MATH 3323 (23524)

Matrix Algebra

Spring 2018
The University of Texas at El Paso

Xianyi Zeng, Instructor

This course is concerned with matrices and vectors. Particularly, it focuses on systems of linear equations, matrices, vector spaces, linear transformations, and eigenvalues and eigenvectors.

Course number:	MATH 3323 (23524)
Course title:	Matrix Algebra
Credit hours:	3
Term:	Spring 2018
Time & location:	1:30–2:50pm MW, LART 101
Exam dates	Midterm exam 1: in class Monday, February 19, 2018
	Midterm exam 2: in class Monday, April 2, 2018
	Final exam: 4:00pm–6:45pm Wednesday, May 9, 2018
Drop deadline	Thursday, March 29, 2018
Prerequisites:	MATH 1312 (Calculus II). This is a mathematical maturity requirement; we will generally not use calculus in this course
Course fee:	None
Instructor:	Xianyi Zeng
	Office hour: 9:40am–11:00am MTW, or by appointment
	Office location: Bell Hall 202
	Office phone: 915-747-6759
	Email: xzeng@utep.edu
Course website:	http://math.utep.edu/faculty/xzeng/2018spring_math3323
Textbook:	Johnson, Riess, and Arnold, *Introduction to Linear Algebra*, 5th Edition, Pearson 2001
	The textbook is required at all class meetings

Course objectives

Vectors and matrices are more than merely special arrangements of numeric values. The students will learn these objects in the contexts of system of linear equations, the geometry of Euclidean spaces, and maps between such spaces. Eigenvalues and eigenvectors arise naturally as we study the relation between these linear maps and the geometries of the Euclidean spaces, which marks the last part of this course.

Upon successful completion of the course, the students will be able to: solve and analyze linear equations, use the language of vectors and matrices to describe geometrical concepts of Euclidean spaces, and compute eigenvalues and eigenvectors of a matrix. The students will be prepared to use linear algebra as a tool in practical applications, and prepared to study more abstract vector spaces.

Grading

Your grade for the course will be based on the following:
- 30% quizzes.
- 20% midterm exam 1 (Chapter 1).
- 20% midterm exam 2 (Chapters 2,3).
- 30% final exam (comprehensive, but with emphasis on Chapter 4).

At the end of each lecture, I will assign suggested homework problems and discuss them the next lecture. There will be in-class quizzes, which generally take place weekly or biweekly, depending on the subject. The quiz problems are taken from the suggested homework ones, and will not be disclosed in advance. Missed quizzes **cannot** be made up, but I will drop **two** lowest quiz scores towards calculating your final grade.

In general, missed exams **cannot** be made up, either. Exceptions can be given only in extraordinary and unavoidable circumstances with reasonable proofs, and with advance notice in written.

The letter grade will be guaranteed at the following levels: A $(90 - 100\%)$, B $(80 - 89\%)$, C $(70 - 79\%)$, D $(60 - 69\%)$. Depending on circumstances, the thresholds for each of the four letter grades could be lowered, but will be equal among all students. The letter grade F, however, will be given if the final score is below 60%.

Attendance policy

Attendance to every class is strongly encouraged; my lectures will complement rather than simply repeat the textbook materials. If you are absent, you are responsible to find out the material and homework that needs to be made up.

Suggested homework problems, supplemental materials, and announcements will be notified by email and course website; it is your responsibility to read my emails and regularly check the course website for updates.

Accommodations for students with disabilities

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at http://www.sa.utep.edu/cass.

Academic honesty policy
Make sure you understand the UTEP academic honesty policy. Students are encouraged to share ideas, but you must do your own homework and you must write your own code for the projects (you may copy code that is on the course website). If homework or program code is suspected of being duplicated or copied, you will receive an incomplete for the assignment, and your case will be referred to the Dean of Students for adjudication. If the instructor has reason to believe that you have cheated on a quiz or exam, your case will be referred to the Dean of Students for adjudication.

Military statement
If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact as soon as possible.

Course format and participation
The course is composed of lectures and after-lecture office hours. We cover mainly the first four chapters of the textbook; some sections may be skipped as will be announced in class. Some sections in the latter three chapters may also be discussed, when they are related to the materials in the first four chapters. We will not cover Matlab in class; however, the students are welcome to discuss Matlab exercises in my office hour.

Course schedule
Below is a tentative schedule for this course.

Week 01 (01/17)	1.1
Week 02 (01/22, 01/24)	1.2, 1.3
Week 03 (01/29, 01/31)	1.4, 1.5
Week 04 (02/05, 02/07)	1.6, 1.7
Week 05 (02/12, 02/14)	1.8, 1.9
Week 06 (02/19, 02/21)	Midterm exam 1, 2.1
Week 07 (02/26, 02/28)	2.2, 2.3
Week 08 (03/05, 03/07)	2.4, 3.1, 3.2
Week 09 (03/12, 03/14)	Spring break
Week 10 (03/19, 03/21)	3.3, 3.4, 3.5
Week 11 (03/26, 03/28)	3.6, 3.7
Week 12 (04/02, 04/04)	Midterm exam 2, 3.8
Week 13 (04/09, 04/11)	3.9, 4.1
Week 14 (04/16, 04/18)	4.2, 4.3
Week 15 (04/23, 04/25)	4.4, 4.5
Week 16 (04/30, 05/02)	4.6, 4.7
Week 17 (05/09)	Final exam