

Date	Main topics	Class topic	Suggested reading	Assignments
8/22/2016	Introduction	Introduction/motivation		
8/24/2016		Applications, curve fitting, terminology	Bishop 1.1; Hastie et al. 2.1-2.2	
8/29/2016		Models and complexity	Rissanen; Mohri et al. 2	
8/31/2016	Machine learning 101	Classification (nearest neighbor, least squares), decision theory	Hastie et al. 2.1-2.5	
9/5/2016		NO CLASS: Labor Day		
9/7/2016		Linear regression	Hastie et al. 3	
9/12/2016		Subset selection, shrinkage, linear classification	Hastie et al. 3.4, 4	
9/14/2016		LDA, logistic regression, clustering (Project 1)	Hastie et al. 4.3, 4.4, 14.3	
9/19/2016		Basis expansions, kernel methods	Hastie et al. 5.1-5.2	
9/21/2016	Scientific programming	Computational complexity	Cormen et al. 1, 2.1	
9/26/2016		Algorithm design, typical computer architectures, & parallel proces	Cormen et al. 1.3, 30	
9/28/2016		Basic data structures, graphs, and trees	Cormen et al. 5.4-5.5, 11.1-11.2	
10/3/2016		Putting it all together - coding & profiling	Matlab example entire class	Project 1
10/5/2016		Review (practice midterm)		
10/10/2016		Discussion of HW 1 and individual project		
10/12/2016	Sparse signal processing	Sparsty, bases		HW 1
10/17/2016		Frames, continuous time wavelets		
10/19/2016		not sure, maybe discussion of individual project?		HW 2 + some idea for individual project
10/24/2016		Wavelet frames, multiresolution approximation		
10/26/2016		Sparse signal acquisition & compressed sensing		HW 3
10/31/2016		Information theoretic performance limits & AMP	various papers provided	Project 2 + finalize idea for individual project
11/2/2016		AMP example	Matlab example entire class	
11/7/2016	Optimization	Dynamic programming		
11/9/2016		Linear programming		
11/14/2016		Convex optimization		
11/16/2016		EM algorithm		
11/21/2016	Dimensionality reduction	Principle components analysis		HW4
11/23/2016		NO CLASS: Thanksgiving		
11/28/2016		Project presentations		HW5?
11/30/2016		Project presentations		Individual project due
12/9/2016		Final	8-11 AM instead of normal time	