#	TOPICS	READINGS IN 5TH EDITION (in 4TH)	KEY DATES
1	The geometry of linear equations	1.1-2.1	
2	Elimination with matrices	2.2-2.3	
3	Matrix operations and inverses	2.4-2.5	
4	*LU* and *LDU* factorization	2.6	
5	Transposes and permutations	2.7	Problem set 1 due Do problems: 23 and 28 from section 1.2 4 and 13 from section 1.3 29 and 30 from section 2.1 20 and 32 from section 2.2 22 and 29 from section 2.3 32 and 36 from section 2.4 7 from section 2.5
6	Vector spaces and subspaces	3.1	
7	The nullspace: Solving Ax = 0	3.2	
8	Rectangular *PA* = *LU* and Ax = b	3.3 (3.3-3.4)	Problem set 2 due Do problems: 24 and 40 from section 2.5 13, 18, 25, and 26 from section 2.6 13, 36, and 40 from section 2.7 18, 23, 30, and 32 from section 3.1
9	Row reduced echelon form	3.3 (3.3-3.4)	
10	Basis and dimension	3.4 (3.5)	

11	The four fundamental subspaces	3.5 (3.6)	Problem set 3 due Do problems: 18, 24, 36, and 37 from section 3.2 19, 25, 27, and 28 from section 3.3. Problem 17 is optional but recommended 13, 25, 28, 35 (MATLAB recommended) and 36 from section 3.4
12	Exam 1: Chapters 1 to 3.4		
13	Graphs and networks	3.5, 10.1 (8.2)	
14	Orthogonality	4.1	Problem set 4 due Do problems: 2, 20, 37, 41, and 44 from section 3.5 11, 24, 28 (with challenge subpart), 30, and 31 from section 3.6
15	Projections and subspaces	4.2	
16	Least squares approximations	4.3	
17	Gram-Schmidt and $A = QR$	4.4	Problem set 5 due 7, 9, 31 (verify this with MATLAB on a 6 by 12 matrix), 32, and 33 from section 4.1 13, 16, 17, 30, 31, and 34 from section 4.2 13 (MATLAB allowed) and 17 from section 8.2
18	Properties of determinants	5.1	
19	Formulas for determinants	5.2	

20	Applications of determinants	5.3	Problem set 6 due Do problems: 4, 7, 9, 26 and 29 from section 4.3 10, 18, 35, and 36 from section 4.4 10, 18, 31, and 32 from section 5.1 (the last two will be treated as challenge problems)
21	Eigenvalues and eigenvectors	6.1	
22	Diagonalization	6.2	
23	Markov matrices	10.3 (8.3)	Problem set 7 due Do problems: 16, 32, and 33 from section 5.2 8, 28, 40, and 41 from section 5.3 19 and 29 from section 6.1 6, 16, and 37 from section 6.2 Challenge problem in MATLAB
24	*Review for exam 2*		
25	Exam 2: Chapters 1-5, 6.1-6.2, 8.2		
26	Differential equations	6.3	
27	Symmetric matrices	6.4	
28	Positive definite matrices	6.5	
29	Matrices in engineering	10.2 (8.1)	Problem set 8 due Do problems: 14, 24, 28, 29, and 30 from section 6.3 7, 10, 23, 28, and 30 from section 6.4 9, 12, and 16 (counts as a challenge problem, MATLAB allowed) from section 8.3
30	Similar matrices	6.2 (6.6)	

31	Singular value decomposition	7.1-7.2 (6.7)	Problem set 9 due Do problems: 25, 26, 27, 29, 32, 33, 34, and 35 from section 6.5 3, 5, 7, 10, and 11 from section 8.1 (last two count as challenge problems)
32	Fourier series, FFT, complex matrices	10.5, 9.2-9.3 (8.5, 10.2-10.3)	
33	Linear transformations	8.1-8.2 (7.1-7.2)	
34	Choice of basis	8.3 (7.3)	Problem set 10 due Do problems: 12, 14, 20, 22, 23, and 24 from section 6.6. 4, 11, and 17 from section 6.7. 4, 5, 12, and 13 from section 8.5 (last two count as challenge problems)
35	Linear programming	10.4 (8.4)	
36	*Course review*		
37	Exam 3: Chapters 1-8 (8.1, 2, 3, 5)		
38	Numerical linear algebra	11.1-11.3 (9.1-9.3)	
39	Computational science	(See the Web site for 18.085)	
40	Final exam		