

Course Information

Math 2360–D01, Linear Algebra

Spring 2020

CRN 44047

January 15, 2020

Instructor: Prof. Lance D. Drager. Office: Math 236. Office Phone: 806-834-8161. If you let the office phone ring long enough, you'll get me or a voice mail system you can leave a message on. My e-mail address is `lance.drager@ttu.edu`.

Some course materials will be posted on my departmental web page, which is <http://www.math.ttu.edu/~drager>.

Email Instructions: When emailing me at `lance.drager@ttu.edu`, include the string M2360 in the subject line. Otherwise, your email may get lost.

Announcements and Class Forum: This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. You can post a question anonymously, if you want. If you have any problems or feedback for the developers, email `team@piazza.com`. You should get an email from Piazza with your login information. If you don't get the email, you can sign up at piazza.com/ttu/spring2020/math2360d01.

Find our class page at piazza.com/ttu/spring202/math2360d01/home

I will check this site at least once each business day.

I will also post class announcements (including assignments) on Piazza, so check it to see what is happening.

If your message is not of general interest to the class, or you want to keep it private, send it to me privately on Piazza or use the email address above.

There is a formula editor on Piazza for inserting mathematical formulas in your posts. The Piazza help should get you started.

If you know \LaTeX you can type \LaTeX code in between double dollar signs: $\$ \$ \dots \$ \$$.

\LaTeX is a standard system for producing mathematical work on computers. Learning it is not required for this course.

If you don't like the Piazza formula editor, you can search for online equation editors on the web. You'll find WYSIWYG editors with a mouse/menu interface that produce the \LaTeX code for the formula, which you can then cut and paste into Piazza (put it between double dollar signs: $\$ \$ \dots \$ \$$). Some of these editors also produce PNG or GIF files you can paste into email, if you need to do that. (If you use Thunderbird, look for \LaTeX plugins.) I can't really tell you which editor is the best. This is a topic the class may want to discuss.

Office Hours: MTWThF 2:00-4:00, unless I have an appointment. These hours are subject to change. You can come by outside of formal office hours; I'll usually have time to talk to you. Please feel free to come by if you need help. If you can't make it to the Lubbock campus, email me and we'll setup a meeting over the internet.

Other Sources of Help: The tutoring center in room Math 106 will be able to help you. The tutoring center can give you a link for an online list of people who offer tutoring for pay. Forming informal study groups with other students can be very helpful. I encourage you to ask me questions, and I encourage students to work together in room 238 during my office hours when I can help.

Text: The text is: Ron Larson, **Elementary Linear Algebra, Seventh Edition**, Brooks/Cole, 2013, ISBN 9781133110873. We will cover approximately Chapters 1-4, 6-7, and material from Chapter 5, as time permits.

Calculator: A TI-89 or better calculator is **required** for this class. **You will need it on exams!** To check if a different model of calculator is acceptable, show it to the instructor. If you don't want to spend the money for a new calculator, you can get a good deal on ebay. Search for the model you want.

Learning Outcomes: M2360 satisfies the university core curriculum requirement in Mathematics: Students graduating from Texas Tech University should be able to demonstrate the ability to apply quantitative and logical skills to solve problems. It meets the following TTU general education student learning outcomes for mathematics that students will:

- Apply arithmetic, algebraic, geometric, statistical and logical reasoning to solve problems.
- Represent and evaluate basic mathematical and/or logical information numerically, graphically, and symbolically.
- Interpret mathematical and/or logical models such as formulas, graphs, tables and schematics, and draw inference from them.

Students develop skill in manipulating with matrices and understand their relationship to linear systems. They understand the concept of bases and vector spaces, as well as, eigenvectors and eigenspaces.

In particular, students

- perform basic vector algebra, and compute their bases
- express a linear transformation as a matrix

- perform basic matrix manipulations, and compute the determinant of a matrix
- compute eigenvalues and eigenvectors
- use the Gram-Schmidt process

Assessment of Learning Outcomes: The assessment of student's mastery of the skills and concepts as specified in the expected learning outcomes will occur, with appropriate course grades assigned, as follows:

1. 3 proctored exams.
2. A proctored Final Exam.
3. Exam corrections.
4. Homework.

The final and the exams are equally weighted. The lowest exam score will be dropped. This could be the score on the final. If you are satisfied with your score on the first three exams, you don't have to take the final or show up at the final exam session. If you don't take the final, the score will be a 0, which will be dropped. On the other hand, *taking the final can't hurt your score*. I will apply a curve to the scores on the exams.

