Syllabus for Math 351, Fall 2022

Instructor information

Instructor Name: Dustin Cartwright

Office Hours and Location: M 2:45–3:45, F 10:05–11:05 and by appointment in Ayres 210. Office hours by Zoom are also available by appointment.

Email: cartwright@utk.edu

Course Webpage: All information, including updates to this syllabus, will be on the Canvas webpage for this course.

Course Communications: Most announcements will be made at the beginning of class. I will use Canvas if I want to reach you between classes or if I want to be sure to reach everyone. I will only use email for urgent messages.

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

Student Learning Objectives

Upon completion of this course, students should know basic properties of groups and rings, as well as many examples, and know how factorization works for integers, polynomials, and other rings.

Learning Environment

I expect you to attend every lecture, pay attention, and participate in discussions. During lectures, you should not be using your laptop, cell phone, or any other electronic devices. Taking notes on a tablet is okay.

You should treat other students in the class with respect, in the classroom and other components of the course.

Text

Introduction to Abstract Algebra: With Applications by Thomas Judson. A printed copy is available from the bookstore. In addition, you may read it online.

Course Assessment

- 25% homework
- 10% group work
- 30% two midterms (15% each)
- 35% final

Letter grades will be assigned based on the scale: A 90–100, A- 85–89, B+ 80–84, B 75–79, B- 70–74, C+ 65–69, C 60–64.

Homework: Homework is due by 8:00am each Tuesday. You will submit your homework on Canvas in PDF format. Assignments will be available on Canvas at least a week in advance.

You are *strongly encouraged* to discuss your homework with other people in class. However, you must write up your own solutions and you must acknowledge your collaborators or any other sources used beyond the standard course resources, as described below.

Homework will be graded based on a subset of the problems.

Citation policy: You must write your own homework solutions and you must credit any person or source who helped you understand the solution.

- You must credit any person you discussed homework with either at the top of your homework or on specific problems.
- Any other source, such as the Internet or books other than the course textbook, must be credited for specific problems, and with enough specificity for me to find your source. For an Internet source, this means using the URL. You may use submission comments to include these URLs.

In all cases, you must understand your answer and write in your *own*

words. You will find solutions on the Internet that use different notation and conventions than this class and you should not just blindly copy those.

Group work: Group work will be done collaboratively in class, possibly unannounced. You will submit your work as a group and be graded on effort.

Midterms and final: The midterms and final must be taken without any book, notes, or electronic devices. The second midterm will cover material since the first midterm, but you will also need to know any foundational material. The final will be cumulative.

Make up Policy

Late homework will generally not be graded or counted for credit. Instead, I will drop the lowest homework score and the lowest group work score.

Missed exams will be excused only in the case of serious problems which unavoidably prevent you from taking the exam, such as a medical or family emergency. All excuses must be documented, to be approved by the Dean of Students. Accommodation is at my discretion and may take the form of a make-up exam or by having the final exam replace that component of your grade, as appropriate for the circumstances. Please let me know as soon as possible if you will miss an exam.

How to be Successful in this Course

Every day: Come to class. Do the homework. Look at the book, either before or after class. Look over your own notes. Start the homework early. Work on the problems yourself before getting help. Look over your homework and exams after they've been graded. Look at the solutions.

Where to get help: Come to office hours. Connect with other people in the class. If you find yourself falling behind, adjust sooner rather than later.

Proofs: Unlike many other math problems, proofs are not necessarily written from the beginning to the end. If you're not sure where to start, try making assumptions that make the problem easier, such as replacing abstract objects with more concrete versions. Look for theorems in the book or your notes that seem to apply. If the theorem doesn't quite apply, can you find an argument to fill the gap? Or modify the proof so that it would work?

Course Outline and Schedule

- Fri, Sep 30: midterm 1
- Wed, Nov 9: midterm 2
- Mon, Dec 12, 10:30am–12:30pm: final

We will cover modular arithmetic, rings, and groups, with an emphasis on examples such as polynomial rings and permutation groups. We will cover most of Chapters 2–12 from the textbook, as well as additional topics if we have time.

The approximate daily schedule of topics discussed in class is listed on a Canvas page.

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.