M340L-SPRING 2020 MATRICES AND MATRIX CALCULATIONS SYLLABUS #52969

Instructor: Dr. Jacky Chong
Office: PMA/RLM 12.140
Office Hours: TTh 11:00a.m.-12:00p.m. (tentative)
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Teaching Assistant: Kendric D. Schefers

Lecture: MWF 4:00p.m.-5:00p.m. in RLP 0.126

Course Webpage. Lecture schedule, homework, as well as other important information regarding the class will be posted on the course webpage:
`https://web.ma.utexas.edu/users/jwchong/math340L_spr20.html`

Required Textbooks: *Linear Algebra and Its Applications, 5th ed.* by D. Lay, S. Lay, and J. McDonald. **ISBN-10:** 9780321982384

Prerequisites: Student must have earned at least a C- in Mathematics 408C, 408K, or 408N (Calculus I) or any equivalent course.

Course Description: The goal of M340L is to present the many uses of matrices and the many techniques and concepts needed in such uses. The emphasis is on concrete concepts and understanding and using techniques, rather than on learning proofs and abstractions. The course is designed for applications-oriented students such as those in the natural and social sciences, engineering, and business. Topics might include matrix operations, systems of linear equations, introductory vector-space concepts (e.g., linear dependence and independence, basis, dimension), determinants, introductory concepts of eigen-systems, introductory finite state Markov chains, and least square problems. Credit will be granted for only one of the following: M340L or M341.

In-Class Exams: There will be three 50-minute in-class exams and one 3-hour final exam. The exams will be held during lecture on the following dates:

Exam 1: Monday, February 17th
Exam 2: Monday, March 23rd
Exam 3: Monday, April 20th

Final Exam: Friday, May 15th
(7:00pm-10:00pm)

Homework: Homework problems along with suggested exercises will be assigned regularly from the course textbook. There will be a total of 14 assignments throughout the semester. We will drop the two lowest scores. It is acceptable for groups of students to help each other on the homework sets; however, each student must write up his or her own work. See the tentative schedule for the assignments and due dates. Every assignment is due before lecture on the indicated dates. **Late assignments will not be accepted**.

Date: January 22, 2020.

MATLAB Projects: There will be four MATLAB projects worth 25 points each. These will be posted on the course webpage as they become available. The due dates are on the course schedule below. Projects also include some instructional introductions. Like homework, it is acceptable for groups of students to discuss the problems with each other; however, each student must write up his or her own code/work.

Course Readings: Reading the sections of the textbook corresponding to the assigned homework exercises is considered part of the homework assignment. You are responsible for material in the assigned reading whether or not it is discussed in the lecture.

Make-up Policy: Make-ups for in-class exams will only be given in the case of a documented absence due to illness, religious observance, participation in a University activity at the request of University authorities, or other compelling circumstances.

Grading: Course grades will be based on homework, in-class exams, and the final exam. Your course grade will be determined by the best of the following two weighted averages:

- 15% Homework, 10% MATLAB, 45% Exams (15% per Exam), 30% Final,
- 15% Homework, 10% MATLAB, 30% Exams (Drop lowest exam score, 15% per Exam), 45% Final.

After your weighted average is calculated, letter grades will be assigned based on the standard grading scale:

A	A-	B+	B	B-	C+	C	C-
> 92%	92–90%	89–87%	86–83%	82–80%	79–77%	76–73%	72–70%

It is possible that the cutoffs may be lower at the discretion of the instructor. However, students who receive less than 50% of the maximum possible score will automatically receive an F for the course.

Academic Integrity: Each student in the course is expected to abide by the University of Texas Honor Code:

> As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity.

You are expected to read carefully and adhere to the following instruction provided by the Office of the Dean of Students: `http://deanofstudents.utexas.edu/conduct/academicintegrity.php`. All cases of academic dishonesty will be referred to the Office of the Dean of Students.

Students with Disabilities: Students with disabilities may request appropriate accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities (SSD), 512-471-6259, `https://diversity.utexas.edu/disability/` . Notify your instructor early in the semester if accommodation is required.

Counseling and Mental Health Services: Available at the Counseling and Mental Health Center, Student Services Building (SSB), 5th floor, M-F 8:00 a.m. to 5:00 p.m., (Phone) 512-471-3515, website `www.cmhc.utexas.edu`. Your mental health should be your top priority, so please take good care of yourself.

Tentative Schedule.

Below is a tentative schedule of the course with the material that I hope to cover and when. This will undoubtedly change as we progresses through the semester, so check the course website regularly for updates. The sections are from the course textbook.

Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 Jan. *20*	*21*	First Day *22* §1.1	*23*	*24* §1.2
Week 2 27 §1.3 **HW1**	*28*	*29* §1.4	*30*	*31* §1.5
Week 3 Feb. *3* §1.7 **HW2**	*4*	*5* §1.8	*6*	*7* §1.9
Week 4 10 §2.1 **HW3**	*11*	*12* §2.2	*13*	*14* §2.3 **ML1**
Week 5 17 Exam 1	*18*	*19* §2.4 **HW4**	*20*	*21* §2.5
Week 6 24 §3.1 **HW5**	*25*	*26* §3.2	*27*	*28* §4.1
Week 7 Mar. *2* §4.2 **HW6**	*3*	*4* §4.3	*5*	*6* §4.4
Week 8 9 §4.5 **HW7**	*10*	*11* §4.6	*12*	*13* §4.7 **ML2**
Week 9 16 *Spring Break*	*17*	*18* *Spring Break*	*19*	*20* *Spring Break*
Week 10 23 Exam 2	*24*	*25* §5.1 **HW8**	*26*	*27* §5.2

Monday	Tuesday	Wednesday	Thursday	Friday
Week 11 30 §5.3 **HW9**	*31*	Apr. 1 §5.4	*2*	*3* §5.5
Week 12 6 §4.9 **HW10**	*7*	*8* §10.1	*9*	*10* §10.2
Week 13 13 §6.1 **HW11**	*14*	*15* §6.2 **ML3**	*16*	*17* §6.3
Week 14 20 Exam 3	*21*	*22* §6.4 **HW12**	*23*	*24* §6.5/6.6
Week 15 27 §7.1 **HW13**	*28*	*29* §7.2	*30*	May 1 §7.4
Week 16 4 §7.4 **HW14**	*5*	*6* §7.5	*7*	Last Day 8 §7.5 **ML4**
Week 17 11	*12*	*13*	*14*	15 Final Exam

(Note: **HW** means homework is due and **ML** means MATLAB project is due.)