The the exams will count for 60% of the final grade. The exam corrections will count for 15%, and the homework will count for 25%.

The procedure for the exam corrections will be discussed after the first exam.

The 90-80-70-60 cut offs will be sufficient for the final grade, but the cutoffs may go a bit lower; I can't say until I see all the scores.

Homework: The homework will be mostly on the Webwork system, but there may be some pencil and paper assignments.

There will be a link to the Webwork site for our course posted on my website and our Piazza page.

Your username on Webwork is your eraider name, but the initial password is your R number (including the capital R). *Please wait for an announcement before trying to get on Webwork.*

If you need help getting started on a problem you are highly encouraged to communicate with me. You *may* discuss the homework problems with your classmates, but after understanding how to do it, go off by yourself and write up the assignment; don't just copy someone else's writeup.

Exam Procedures: For the proctored exams, there are three possibilities. For those who can make it to the Lubbock campus (say less than 100 miles), I will arrange a proctored exam session some evening in the Math building.

If that doesn't work, you can take the exam at the Texas Tech Academic Testing facility on the Lubbock campus. You should go there and register with them before the exam, so they will be expecting you. You will need to tell me

that you are doing this before the exam, so I can send the exam to the testing center. The testing center is located in West Hall, Room 214, testing@ttu.edu.

If you can't make it to Lubbock, you'll need to locate an academic testing center near you. The testing centers can be found at Universities, Colleges and Community Colleges. You, and the testing center, will have to enter your information on a form for the Math Dept. Send the form to me by the USPS. See my website or Piazza for the form and my mailing address.

Final Exam: Since this is a distance course, we will need to discuss how to do the final. I would recommend May 9, but we can change that.

Makeups: If you are absent from an exam and convince me that your reason was legitimate, I will give a makeup exam. The homework on Webwork will be open until the end of classes, see the date on Webwork.

Class Schedule: The tentative schedule for the class is as follows:

Jan. 15-22 Module 1: Systems of Linear Equations

Jan. 24-Feb. 12 Module 2: Matrices

Feb. 14-24 Module 3: Determinants

Feb. 17 Exam 1

Feb. 26-March 23 Module 4: Vector Spaces

March 14-22 Spring Break

March 25 Exam 2

March 27-April 8 Module 5: Linear Transformations

April 10-April 24 Module 6: Eigenvalues and Eigenvectors

April 27 Exam 3

April 29-May 4 Module 7: Inner Product Spaces

May 5 Last Day of Classes

TBA Final Exam

If these dates are changed, the changes will be discussed on Piazza and will appear on the calendar on my website. However, **this document will not be changed.**

Formative Assessment: Continuous formative assessment of the progress of the course will occur via ongoing communication between the instructor and the students. To this end, all students are encouraged to ask questions during class and to seek the instructor's help out of class when needed. Other activities in support of student-instructor communication will include: practice exams

and quizzes, review of homework, and personal interviews with students doing poorly on work assigned at the beginning of the course.

Identification: You should be prepared to show your Texas Tech picture ID at any quiz or exam.

Accommodations for Disabilities: Any student who, because of a disability, may require special arrangements in order to meet course requirements should contact the instructor as soon as possible to make necessary accommodations. Students should present appropriate verification from Disabled Student Services, Dean of Students Office (AccessTECH). No requirement exists that accommodations be made prior to completion of this approved University process.

Religious Holy Days: A student may be absent from class for a religious holy day, as legally defined, and will be allowed to make up any missed examination or assignment within a reasonable time after the absence. See http://www.depts.ttu.edu/officialpublications/catalog/_AcademicsRegulations.php

Academic Misconduct: It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and a high standard of integrity. The attempt of students to present as their own work any work that they have not honestly preformed is regarded by the faculty and administration as a serious offense and renders the offenders liable to serious consequences, possibly suspension.

For more information, and a description of what is considered to be misconduct, see http://www.depts.ttu.edu/officialpublications/catalog/_AcademicsRegulations.php

Civility in the Classroom: Students are expected to assist in maintaining a classroom environment that is conducive to learning. In order to assure that all students have the opportunity to gain from time spent in class, unless otherwise approved by the instructor, students are prohibited from engaging in any other form of distraction. Inappropriate behavior in the classroom shall result, minimally, in a request to leave class. For more information, see http://www.depts.ttu.edu/officialpublications/catalog/_AcademicsRegulations.php