Syllabus for 18.06 Linear Algebra, Spring 2009

MWF 11–12 Room 54-100

The three midterm exams will be held in Walker during lecture hours (closed book). All grading questions should go to your recitation instructor!

W	2/4	The Geometry of Linear Equations	1.1–2.1
F	2/6	Elimination, Matrix Operations	2.2, 2.4
M	2/9	Elimination Matrices and Matrix Inverses	2.3, 2.5
W	2/11	$A = LU$ Factorization	2.6
F	2/13	Permutations, Dot Products, and Transposes	2.7
M	2/16	HOLIDAY (lecture on *Tuesday*)	
T	2/17	Vector Spaces and Subspaces	3.1
W	2/18	The Nullspace: Solving $Ax = 0$	3.2
F	2/20	Solving $Ax = b$ for nonsquare A, Row-reduced Echelon Form	3.3–3.4
M	2/23	Independence, Dimension, and Bases	3.5
W	2/25	The Four Fundamental Subspaces	3.6
F	2/27	Subspaces and Matrix Operations	
M	**3/2**	**Exam 1: Chapters 1 to 3.4**	
W	3/4	Graphs and Networks	8.2
F	3/6	Orthogonality and Subspaces (**Add Date**)	4.1
M	3/9	Projections	4.2
W	3/11	Least Squares Approximations	4.3
F	3/13	Orthonormal Bases, Gram-Schmidt, and $A = QR$	4.4
M	3/16	Fourier Series and Orthogonal Polynomials	8.5
W	3/18	Properties of Determinants	5.1
F	3/20	Formulas for Determinants; Jacobians	5.2–5.3
M–F	3/23–27	SPRING BREAK	
M	3/30	Exam Review	
W	**4/1**	**Exam 2: Chapters 1–5, 8.2, 8.5**	
F	4/3	Eigenvalues and Eigenvectors	6.1
M	4/6	Similar Matrices, Diagonalization, and Powers of A	6.6, 6.2
W	4/8	Markov Matrices	8.3
F	4/10	Differential Equations	6.3
M	4/13	Symmetric Matrices	6.4
W	4/15	Positive Definite Matrices	6.5
F	4/17	Defective Matrices: Jordan Forms and Generalized Eigenvectors	6.6
M	4/20	HOLIDAY	
W	4/22	Singular Value Decompositions	6.7
R	4/23	(**Drop Date**)	
F	4/24	Matrices in Engineering	8.1
M	4/27	Linear Operators on Functions	
W	4/29	Exam Review	
F	**5/1**	**Exam 3: Chapters 1–8 (8.1, 2, 3, 5)**	
M	5/4	Google PageRank; Principal Components Analysis	
W	5/6	Sparse Matrices and Iterative Methods	9.3
F	5/8	Numerical Linear Algebra	9.1–9.2
M	5/11	Complex Matrices and FFTs	10.1–3
W	5/13	Course Review	
M–F	**5/18–22**	**Final Exams**	