Matrix Algebra  Syllabus  Spring 2020
MATH 3323  MW 9:00am to 10:20am  LART 102

Instructor: Julio César Urenda Castañeda
Office: Library 504
Hours: MW 1:30pm to 2:30pm (tentative) or by appointment
email: j curenda@utep.edu
phone: (915)747-7005

Prerequisites: Calculus II (MATH 1312). This is a mathematical maturity requirement.

Course Objectives: This course is concerned with matrices and vectors. In one setting, matrices and vectors
merely serve as efficient devices for storing the coefficients and solutions of systems of linear equations.
The solutions of many such systems, though, are hard to even describe without the right language. This
is the language of vector spaces, where matrices serve as functions turning vectors into other vectors. We
will then spend most of our time examining vector spaces, and especially various vector spaces we can
naturally assign to a matrix. In this setting, eigenvalues and eigenvectors of a matrix arise naturally, and
we end the course examining these. Upon successful completion of this course, you will be able to solve
and analyze systems of linear equations. You will be able to find and describe the various vector spaces
associated to a matrix, and you will be prepared to study more abstract vector spaces. You will be able
to compute eigenvalues and eigenvectors of a matrix, and know what they are good for. You will be able
to do all of this equally well with the symbolic/numerical description of matrices and vectors as arrays
of numbers, and with the geometrical description of matrices and vectors, using the powerful organizing
concept of dimension, even in dimensions higher than 3.

Textbook: Introduction to Linear Algebra, 5th ed., Johnson, Riess, Arnold, Chapters 1-4. We will
skip some sections, as announced in class. The textbook is required at all class meetings.

Required Reading: Read each section that we cover in class, both before and after class. Skim the section before
class, even if you do not understand it fully, to have some idea of what we’ll be doing in class. Read it
more carefully after class to clarify and fill in details you missed in class.

Warning: Sometimes, we will not “cover” all the material from a section in class, but instead focus on a
particular aspect of the section. In such cases, I will point out in class which other parts of the section I
expect you to read on your own.

Grading

Quizzes, Homework, and Participation (20%) Suggested homework problems will be assigned most class days
and will generally be discussed at the next class. There will be approximately 12 quizzes, with problems
taken from the homework. Quizzes are closed-book, closed-notes. Missed quizzes cannot be made up, but
your two lowest quiz scores will be dropped. It is very important that you do your homework before it is
discussed in class. You will only learn the material by doing it yourself, not by watching others do it for
you. Mathematics is not an spectator’s game.

Midterm Exams (20%) There will be three in-class exams, exact dates will be announced in class. Makeup
exams can be given only in extraordinary and unavoidable circumstances, and with advance notice.

Final (20%) The final comprehensive exam will be on

   Wednesday, May 13th from 10:00am to 12:45pm

Policies

Academic dishonesty: It is UTEP’s policy, and mine, for all suspected cases or acts of alleged scholastic dis-
honesty to be referred to the Office of Student Conduct and Conflict Resolution for investigation and
appropriate disposition. See Section II.1.2.2 of the Handbook of Operating Procedures.

Attendance: You are strongly encouraged to attend class every day. I expect you to arrive for class on time
and to remain seated until the class is dismissed. Students who have six or more absences (excused or
unexcused) or have demonstrated lack of effort will be dropped from the course with a grade of “F”. You
are responsible to find out any assignment that must be made up if you are absent. My goal is for class
meetings and activities to complement, rather than to echo, the textbook, and thus for every class to be
worth attending.

Drop date: The deadline for student-initiated drops with a W is Friday, April 3rd. After this date, you can only
drop with the Dean’s approval, which is granted only under extenuating circumstances. I hope everyone
will complete the course successfully, but if you are having doubts about your progress, I will be happy to
discuss your standing in the course to help you decide whether or not to drop. You are only allowed three
enrollments in this course, and students enrolled after Fall 2007 are only allowed six withdrawals in their
entire academic career, so please exercise the drop option judiciously.

**Courtesy:** We all have to show courtesy to each other, and the class as a whole, during class time. Please arrive
to class on time (or let me know when you have to be late, and why); do not engage in side conversations
when one person (me, or another student) is talking to the whole class; turn off your cell phone (or, for
emergencies, at least set it to not ring out loud), and do not engage in phone, email, or text conversations
during class.

**Disabilities:** If you have, or suspect you have, a disability and need an accommodation, you should contact
the Center for Accommodations and Support Services (CASS) at 747-5148, cass@utep.edu, or Union East
room 106. You are responsible for presenting to me any CASS accommodation letters and instructions.

**Exceptional circumstances:** If you anticipate the possibility of missing large portions of class time, due to
exceptional circumstances such as military service and/or training, or childbirth, please let me know as
soon as possible.