Math 244-Syllabus

Text book: Elementary Linear Algebra with Supplemental Applications, 11th Edition By Howard Anton and Chris Rorres

Chapter 1

1.1 Introduction to Systems of Linear Equations

1.2 Gaussian Elimination

1.3 Matrices and Matrix Operations

1.4 Inverses and Algebraic Properties of Matrices

1.5 Elementary Matrices and a Method for Finding A^{-1}

1.6 More on Linear Systems and Invertible Matrices

1.7 Diagonal, Triangular and Symmetric Matrices

1.8 Matrix transformations **(From Definition 1 to the end of example 1 and from page 80 " A procedure for finding Standard Matrices" to the end of example 4)**

Chapter 2

2.1 Determinants by Cofactor Expansion

2.2 Evaluating Determinants by Row Reduction

2.3 Properties of the Determinants and Cramer's Rule

Chapter 4

4.1 Real Vector Spaces **(Exercise 11 to be solved in the lecture)**

4.2 Subspaces **(Theorem 4.2.6 is Not included)**

4.3 Linear Independence

<u>4.4</u> Coordinates and Basis (From Definition 1 to the end of the section)

<u>4.5</u> Dimension (Exercise 7 (d) is solved in the lecture),
<u>4.6</u> Change of Basis

<u>4.7</u> Row Space, Column Space and Null space

<u>4.8</u> Rank, Nullity and the Fundamental Matrix Spaces. (The concept of orthogonal complement is NOT included).

Chapter 5

<u>5.1</u> Eigenvalues and Eigenvectors

<u>5.2</u> Diagonalization (From "Geometric and Algebraic Multiplicity" (page 309) to the end of the section is Not included)

Chapter 6

<u>6.1</u> Inner Products (An Application of weighted Euclidean Inner Product (page 347), Example 3, Example 8, and Example 9 are Not included)

<u>6.2</u> Angle and Orthogonality in Inner Product Spaces (From "Orthogonal Complements" (page 359) to the end of the section is Not included)

<u>6.3</u> Gram–Schmidt Process; *QR*-**Decomposition** (From "Coordinates Relative to Orthonormal Bases" -page 366- to page 369 are Not included)

Chapter 8

8.2 General Linear Transformations (Examples 9, 17, 18 and 19 are not included)

8.4 Matrices for General Linear Transformations (Theorem 8.4.1 and Example 6 are not included)