Date	Topic	Assignment	Bishop Chapter
1/23	**Course introduction** Machine Learning framework overview Regression & Classification. Bias-Variance.		1
1/28	**Linear Equations** Lagrange multipliers. Over determined and underdetermined equations Dual formulations		
1/30	**Principal Component Analysis** Coordinate transformations. Eigen values.	**Eigendigits classification**	
2/4	**Information Theory** Motivation. Huffman codes. KL divergence. Mutual information.		1
2/6	**Independent component Analysis** Blind source separation	**Audio De-mixing**	
2/11	**Basic Probability Theory** Bayes rule		1
2/13	**Probability distributions** Multivariate Normal distributions. Exponential family		2
2/18	**Sampling I** Analytical approaches. Basic sampling methods		11
2/20	**Sampling II** MCMC. Gibbs sampling		11
2/25	**Gaussian Process I** Introduction and rationale		6
2/27	**Gaussian Process II** Learning controlling parameters		6
3/4	**Support Vector Machines I** Dual transformation. Kernel trick	**Digits classification with SVMs**	7
3/6	**Support Vector Machines II** Inequality constraints. Coordinate descent optimization		7
3/11	**Machine Learning Theory**		
3/13	**MID-TERM EXAM**		
3/18	**BREAK**		
3/20	**BREAK**		
3/25	**Hidden Markov Models** Basic algorithms		13

Date	Topic	Assignment	Bishop Chapter
3/27	**Reinforcement Learning I** Basic algorithms: Value learning, policy learning, Q learning	**Reinforcement learning assignment**	
4/1	**Reinforcement Learning II** Modular approaches		
4/3	**Reinforcement Learning III** Model-free policy learning		
4/8	**Backpropagation** Basic mathematics.Recurrent connection methods		**5**
4/10	**Convolution networks**	**Deep Learning Assignment**	
4/15	**Deep Learning**		
4/17	**Deep Learning** Advanced concepts		
4/122	**Graphical Models I** Basic notation and network constraints	**Problem set**	**8**
4/24	**Graphical Models II** Inference		**8**
4/29	**Graphical Models III** Conditional random fields		**8**
5/1	**COURSE SUMMARY**		
5/6	Exam Preparation		
5/8	**FINAL EXAM**		