

Math 341, Spring 2021

Linear algebra and matrix theory

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Course objectives. This course covers a variety of topics within linear algebra and matrix theory. It is also intended to help develop skills at constructing and writing mathematical proofs. Specific topics to be covered include vectors and matrices, systems of linear equations and Gaussian elimination, eigenvalues and eigenvectors, determinants, vector spaces, linear transformations, and orthogonality.

Prerequisites. M 408D or M 408L or the equivalent, with a grade of at least C-, or consent of instructor.

Website. You will find a detailed schedule, and links to slides, practice tests, and other course materials at:

https://users.odan.utexas.edu/~pgm/Teaching/2021_M341.

Text. *Elementary Linear Algebra* by Stephen Andrilli and David Hecker, 5th edition.

Meeting times and logistics. TTh 9.00am – 10.30am. All instruction in this course will be conducted virtually. We will meet via zoom at the regular times on Tuesdays and Thursdays. Initially, I will conduct lectures live during the meeting times, with recordings posted afterwards. Later on in the semester, we may switch to a format of prerecorded lectures, combined with discussion and problem solving sessions during the regular class times.

Important: The recordings are accessible only to students registered in the class. This is to protect the privacy of students participating in class discussions. Do not share links or download video files.

Online teaching considerations. For this course to be most effective, it is essential that you engage with the material right from the start, participate in class discussions, and work plenty of problems. It can be tempting to not dial in to class, and to rely on the posted lecture, but please make it a priority to participate in the lectures. It is invaluable to me to get feedback from you on whether you follow along with the presentation. If you find that you are not following, and if you let me know, then I know to not move on to the next point. I can go over the material again, provide additional details, or attempt to present the material from a different angle. None of this is possible if you just view the recording. Additionally, it is often easier to stay mentally focused during a live lecture.

Some things to keep in mind:

- Turn your microphone off whenever you are not speaking.
- It is great if you keep your video on whenever possible, in particular when asking questions. This makes the class more “human”. No obligation, though, and you are certainly welcome to ask questions either way.
- To ask a question, please use the “raise hand” function, and wait for me to call on you. If I don’t within a few moments, then likely I missed your hand, and in that case please just unmute yourself and interrupt. I very much welcome your participation!
- I find it hard to monitor the chat during a lecture, so that is a less good way to ask questions. (Although I may from time to time ask you to answer questions in the chat.)

Office hours (instructor). The instructor is available through Piazza / email / scheduled calls.

Teaching assistant. Zhou Fang, zhou.fang1@math.utexas.edu

Office hours (TA). Tuesdays 2:00pm – 3:00pm and Wednesdays 12:30pm – 1:30pm.

Homeworks. There will be 11 homework assignments. They are due on Thursday at noon in every week except for weeks 1, 8, and 13. You will find a precise schedule on the course webpage.

The homeworks should be completed individually. You are allowed, and even encouraged, to discuss homework problems with each other, but the work you hand in needs to be your own.

Grading. The final grade will be based on homeworks, two section exams, and a final exam:

- 30% for homeworks (3.33% each for your top 9 homeworks over the course of the semester).
- 22% for a section exam on Thursday March 11: 8% for quiz, 14% for take home exam.
- 22% for a section exam on Thursday April 22: 8% for quiz, 14% for take home exam.
- 26% for the final exam on Wednesday May 12: 10% for quiz, 16% for take home exam.

The homeworks should be completed individually, but you are allowed to discuss the problems with your fellow students. The quizzes and the take home exams should be worked individually, and you are not allowed to discuss them with anyone beside the instructor.

The quizzes will be administered online through Canvas. They will be open for you to take at any time during the day indicated. Once you start, you will have 45 minutes to complete the exam.

The take home exams will be posted on the course website at least 4 days before the due date. You are allowed to consult the book and your course notes as you work on the take home exams. Submission is through gradescope.

The time limits for the exams are sharp, and the system will close to submission at the stated time. Be sure to not leave things so late that you have no time to handle technical issues!

Concerns. If concerns of any kind arise during the course of the semester, I want to hear from you.

If you find that some aspects of the course delivery are not working well, it is more helpful for me (and you!) if you tell me early in the semester.

Make sure you are available during the exam times posted. If these conflict with any religious holidays or other foreseeable events, then please let me know at the start of the semester.

Most importantly, if you fall behind, find it generally hard to follow along, or are having any other issues arise that make it challenging for you to do well in the course, then let me know early! The later I find out, the harder it will be to help.

