



STARK STATE COLLEGE

GENERAL SYLLABUS

Course Information

Course Name: Linear Algebra
Course Number: MTH226

Required Materials

Textbook(s): Elementary Linear Algebra-8th edition; by Ron Larson
 Cengage Learning 2017;
 ISBN: 978-1-305-65800-4 (student edition); 978-1-305-95320-8 (loose-leaf edition)

Required Readings: none

Additional Materials: A graphing calculator is recommended but not required.

Course Outline/Calendar

The date of coverage and order of coverage may be modified based on the faculty member and events beyond the control of faculty members that interfere with class times and teaching.

Week	Chapter/Topic/Lab
1	Ch. 1 Systems of Linear Equations (Review) 1.1 Introduction to Systems of Linear Equations 1.2 Gaussian and Gauss-Jordan Eliminations 1.3 Applications of Systems of Linear Equations Ch. 2 Matrices (Review) 2.1 Operations with Matrices 2.2 Properties of Matrix Operations 2.3 The Inverse of a Matrix
2	2.4 Elementary Matrices 2.6 Some Applications of Matrix Operations Ch. 3 Determinants (Review) 3.1 The Determinant of a Matrix 3.2 Determinants and Elementary Operations 3.3 Properties of Determinants 3.4 Applications of Determinants

Week	Chapter/Topic/Lab
	Test #1 (Chapters 1, 2, 3)
3	Ch. 4 Vector Spaces 4.1 Vectors in \mathbb{R}^n 4.2 Vector Spaces 4.3 Subspaces of a Vector Space
4	4.4 Spanning Sets and Linear Independence 4.5 Basis and Dimension 4.6 Rank of a Matrix and Systems of Linear Equations
5	4.7 Coordinates and Change of Basis 4.8 Applications of Vector Spaces
6	Ch. 5 Inner Product Spaces 5.1 Length and Dot Product in \mathbb{R}^n 5.2 Inner Product Spaces
7	5.3 Orthonormal Bases: Gram-Schmidt Process (if time permits) 5.4 Mathematical Models and Least Square Analysis (if time permits)
8	5.5 Applications of Inner Product Spaces Test #2 (Chapters 4, 5)
9	Ch. 6 Linear Transformations 6.1 Introduction to Linear Transformations 6.2 The Kernel and Range of a Linear Transformation
10	6.3 Matrices for Linear Transformations 6.4 Transition Matrices and Similarity
11	6.5 Applications of Linear Transformations Ch. 7 Eigenvalues and Eigenvectors 7.1 Eigenvalues and Eigenvectors
12	7.2 Diagonalization 7.3 Symmetric Matrices and Orthogonal Diagonalization
13	7.4 Applications of Linear Transformations Ch. 8 Complex Vector Spaces. Abstract Vector Spaces 8.1 Complex Numbers (review) 8.2 Conjugates and Division of Complex Numbers (review)
14	8.3 Polar Form and DeMoivre's Theorem (review) 8.4 Complex Vector Spaces and Inner Products. Abstract Vector Spaces
15	Make up week (if time permits)
16	Final Exam Test #3 (Chapters 6, 7, 8)