

Syllabus for Math 453, Spring 2022

Instructor information

Instructor Name: Cartwright, Dustin

Office Hours: Tu 12:45–1:45, Th 11:05-12:05, or by appointment in Ayres 210 or Zoom meeting 944 0974 6755.

Email: cartwright@utk.edu

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

Course Communications: Most announcements will be made in 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 email you for urgent messages, so please read any email I send you.

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

Student Learning Objectives

By the end of this course, a student should understand the properties of and be able to do computations with vector spaces, bases, inner products, orthogonality, Jordan canonical forms, normal matrices, and semidefinite matrices. These topics provide a foundation for many applications of linear algebra. Graduate students in mathematics will be prepared to pass the diagnostic exam in linear algebra.

Learning Environment

I expect you to attend every lecture, pay attention, and participate in discussions. If something doesn't make sense, ask questions.

You should treat the other students in the class with respect, in the classroom and in anything connected to it.

Text

A Second Course in Linear Algebra by Garcia and Horn.

This book is provided to you through inclusive access, which means that you will automatically be billed for an online version of the textbook. If you obtain the textbook some other way, opt out of inclusive access in order to receive a refund.

Course Assessment

- 25% homework
- 35% two in-class midterms (17.5% each)
- 10% take-home midterm
- 30% in-class 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. I may adjust these to be more generous.

Homework: Homework is due by 8:00am on Wednesdays. Assignments will be posted on Canvas at least a week in advance. Homework will be submitted on Canvas as a PDF.

I may use your submitted answers to make solutions and distribute those to the class. If you do *NOT* wish to have your answers shared, you may request that with your submission or by email. Otherwise, your homework submission is giving me permission to include it in solutions.

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

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 discuss the homework with. You may do this for the assignment as a whole, 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 giving the URL. You may cite using submission comments.

In all cases, you should make sure you understand your answer and write your answers in your *own words*. You will find sources that use different notation or conventions, so you should make sure your answers are correct for the conventions used in our course.

In-class exams: The in-class exams must be taken without any books, notes, or electronic devices. The second in-class midterm will cover material since the first midterm. The final will be cumulative.

Take-home midterm: The format of the take-home exam will depend on your enrollment level:

- Undergraduate enrollment: You will have 72 hours for the exam. You may use your notes and book, but no other sources.
- Graduate enrollment, option A (intended for math PhD students): During the 72 hour exam period, you will take an online, timed, 2-hour exam in LockDown Browser. The exam will be similar to past linear algebra diagnostic exams.
- Graduate enrollment, option B (intended for engineering students): You will have 72 hours for the exam, which will be more difficult than the undergraduate exam. You may use your notes and book, but no other sources.

Students with graduate enrollment will be enrolled in option A or B based on their department of study. Students preferring a different option should contact me.

There will be no homework on the week of the take-home midterm.

Make up Policy

Late homework will generally not be graded or counted for credit. In lieu of excused homework, I will drop the lowest homework grade.

Missed exams will be excused only when circumstances 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 or by having the final exam replace that component of your grade. Please let me know as soon as possible if you are unable to attend an exam.

In the case of COVID-19, absences will be accommodated only if you have followed the university's policy on self-isolation.

How to be Successful in this Course

Go over the lecture material after each class, either from your own notes, or the corresponding section in the textbook. Talk to other people in the class. Come to office hours. Ask questions in class. Read the textbook. Read Wikipedia or other sources.

Start the homework early. Try to solve each problem on your own before looking for hints. Work with other people on the homework. Share your ideas while you're working to get more feedback and learn how other people think. When you get homework or exams back, look at the feedback and the solutions and understand what you did wrong.

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

Course Outline and Schedule

- Th, Mar 3: midterm 1
- Th, Apr 7: midterm 2
- Th, Apr 28, 8am: take-home midterm due
- Tu, May 12, 3:30pm–5:30pm: final

We will cover the main topics in Chapters 1–15 of the textbook. The approximate schedule of daily topics is listed on the Canvas page “Daily schedule.”

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.