

**ENG EK 103: Computational Linear Algebra: Fall 2019 (planned) schedule**

Lec.	Date	Title	Reading	Notes
1	09.03.2019 (A1-A3)	Course introduction	Ch. 1.1	
	09.04.2019 (A4)	Vectors: basics and linear combinations		
2	09.05.2019 (A1-A3)	Vectors: inner products	Ch. 1.2,1.3, 2.4	
	09.09.2019 (A4)	Matrices: basic operations		
3	09.10.2019 (A1-A3)	Linear system of equations	Ch. 2.1, 2.2	
	09.11.2019 (A4)	Gaussian elimination		
4	09.12.2019 (A1-A3)	Elimination matrices	Ch. 2.3, 2.5	PS 1 due
	09.16.2019 (A4)	Matrix inverse		
5	09.17.2019 (A1-A3)	LU factorization	2.6, 2.7	
	09.18.2019 (A4)	Transposes and symmetric matrices		
6	09.19.2019 (A1-A3)	Introduction to vector spaces and subspaces	Ch. 3.1	PS 2 due
	09.23.2019 (A4)			
7	09.24.2019 (A1-A3)	Null space and homogenous solutions	Ch. 3.2	
	09.25.2019 (A4)			
8	09.26.2019 (A1-A3)	Complete solution to $Ax = b$	Ch. 3.3	PS 3 due
	09.30.2019 (A4)			
9	10.01.2019 (A1-A3)	Independence and spanning sets	Ch. 3.4	
	10.02.2019 (A4)	Basis and dimension		
10	10.03.2019 (A1-A3)	The four fundamental spaces	Ch. 3.5	PS 4 due
	10.07.2019 (A4)			
11	10.08.2019 (A1-A3)	Orthogonal complements + 4 fundamental spaces	Ch. 4.1	
	10.09.2019 (A4)	Exam 1: (through Lec. 8 (complete solution))		
12	10.10.2019 (A1-A3)	Exam 1: through Lec. 8 (complete solution)		
	10.15.2019 (A4)	Orthogonal complements + 4 fundamental spaces	Ch. 4.1	
13	10.17.2019 (A1-A3)	Projections	Ch. 4.2	PS 5 due
	10.16.2019 (A4)			
14	10.22.2019 (A1-A3)	Least squares	Ch. 4.3	
	10.21.2019 (A4)			
15	10.24.2019 (A1-A3)	Gram-Schmidt orthogonalization	Ch. 4.4	PS 6 due
	10.23.2019 (A4)	QR Factorization		
16	10.29.2019 (A1-A3)	Matrix determinants	Ch. 5.1-2	
	10.28.2019 (A4)			
17	10.31.2019 (A1-A3)	Evals and e vectors	Ch. 6.1	PS 7 due
	10.30.2019 (A4)			
18	11.05.2019 (A1-A3)	Evals and e vectors (redux)	Ch. 6.1	
	11.04.2019 (A4)			
19	11.07.2019 (A1-A3)	Matrix diagonalization	Ch. 6.2	PS 8 due
	11.06.2019 (A4)	Jordan form		
20	11.12.2019 (A1-A3)	Symmetric matrices	Ch. 6.4-5	
	11.11.2019 (A4)	Positive definite matrices		
21	11.14.2019 (A1-A3)	Exam 2: through Lec. 18 (e-vals/e-vectors)		
	11.13.2019 (A4)			
22	11.19.2019 (A1-A3)	Google PageRank	Ch. 10.3	
	11.18.2019 (A4)	Dominant e-vals/power method		
23	11.21.2019 (A1-A3)	SVD	Ch. 7.1	PS 9 due
	11.20.2019 (A4)			

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24	11.26.2019 (A1-A3) 11.25.2019 (A4)	SVD continued	Ch. 7.3	
25	12.03.2019 (A1-A3) 12.02.2019 (A4)	Change of basis Principal component analysis	Ch. 7.3, 8.2	PS 10 due
26	12.05.2019 (A1-A3) 12.04.2019 (A4)	Basic probability + statistics	Ch. 12.1	
27	12.10.2019 (A1-A3) 12.09.2019 (A4)	Final: review		PS 11 due
28	12.11.2019 (A4)	Application		