

MATH 23a, FALL 2004
THEORETICAL LINEAR ALGEBRA AND MULTIVARIABLE
CALCULUS I

Texts: There are two required texts:

1. "Matrices and Linear Algebra," by Hans Schneider and George Phillip Barker (Dover, ISBN # 0-486-66014-1)
2. "Advanced Calculus of Several Variables," by C. H. Edwards, Jr. (Dover, ISBN # 0-486-68336-2)

More Detailed Syllabus:

Week 1	Schneider & Barker	Sect. 3.1	Vectors and Vector Spaces
	Edwards	Sect. 1.1	The Vector Space \mathbb{R}^n
Week 2	Schneider & Barker	Sect. 3.2	Subspaces and Linear Combinations
	Schneider & Barker	Sect. 3.3	Linear Dependence and Linear Independence
	Edwards	Sect. 1.2	Subspaces of \mathbb{R}^n
Week 3	Schneider & Barker	Sect. 3.4	Bases
	Schneider & Barker	Sect. 3.5	Bases and Representations
	Edwards	Sect. 1.4	Linear Mappings and Matrices
	Edwards	Sect. 1.5	The Kernel and Image of a Linear Map
Week 4	Schneider & Barker	Sect. 5.1	Definitions
	Schneider & Barker	Sect. 5.2	Representation of Linear Transformations
Week 5	Schneider & Barker	Sect. 1.1	Matrices: Definitions
	Schneider & Barker	Sect. 1.2	Addition and Scalar Multiplication of Matrices
	Schneider & Barker	Sect. 1.3	Matrix Multiplication
Week 6	Midterm		
Week 7	Schneider & Barker	Sect. 5.3	Representations under Change of Basis
	Schneider & Barker	Sect. 6.1	Introduction
Week 8	Schneider & Barker	Sect. 6.3	Similarity
	Schneider & Barker	Sect. 6.4	Algebraic and Geometric Multiplicities
	Schneider & Barker	Sect. 4.1	Introduction as a Volume Function
	Schneider & Barker	Sect. 4.2	Permutations and Permutation Matrices
	Schneider & Barker	Sect. 4.3	Uniqueness and Existence of the Determinant Function
	Edwards	Sect. 1.6	Determinants
Week 9	Schneider & Barker	Sect. 7.1	Inner Products
	Schneider & Barker	Sect. 7.2	Representation of Inner Products
	Schneider & Barker	Sect. 7.3	Orthogonal Bases
	Edwards	Sect. 1.3	Inner Products and Orthogonality
Week 10	Thanksgiving		
Week 11	Edwards	Appendix	The Completeness of \mathbb{R}
Week 12	Edwards	Sect. 1.7	Limits and Continuity
	Edwards	Sect. 1.8	Elementary Topology of \mathbb{R}^n