Course Policies

Lecture: Tues & Thurs 11:00 am - 12:15 pm, 128 Wilson Hall
Recitation: Fridays, 2:30 - 3:20 pm, 128 Wilson Hall
Instructors: See Sakai site

BIOL/GNET 621 is an upper-level genetics course intended for graduate students and advanced undergraduates. Undergraduates must have taken BIOL 202 or the equivalent; there are no prerequisites for graduate students. The course covers genetic principles and tools through lectures, reading of research articles, and discussion. We have not assigned a textbook, but you may wish to consult one if you need to review introductory genetics. Any textbook used for BIOL 202 is okay.

Grading

Final grades will be based on:

• 36% Exams: two midterms and a comprehensive final
• 40% Problem sets
• 24% Recitation (participation and paper presentation)

Exams

There will be two in-class midterm exams. Each will be 100 points and count for 8% of your final grade. There will also be a comprehensive final exam that will have 150 points from the final third of the course and 50 points from each of the 1st and 2nd parts; it will be 20% of the final grade.

Exams will consist of questions similar to those on problem sets, and are meant to emphasize conceptual understanding of genetics. No makeup exams will be given; this includes the final! We are required to have a final exam at the time scheduled by the University. If your other courses decide to have an exam at some time of the instructors’ choosing and it conflicts with this final, you must arrange for a different time with the other instructor.

Paper presentation

One or two original research papers will be assigned as reading to accompany each lecture. Each week, a group of 2-3 students will present one of these papers during recitation. Dates will be assigned/chosen at the first recitation meeting. Your presentation counts as 12% of your grade.

When other students are presenting, you will be expected to pay attention and contribute to discussion by asking or answering questions (yes, asking questions counts, too, even questions about not understanding parts of the article – it’s important to be willing to do this), responding to comments by other students, explaining figures or text from the article being discussed, etc. 12% of your grade will be based on your participation in recitation.

Problem Sets

Problem sets will be assigned most weeks. These will include problems and questions about the lectures and reading. You are encouraged to work collaboratively to solve the problems, but each student must write and turn in his or her own answers. You can turn them in at class or post them to Sakai through the Assignment tool. Problem sets will be graded and returned. Late problem sets will not be accepted. Problem sets count as 40% of your grade.

Diversity Statement

The instructors of this course value the perspectives of individuals from all backgrounds reflecting the diversity of our students. We broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, political background, and physical and learning ability. We strive to make this classroom an inclusive space for all students.
Part I: Genetic Principles (Copenhaver)

Aug 20 Tues Introduction, DNA & chromosome structure

22 Thurs Meiosis & mitosis

23 Fri Discussion (TAs present first paper)

27 Tues Mendelian basics
Tory et al. (2104) Mutation-dependent recessive inheritance of NPHS2-associated steroid-resistant nephrotic syndrome. Nature Genetics 46(3) 299-304. doi:10.1038/ng.2898

29 Thurs Molecular biology basics

30 Fri Discussion

Sept 3 Tues Recombination


5 Thurs Chromosome aberrations

6 Fri Discussion

10 Tues Linkage and mapping
Kirby et al. (2013) Mutations causing medullary cystic kidney disease type 1 lie in a large VNTR in MUC1 missed by massively parallel sequencing. Nature Genetics 45(3) 299-305. doi:10.1038/ng.2543

12 Thurs Pedigrees, tetrads & LODs

13 Fri No Discussion due to Genetics Retreat

17 Tues Association mapping

19 Thurs Exam I

20 Fri No discussion this week

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<td>4</td>
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<td>Fri</td>
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Part III: Non-Mendelian Genetics (Ahmed)

Nov 5 Tues DNA transposons  

7 Thurs Retrotransposons  

8 Fri Discussion

12 Tues Gene targeting  

14 Thurs RNAi I  

15 Fri Discussion

19 Tues RNAi II  

21 Thurs Non-Mendelian inheritance  

22 Fri Discussion

26 Thurs Epigenetics I  

28 Thurs THANKSGIVING

29 Fri THANKSGIVING

Dec 3 Tues Epigenetics II  


12 Thurs CUMMULATIVE FINAL EXAM 12:00 – 3:00 pm

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