



**Dartmouth College**  
**Department of Mathematics**

**Math 22 - Linear Algebra with Applications**

**Winter 2026**

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| <b>Instructor:</b>     | Gage Hofer (he/him/his)           |
| <b>Email:</b>          | gage.hofer@dartmouth.edu          |
| <b>Office:</b>         | Kemeny Hall 314                   |
| <b>Office Hours:</b>   | MR 2:00-3:30PM, or by appointment |
| <b>Lecture Time:</b>   | MWF 11:30-12:35PM                 |
| <b>X Hour:</b>         | T 12:15-1:05PM                    |
| <b>Class Location:</b> | Kemeny Hall 007                   |
| <b>Tutorial:</b>       | TRSu 7:00-9:00PM                  |

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**Required Materials**

- “Linear Algebra and Its Applications 5E” by David C. Lay, Steven R. Lay, and Judi J. McDonald. The ISBN-13 for the printed text is 978-0321982384. Information about the book should also be available on Banner.

**Meeting Times and Locations:**

Lecture meets three times a week, on Mondays, Wednesdays and Fridays from 11:30-12:35PM. X Hour takes place on Tuesdays, from 12:15-1:05PM. Both will be hosted in Kemeny Hall 007. All relevant class materials and information will be posted to our course site on Canvas.

**Tutorial/Teaching Assistant Information**

Graduate student(s) will be assigned to host tutorials on Tuesday, Thursday and Sunday of each week from 7:00-9:00PM in Kemeny 006; the teaching assistants for this term are Aidan Hennessey and Kaelen D. Baird. You can use these sessions to get help with questions over course topics and homework assignments. They will be open to all Math 22 students, and a prior appointment is not required.

**Course Description:**

*General description:* Linear algebra is the study of vector spaces and the linear transformations between such spaces. In this class we will work mostly with the vector space  $\mathbb{R}^n$ . We will learn how to represent linear transformations with matrices and study different types of linear transformations, such as diagonalizable transformations. During the last weeks of classes we will concentrate on applications.

*Coursework:* You should expect to work on this course at least seven to nine hours per week on top of attending lectures. The work you should do includes the homework, discussion work in class, organizing and reviewing class notes, reading through examples in the textbook, and preparing for exams.

*Homework:* I plan on having one homework set a week that will be graded; they will be posted on the homework page. No late homework will be accepted. You will write all of your answers on paper (or type

them up if you are so inclined), and it will be collected once a week on Wednesday via Gradescope. Homework is to be written neatly make sure not to write too close to the margins, otherwise when you scan it there might be missing information. Make sure that before you submit your homework you check to make sure that all information has been scanned and that it can be read. I will provide feedback and help in person (and via email) if you have questions about specific problems. Discussing the homework assignments with other students is also encouraged, but you must write and submit your own answers.

*WebWork:* The daily web-based problems can only be accessed by clicking the corresponding link in the Assignments section of Canvas. See also the WebWork homepage ([see here](#)) containing a FAQ and quick start guide.

WebWork assigned from each class should be done by the next class. This preparation will be expected during the lecture. However, the official deadline will be two classes after it is initially assigned. For instance, WebWork assigned on Fridays must be completed by 9 a.m. the following Wednesday morning. Similarly, WebWork assigned on Mondays is due by 9 a.m. on the upcoming Friday morning within the same week.

*Exams:* There are a total of three exams: two midterms, and one final exam. The final exam will be comprehensive, and so you should prepare as such; you will have **150 minutes** to complete the final.

The tentative schedule for the exams is as follows:

**Midterm 1:** January 28th, 7:00-9:00PM in (TBD).

**Midterm 2:** February 18th, 7:00-9:00PM in (TBD).

**Final:** March 13th, 8:00AM in (TBD).

*Grading breakdown (tentative):*

**Homework:** 15%

**WebWork:** 10%

**Midterms:** 40%

**Final:** 25%

**Participation:** 10%

**Note:** I will not be grading on a curve, and I do not award extra credit. Each midterm will be counted for 20% of the total 40% in the final grade— so a fair split between the two.

*Make-ups:* When it comes to absences from class, I try to adhere to the policies detailed in the [student handbook](#). In general, if you might have to miss an exam for a religious observance, athletic competition, or other foreseeable (and valid) reason, please let me know by the end of the second week so we can figure out how to proceed (see also the policies below). Outside of these circumstances, I do not allow make-ups.

*Lecture and X Hour:* While the main goal of a lecture is to introduce new material, I also want to use it as a time for discussion among the class. Therefore, you can expect to engage with new material in real time, and potentially with the help of your fellow classmates. I envision X Hour to function similar to office hours, just on a potentially wider scale. A typical X Hour usually will begin by breaking you into groups to work on any of the following:

- Working out examples
- Solving problems on your own or in groups

- Reviewing for upcoming exams
- Asking questions

I would like to try to make mathematics more of a social act—I find that working together with others and talking about problems can often be very helpful when learning new material. As such, I might also ask for you to present a solution to me on the board with your group (not in front of the whole class, in case of social anxiety or general reticence). It is important to remember that the best way to learn mathematics is by *doing* mathematics—it is a much more rewarding experience if you approach it with this in mind. I am more than happy to help in whatever way I can, so please do not hesitate to ask any questions you may have—there is no such thing as an insignificant question! If you have questions or need help with the course, you can ask during class, via email, or you can stop in during my office hours.