University Policies:

Academic Integrity. Each student in the course is expected to abide by the University of Texas Honor Code: “As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity.” Plagiarism is taken very seriously at UT. Therefore, if you use words or ideas that are not your own (or that you have used in previous class), you must cite your sources. Otherwise you will be guilty of plagiarism and subject to academic disciplinary action, including failure of the course. You are responsible for understanding UT’s Academic Honesty and the University Honor Code which can be found at the following web address: http://deanofstudents.utexas.edu/sjs/acint_student.php

Q Drop Policy. If you want to drop a class after the 12th class day, you’ll need to execute a Q drop before the Q-drop deadline, which typically occurs near the middle of the semester, but has been extended for the spring 2021 semester to May 11. Under Texas law, you are only allowed six Q drops while you are in college at any public Texas institution—however, for the fall 2020 and spring 2021 semesters, all Q-drops will be considered “non-academic,” which allows students to drop a class without counting toward the six-class limit. For more information about Q drops in general, see:

<http://www.utexas.edu/ugs/csacc/academic/adddrop/qdrop>

For information about fall 2020 and spring 2021 updates to the Q Drop Policy, see:

<https://t.e2ma.net/message/r3htee/j51jb0>

Pass/Fail or Credit/No Credit Grading Policy. For the spring 2021 semester, undergraduate students may choose to have a total of three (3) classes graded on a Pass/Fail or Credit/No Credit basis without penalty. These exceptions are new and apply only to the fall 2020 and spring 2021 semesters. For more information please visit UT’s policy on the Extended deadline for Q-drops and P/F Flexibility.

University Resources for Students. Your success in this class is important to me. We will all need accommodations because we all learn differently. If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible. Together we’ll develop strategies to meet both your needs and the requirements of the course. There are also a range of resources on campus:

Services for Students with Disabilities: This class respects and welcomes students of all backgrounds, identities, and abilities. If there are circumstances that make our learning environment and activities difficult, if you have medical information that you need to share with me, or if you need specific arrangements in case the building needs to be evacuated, please let me know. I am committed to creating an effective learning environment for all students, but I can only do so if you discuss your needs with me as early as possible. I promise to maintain the confidentiality of these discussions. If appropriate, also contact Services for Students with Disabilities, 512-471-6259 (voice) or 1-866-329- 3986 (video phone).

<http://ddce.utexas.edu/disability/about/>

Counseling and Mental Health Center: Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs and alcohol, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress.

All of us benefit from support during times of struggle. You are not alone. There are many helpful resources available on campus and an important part of the college experience is learning how to ask for help. Asking for support sooner rather than later is often helpful.

If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support.

<http://www.cmhc.utexas.edu/individualcounseling.html>

Libraries: <http://www.lib.utexas.edu/>

ITS: <http://www.utexas.edu/its/>

Student Emergency Services: <http://deanofstudents.utexas.edu/emergency/>

BeVocal: BeVocal is a university-wide initiative to promote the idea that individual Longhorns have the power to prevent high-risk behavior and harm. At UT Austin all Longhorns have the power to intervene and reduce harm. To learn more about BeVocal and how you can help to build a culture of care on campus, go to:

<http://wellnessnetwork.utexas.edu/BeVocal>

Important Safety Information: If you have concerns about the safety or behavior of fellow students, TAs or Professors, call BCAL (the Behavior Concerns Advice Line): 512-232-5050. Your call can be anonymous. If something doesn't feel right — it probably isn't. Trust your instincts and share your concerns.

The following recommendations regarding emergency evacuation from the Office of Campus Safety and Security, 512-471-5767, <http://www.utexas.edu/safety/> Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.

- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
- Link to information regarding emergency evacuation routes and emergency procedures can be found at: www.utexas.edu/emergency

Title IX Reporting. Title IX is a federal law that protects against sex and gender-based discrimination, sexual harassment, sexual assault, unprofessional or inappropriate conduct of a sexual nature, dating/domestic violence and stalking at federally funded educational institutions. UT Austin is committed to fostering a learning and working environment free from discrimination in all its forms. When unprofessional or inappropriate conduct of a sexual nature occurs in our community, the university can:

- (1) Intervene to prevent harmful behavior from continuing or escalating.
- (2) Provide support and remedies to students and employees who have experienced harm or have become involved in a Title IX investigation.
- (3) Investigate and discipline violations of the university's relevant policies.

Beginning January 1, 2020, Texas Senate Bill 212 requires all employees of Texas universities, including faculty, report any information to the Title IX Office regarding sexual harassment, sexual assault, dating violence and stalking that is disclosed to them. Texas law requires that all employees who witness or receive any information of this type (including, but not limited to, writing assignments, class discussions, or one-on-one conversations) must be reported. *I am a Responsible Employee and must report any Title IX related incidents that are disclosed in writing, discussion, or one-on-one.* Before talking with me, or with any faculty or staff member about a Title IX related incident, be sure to ask whether they are a responsible employee. If you would like to speak with someone who can provide support or remedies without making an official report to the university, please email advocate@austin.utexas.edu. For more information about reporting options and resources, visit <http://www.titleix.utexas.edu/>, contact the Title IX Office via email at titleix@austin.utexas.edu, or call 512-471-0419.

Although graduate teaching and research assistants are not subject to Texas Senate Bill 212, they are still mandatory reporters under Federal Title IX laws and are required to report a wide range of behaviors we refer to as unprofessional or inappropriate conduct of a sexual nature, including the types of conduct covered under Texas Senate Bill 212. The Title IX office has developed supportive ways to respond to a survivor and compiled campus resources to support survivors.

Religious holidays. If you plan to miss class due to observance of a religious holiday, please let the instructor know *at least two weeks in advance*. You will not be penalized for this absence, although you will still be responsible for any work you will miss on that day if applicable. Check with instructor for details or arrangements.