

Section 01

Block: D+ (T, Th 10:30-11:45 am).

Instructor: Eunice Kim (eunice.kim@tufts.edu)

Section 02

Block H+ (T, Th 1:30-2:45 pm).

Instructor: Todd Quinto (todd.quinto@tufts.edu)

Section 03

Block G+ (M, W 1:30-2:45 pm).

Instructor: Robert Lemke Oliver (robert.lemke_oliver@tufts.edu)

Section 04

Block K+ (M, W 4:30-5:45 pm).

Instructor: Robert Lemke Oliver (robert.lemke_oliver@tufts.edu)

Prerequisites: Math 34 (or 39) or instructor's consent.

Required text: *Linear Algebra and Its Applications, 4th edition*, by David Lay, Addison-Wesley (Pearson), 2011. You can also buy the textbook packaged with a copy of the *Study Guide for Linear Algebra and Its Applications* from the bookstore. The *Study Guide* is recommended, but not required. You can find the book at the bookstore and online at <https://tufts.bncollege.com/> and other sources.

Course Website: <http://courses.math.tufts.edu/math70/>

Description: Linear algebra is the study of matrices, vector spaces, and linear transformations. In Math 70 we start by studying systems of linear equations. This will quickly lead to useful concepts such as vector spaces, dimension (you will learn about four-, five-, and infinite-dimensional spaces), linear transformations, and eigenvalues. These concepts will help you solve linear equations efficiently, and more importantly, they fit together in a beautiful framework that will give you a deeper understanding of mathematics. Linear algebra arises everywhere in mathematics (you will use it in almost every upper level math course) as well as in physics, chemistry, biology, engineering, economics, and a range of other fields. Even when a problem involves nonlinear equations, as is often the case in applications, linear systems still play a central role, since the most common methods for studying nonlinear systems approximate them by linear systems.

Among the applications of linear algebra are solutions of linear systems of equations, determining conic curves and quadric surfaces not in standard form, the second-derivative test in vector calculus, computer graphics, linear economic models, and differential equations. Linear algebra also enters in further study of calculus, where the derivative is viewed as a linear transformation.

In addition to computation and problem-solving, axiomatic mathematics and basic proofs are important parts of the course.

Learning Objectives: This course satisfies Learning Objectives 1a, 1c, 1d, and 2a, 2b. (See <http://ase.tufts.edu/faculty/committees/objectives/math.htm>)

Homework: Homework problems will be assigned and picked up starting with the third assignment. Homework assigned for a certain class day will be due the next class day. You are encouraged to collaborate with other students on the homework and to check your solutions for mistakes. However, you must submit your own answers showing all of your work.

Quizzes: There will be several in-class quizzes which will be announced one week in advance. They will involve definitions, proofs, or problems similar to those from the homework.

Exams: Please read the departmental exam policy here:

<http://math.tufts.edu/courses/examPolicy.htm>. Take special note of the policy on missed exams. *We do not give make-up exams for the midterms and an unexcused absence from any exam will be counted as a zero.* Excused absences are determined by the Mathematics Department on a case by case basis. Midterm exams are given in the "open" block on Mondays from 12-1:20 pm in rooms to be announced. Exams are *not* given in your classroom. The exam room schedule will be announced in class and posted in the Math building.

Exam 1: Monday, October 7, 12:00 - 1:20 pm

Exam 2: Monday, November 4, 12:00 - 1:20 pm

Final Exam: Thursday, December 12, 8:30am - 10:30am

Grading: Suppose H is your homework score, Q is your total quiz score (both scaled to 100), MH is your higher midterm score, ML is your lower midterm score, and F is your score on the final exam. Your course score S is the larger of the following two quantities:

$$S_1 = .05H + .10Q + .25MH + .25ML + .35F$$

$$S_2 = .05H + .10Q + .15ML + .25MH + .45F$$

If you were to miss a midterm exam for a reason *accepted as legitimate by the Mathematics Department*, your course score S would be the larger of these two numbers:

$$S_1 = .05H + .10Q + .35M + .50F$$

$$S_2 = .05H + .10Q + .25M + .60F$$

Identifiers: Homework will be collected using folders handed out in class. Please mark your folder with the course and section numbers as well as an identifier to help you know that it is your folder—something that is likely unique to your section and something that is pronounceable in case your instructor chooses to return homework folders by calling out the identifiers. Please write it as clearly as possible and make sure to tell your instructor well before the end of the semester what your identifier is so credit associated with it can be counted towards your course grade.

Feel free to use your name as your identifier, but expect that unless you are told otherwise, the homework folders are handed off between instructor and grader in a way that does not ensure their confidentiality (usually by way of drawers in the lobby of the Bromfield-Pearson building). Your educational record is privileged information under the federal Family Educational Rights and Privacy Act (FERPA), and using your name as identifier means that you opt out of being guaranteed the confidentiality of the information on and in your homework folder.

Student Accessibility Services: Tufts University values the diversity of our students, staff, and faculty and recognizes the important contribution each student makes to our community. Tufts is committed to providing equal access and support to all qualified students through the provision of reasonable accommodations so that each student can succeed to their fullest. If you need accommodations, please contact the Student Accessibility Services (SAS) office at Accessibility@tufts.edu or 617-627-4539 to make an appointment with an SAS representative to determine appropriate accommodations. They can be helpful, even if you are not sure if you have a documented disability.

Important Dates:

Tuesday, September 17	Last day to add a course
Tuesday, October 8	Last day for Sophs., Jrs., Srs. to drop without a W
Tuesday, November 12	Last day for all students to elect the PASS/FAIL option (up to 5p.m.)
Tuesday, November 12	Last day for ALL students to drop a course—This is earlier than in the past.