

Syllabus
Math 254 – Introduction to Linear Algebra – Summer 2011

Class: MTWRF 11:00–12:05 A.M., Cramer 239

Instructor: Dr. Rakhim Aitbayev, Weir 236, (575) 835-5463, aitbayev@nmt.edu,
Office hours: MTWRF 10:00–11:10 A.M.

Catalog description: Solution of linear systems, matrix algebra, rank, determinants, eigenvalues and eigenvectors, numerical aspects of matrix calculations, introduction to vector spaces and linear transformations, applications. Same as BCS 254. (3 cr, 3 cl. hr.)

Prerequisite: MATH 131 passed with grade *C*– or better.

Course webpage: <http://www.nmt.edu/~aitbayev/math254>

Announcements, homework assignments, and quiz and test solution keys will be posted on the course webpage.

Course content: Chapters 1–7 of the textbook.

Textbook: *Linear Algebra and Its Applications*, third edition, by David C. Lay, Addison-Wesley.
Textbook web support: www.laylinalg.com

Graded assignments: Tests, homeworks, quizzes, and the lab.

- The two lowest homework scores will not be counted in the final score.
- Announced quizzes will be given about once a week. The lowest quiz score will not be counted in the final score.
- There will be three tests during the semester and a final exam.

Course grade composition:

Test 1	Test 2	Test 3	Final	Homeworks	Quizzes	Lab
15%	15%	15%	25%	10 %	15%	5%

Course grade scale:

Course score (%)	0–60	60–66	66–69	69–72	72–76	76–79	79–82	82–86	86–89	89–92	92–100
Letter grade	<i>F</i>	<i>D</i>	<i>D+</i>	<i>C</i> –	<i>C</i>	<i>C+</i>	<i>B</i> –	<i>B</i>	<i>B+</i>	<i>A</i> –	<i>A</i>
Grade points	0.00	3.00	3.99	5.01	6.00	6.99	8.01	9.00	9.99	11.01	12.00

Auditing: Auditing students should report their auditing status to the instructor immediately. Attendance of 90% of class meetings is required for obtaining the SA grade.

The Course Policy

- Students must follow the *Academic Honesty policy* (see NMT Course Catalog).
- Individual work is required for all graded assignments.
- Homeworks must be submitted at the beginning of class. Late homeworks are not accepted.

- A make-up test or a quiz could be given only in an exceptional situation with a documented evidence of excused absence.
- Quizzes and tests are closed book.
- Your homework and quiz papers are graded by a grader. If you have any questions regarding grading of your work you need to address the instructor immediately. By comparing with the solution keys posted on the course webpage, you should make sure that your quizzes are graded correctly.

The Course Objectives

Upon completion of this course, students should be able to:

- Understand the structure of the solution set of a linear system;
- Find a general solution of a linear system;
- Apply matrix algebra; understand the rank and the nullity of a matrix;
- Understand linear independence and linear dependence of a vector set, spanning sets, and bases.
- Find coordinate vectors in a given basis, change coordinates;
- Understand linear transformations; injection, surjection, and bijection;
- Understand eigenvalues and eigenvectors of a matrix;
- Determine if a matrix is diagonalizable and diagonalize it;
- Orthogonally diagonalize a symmetric matrix;
- Apply methods of Cramer, Gaussian Elimination, and Gramm–Schmidt.
- Solve a least squares problem.

Recommendations for Success

- Do not skip classes;
- Be active in class, which means:
 - Follow the instructor;
 - Take notes;
 - Ask questions;
- Do your homework, which means:
 - Complete the homework assignment;
 - Review lecture notes and read the corresponding sections in the textbook;
 - Review graded papers;
 - Write down questions for the instructor.
- Keep a list of all important formulas and definitions, and try to memorize it.