

Mathematics 2270

Fall, 2019 Course Outline

Week 1: (August 19-23)

Introduction/Syllabus
1.1 Systems of Linear Equations
1.2 Row reduction and Echelon forms

Week 2: (August 26-30)

1.3 Vector equations
1.4 Matrix equations
1.5 Solution sets of linear systems

Week 3: (September 2-6)

1.6 Applications of linear systems
1.7 Linear independence
1.8 Introduction to linear transformations

Week 4: (September 9-13)

1.9 The matrix of a linear transformation
2.1 Matrix operations
2.2 The inverse of a matrix

Week 5: (September 16-20)

2.3 Characterizations of invertible matrices
2.4 Partitioned matrices
2.5 Matrix factorizations

Week 6: (September 23-27)

3.1 Introduction to determinants
3.2 Properties of determinants
Midterm 1 (Wednesday and Friday)

Week 7: (September 30-October 4)

3.3 Cramer's rule, volume and linear transformations
4.1 Vector spaces and subspaces

Fall Break Week: (October 7-11)

Fall Break

Last Day to Drop: Friday, August 30
Last Day to Withdraw: Friday, October 18

Week 8: (October 14-18)

4.2 Null spaces, column spaces and linear transformations
4.3 Linearly independent sets and bases
4.4 Coordinate systems

Week 9: (October 21-25)

4.5 The dimension of a vector space
4.6 Rank
4.7 Change of basis

Week 10: (October 28-November 1)

5.1 Eigenvectors and eigenvalues
5.2 The characteristic equation
5.3 Diagonalization

Week 11: (November 4-8)

5.4 Eigenvectors and linear transformations
5.5 Complex eigenvalues
Midterm 2 (Wednesday and Friday)

Week 12: (November 11-15)

5.6 Discrete dynamical systems
6.1 Inner product, length and orthogonality
6.2 Orthogonal sets

Week 13: (November 18-22)

6.3 Orthogonal projections
6.4 Gram-Schmidt process
6.5 Least squares problems

Week 14: (November 25-29)

7.1 Diagonalization of symmetric matrices
7.2 Quadratic Forms
7.3 Constrained optimization

Week 15: (December 2-6)

Project 2 Poster Presentations
7.4 The singular value decomposition
Final Review

Extra Final Review:
Friday, December 6, 1:00 to 2:30 pm
Final Exam:
Monday, December 9, 10:30 am to 12:30 pm