

# Tentative Course Schedule

## Math 2270-001 (Summer 2005)

Day	Month	Date	Text Ref	Description
1	M	May 16	1.1 - 1.3	Review of (solutions of) linear systems of equations. Gauss-Jordan elimination. Matrix notation.
2	T	May 17	1.2, 2.4	Matrices. Matrix algebra.
3	W	May 18	2.4	Matrix algebra (cont'd). Comparison with usual arithmetic of numbers.
4	Th	May 19	2.3, 6.1	Matrix invertibility and computation of matrix inverses.
5	M	May 23	6.1	Row-echelon form. Rank and nullity of a matrix.
6	T	May 24	6.1	Determinants.
7	W	May 25	6.1, 6.2	Determinants (cont'd).
8	Th	May 26	4.1, 4.2	Vector spaces (or linear spaces). Linear transformations. Examples.
	M	May 30		<b>Memorial Day Holiday</b>
9	T	May 31	4.1, 4.2	Vector spaces (or linear spaces). Linear transformations. Examples.
10	W	June 1	3.2	Linear (in)dependence.
11	Th	June 2	3.2	Basis. Dimension.
12	M	June 6		<b>Test 1 (Linear systems of equations. Matrix algebra. Determinants.)</b>
13	T	June 7	3.3	Basis. Dimension. (Cont'd).
14	W	June 8	4.3	Matrix representatives of linear transformations w.r.t. chosen bases. Change of bases.
15	Th	June 9	4.3	Matrix representatives of linear transformations w.r.t. chosen bases. Change of bases. (Cont'd).
16	M	June 13	3.1, 3.2	Subspaces. Kernel, images, nullity, and rank of linear transformations.
17	T	June 14	3.3	Rank and Nullity Theorem
18	W	June 15	7.2, 7.3	Eigenvalues and eigenvectors of matrices and linear transformations.
19	Th	June 16	7.2	Characteristic polynomials. Algebraic multiplicity.
20	M	June 20	7.3	Eigenspaces. Geometric multiplicity.
21	T	June 21	7.3	Eigenspaces. Geometric multiplicity. Cont'd.
22	W	June 22	7.4	Diagonalization of matrices and linear transformations.
23	Th	June 23	7.4	Diagonalization of matrices and linear transformations. Cont'd.
24	M	June 27		<b>Test 2 (Linear spaces, linear transformations, matrix representatives, linear independence, rank, nullity)</b>
25	T	June 28	5.5	Inner product spaces. Transpose and conjugate transpose of matrices.
26	W	June 29	6.3	Geometric interpretation of the determinant: volume.
27	Th	June 30	6.3	Geometric interpretation of the determinant: volume (cont'd).
	M	July 4		<b>Independence Day Holiday</b>
28	T	July 5	5.1, 5.2	Orthogonality. Gram-Schmidt orthogonalization. QR-factorization.
29	W	July 6	5.1	Orthogonal sets. Orthonormal bases.
30	Th	July 7	5.4	Approximation. Orthogonal projection. Least-squares.
31	M	July 11		<b>Test 3 (Eigenvalues, eigenvectors, eigenspaces, diagonalization of linear transformations and matrices)</b>
32	T	July 12	5.4	Approximation. Orthogonal projection. Least-squares. Cont'd.
33	W	July 13	5.4	Data-fitting
34	Th	July 14	5.4	Data-fitting (cont'd).
35	M	July 18	8.1 - 8.3	Orthonormal diagonalization of linear maps between inner product spaces. Spectral Theorem.
36	T	July 19	8.1 - 8.3	Geometric meaning of orthonormal diagonalization.
37	W	July 20	8.1 - 8.3	Quadratic forms. Relation with symmetric bilinear forms. Symmetric matrices.
38	Th	July 21	8.1 - 8.3	Singular Values
	M	July 25		<b>Pioneer Day Holiday</b>
39	T	July 26		
40	W	July 27		
41	Th	July 28		
42	M	August 1		<b>Test 4 (Inner product spaces, orthogonality, Gram-Schmidt, approximation in inner product spaces, least-squares, data-fitting)</b>
43	T	August 2		
44	W	August 3		<b>Review. Classes end.</b>