

*Math 341, Fall 2022, Unique nr. 55415*

## **Linear algebra and matrix theory**

Gunnar Martinsson

phone: 512-232-2612, email: [pgm@oden.utexas.edu](mailto:pgm@oden.utexas.edu), office: PMA 11.164

**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/2022\\_M341](https://users.odan.utexas.edu/~pgm/Teaching/2022_M341)

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

**Meeting times.** TTh 9.30am – 10.45am, PMA 5.116.

**Office hours (instructor).** Mondays 1:00pm – 2:00pm; Fridays 4:00pm – 5:00pm.

**Teaching assistant.** Saad Slaoui, [slaouis@utexas.edu](mailto:slaouis@utexas.edu)

**Office hours (TA).** Tuesdays 2:00pm – 3:00pm; Wednesdays 4:00pm – 5:00pm.

**Homeworks.** There will be 11 homework assignments. 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).
- 20% for a section exam on Thursday Oct. 6.
- 20% for a section exam on Thursday Nov. 17.
- 30% for the final exam on Saturday Dec. 10.

The homeworks should be completed individually, but you are allowed to discuss the problems with your fellow students. Homeworks will be submitted through GradeScope. The three exams will all be in person, and should be worked individually (closed books, no lecture notes, no calculators, etc.).

**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.

Importantly, if you fall behind, find it hard to follow along, or have 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.

**Statement on Learning Success** Your success in this class is important to me. We will all need to be adaptable 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. I also encourage you to reach out to the student resources available through UT. Many are listed on this syllabus, but I am happy to connect you with a person or Center if you would like.

**Statement on Flexibility** In acknowledgement of COVID 19 and its impact on the University of Texas at Austin community, this course will reaffirm one of the core values here at UT Austin: responsibility. Our responsibility to ourselves and each other is to put our humanity in the forefront of our academic pursuits. With that being said, this semester I commit to being adaptable in this time of great need, which is reflected in the course policies below around attendance, grading, and assignments/exams. If you experience any hardships such as illness, accident, family crisis please know that these policies may be amended and therefore you should communicate with me as soon as you feel comfortable doing so. If for any reason you do not feel comfortable discussing with me, please visit Student Emergency Services. For additional campus resources, please visit <https://coronavirus.utexas.edu/students>.

**Services for Students with Disabilities** The university is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Services for Students with Disabilities (SSD). Please refer to SSD's website for contact and more information: <http://diversity.utexas.edu/disability/>. If you are already registered with SSD, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations and needs in this course.

**Counseling and Mental Health Center** The Counseling and Mental Health Center serves UT's diverse campus community by providing high quality, innovative and culturally informed mental health programs and services that enhance and support students' well-being, academic and life goals. To learn more about your counseling and mental health options, call CMHC at (512) 471-3515. If you are experiencing a mental health crisis, call the CMHC Crisis Line 24/7 at (512) 471-2255.

**The Sanger Learning Center** Did you know that more than one-third of UT undergraduate students use the Sanger Learning Center each year to improve their academic performance? All students are welcome to take advantage of Sanger Center's classes and workshops, private learning specialist appointments, peer academic coaching, and tutoring for more than 70 courses in 15 different subject areas. For more information, please visit <http://www.utexas.edu/ugs/slc> or call 512-471-3614 (JES A332).

*Undergraduate Writing Center* <http://uwc.utexas.edu/>

*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: <https://wellnessnetwork.utexas.edu/BeVocal>.

### **Important Safety Information:**

*COVID-19 Update:* While we will post information related to the contemporary situation on campus, you are encouraged to stay up-to-date on the latest news as related to the student experience. <https://protect.utexas.edu/>

If you have concerns about the safety or behavior of fellow students, TAs or Professors, call BCAL (the Behavior Concerns and COVID-19 AdviceLine): 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](http://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](mailto: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](mailto: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.

**Emergency Evacuation Procedures** The following recommendations regarding emergency evacuation from the Office of Campus Safety and Security, 512-471-5767, <http://www.utexas.edu/safety/>

### **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: <https://deanofstudents.utexas.edu/conduct/standardsofconduct.php>

*Q Drop Policy and pass-fail policies* Please see

<https://onestop.utexas.edu/registration-and-degree-planning/registering-for-classes/add-drop-a-course/> for up-to-date information.

**Religious holidays**

If you plan to miss class due to observance of a religious holiday, please let the instructor know *during the first two weeks of the semester*. 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.