Syllabus
Integrative Biology 161 – Spring 2013
Population and Evolutionary Genetics (4 units)

Lectures: 11:00-12:30 AM Tuesdays and Thursdays, 3106 Etcheverry until 1/29 – thereafter 155 Donner Lab.

Instructor: Rasmus Nielsen
Email: rasmus_nielsen@berkeley.edu
Office: 4098 VLSB
Office Hours: Mon 4-5, Tue 3-4

Instructor: Montgomery Slatkin
Email: slatkin@berkeley.edu
Office: 4155 VLSB
Office hours: Tue 3-4, Wed 3-4

GSI: Benjamin Peter
Email: bp@berkeley.edu
Office: 3056 VLSB
Office Hours: Wed 4-5

GSI: Jeremy Chase Crawford
Email: jcrawford@berkeley.edu
Office: 3056 VSLB
Office hours: Mon 3-4

Population genetics provides the theoretical foundation for modern evolutionary thinking. It also provides a basis for understanding genetic variation within populations. We will study population genetic theory and use it to illuminate a number of different topics, including the existence of sex, altruism and cooperation, genome evolution speciation, and human genetic variation and evolution.

Prerequisites Bio 1B and Math 16A, or equivalent.

Course Format The course consists of 3 hours of lectures (TuTh 11:00 – 12:30 pm) and two hours of computer exercises and/or discussion each week.

Text This year we will use a draft of our own textbook as a text for this course. The book has been posted on bspace.

Requirements and Grading Attendance at lectures and participation in classroom discussions and computer exercises is required of all students enrolled. The computer labs will account for 20% of the final grade.

There will be two mid-term exams, which each will account for 20% of the final grade. 40% of your grade will be based upon the final examination. The midterms and final are closed book examinations. You can bring no notes, books, calculators, cell phones, or any other electronic communication devices. The final is cumulative with most weight on the material from the last third of the semester. Grading will be done on a curve with a B-average among enrolled undergraduate students.

Tentative Lecture Schedule

Lecture	Date	Topic	
1	1/22	Genetic variation	RN
2	1/24	Genetic variation	RN
3	1/29	Genetic drift	RN
4	1/31	Genetic drift	RN
5	2/5	Coalescent	RN
6	2/7	Coalescent	RN
7	2/12	Population subdivision	RN
8	2/14	Population subdivision	RN
9	2/19	Inference in population genetics	RN
10	2/21	Inference in population genetics	RN
	2/26	Midterm 1	
11	2/28	Linkage disequilibrium	MS
12	3/5	Linkage disequilibrium	MS
13	3/7	Natural selection	MS
14	3/12	Natural selection	MS
15	3/14	Selection and genetic drift	MS
16	3/19	Selection and genetic drift	MS
17	3/21	Selection and genetic drift	MS
	3/25-29	*Spring Break*	
18	4/2	Testing for selection	RN
19	4/4	Testing for selection	RN
	4/9	Midterm 2	
20	4/11	Selection II	MS
21	4/16	Selection II	MS
22	4/18	Selection II	MS
23	4/23	Quantitative genetics	MS
24	4/25	Quantitative genetics	MS
25	4/30	Neanderthal genomics	MS
26	5/2	Selection in human populations	RN
Final	5/16	8-11 AM, exam group 13	