

Quantitative Genomics - Spring 2017 Version 2, April 11

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. 26	INTRODUCTION	<i>Goals of quantitative genomics</i>		1
Jan. 31	PROBABILITY AND STATISTICS HW #1 - Assigned (Feb. 1)	<i>Intro. to probability I</i>		2
Feb. 2		<i>Intro. to probability II</i>	Supplementary Reading#1: Intro. to R	
Feb. 7	HW #1 - Due HW #2 - Assigned	<i>Expectations, variances, covariances, and probability models</i>	Supplementary Reading #2: Matrix Basics	3
Feb. 9		<i>Samples and statistics</i>		
Feb. 14	HW #2 - Due HW #3 - Assigned	<i>Introduction to estimation</i>	Supplementary Reading#3: Intro. to estimation	4
Feb. 16		<i>Maximum likelihood estimators</i>		
Feb. 21		<i>No Class!! (Fall Break)</i>		5
Feb. 23	HW #3 - Due HW #4 - Assigned	<i>Introduction to hypothesis testing I</i>	Supplementary Reading#4: Intro. to HT	

Feb. 28		<i>Introduction to hypothesis testing II</i>		6
March 2	MAPPING: GWAS	<i>Quantitative genomic analysis I: introduction and inference</i>		
March 7	HW #4 - Due HW #5 - Assigned	<i>Quantitative genomic analysis II: introduction and inference</i>		7
March 9		<i>Genome-Wide Association Studies (GWAS) I: continuous traits</i>		
March 14		<i>Class Cancelled (!!)</i>		8
March 16	HW #5 - Due HW #6 - Assigned	<i>Genome-Wide Association Studies (GWAS) II: population genetics</i>	<i>Genome-Wide Association Studies (GWAS) III: statistical and experimental issues</i>	
March 21		<i>No Class!!</i>		9
March 23	HW #6 - Due	<i>No Class!!</i>	<i>Genome-Wide Association Studies (GWAS) IV: logistic regression 1 (the model)</i>	
March 28	Midterm Assigned (!!) 11:59PM, Tues. March 28	<i>Genome-Wide Association Studies (GWAS) III: statistical and experimental issues</i>		10
March 30	Midterm Due: 11:59PM, Fri. March 30!!	<i>Genome-Wide Association Studies (GWAS) IV: covariates I and QQ plots and population structure</i>		

April 4	Spring break	<i>No Class!!</i>		11
April 6	Spring break	<i>No Class!!</i>		
April 11		<i>Genome-Wide Association Studies (GWAS) IV: logistic regression 1 (the model)</i>		12
April 13	Project Assigned	<i>Genome-Wide Association Studies (GWAS) V: logistic regression II (IRLS algorithm and GLMs)</i>		
April 18		<i>Genome-Wide Association Studies (GWAS) X: Haplotype testing, alternative tests, and minimum GWAS analysis</i>		13
April 20		<i>Advanced topics I: Mixed Models</i>		
April 25		<i>Advanced topics II: Multiple regression (epistasis) and multivariate regression</i>		14
April 27	MAPPING LOCI: BAYESIAN ANALYSIS	<i>Bayesian inference I: inference basics / linear models</i>		
May 2		<i>Bayesian inference II: MCMC algorithms</i>		15
May 4	PEDIGREE / INBRED LINE ANALYSIS / CLASSIC QUANTITATIVE GENETICS	<i>Basics of linkage analysis / Inbred line analysis</i>		
May 9	Project Due	<i>Heritability and additive genetic variance</i>		16