STUDENT'S SYLLABUS - Spring 2019

COURSE TITLE:	LINEAR ALGEBRA I
COURSE NUMBER:	MATH 341
TEXTBOOK:	*Linear Algebra and its applications* (4th ed.), D. Lay

Instructor: Dr. Randall Paul   CRN/Section: 31847/02
Office #: Owens 126 x1467   Office Hours: MTW 11:00-12:00 or by appointment
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Grading:

Homework:	10%	
Test 1:	20%	Fri, Apr 19
Test 2:	20%	Fri, May 10
Test 3:	20%	Fri, May 31
Final:	30%	2:00-4:00 Mon, June 10

Any student with a disability who anticipates a need for accommodation in this course is encouraged to talk with the instructor about their needs as soon as possible.

Objectives:

Students should finish the course with an understanding of:

1. Algebra of matrices

2. Systems of linear equations and methods of solution

3. Finite-dimensional vector spaces

4. Eigenvalues, eigenvectors and characteristic polynomials

5. Applications of linear algebra

Exams:

All exam dates are tentative except that of the final.

If presented with a compelling reason **in a timely fashion** I will grant one—**and only one**—make-up exam. If you miss two exams for whatever reason (except participating in official OIT events—such as student athletics) you are out of luck. This includes, by the way, if you miss your make-up exam. (Don't laugh–it's happened more than once!)

In a timely fashion means that if you know you will miss an exam you must tell me at least a week before the exam so that we can arrange the make-up. If you are the victim of a sudden emergency (sickness, death in the family) you must get a message to me (e-mail or phone) **before or during the day of the exam!** You should come see me personally (physically—not e-mail or by phone) as soon as possible so that we can arrange the make-up.

Note that these policies don't apply to the final. The only excuse for missing the final is a sudden personal emergency. If I judge the emergency sufficiently dire I will grant you an incomplete. Do not ask to take the final at a different time—the answer is no.

Everyone has a bad day now and then, and sometimes that day happens to be an exam day. For this reason I may—**at my discretion**—replace one of your test grades with your grade on the final. My discretion is strongly effected by how much homework you've done and whether you've asked questions and/or come to office hours. Be warned, though, that most students—for whatever reason—do not help themselves on the final. It's best to already have the grade you want going into the final.

Homework:

Succeeding in this class is all a matter of **practice**, finding your mistakes, and **fixing them!** Doing your homework, therefore, should be your highest priority.

Homework will be due approximately two days after it is assigned. Each homework is worth 5 points. I will grade only two problems carefully for correctness, each worth 1 point. The remaining 3 points will be awarded if you made a "good attempt" at all of the problems. You lose 1 point for handing in your homework a day or two late; you lose 2 points if it is more late than this.

I strongly encourage students in this class to make friends and work on homework problems together. This is not cheating unless you just mindlessly copy someone else's work. The important thing is to understand how a problem is done.

I am always available (and happy) to talk about homework in my office hours or by appointment. Try to do a problem yourself first. Then ask your friends and compare answers. If you're still confused come talk to me or try using the tutors at CFLAT. The critical thing is to find what you're doing wrong and fix it.

A quick warning about tutors (and friends and me). It's great to get help from lots of sources, but in the end **you** have to perform **by yourself** on the exams. Do not decide you've "got it" until you've done several problems by yourself with no help from anyone else!

Course Description:

Here is a list of the topics and sections of the book that we will cover in the order we will cover them. The horizontal lines show (more or less) where each test will be.

sec	topic
1.1	Systems of linear equations
1.2	Row Reduction and Echelon Forms
1.3	Vector Equations
1.5	Solution sets of Linear Systems
1.6, 1.10	Applications of Linear Systems
1.7	Linear Independence
2.1	Matrix operations
2.2	Inverse of a Matrix
2.3	Characterizations of Invertible Matrices
2.5	Matrix Factorization
2.8	Subspaces of $\mathbb{R}^n$, Null and Column Spaces
2.9	Dimension and Rank
1.8, 1.9	Linear Transformations
2.6	Applications to Computer Graphics
5.1	Eigenvalues and Eigenvectors
1.6, HO	Applications with Eigenvalue 1
3.1	Introduction to Determinants
3.2	Properties of Determinants
5.2	Characteristic Equation
5.3	Diagonalization
5.4	Eigenvectors and Linear Transformations
5.5	Complex Eigenvalues
5.6	Discrete Dynamical Systems