

## BIOL SCI 393 (Spring 2019) Biomedical Genetics

### Program in Biological Sciences Biol. Sci. 393: Biomedical Genetics

Lectures: Monday, Wednesday, Friday 10:00 - 10:50 AM, Lunt Hall 107  
Exams: Midterm#1 (Wed., April 17, 10:00-10:50 AM)  
Midterm#2 (Mon., May 6, 10:00-10:50 AM)  
Final (Wed., June 5th, 1-3 PM), Cook Hall 3118  
Instructor: Erik Andersen, Department of Molecular Biosciences, Pancoe 4115  
email: erik.andersen@northwestern.edu, Office hours F 3-5 PM in Silverman 3150  
Textbook: Introduction to Genetics Analysis by Griffiths *et al.* 11th edition  
Website: bio393.andersenlab.org

### Course Format

This course will have lectures on Mondays, Wednesdays, and Fridays from 10:00 to 10:50 AM. On Fridays, we will have optional office hours to go through questions from lectures or problem sets from 3-5 PM. Participation in lecture is required. The course will have seven problem sets, two midterms, and a final examination. We will have an optional Genetics escape room during reading week. Participation is not required.

### Problem sets

Problem sets will be posted on the class website on Sundays before the Friday problem-solving session. They are due at 5 PM on Fridays outside Pancoe 4115. 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. *Problem sets will be graded for completion not for correct answers.* It is acceptable to get questions incorrect as long as you try to solve them.

### 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. 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>	22%	56 points (8 pts each)
<b>Participation</b>	3%	8 points
<b>Midterms</b>	50%	128 points (64 pts each)
<b>Final</b>	25%	64 points

Any student with a disability requesting accommodations is required to register with AccessibleNU ([accessiblenu@northwestern.edu](mailto:accessiblenu@northwestern.edu); 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.

Students can find useful resources for safety and security, academic support, and mental and physical health and well-being at the NUhelp website and app.

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>
Mon. Apr. 1	Mendelian Inheritance, Basic probability
Wed. Apr. 3	Chromosome theory, recombination, and mapping I
Fri. Apr. 5	Chromosome theory, recombination, and mapping II, Problem set #1 due
Mon. Apr. 8	Screens, selections, mutants, and dosage
Wed. Apr. 10	Complementation
Fri. Apr. 12	Enhancement and suppression I, Problem set #2 due
Mon. Apr. 15	Enhancement and suppression II
Wed. Apr. 17	MIDTERM #1 (covers first third of class)
Fri. Apr. 19	Genetic interactions: epistasis I, No problem set after midterm
Mon. Apr. 22	Genetic interactions: epistasis II
Wed. Apr. 24	Principles and methods of genetic analysis I
Fri. Apr. 26	Principles and methods of genetic analysis II, Problem set #3 due
Mon. Apr. 29	Principles and methods of genetic analysis III
Wed. May 1	Developmental genetics
Fri. May 3	Behavioral genetics, Problem set #4 due, Office hours in Silverman 4150
Mon. May 6	MIDTERM #2 (covers second third of class)
Wed. May 8	Variation and allele frequency spectrum I
Fri. May 10	Variation and allele frequency spectrum II, Problem set #5 due
Mon. May 13	Pedigrees and phase I
Wed. May 15	Pedigrees and phase II
Fri. May 17	Linkage mapping and LOD scores, Problem set #6 due
Mon. May 20	Linkage disequilibrium and pop. structure
Wed. May 22	Complex traits, GWAS
Fri. May 24	NO CLASS, Memorial Day break
Mon. May 27	NO CLASS, Memorial Day
Wed. May 29	Human genetics and the future
Fri. May 31	Make-up, Genetics Escape Room Pre-test, Review, Problem set #7 due
Mon. Jun. 3	NO CLASS, 10 AM - noon, Genetics Escape Room (optional), Silverman 2150
Wed. Jun. 5	NO CLASS, 10 AM - 10:50 AM, Review session (optional), Lunt 107
Fri. Jun. 7	10 AM - 12 PM, FINAL EXAMINATION (covers last third of class), Cook 3118