. In the event of an unavoidable absence, you may submit your homework by email, so long as it arrives before class time.

I will excuse a missed exams due to circumstances which unavoidably prevent from attending the scheduled exam, such as a medical or family emergency. Make up exams require appropriate documentation, which, in most cases, should be provided through and approved by the Dean of Students. All accommodation is at my discretion, even if you have been approved by the Dean of Students.

Most likely, accommodation will mean either taking the exam before the scheduled date (obviously not possible in many circumstances) or having the final exam replace that component in your grade. Please let me know as soon as possible if you will miss an exam.

How to be Successful in this Course

Go over the lecture material after each class, either your own notes, or the textbook. Start the homework early. Work on the problems by yourself before getting help. Look at the hints in the back of the book.

If you don't know what to do with a a proof, start by unpacking the definitions. What exactly do you need to do to prove the statement? Try looking for theorems which have similar assumptions or conclusions to what you're given. If the theorem doesn't quite fit, can you change the proof of the theorem to make it work? Try making the problem easier by adding more assumptions or having a weaker conclusion, and then working from there.

Go to office hours. When you get your homework and exams back, go over your results and understand why you got the answers you did. Talk to other people in the class about the homework and the material.

If you find yourself falling behind on the material, adjust sooner rather than later. Go back over the notes or the book. Rework problems that you got wrong. Come to office hours if you have questions.

Course Outline and Schedule

We will cover modular arithmetic, rings, and groups, with an emphasis on examples such as modular arithmetic, polynomial rings and permutation groups. We will cover most of Chapters 2–5, Sections 6.1, 6.3, and Chapters 8–12 from the textbook.

The approximate schedule of topics discussed in class is listed on a page called “Class schedule” on Canvas. The dates of the exams are:

- Wed, Sep 25: in-class midterm
- Wed, Nov 6: take-home midterm due (distributed on Mon, Nov 4)
- Wed, Nov 20: in-class midterm
- Mon, Dec 9, 10:15–12:15: final

Campus Syllabus

If the instructor finds it necessary to make informational changes (e.g. office hours, schedule adjustments) due to students' needs or unforeseen circumstances, students will be notified in writing/email of any such changes.