Math 2210 - Applied Linear Algebra, Fall 2016.

Text: David, C. Lay, Linear Algebra, 4-th edition.

Meeting time and place : Tue, Thu, 12:30-1:45, 321 MONT.

Contact information:

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- Office hours: Tue, Thu, 2-3:30pm.

Midterms:

- 1-st, Friday, October 9, in class.
- 2-nd, Friday, November 6, in class.

Grading.

Grading will be based on homework, midterms and the final. The weight of each grade will be: Final: 40% , each midterm: 25%, homework: 10% .

I will collect homework every Thursday, but will not grade it, only skim it to see if it was given. No late homework will be accepted.

Course description:

This course provides an introduction to the concepts and techniques of Linear Algebra. This includes the study of matrices and their relations to linear equations, linear transformations, vector spaces, eigenvalues and eigenvectors, and orthogonality.

Calculator policy.

You will need to show your work on exams and homework assignments, but may use calculators, in all cases, to double check your answers and save time on routine calculations. The recommended graphic calculator is TI83 (best value for the money) but the others will do as well.

Extra help: The Q center and Textbook website

I encourage you to come for help to my office during office hours, and I will be happy to find other times when we can meet if my office hours schedule does not fit your schedule. However there might be times when you need help and I am not available. A good source of extra help is the UConn Q Center. Check their website for hours and locations. In addition

to drop-in free tutoring, the Q Center also maintains a list of private tutors. An online source of additional practice exercises, reveiew sheets, and exam samples with solutions, is the **Student Resources** located on your textbook website: http://wps.aw.com/aw lay linearalgebra 4/ .

Here is the syllabus. The actual pace of the course might be slightly different. The homework problems listed after each section should be studied but not turned in, they will be discussed at th beginning of the next class.

Week 1.

1.1 System of Linear Equations, homework: p. 10-11: 1, 8, 13, 17, 22, 23, 24.

1.2 Row Reduction and Echelon Form, homework: p.21-23: 1, 3, 7, 14, 19, 21, 22.

Week 2.

1.3 Vector Equations, homework: p.32-34: 1,3,6,9,13,14,15,21.

1.4 The Matrix Equation $A\mathbf{x} = \mathbf{b}$, homework: p.40-42: 1,4,7,9,13,22,23,25.

Week 3.

1.5 Solution sets of a linear equation, homework: p.47-49: 2,5,11.

1.7 Linear independence, homework: p.60-62: 1,5,8,9,15,20,22,33,34.

Week 4.

1.8 Introduction to Linear Transformations, homework: p.68-70: 1,8,9,13,17,31.

1.9 The Matrix of a Linear Transformation, homework: p.78-79: 1,2,15,20.

- Review.

Week 5.

2.1 Matrix Algebra: Operations, homework: p.100-102:2,5,7,10,15,27.

2.2 Matrix Algebra: Inverses, homework: p.109-111:3,6,13,18,31.

Week 6.

2.3 Characterizations of Invertible Matrices, homework: p.115-116: 3,5,8,13,15.

♠ Midterm 1, Thursday, October 6.

Week 7.

3.1 Determinants: Introduction, homework: p.167-169:4,11,37,38.

3.2 Determinants: Properties, homework: p.175-177:16,17,20,25,29,31,32,40.

Week 8.

4.1 Vector spaces and subspaces, homework: p.195-198:1,7,11,13,15,31.

4.2 Null Spaces, Column Spaces, Linear Transformations,
homework: p.205-207: 3,11,14,17,21,23,25.

Week 9.

4.3 Linear Independent Sets, Bases, homework: 213-215:3,4,9,11,13,15,23,24.

4.5 Dimension of Vector Spaces, homework: p.229-230:1,9,11,17,19.

- Review.

Week 10.

4.6 Rank, homework: p.236-238:2,5,7,10,13,27.

♠ Midterm 2, Thursday, November 3.

Week 11.

5.1 Eigenvalues and Eigenvectors, homework: p.271-273:2,3,7,13,17,19,23.

5.2 The Characteristic Equation, homework: p.279-281:2,5,12,15,20,21.

Week 12.

5.3 Diagonalization, homework: p.286-287: 1,4,5,9,11,23,24,31.

6.1 Inner Product and Orthogonality, homework: p.336-338: 5,10,13,15,17,20,25.

Week 13.

Thanksgiving recess.

Week 14.

6.2 Orthogonal Sets, homework: p.344-346:1,2,9,11,14,20,26,27.

6.4 Gram-Schmidt Process, homework: p.358-360:3,7,9.

Week 15.

7.1 Diagonalization of Symmetric Matrices, or other topics as time permits.

♡ For your enjoyment: Application of Linear Algebra to Google.

• Review.

Week of Finals.

♠ Final Exam (Tentative Time) Monday, May 4, 10-12, Place: TBA.

♡ Extra Office Hours will be scheduled before the Final Exam.