

## BIOL SCI 393 (Spring 2017) Genetic Analysis

### **Program in Biological Sciences Biol. Sci. 393: Genetic Analysis**

Lectures: Tues. and Thurs. 9:30 - 10:50 AM, Tech L170  
Exams: Midterm (April 25, 9:30 - 10:50 AM), Final (Tues. 6/6, 12 - 2 PM, Room Tech L170)  
Instructor: Erik Andersen, Department of Molecular Biosciences, Cook 3125,  
email: erik.andersen@northwestern.edu, Office hours F 2-3 PM in Cook 3118  
TA: Shannon Brady, Department of Molecular Biosciences and IBiS, Cook 3117,  
email: ShannonBrady2014@u.northwestern.edu, Office hrs F 1-2 PM, Cook 3118  
Textbook: Introduction to Genetics Analysis by Griffiths *et al.* 11th edition  
Website: bio393.andersenlab.org

### **Course Format**

This course will have lectures on Tuesdays and Thursdays from 9:30 to 10:50 AM. On Fridays, we will have recitation to go through questions from lectures or problem sets from 1-3 PM. Problem sets are due on Fridays at 3 PM outside Cook 3125. They will be graded for completion not for correct answers. In other words, it is acceptable to get questions incorrect as long as you try to solve them. Participation in lecture is required. The course will have five problem sets, one midterm, and a final examination.

### **Problem sets**

Problem sets will be distributed on Tuesdays approximately two weeks before the Friday problem-solving session. Students must turn in their completed problem sets at 3 PM on Fridays outside Cook 3125. On Fridays, we will have recitation to go through questions from lectures or problem sets from 1-3 PM in Cook 3118. Problem sets are meant to be difficult and take time to complete. Oftentimes, problems will become easier with iterative attempts. I strongly encourage students to work independently.

### **Grading**

Each examination will cover material from the preceding lectures and problem sets. Successive exams assume you remember concepts and methods discussed earlier in the course. No make-up exams will be given. Problem sets are graded for completion. Full points are awarded for completed problem sets due on Friday. Students can bring notes written on a single 8.5x11 inch sheet of paper (both sides if needed) to the exams.

Point distribution		
<b>Problem sets</b>	30%	100 points (20 pts each)
<b>Participation</b>	10%	33 points
<b>Midterm</b>	30%	100 points
<b>Final</b>	30%	100 points

Any student with a disability requesting accommodations is required to register with AccessibleNU ([accessiblenu@northwestern.edu](mailto:accessiblenu@northwestern.edu); [847-467-5530](tel:847-467-5530)) and present an accommodation letter from AccessibleNU to the course instructor, preferably within the first two weeks of class. All information will remain confidential.

All work submitted for this class must be your own. Suspected violations of academic integrity will be reported to the Dean's Office. For more information on Northwestern policies on academic integrity, see <http://www.weinberg.northwestern.edu/handbook/integrity/index.html>.

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<b>Date</b>	<b>Lecture topic</b>
Tues. March 28	Mendelian Inheritance, Basic probability, PS#1 out
Thurs. March 30	Chromosome theory, recombination, and mapping
Tues. April 4	Screens, selections, mutants, and dosage
Thurs. April 6	Complementation, PS#1 due on F
Tues. April 11	Enhancement and suppression, PS#2 out
Thurs. April 13	Genetic interactions: epistasis
Tues. April 18	Principles and methods of genetic analysis I
Thurs. April 20	Principles and methods of genetic analysis II, PS#2 due on F
Tues. April 25	MIDTERM EXAMINATION
Thurs. April 27	Developmental genetics I, PS#3 out
Tues. May 2	Developmental genetics II
Thurs. May 4	Behavioral genetics, PS#3 due on F
Tues. May 9	Variation and allele frequency spectrum, PS#4 out
Thurs. May 11	Pedigrees and phase
Tues. May 16	Linkage mapping and LOD scores
Thurs. May 18	Linkage disequilibrium and pop. structure
Tues. May 23	Complex traits and GWAS
Thurs. May 25	Human genetics and the future, class discussion
Tues. May 30	NO CLASS for Reading week
Thurs. June 1	NO CLASS for Reading week, Office hours, PS#4 due on F
Thurs. June 8	FINAL EXAMINATION, 12-2 PM, Room Tech L170