### Course Policies:

*Academic integrity:* We will adhere to Dartmouth’s institutional [academic honor principle](#), which states:

“Academic integrity is foundational to a Dartmouth education. All members of the Dartmouth community—faculty, staff, and students—are responsible for maintaining a culture of integrity, honesty, and respect in teaching, learning, scholarship, and creative work.

By upholding this principle, we foster an atmosphere of intellectual growth and personal development both within and beyond Dartmouth.”

I believe falsifying the results of one’s research, stealing the words/ideas of another, or cheating on assignments corrupts any attempts to create such an atmosphere. I also believe that using an AI-content generator such as ChatGPT to complete assignments without proper attribution violates academic integrity, and interferes with your learning process; *as such, I do not support the use of AI for problem solving (in and outside of class)*. With that said, I highly encourage you to discuss problems with others if you are having difficulty! Working through solving a problem—either with classmates, other students, or myself—is, in my mind, a more constructive use of your time and efforts, rather than relying on AI software to provide a (potentially faulty) solution without proper explanation.

*Statement on disclosures of instances of sexual misconduct:* At Dartmouth, we value integrity, responsibility, and respect for the rights and interests of others, all central to our Principles of Community. We are dedicated to establishing and maintaining a safe and inclusive campus where all community members have equal access to Dartmouth’s educational and employment opportunities. We strive to promote an environment of sexual respect, safety, and well-being. Through the Sexual and Gender-Based Misconduct Policy (SMP), Dartmouth demonstrates that sex and gender-based discrimination, sex and gender-based harassment, sexual assault, dating violence, domestic violence, stalking, etc., are not tolerated in our community.

For more information regarding Title IX and to access helpful resources, visit Title IX’s website ([sexual-respect.dartmouth.edu](https://sexual-respect.dartmouth.edu)). As a faculty member, I am required to share disclosures of sexual or gender-based misconduct with the Title IX office.

If you have any questions or want to explore support and assistance, please contact the Title IX office at 603-646-0922 or [TitleIX@dartmouth.edu](mailto:TitleIX@dartmouth.edu). Speaking to Title IX does not automatically initiate a college resolution. Instead, much of their work is around providing supportive measures to ensure you can continue to engage in Dartmouth’s programs and activities.

*Student accessibility and accommodation:* Students requesting disability-related accommodations and services for this course are required to register with Student Accessibility Services (SAS; [Apply for Services webpage](#); [student.accessibility.services@dartmouth.edu](mailto:student.accessibility.services@dartmouth.edu); 1-603-646-9900) and to request that an accommodation email be sent to me in advance of the need for an accommodation. Then, students should schedule a follow-up meeting with me to determine relevant details such as what role SAS or its [Testing Center](#) may

play in accommodation implementation. This process works best for everyone when completed as early in the quarter as possible. If students have questions about whether they are eligible for accommodations or have concerns about the implementation of their accommodations, they should contact the SAS office. All inquiries and discussions will remain confidential.

*Statement on religious observances:* Dartmouth has a deep commitment to support students' religious observances and diverse faith practices. Some students may wish to take part in religious observances that occur during this academic term. If you have a religious observance that conflicts with your participation in the course, please meet with me as soon as possible—before the end of the second week of the term at the latest—to discuss appropriate course adjustments.

*Title IX:* At Dartmouth, we value integrity, responsibility, and respect for the rights and interests of others, all central to our Principles of Community. We are dedicated to establishing and maintaining a safe and inclusive campus where all have equal access to the educational and employment opportunities Dartmouth offers. We strive to promote an environment of sexual respect, safety, and well-being. In its policies and standards, Dartmouth demonstrates unequivocally that sexual assault, gender-based harassment, domestic violence, dating violence, and stalking are not tolerated in our community.

The Sexual Respect Website ([see here](#)) at Dartmouth provides a wealth of information on your rights with regard to sexual respect and resources that are available to all in our community.

Please note that I am obligated to share disclosures regarding conduct under Title IX with Dartmouth's Title IX Coordinator. Confidential resources are also available and include licensed medical or counseling professionals (e.g., a licensed psychologist), staff members of organizations recognized as rape crisis centers under state law (such as WISE), and ordained clergy ([see here](#)).

Should you have any questions, please feel free to contact Dartmouth's Title IX Coordinator or the Deputy Title IX Coordinator for the Guarini School. Their contact information can be found on the sexual respect website listed above.

#### **Additional Information and Resources:**

*Dartmouth College Calendar:* The academic calendar can be found [here](#).

*Other resources:* For more information on other services available to you, please see [here](#).

**The course instructor reserves the right to modify the syllabus as necessary.**