

Syllabus for 18.06 Linear Algebra, Spring 2012

MWF 11-12 Room 54-100

Text: *Introduction to Linear Algebra, 4th Edition, Gilbert Strang*

**The three midterm exams will be held in Walker during lecture hours:
Closed-Book. All grading is by your recitation instructor!**

W	2/8	The Geometry of Linear Equations	1.1–2.1
F	2/10	Elimination with Matrices	2.2–2.3
M	2/13	Matrix Operations and Inverses	2.4–2.5
W	2/15	LU and LDU Factorization	2.6
F	2/17	Transposes and Permutations	2.7
T	2/21	Vector Spaces and Subspaces	3.1
W	2/22	The Nullspace: Solving $Ax = 0$	3.2
F	2/24	Rectangular $PA = LU$ and $Ax = b$	3.3–3.4
M	2/27	Row Reduced Echelon Form	3.3–3.4
W	2/29	Basis and Dimension	3.5
F	3/2	The Four Fundamental Subspaces	3.6
M	3/5	Graphs and Networks	8.2
W	3/7	Orthogonality	4.1 (and Review)
F	3/9	Exam 1: Chapters 1 to 3.5	
M	3/12	Projections and Subspaces	4.2
W	3/14	Least Squares Approximations	4.3
F	3/16	Gram-Schmidt and $A = QR$	4.4
M	3/19	Properties of Determinants	5.1
W	3/21	Formulas for Determinants	5.2
F	3/23	Applications of Determinants	5.3
M-F	3/26-30	HOLIDAY	
M	4/2	Eigenvalues and Eigenvectors	6.1
W	4/4	Diagonalization	6.2
F	4/6	Markov Matrices	8.3
M	4/9	<i>Review for Exam 2</i>	
W	4/11	Exam 2: Chapters 1–5, 6.1, 8.2	
F	4/13	Differential Equations	6.3
M	4/16	HOLIDAY	
W	4/18	Symmetric Matrices	6.4
F	4/20	Positive Definite Matrices	6.5
M	4/23	Matrices in Engineering	8.1
W	4/25	Similar Matrices	6.6
F	4/27	Singular Value Decomposition	6.7
M	4/30	Fourier Series, FFT, Complex Matrices	8.5, 10.2–10.3
W	5/2	Linear Transformations	7.1–7.2
F	5/4	<i>Course Review</i>	
M	5/7	Exam 3: Chapters 1–6, 8.1, 2, 3, 5	
W	5/9	Choice of Basis	7.3
F	5/11	Linear Programming	8.4
M	5/14	Numerical Linear Algebra	9.1–9.3
W	5/16	Computational Science	18.085
		Final Exam	