

Daily Schedule for MATH 8530

August

Monday	Tuesday	Wednesday	Thursday	Friday
16	17	18 Welcome and class overview	19	(36:24) 20 Lecture 1.1 Vector spaces HW 0 due
(39:25) 23 Lecture 1.2 Spanning and linear independence	24	(63:20) 25 Lectures 1.3—1.4 Direct sums products, and quotients	26	(52:43) 27 Lecture 1.5—1.6 Duality HW 1 due

September

Monday	Tuesday	Wednesday	Thursday	Friday
(31:31) 30 Lecture 2.1 Rank and nullity	31	(38:40) 1 Lecture 2.2 Applications of the rank-nullity theorem	2	(35:23) 3 Lecture 2.3 Algebra of linear maps HW 2 due
(43:09) 6 Lecture 2.4 The four fundamental subspaces	7	(41:07) 8 Lecture 2.5 The transpose of a linear map	9	(62:59) 10 Lectures 2.6—2.7 The matrix of a linear map; change of basis HW 3 due
(58:03) 13 Lecture 3.1—3.2 Multilinear forms	14	(41:56) 15 Lecture 3.3 Alternating multilinear forms	16	(33:30) 17 Lecture 3.4 Determinant of a linear map HW 4 due
(65:12) 20 Lectures 3.5—6 Determinant and trace of a matrix	21	(56:25) 22 Lecture 3.7 Tensor products	23	(56:25) 24 Lecture 4.1 Eigenvalues and eigenvectors HW 5 due
(49:20) 27 Lecture 4.2 The Cayley-Hamilton theorem	28	(29:29) 29 Lecture 4.3 Generalized eigenvectors	30	(41:31) 1 Lecture 4.4 Invariant subspaces HW 6 due

October

Monday	Tuesday	Wednesday	Thursday	Friday
4 MIDTERM 1	5	(59:40) 6 Lectures 4.5—4.6 The spectral theorem and generalized eigenspaces	7	(??:??) 8 Lecture 4.7—4.8 Jordan canonical form; differential operators HW 7 due
11 FALL BREAK	12 FALL BREAK	(??:??) 13 Lecture 4.9 Rational canonical form	14	(41:52) 15 Lecture 5.1 Inner products and Euclidean structure HW 8 due
(48:14) 18 Lecture 5.2 Orthogonality	19	(52:29) 20 Lecture 5.3 Gram-Schmidt and orthogonal projection	21	(56:49) 22 Lecture 5.4—5.5 Adjoint and least squares HW 9 due
(32:19) 25 Lecture 5.6 Isometries	26	(47:06) 27 Lecture 5.7 Norms of linear maps	28	(??:??) 29 Lectures 5.8 Sequences, convergence, complex inner products HW 10 due

November

Monday	Tuesday	Wednesday	Thursday	Friday
1 MIDTERM 2	2	(29:54) 3 Lectures 5.9 Sequences, convergence, complex inner products	4	(36:11) 5 Lecture 6.1 Quadratic forms HW 11 due
(38:56) 8 Lecture 6.2 Spectral resolutions	9	(35:07) 10 Lecture 6.3 Normal linear maps	11	(53:09) 12 Lecture 6.4 The Rayleigh quotient HW 12 due
(44:50) 15 Lecture 6.5 Self-adjoint differential operators; Sturm-Liouville theory	16	(32:42) 17 Lecture 7.1 Positive definite and semi-definite maps	18	(44:50) 19 Lecture 7.2 Nonstandard inner products & Gram matrices HW 13 due
(??:??) 22 Lecture 7.3 Polar decomposition	23	24 THANKSGIVING BREAK	25	26 THANKSGIVING BREAK
(??:??) 29 Lecture 7.4 Singular value decomposition	30	(??:??) 1 Lecture 7.5 Partially ordering positive maps	2	(??:??) 3 Lecture 7.6 Monotone matrix functions HW 14 due