

**MATH 313 Sections 2 and 5 – LINEAR ALGEBRA
WINTER TERM 2014**

Instructor: Prof. Petar Pavešić

Textbook: D.C. Lay, *Linear Algebra and its Applications, BYU Edition*

Reading and Homework: Each day I will teach the section from the book listed in the syllabus. You are expected to read the section from the textbook listed below before corresponding class begins. Homework and reading will be assigned for each class period. Each homework assignment is due two class periods after it is assigned, unless otherwise stated. Graded homework will be handed out in class. Those who prefer to be given their homework personally, please let me know in advance.

Exams: Three midterm examinations and a comprehensive final examination. The midterms will be given in the testing center, according to the schedule below. The final exam will be given at the time scheduled by the University.

Grading: Your grade will be computed as follows: Homework 45%, Midterms 35%, Final 20%.

Monday, January 6	1.1 Systems of Linear Equations Homework 1: 14, 17, 18, 26, 33
Wednesday, January 8	1.2 Row Reduction and Echelon Forms Homework 2: 6, 7, 12, 13, 15a, 16ab 30
Friday, January 10	1.3 Vector Equations Homework 3: 11, 14, 18, 21, 22, 27ab, 30
Monday, January 13	1.4 The Matrix Equation $Ax = b$ Homework 4: 1, 3, 5, 7, 14, 29, 30, 33, 34, 36
Wednesday, January 15	1.5 Solution Sets of Linear Systems Homework 5: 7, 11, 14, 20, 27, 29, 34, 40; read Section 1.6
Friday, January 17	1.7 Linear Independence Homework 6: 15, 16, 17, 21, 27, 28, 31, 33, 34, 38
Monday, January 20	Holiday
Wednesday, January 22	1.8 Introduction to Linear Transformations Homework 7: 1, 4, 9, 13, 15, 16, 25, 26, 33
Friday, January 24	1.9 The Matrix of a Linear Transformation Homework 8: 3, 7, 11, 19, 23, 29, 35; read Section 1.10
Monday, January 27	2.1 Matrix Operations Homework 9: 1, 4, 5, 10, 18, 20, 21, 22, 23, 27, 28
Wednesday, January 29	2.2 The Inverse of a Matrix Homework 10: 2, 8, 9, 11, 14, 17, 32
Friday, January 31	2.3 Characterizations of Invertible Matrices Homework 11: 11, 13, 15, 20, 22, 27; due February 3
Monday, February 3	Review
February 3 and 4	TEST 1 Sections 1.1 - 1.5, 1.7 - 1.9, 2.1 - 2.3

Wednesday, February 5	2.4 Partitioned Matrices Homework 12: 6, 13, 15, 17, 27
Friday, February 7	2.5 Matrix Factorizations Homework 13:
Monday, February 10	3.1 Introduction to Determinants Homework 14:
Wednesday, February 12	3.2 Properties of Determinants Homework 15:
Friday, February 14	3.3 Cramer's Rule, Volume, and Linear Transformations Homework 16:
Monday, February 17	Holiday
Tuesday, February 18	4.1 Vector spaces Homework 17:
Wednesday, February 19	4.1 Subspaces Homework 18:
Friday, February 21	4.2 Null Spaces, Column Spaces, and Linear Transformations Homework 19:
Monday, February 24	4.3. Linearly Independent Sets; Bases Homework 20:
Wednesday, February 26	4.4 Coordinate Systems Homework 21:
Friday, February 28	4.5 The Dimension of a Vector Space Homework 22:
Monday, March 3	Review
March 3 and 4	TEST 2 Sections 2.4 - 2.5, 3.1 - 3.3, 4.1 - 4.5

Wednesday, March 5	4.6 Rank Homework 23:
Friday, March 7	5.1 Eigenvectors and Eigenvalues Homework 24:
Monday, March 10	5.2 The Characteristic Equation Homework 25:
Wednesday, March 12	5.3 Diagonalization Homework 26:
Friday, March 14	5.4 Eigenvectors and Linear Transformations Homework 27:
Monday, March 17	5.5. Complex Eigenvalues Homework 28:
Wednesday, March 19	6.1 Inner Product, Length and Ortogonality Homework 29:
Friday, March 21	6.2 Orthogonal Sets Homework 30:
Monday, March 24	6.3 Orthogonal Projections Homework 31:
Wednesday, March 26	6.4 The Gram - Schmidt Process Homework 32:
Friday, March 28	6.5 Least-Squares Problem Homework 33:
Monday, March 31	Review
Monday, March 31	TEST 3 Sections 4.6, 5.1 - 5.5, 6.1 - 6.5

Wednesday, April 2	6.6. Applications to Linear Models Homework 34:
Friday, April 4	7.1 Diagonalization of Symmetric Matrices Homework 35:
Monday, April 7	7.2 Quadratic Forms Homework 36:
Wednesday, April 9	7.3 Constrained Optimization Homework 37:
Friday, April 11	7.4 The Singular Value Decomposition Homework 38:
April 21 and April 22	FINAL EXAM
