

Quantitative Genomics - Spring 2016 Version 4, posted March 8

Please note that we reserve the right to alter this schedule and reading assignments: this schedule will also be updated regularly on the class website.

Date	Topic / Assignments	Lecture	Reading	Week
Jan. 28	INTRODUCTION	<i>Goals of quantitative genomics</i>		1
Feb. 2	PROBABILITY AND STATISTICS HW #1 - Assigned	<i>Intro. to probability I</i>		2
Feb. 4		<i>Intro. to probability II</i>	Supplementary Reading #1: Intro. to R	
Feb. 9	HW #1 - Due HW #2 - Assigned	<i>Expectations, variances, covariances, and probability models</i>	Supplementary Reading #2: Matrix Basics	3
Feb. 11		<i>Samples and statistics</i>		
Feb. 16	HW #2 - Due	<i>No Class!!</i>		4
Feb. 18	HW #3 - Assigned Feb. 19	<i>Introduction to estimation</i>	Supplementary Reading #3: Intro. to estimation	
Feb. 23		<i>Maximum likelihood estimators</i>		5
Feb. 25	HW #3 - Due Feb. 26	<i>Introduction to hypothesis testing I</i>	Supplementary Reading #4: Intro. to HT	

March 1	HW #4 - Assigned			6
March 3	MAPPING: INTRO	<i>Introduction to hypothesis testing II</i>		
March 8	MAPPING: GWAS HW #4 - Due HW #5 - Assigned	<i>Quantitative genomic analysis I: introduction and inference</i>		7
March 10		<i>Genome-Wide Association Studies (GWAS) I: continuous traits</i>		
March 15	HW #5 - Due Midterm Assigned (!!) 11:59PM, Tues. March 15	<i>Genome-Wide Association Studies (GWAS) II: population genetics</i>		8
March 17	Midterm Due: 11:59PM, Fri. March 18!!	<i>Genome-Wide Association Studies (GWAS) III: statistical and experimental issues</i>		
March 22		<i>No Class!!</i>		9
March 24		<i>No Class!!</i>		
March 29	Spring break	<i>No Class!!</i>		10
March 31	Spring break	<i>No Class!!</i>		
April 5	HW #6 - Assigned	<i>Genome-Wide Association Studies (GWAS) IV: logistic regression 1 (the model)</i>		11
April 7		<i>Genome-Wide Association Studies (GWAS) V: logistic</i>		

		<i>regression II (IRLS algorithm) and Generalized Linear Models</i>		
April 12	HW #6 - Due	<i>Genome-Wide Association Studies (GWAS) VII: haplotypes and haplotype testing</i>		12
April 14	Project Assigned	<i>Genome-Wide Association Studies (GWAS) VIII: covariates I and QQ plots</i>		
April 19		<i>Genome-Wide Association Studies (GWAS) IX: covariates II and population structure</i>		13
April 21		<i>Genome-Wide Association Studies (GWAS) X: minimum GWAS analysis and random covariates</i>		
April 26	MAPPING LOCI: BAYESIAN ANALYSIS	<i>Genome-Wide Association Studies (GWAS) X: Alternative tests / epistasis</i>		14
April 28		<i>Bayesian inference I: inference basics / linear models</i>		
May 3		<i>Bayesian inference II: MCMC algorithms</i>		15
May 5	PEDIGREE / INBRED LINE ANALYSIS / CLASSIC QUANTITATIVE GENETICS	<i>Basics of linkage analysis / Inbred line analysis</i>		
May 10	Project Due	<i>Heritability and additive genetic variance</i>		16