

## BU BE562; MIT 6.047/6.878 Fall 2009 - Course Schedule

Lec	Date	Topic	Homework	Reading
1	Thu Sep 10	Intro: Biology, Algorithms, Machine Learning		J3.1-7;J2.8-10;D11
		Recitation1: Probability, Statistics, Biology	PS1	
2	Tue Sep 15	Global/local alignment/DynProg	(due 9/21)	D2.1-2.3;J6.4-6.9
3	Thu Sep 17	StringSearch/Blast/DB Search		J9.1-9.8
		Recitation2: Affine gaps alignment / Hashing with combs		
4	Tue Sep 22	Clustering/Basics/Gene Expression/Sequence Clustering	PS2	J10.1-10.3
5	Thu Sep 24	Classification/Feature Selection/ROC/SVM	(due 9/28)	
		Recitation3: Microarrays		
6	Tue Sep 29	HMMs1 - Evaluation / Parsing		D3.1-3.2
7	Thu Oct 01	HMMs2 - PosteriorDecoding/Learning		D3.3
		Recitation4: Posterior decoding review, Baum-Welch Learning	PS3	
8	Tue Oct 06	Generalized HMMs and Gene Prediction	(due 10/14)	
9	Thu Oct 08	Regulatory Motifs/Gibbs Sampling/EM		J4.4-4.9;J5.5;J12.2
		Recitation5: Entropy, Information, Background models		
	Tue Oct 13	No lecture, Columbus Day		
10	Thu Oct 15	Measuring natural selection in the human population (Pardis Sabeti)		P2
		Recitation 6: Gene Trees, Species Trees, Reconciliation	PS4	
11	Tue Oct 20	Phylogenetics, Molecular Evolution, and Measures of Selection	(due 10/23)	D7.1-7.5;P4
12	Thu Oct 22	Learning about population history from genetic data (David Reich)		P3
		Recitation 7: Population genomics		
13	Tue Oct 27	MIDTERM (Review Session ?? at ?pm)	Midterm	
14	Thu Oct 29	Next Generation Sequencing and Applications (Chip-Seq)	PS5a: Project	
		Recitation 8: Project Brainstorming	Proposal	
15	Tue Nov 03	ComparativeGenomics1:BiologicalSignalDiscovery/EvolutionarySignatures	(due 11/2)	
16	Thu Nov 05	ComparativeGenomics2:Phylogenomics, Gene and Genome Duplication	PS6:GrantReview	
17	Tue Nov 10	Epigenomics, Development, and Chromatin States	(due 11/9)	
	Wed Nov 11	Veterans Day Holiday	PS5b: Revised	
18	Thu Nov 12	Conditional Random Fields/Gene Finding/Feature Finding	Project	
			Proposal	
19	Tue Nov 17	Metabolic Modeling 1 - Dynamic systems modeling	(due 11/16)	
20	Thu Nov 19	Metabolic Modeling 2 - Flux balance analysis & metabolic control analysis		
21	Tue Nov 24	Regulatory Networks/Bayesian Networks		J8.1-8.2;P1
	Thu Nov 26	Thanksgiving Break		
22	Tue Dec 01	Guest Lecture - Human Microbiome Project	Final Project	
23	Thu Dec 03	Guest Lecture - Synthetic Biology	(Write-up due:	
24	Tue Dec 08	Short guest lectures by Grad Students and Postdocs in Comp. Biology	12/7 at 8pm)	
25	Thu Dec 10	Final Presentations - Part I (11am)		
26	Thu Dec 10	Final Presentations - Part II (4pm)		