

SYLLABUS

Math 250 – Introductory Linear Algebra – Fall 2016

M 10:20 AM - 11:40 AM & Th 10:20 AM - 11:40 AM; TIL-258, Livingston Campus

Instructor: Zhi Qi, e-mail: zhi.qi@rutgers.edu, Hill Center 242, Phone: 848-445-7278, Home-page: <http://www.math.rutgers.edu/~zq44/>

Suggested Text: Spence, Insel & Friedberg, *Elementary Linear Algebra: A Matrix Approach, 2nd Edition*; Prentice-Hall, (ISBN # 978-0-13-187141-0)

Office Hours: F 3:00 PM - 5:00 PM, or by appointment.

Teaching Assistant: Richard Z. Voepel, e-mail: rzv2@math.rutgers.edu, Hill Center 620.

Homework: There will be 13 homework sets. Homework problems will be collected on Thursdays and will be graded starting from the second week. The lowest three homework scores will be dropped.

Homework Policy:

1. **No late homework will be accepted under any circumstances!** (This is as much a courtesy to the grader as an incentive to stay current with the course and not fall behind.)

2. When you have worked on a problem for a while and remain stuck, you are encouraged to ask for hints from the instructor. Students may also discuss problems with one another, but must write solutions on their own. In particular if you have taken notes while discussing homework problems with friends or the instructor, you must put these notes away when writing your solution.

Quizzes: There are five short written quizzes, as indicated on the course syllabus. No makeup quizzes are given, but your lowest quiz grade is dropped.

Exams: There will be 2 midterms and a final. (The dates are given in the table.)

Exam Policy: All exams will be closed book and student-prepared formula sheets will not be permitted.

Academic Integrity: All Rutgers students are expected to be familiar with and abide by the [academic integrity policy](#). **Violations of the policy are taken very seriously!**

Calculator Policy: Calculators may be used on homework but do not suffice on problems for which explanation is required. Calculators may **not** be used on quizzes or exams.

Grades: The proportions for computing your final grade will be the following:

Homework: 20 %, Quizzes: 14 %, Midterm 1: 16 %, Midterm 2: 16 %, Final: 34 %.

Lecture (Q = quiz)	Reading	Topics
1, Sep 8	1.1, 1.2	Matrices, Vectors, and Linear Combinations
2, Sep 12	1.3	Systems of Linear Equations; Reduced Row Echelon Form
3, Sep 15	1.4	Gaussian Elimination; Rank and Nullity of a Matrix
4, Sep 19	1.6	Span of a Set of Vectors
5 Q , Sep 22	1.7	Linear Dependence and Linear Independence
6, Sep 26	1.7, 2.1	Homogeneous Systems; Matrix Multiplication
7, Sep 29	2.1	Matrix Algebra
8, Oct 3	2.3, Appendix E	Invertibility and Elementary Matrices; Column Correspondence Property; Uniqueness of Reduced Row Echelon Form
9 Q , Oct 6	2.4, 2.5	Inverse of a Matrix, Partitioned Matrices and Block Multiplication
10, Oct 10	2.6	<i>LU</i> Decomposition of a Matrix
11, Oct 13	Midterm 1 (10:20 AM - 11:40 AM)	
12, Oct 17	3.1	Determinants; Cofactor Expansions
13, Oct 20	3.2	Properties of Determinants
14, Oct 24	4.1	Subspaces
15 Q , Oct 27	4.2	Basis and Dimension
16, Oct 31	4.3	Column Space, Null Space and Row Space of a Matrix

17, Nov 3	5.1	Eigenvalues and Eigenvectors
18, Nov 7	5.2	Characteristic Polynomial
19Q, Nov 10	5.3	Diagonalization of a Matrix
20, Nov 14	5.5	Examples of Diagonalization
21, Nov 17	Midterm 2 (10:20 AM - 11:40 AM)	
22, Nov 21	6.1	Geometry of Vectors; Projection onto a Line
23, Nov 22	6.2	Orthogonal Sets of Vectors; Gram-Schmidt Process; QR factorization
24, Nov 28	6.3	Orthogonal Projection; Orthogonal Complements; Projection onto Column Space; Closest Vector Property
25Q, Dec 1	6.5	Orthogonal Matrices
26, Dec 5	6.6	Diagonalization of Symmetric Matrices
27, Dec 8	6.6	Diagonalization of Quadratic Forms; Spectral Decomposition for Symmetric Matrices
28, Dec 12		Review
Dec 20	Final (12:00 PM - 3:00 PM)	