

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

Lectures: MWF 2:00 PM - 2:50 AM, Tech M128  
Discussion F 3:00 PM - 3:50 PM, Tech M128  
Exams: Midterm (May 1, 2-4 PM), Final (June 10, 3-5 PM)  
Instructor: Erik Andersen, Department of Molecular Biosciences, Cook 3125,  
email: erik.andersen@northwestern.edu, Office hours M 3-4 PM Cook 4123  
TA: Daniel Cook, Department of Molecular Biosciences and IBiS, Cook 3123,  
email: DanielCook2013@u.northwestern.edu, Office hours W 3-4 PM Cook 4123  
Textbook: Introduction to Genetics Analysis by Griffiths *et al.* 10th edition  
Website: www.andersenlab.org/bio393

### **Course Format**

This course will have lectures on Mondays and Wednesdays. On Fridays, the class will alternate between quizzes and problem-solving sessions. Participation in lecture and Friday discussions is required. The course will have four quizzes, four problem sets, one midterm, and a final examination.

### **Problem sets and quizzes**

Problem sets will be distributed on Mondays nearly two weeks before the problem-solving session. Students must turn in their completed problem sets and be prepared to work through the problems in class on Fridays. Problem-solving sessions are also meant to discuss questions about the lecture material. Quizzes will assess student progress through basic concepts. Students can take each of the quizzes twice to improve scores. Students will receive their graded quizzes in the following lecture.

### **Grading**

Each examination and quiz will cover material from the preceding lectures, quizzes, and problem sets. Successive exams and quizzes assume you remember concepts and methods discussed earlier in the course. No make-up exams or quizzes will be given. If you get 80% or greater on a quiz, you receive all 20 points. If you get less than 80% on a quiz the first time through, you may take the quiz again on the next scheduled quiz day. If you receive less than 80% the second time through, you will receive that score for the quiz. Problem sets are not graded. Full points are awarded for completed problem sets due on Friday and the student participates in the class discussion on Friday.

Point distribution		
<b>Problem sets</b>	15%	60 points (15 pts each)
<b>Quizzes</b>	20%	80 points (20 pts each)
<b>Participation</b>	5%	20 points
<b>Midterm</b>	30%	120 points
<b>Final</b>	30%	120 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>.

**BIOL SCI 393 (Spring 2015) Genetic Analysis**

<b>Date</b>	<b>Lecture topic</b>
Mon. March 30	Mendelian Inheritance, Basic probability, PS#1 out
Wed. April 1	Chromosome theory, mitosis, and meiosis
Fri. April 3	QUIZ #1
Mon. April 6	Recombination and mapping
Wed. April 8	Screens, selections, mutants, and dosage
Fri. April 10	PROBLEM SET #1 Due
Mon. April 13	Complementation, PS#2 out
Wed. April 15	Genetic interactions: epistasis
Fri. April 17	QUIZ #2
Mon. April 20	Genetic interactions: enhancement and suppression
Wed. April 22	Principles and methods of genetic analysis I
Fri. April 24	PROBLEM SET #2 Due
Mon. April 27	Principles and methods of genetic analysis II, PS#3 out
Wed. April 29	Principles and methods of genetic analysis III
Fri. May 1	MIDTERM EXAMINATION
Mon. May 4	Developmental genetics I
Wed. May 6	Developmental genetics II
Fri. May 8	PROBLEM SET #3 Due
Mon. May 11	Behavioral genetics
Wed. May 13	Model organisms in genetics (from cells to humans)
Fri. May 15	QUIZ #3
Mon. May 18	Human variation and allele frequency spectrum
Wed. May 20	Pedigrees and linkage mapping
Fri. May 22	PROBLEM SET #4 Due
Mon. May 25	Linkage disequilibrium and population structure
Wed. May 27	Complex traits and GWAS
Fri. May 29	QUIZ #5
Mon. June 1	Epigenetics and transgenerational effects
Wed. June 3	Genome sequencing, exome sequencing, and what do we do with these data
Fri. June 5	PROBLEM SET #5 Due
Wed. June 10	FINAL EXAMINATION, 3-5 PM, Room TBD