Matrix Algebra	**Syllabus**	**Spring 2019**
MATH 3323	MW 9:00am to 10:20am	LART 202

Instructor: Julio César Urenda Castañeda
    Office: Library 504
    Hours: TWR 8:25am to 8:55am or by appointment
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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 well 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 and Homework (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 15th from 10:00am to 12:45pm

Policies

Academic dishonesty: It is UTEPs policy, and mine, for all suspected cases or acts of alleged scholastic dishonesty 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** 5th. After this date, you can only drop with the Deans 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.