Topics to be covered and the textbook reference

Date	Topic	Reference
Aug 24, 2016	Introduction to machine learning	Lecture notes
Aug 27, 2016	Introduction to machine learning	Alpaydin Ch 1
Aug 30, 2016	Sum & product rules of probability, Bayes rule, densities	Bishop Sec 1.2
Aug 31, 2016	Expectation, covariance	Bishop Sec 1.2.1, 1.2.2
Sept 3, 2016	Bayesian probability, Gaussians	Bishop Sec 1.2.3, 1.2.4
Sept 6, 2016	Multivariate Gaussians and covariance	Class notes
Sept 7, 2016	Review	
Sept 10, 2016	Review	
Sept 13, 2016	Regression/curve fitting	Bishop Sec 1.1 & 1.2.5
Sept 14, 2016	Model selection and curse of dimensionality	Bishop Sec 1.3 and 1.4
Sept 17, 2016	Supervised learning: Learning a class from examples	Alpaydin Section 2.1
Sept 20, 2016	VC dimension, PAC learning, multiple classes	Alpaydin Sec 2.2-2.5
	Bayesian decision theory: classification	Alpaydin Sec 3.1, 3.2
Sept 24, 2016	losses & risks	Alpaydin Sec 3.3
Sept 27, 2016	Discriminant functions	Alpaydin Sec 3.4
	Utility theory, association rules	Alpaydin Sec 3.5-3.6
Oct 1, 2016	Parametric methods: Bernoulli and multinomial density	Alpaydin Sec 4.1 & 4.2
	parametric classification	Alpaydin Sec 4.5
	TEST I	
Oct 8, 2016	Discriminant functions	Bishop Sec 4.1.1-4.1.3
Oct 11, 2016	Vijaya Dashami	
Oct 15, 2016	Valmiki Jayanti	
Oct 18, 2016	Fisher's linear discriminant	Bishop Sec 4.1.4-4.1.6
	The perceptron algorithm	Bishop Sec 4.1.7
Oct 22, 2016	Fixed basis functions and logistic regression	Bishop Sec 4.3.1/4.3.2
Oct 25, 2016	Multivariate methods: Parameter estimation, missing values, multivariate normal	Alpaydin Sec 5.1-5.4
	Multivariate classification, tuning complexity, discrete features, regression	Alpaydin Sec 5.5-5.8
Oct 29, 2016	Naraka Chaturdasi	
Nov 1, 2016	Rajyotsava	
Nov 5, 2016	Dimensionality reduction: subset selection	Alpaydin Sec 6.1 & 6.2

Nov 8, 2016	Principal component analysis	Alpaydin Section 6.3
	Review	Class notes
Nov 12, 2016	TEST II	
Nov 15, 2016	Clustering: Mixture densities, K-Means	Alpaydin Sec 7.1-7.3
	Expectation-Maximization	Bishop Sec 9.1 & 9.2
Nov 19, 2016	Sup learning after clustering, hierarchical clustering	Alpaydin Sec 7.6 & 7.7
Nov 22, 2016	Cluster validity	Alpaydin Sec 7.8
	Non-parametric methods: density estimation	Alpaydin Sec 8.1- 8.2.2
Nov 26, 2016	K-nearest neighbour	Alpaydin Sec 8.2.3
Nov 29, 2016	Kernel methods: Dual rep., constructing kernels	Bishop Sect 6.1 & 6.2
	Radial basis functions	Bishop Sec 6.3
Dec 3, 2016	Optimal separating hyperplane	Alpaydin Sec 13.2
Dec 6, 2016	Non-separable case: soft margin hyperplane	Alpaydin Sec 13.3
	Review	Class notes
Dec 10, 2016	TEST III	
Dec 13, 2016	Decision trees, univariate trees	Alpaydin Sec 9.1
	Classification trees	Alpaydin Sec 9.2.1
Dec 17, 2016	Regression trees, pruning	Alpaydin Sec 9.2.2&9.3