Linear Algebra

Readings

The readings are assigned in: Strang, Gilbert. *Introduction to Linear Algebra*. 4th ed. Wellesley-Cambridge Press, 2009. ISBN: 9780980232714.

Reading assignments are also provided for the newer edition: Strang, Gilbert. *Introduction to Linear Algebra*. 5th ed. Wellesley-Cambridge Press, 2016. ISBN: 9780980232776.

SES #	TOPICS	READINGS IN 4TH EDITION	READINGS IN 5TH EDITION
1	The geometry of linear equations	1.1-2.1	1.1-2.1
2	Elimination with matrices	2.2-2.3	2.2-2.3
3	Matrix operations and inverses	2.4-2.5	2.4-2.5
4	*LU* and *LDU* factorization	2.6	2.6
5	Transposes and permutations	2.7	2.7
6	Vector spaces and subspaces	3.1	3.1
7	The nullspace: Solving Ax = 0	3.2	3.2
8	Rectangular *PA* = *LU* and Ax = b	3.3-3.4	3.3
9	Row reduced echelon form	3.3-3.4	3.3
10	Basis and dimension	3.5	3.4
11	The four fundamental subspaces	3.6	3.5
12	Exam 1: Chapters 1 to 3.4		
13	Graphs and networks	8.2	3.5, 10.1
14	Orthogonality	4.1	4.1
15	Projections and subspaces	4.2	4.2
16	Least squares approximations	4.3	4.3
17	Gram-Schmidt and *A* = *QR*	4.4	4.4
18	Properties of determinants	5.1	5.1
19	Formulas for determinants	5.2	5.2
20	Applications of determinants	5.3	5.3
21	Eigenvalues and eigenvectors	6.1	6.1
22	Diagonalization	6.2	6.2
23	Markov matrices	8.3	10.3
24	*Review for exam 2*		
25	Exam 2: Chapters 1-5, 6.1-6.2, 8.2		
26	Differential equations	6.3	6.3
27	Symmetric matrices	6.4	6.4
28	Positive definite matrices	6.5	6.5
29	Matrices in engineering	8.1	10.2
30	Similar matrices	6.6	6.2
31	Singular value decomposition	6.7	7.1-7.2

SES #	TOPICS	READINGS IN 4TH EDITION	READINGS IN 5TH EDITION
32	Fourier series, FFT, complex matrices	8.5, 10.2-10.3	10.5, 9.2-9.3
33	Linear transformations	7.1-7.2	8.1-8.2
34	Choice of basis	7.3	8.3
35	Linear programming	8.4	10.4
36	*Course review*		
37	Exam 3: Chapters 1-8 (8.1, 2, 3, 5)		
38	Numerical linear algebra	9.1-9.3	11.1-11.3
39	Computational science	See the Web site for 18.085	
40	Final exam		