MA 110E: Fall 2022   **Introduction to Linear Algebra**

Mathematics   *Albert Nerken School of Engineering at The Cooper Union*

Course Descripton:	Vectors in two- and three-dimensions, vector algebra, inner product, cross product and applications. Analytic geometry in three dimensions: lines, planes, spheres. Matrix algebra; solution of systems of linear equations, determinants, inverses, complex numbers. *2 credits. Prerequisite: none*
Instructor:	Mili Shah (mili.shah@cooper.edu) 41 Cooper Room 311
Lectures:	Mondays 4:00PM-4:50PM 41 Cooper Room 104 Wednesdays 12:00PM-12:50PM 41 Cooper Room 306
Office Hours:	Wednesdays 1:30PM-3:00PM or by appointment 41 Cooper Room 311
Participation:	Please contribute to the classroom environment by asking questions and participating in discussions. Your interaction will be considered when assigning borderline grades, as will improving performance throughout the course of the semester.
Grading:	25% Quizzes, 45% Exams, 30% Final
Homework:	Suggested homework problems are posted on the following page. These homework problems will not be graded but are representative of information that is required. Similar homework will be presented on quizzes, exams, and finals. Additional suggested problems may be given during class.
Quizzes:	There will be quizzes given throughout the semester due Wednesdays at 11:59pm. These will be based on problems from the previous week. Collectively, these quizzes will constitute 25% of the final grade. The lowest quiz grade will be dropped.
Exams:	Two exams and one final will be given during the semester. You may not use outside resources: calculators, other students, other books, etc. The first exam will constitute 20% of your total grade, the second exam 25%, and the final will constitute 30% of your total grade. Exam 1: Wednesday, October 5 Exam 2: Wednesday, November 9 Final Exam: Wednesday, December 14 *Note: I reserve the right to adapt exam dates.*
Assessment:	Quizzes will be posted on the website `https://webwork.runestone.academy/webwork2/cooper-shah-ma-110-fall-2022/` Your initial login is your Cooper username and your password is your Cooper ID number.
Late policy:	No quiz, exam, or final may be made up without prior arrangement or a written excuse.
Text:	Howard Anton, *Elementary Linear Algebra*, 10th edition, Wiley (2010) ISBN-13: 978-0470458211
Disabilities:	If you believe you are entitled to an accommodation on assessments through the Americans with Disabilities Act, you must self-identify to the Office of the Dean of Students and meet with me during the first week of the term to discuss arrangements for meeting your accommodation.

Timeline

Please note that this schedule is tentative and will likely be adjusted as the semester progresses.

Week	Homework
8/29/2022	3.1: 2, 4, 8, 10, 18, 24, 26, 30, TF
9/5/2022	3.2: 3.2: 2, 4, 10a, 12a, 14a, 16, 18, 20a, 22, 24a, 26a, 32, TF
9/12/2022	3.3: 2, 4, 5, 6, 7, 8, 10, 14, 18, 22, 26, 30, 34, 38, 43, 44, TF
9/19/2022	3.4: 2, 4, 6, 10, 13, 15, TF (a-c)
9/26/2022	3.5: 2, 4, 8, 12, 14, 17, 22, 27, 30, 31, 36, 37, TF
10/3/2022	**Exam 1 on Wednesday October 5**
10/10/2022	1.1: 1, 2, 4, 6, 8, 10, 11, 14, 15, TF
	1.2: 2, 3, 6, 10, 13-16, 18, 25, 33, 36, 37, 38, 42, TF
10/17/2022	1.3: 2, 8, 10, 12, 14, 20, 25, 27, TF
	3.4: 18, 20, 21, 24, 26, 28, TF(d-f)
10/24/2022	1.4: 2, 4, 6, 8, 10, 12, 25, 28, 40, 54, TF
	1.5: 2, 6, 8, 12, 14, TF
10/31/2022	1.6: 2, 14, 18, 21, 22, 23, TF
11/7/2022	1.7: 2, 6, 12, 18, 22, 24, 29, 30, 32, 33, 35, 36, 37, 40, 41, 42, TF
11/14/2022	**Exam 2 on Wednesday November 9**
11/21/2022	2.1: 2, 9, 13, 14, 19, 21, 24, 32, 33, 34, 38, 40, TF
	2.2: 2, 6, 9, 10, 15, 28, 29, 34, 35, 36, TF
	2.3: 6, 8, 10, 18, 20, 26, 30, 33, 35, 38, TF
11/28/2022	5.1: 1-4
	Complex: Let $z = \sqrt{3} + i$. Describe z in exponential and polar form and then calculate $|z|$, z^3, $\sqrt{z}$.
12/5/2022	Review
12/14/2022	**Final Exam on Wednesday December 14**