MATHEMATICS 2051 (Linear Algebra II) — Fall 2007
Course Outline

Unit 1: The Vector Space $\mathbb{R}^n$ (approx. 4 weeks)
- 1.1: Subspaces and Spanning (Section 5.1)
- 1.2: Independence and Dimension (Section 5.2)
- 1.3: Rank of a Matrix (Section 5.4)
- 1.4: Similarity and Diagonalization (Section 5.5)

Unit 2: Vector Spaces (approx. 3 weeks)
- 2.1: Basic Properties of Vector Spaces (Section 6.1)
- 2.2: Subspaces and Spanning Sets (Section 6.2)
- 2.3: Linear Independence and Dimension (Section 6.3)
- 2.4: Finite Dimensional Spaces (Section 6.4)

Unit 3: Orthogonality (approx. 3 weeks)
- 3.1: Basic Properties of Orthogonality (Section 5.3)
- 3.2: Orthogonal Complements and Projections (Section 8.1)
- 3.3: Orthogonal Diagonalization (Section 8.2)
- 3.4: Positive Definite Matrices (Section 8.3†)
- 3.5: Complex Matrices (Section 8.6†)

Unit 4: Linear Transformations (approx. 2 weeks)
- 4.1: Basic Properties of Linear Transformations (Section 7.1)
- 4.2: Kernel and Image of a Linear Transformation (Section 7.2)
- 4.3: Isomorphisms and Composition (Section 7.3†)
- 4.4: The Matrix of a Linear Transformation (Section 9.1†)

† These sections will be covered only as time permits.