

MATH 2270 Sec. 1 MTWF 10:45am-11:35am, Room: JTB 110

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Office Hours: Wednesdays from 4:00-5:00pm and Fridays from 9:30-10:30am.

Textbook: Linear Algebra and its Applications, 5th edition, by David D. Lay. ISBN: 032198238X

Course Web Page: All course information and announcements will be posted on canvas. You can access the course's canvas page through CIS. This page contains material that may help you succeed in this course. Check it frequently!

Prerequisites: C or better in MATH 2210 or MATH 1260 or MATH 1280 or MATH 1321 or MATH 1320.

Course Overview: This course is the first course in a year long sequence (2270-2280) devoted to linear mathematics. In this course, we study two objects: vectors and matrices. We start by thinking of vectors and matrices as arrays of numbers, then we progress to thinking of vectors as elements of a vector space and matrices as linear transformations. In our study of vectors and matrices, we learn to solve systems of linear equations, familiarize ourselves with matrix algebra, and explore the theory of vector spaces. Some key concepts we study are determinants, eigenvalues and eigenvectors, orthogonality, symmetric matrices, and quadratic forms. Along the way we encounter applications of the material in science and engineering.

Homework: There will be one homework assignment each week, with the exception of exam weeks. Homework problems will be posted on canvas, and homework assignments will be due in class on Fridays. Homework assignments must be stapled. Unstapled assignments will not receive credit. I understand that sometimes homework cannot be completed on time due to circumstances beyond your control. To account for this, each student will be allowed to turn in **two** late homework assignments throughout the course of the semester. These assignments cannot be turned in more than one week late, and must be turned in on a Friday with the next homework assignment (or turned in on a Friday before the exam if it is an exam week). You do not need to tell me the reason why your homework assignment is late.

Midterms: There will be three midterm exams. They will take place every fourth Friday of the semester. These exams will include all material that has been covered in class since the previous exam. We will dedicate the class period prior to each exam to review, and there will not be a homework assignment due on exam weeks. If you have to miss an exam for a legitimate reason, you must let me know before the exam takes place, and we can arrange for you to take the exam earlier that week, or the following Monday. If you take the exam at a different time than the rest of the class, I will have to write new problems. Because of this, the exam will be slightly harder than the original exam. I will not drop any exam scores, but if your score on the final exam is higher than your score on one or more of the midterm exams, your final exam score will replace your lowest midterm exam score when I calculate your final course grade. This policy only applies to students who took all three midterm exams - a zero on a midterm exam will not be replaced by the final exam.

Final Exam: The final exam for this course takes place on **Wednesday, May 4** from **10:30am-12:30pm** in our regular classroom **JTB 110**. Note that this is the last day of finals week. You must take the final

exam at this scheduled time - there will be no makeup exams. *If you cannot take the final exam at this time, please drop the class.*

Grading: Homework, midterm exams, and the final exam will contribute to your final course grade. The breakdown of how each element contributes is the following:

Weekly Homework	30%
Midterm 1	15%
Midterm 2	15%
Midterm 3	15%
Final	25%

I reserve the right to change the grade scheme as I see fit. Any other grade schemes will only be beneficial to your grade as compared to the above standard. Your final numerical grade will be rounded to the nearest integer, and letter grades will be distributed according to the following scheme: A (100-93), A- (92-90), B+ (89-87), B (86-83), B- (82-80), C+ (79-77), C (76-73), C- (72-70), D+ (69-67), D (66-63), D- (62-60), E (59-0).

Calculators: I will not allow you to use calculators on the midterms or the final exam. Calculators may be appropriate on certain homework problems, but I encourage you not to become dependent on them. If you do not already have a calculator, you do not need to buy one for this course. All calculations that you might need to do can be completed using Wolfram Alpha, which is available online for free.

ADA: The Americans with Disability Act requires that reasonable accommodations be provided for students with cognitive, systemic, learning and psychiatric disabilities. Please contact me at the beginning of the semester to discuss any such accommodations you may require for this course.

Other policies:

- Please be respectful during lectures. You are an adult, and I will expect you to act accordingly. Examples of disrespectful behavior include texting, surfing the web, and talking while I am talking. If you are behaving disrespectfully in class, I will ask you to leave.
- If you have questions about your grade on an exam or homework assignment, you must bring them to my attention within a week of when the assignment was returned to you.
- If you cheat on any assignment, I will give you a zero on that assignment. Depending on the severity of the cheating, I may decide to fail you from the class. In all cases of academic dishonesty, I will report the incident to the Dean of Students.

Extra Help: Do not hesitate to come to my office during office hours or by appointment to discuss a homework problem or any aspect of the course. The T. Benny Rushing Mathematics Tutoring Center offers free tutoring. Beginning the second week of classes, tutoring will be available from 8am to 8pm Monday through Thursday and 8am to 6pm on Friday. If you want to hire an outsider tutor (for a fee), you can find a list of such people through the math department.

Important Dates:

Drop Deadline	January 22
First Midterm	February 5
Withdraw Deadline	March 4
Second Midterm	March 4
Spring Break	March 12-20
Third Midterm	April 8
Course Final	May 4

Disclaimer: I reserve the right to change any information in this syllabus throughout the semester. If I make a change to the course policies, I will inform you in class, and post an updated version of the syllabus to canvas. I will hold you accountable for information that is stated in class or posted on canvas.

Study Tips:

- **Computation vs. Theory:** This course is a combination of computational mathematics and theoretical mathematics. By theoretical mathematics, I mean abstract definitions and theorems, instead of calculations. The computational aspects of the course may feel more familiar and easier to grasp, but I urge you to focus on the theoretical aspects of the subject. Linear algebra is a tool that is heavily used in mathematics, engineering, and science, so it will likely be relevant to you later in your career. When this time comes, you will find that the computations of linear algebra can easily be done by computing systems such as Matlab or Mathematica. But to understand the significance of these computations, a person must understand the theory of linear algebra. Understanding abstract mathematics is something that comes with practice, and takes more time than repeating a calculation. When you encounter an abstract concept in lecture, I encourage you to pause and give yourself some time to think about it. Try to give examples of the concept, and think about what the concept is good for.
- **Lectures:** I will use lectures to explain the concepts in the textbook as simply as possible. However, 50 minutes is usually not enough time to absorb a new concept. I will post an up-to-date schedule on canvas of what we will be covering each class period so that you will know which section we will cover on a given day. I encourage you to skim the section in the textbook before I lecture. Spend some time thinking about new definitions that are introduced, and try to think of examples.
- **Textbook:** The textbook is a valuable resource. It is the first place you should turn for supplemental material to the lectures. Skim the section before the lecture to prepare yourself, and after the lecture read the section more carefully to try to synthesize the material from class with the material from the textbook.
- **Getting Help:** In linear algebra, like most mathematics courses, definitions build on each other quickly. If you fall behind, it will be difficult to catch up. Work hard from the beginning, and come to office hours immediately if you don't understand something. Waiting two weeks and trying to catch up before the next exam is not a good strategy for success.
- **Working Together:** Mathematics is a collaborative subject. Talking through a concept with a peer can often be the best way to truly understand it. I encourage you to meet your classmates and form study groups. I welcome you to work together on homework, but be sure that the solutions you turn in are your own (written by you, in your own words). Identical copies of homework will be considered cheating.