

MA 110D: Fall 2023 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, the solution of systems of linear equations, determinants, inverses, and basic properties of the complex number system.

2 credits. Prerequisite: none

Instructor: Mili Shah (mili.shah@cooper.edu)
41 Cooper Room 311

Lectures: Tuesdays 11:00AM-11:50AM, 41 Cooper Room 101
Wednesdays 11:00AM-11:50AM, 41 Cooper Room 101

Office Hours: Mondays 12:30PM-2:00PM 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.

Quizzes: There will be quizzes given throughout the semester due Mondays 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 (split over two final exam days) 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, September 27

Exam 2: Wednesday, November 8

Final Exam I: Tuesday, December 12

Final Exam II: Wednesday, December 13

Note: I reserve the right to adapt exam dates.

Assessment: Quizzes will be posted on the website

<https://webwork-hosting.runestone.academy/webwork2/cooper-shah-ma110-fall12023/>

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: -Cuoco, A., Waterman, K. Kerins, B. Kaczorowski, E., Manes, M., *Linear Algebra and Geometry*, AMS/MAA, Vol. 46, 2019.

-Anton, H., *Elementary Linear Algebra*, 9th edition, Chapter 10

<https://cooperunion.sharepoint.com/:b:/s/library.department/>

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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	Schedule
8/29/2023	1.1: 1, 4, 5, 7, 9, 10, 12, 13, 14 1.2: 2, 6, 7, 10, 12, 13 1.3: 1, 2, 6, 8, 11, 12, 13, 15
9/5/2023	1.4: 2, 3, 4, 9, 13, 15 2.1: 1, 3, 5, 6 2.2: 1, 2, 3, 4, 9, 11, 12, 13, 17, 20, 22, 26, 29, 35
9/12/2023	2.3: 1, 2, 3, 7, 10, 13 2.4: 1, 4, 6, 11, 13, 17 2.5: 1, 5, 6, 7, 11, 13, 18
9/19/2023	2.6: 1, 2, 3, 6, 8, 12, 17
9/26/2023	Exam 1 on Wednesday September 27
10/3/2023	3.1: 1, 2, 5, 7, 9 3.2: 1, 2, 4, 8h, 9, 12
10/10/2023	3.3: 1, 2, 5, 6, 7, 10
10/17/2023	3.4: 2, 3, 4, 5, 8, 14 3.5: 1, 2, 3, 6, 7, 10, 13
10/24/2023	4.1: 2, 7 4.2: 2, 4, 5, 12 4.3: 1, 3, 6, 11 4.4: 1, 4, 9, 10, 15, 17, 20, 22, 24, 27
10/31/2023	4.5: 1, 3, 11, 13, 14, 22, 28 4.6: 2, 3, 4, 14, 15, 26, 28
11/7/2023	Exam 2 on Wednesday November 8
11/14/2023	5.1: 1, 3, 10, 11, 13, 15 5.2: 1, 2, 5, 19, 21, 24, 25, 27 5.3: 2, 3, 6, 9, 16, 22, 25, 27
11/21/2023	Thanksgiving
11/28/2023	5.4: 2, 4, 7, 8, 13 9.1: 1, 3, 7, 8 9.2: 1, 5, 10, 11, 16 9.3: 1, 5, 6
12/5/2023	10.1 (Anton): 1, 2, 8, 9, 11, 19, 24, 30 10.2 (Anton): 4, 7, 15, 17, 22, 28, 32, 37, 41 10.3 (Anton): 3, 6, 7, 10, 11, 18, 20, 21
12/12/2023	Final Exam Part I
12/13/2023	Final Exam Part II