BICD 100 Genetics
Spring 2010
B00

Professor: Emily Troemel
Lectures: Tuesday and Thursday 8 am – 9:20 am
Location: Warren Lecture Hall 2001
Textbook: *Essentials of Genetics* by Klug, Cummings, Spencer, Palladino. Seventh Edition, 2010, Benjamin Cummings.

Goals: Genetics is central to modern biology. Genes provide the basis of inheritance for all life forms, from bacteria to humans. Genetic variation influences human biology and disease. We will explore how genes were discovered, how they are studied, and how they are used to analyze and manipulate biological function. We will use quantitative approaches to solving problems in classical and population genetics. We will also touch on more modern genetic approaches.

Prerequisites. BILD1 is required; review the relevant parts of BILD1 if necessary.

Lecture schedule (tentative and subject to change)
Readings = Chapters from Klug et al, Essentials in Genetics

#, Date	Topic	Reading
1: Tues, 3/30	Intro to Mendel: monohybrid cross	Chapter 1, 3 (p37-42)
2: Thurs, 4/1	Mitosis and Meiosis, dihybrid cross	Chapter 2, 3 (p42-48)
3: Tues, 4/6	More crosses, chi-square and probability, pedigrees	Chapter 3 (p49-55)
4: Thurs, 4/8	Epistasis, complementation, pleiotropy	Chapter 4 (p60-73)
5: Tues, 4/13	X-linked mutations, expressivity, penetrance, imprinting	Chapter 4 (p73-85)
6: Thurs, 4/15	Sex determination, sex chromosomes, dosage compensation	Chapter 5
7: Tues, 4/20	Chromosomes: variations in number and arrangement	Chapter 6
8: Thurs, 4/22	Gene mapping I: recombination and linkage, 3-point crosses	Chapter 7 (p132-147)
9: Tues, 4/27	Gene mapping II: molecular markers, LOD scores	Chapter 7 (p147-153)
THURS 4/29	MIDTERM	
10: Tues, 5/4	Bacterial genetics: mutations, conjugation	Chapter 8 (p159-170)
11: Thurs, 5/6	1st half: Bacteriophage 2nd half: Guest lecturer Dr. John Curington, Antibiotic resistance	Chapter 8 (p170-177)
12: Tues, 5/11	DNA and the transforming principle	Chapter 9
13: Thurs, 5/13	DNA basis of mutations, DNA repair	Chapter 14
14: Tues, 5/18	Regulation of gene expression, RNA interference	Chapter 15
15: Thurs, 5/20	Cancer genetics	Chapter 16
16: Tues, 5/25	Forward and reverse genetic analysis	Chapter 21
17: Thurs, 5/27	Quantitative traits	Chapter 22
18: Tues, 6/1	Evolutionary and population genetics	Chapter 23,24
19: Thurs, 6/3	Guest lecturer Professor Deborah Yelon, zebrafish genetics	

FINAL EXAM: Thursday, June 10, 8am-11am

Professor contact information: Emily Troemel (etroemel@ucsd.edu)
Office hours: 4202 Bonner Hall, Tuesdays 10-11 am
To email me specific questions, please put BICD100 or Genetics in the subject line, or your mail may not be read promptly.

Course web site: 2 URLs to get information
1) webct.ucsd.edu - login with your active directory login and password
2) http://www.biology.ucsd.edu/classes/bicd100.SP10/
user name is: bicd100sp10
passcode is: dauer

Lecture notes will be posted to the websites as pdf files for downloading. Check WebCT first.

Sections and Teaching Assistants:
You must be enrolled and participate in a section. If you are not enrolled in a section, you will not receive credit for problem sets (see Problem Sets section, below). Starting at 6:00 PM on March 29, section enrollment will open at http://sections.ucsd.edu. Login there using your UCSD student PID and select this BICD100 class (Troemel, T/Th 8AM). Students enrolled in the class can then enroll in any of the sections that still have space available by clicking the "enroll" button for that section. The section you are enrolled in will then be highlighted in green. Up to 6:00 PM on April 14, you can change your section enrollment if necessary by logging in and clicking on the "enroll" button for a different section. Send questions regarding section enrollment to Tiffany Dunbar at tdunbar@ucsd.edu.

Section	Day and time	Room	TA	TA email
B01	M 4:00p - 4:50p	WLH 2112	Geraldine Chan	g4chan@ucsd.edu
B02	M 5:00p - 5:50p	WLH 2112	Gordon Bean	brazilbean@gmail.com
B03	M 6:00p - 6:50p	WLH 2112	Alex Doo	adoo@ucsd.edu
B06	W 2:00p - 2:50p	CENTR 207	Tiffany Dunbar	TLdunbar@ucsd.edu
B07	W 3:00p - 3:50p	CENTR 207	Stephanie Ng	srng@ucsd.edu
B08	W 4:00p - 4:50p	CENTR 207	Omar Mohtar	Omohtar@ucsd.edu
B09	W 5:00p - 5:50p	CENTR 207	Abe Silverio	asilveri@ucsd.edu
B12	Th 10:00a - 10:50a	WLH 2112	Shuxiao (Susan) Zhang	shz004@ucsd.edu
B13	Th 11:00a - 11:50a	WLH 2112	Daniel Chou	dchiou@ucsd.edu

TA office hours will be announced in class and posted on the web site.

Textbooks
The required textbook is *Essentials of Genetics* by Klug, Cummings, Spencer, Palladino. Seventh Edition, 2010, Benjamin Cummings.

How to do well in this course
Attend lectures and take your own notes. Don't just 'follow along' with a printout, or rely on someone else's notes. Active note taking is the key to effective learning!

Attend and participate in discussion sections.

Work through the problem sets.

Come to office hours. Talk to the instructor and TAs: we are here to help you.

Genetics is a problem solving science. It is essential to spend time solving problems in classical Mendelian and human genetics. The exams will largely consist of such problems. Work through the problems in the textbook. Don't just look up the answer in the solutions manual.

EXAMS
There will be one midterm (40% of grade) and a final (50% of grade). The final exam will consist mostly of material since the mid-term, but will also include some material from the first portion of the course.

PROBLEM SETS
10% of your grade will be based on problem sets. There will be approximately 5 problem sets throughout the course, made available via WebCT. These will be due in lecture about one week after they are uploaded to WebCT. They must be handed in to the TA of the section in which you are enrolled in order to be graded. It is your responsibility to know which section you are enrolled in and thus which TA you hand your problem set to in lecture.

ELECTRONIC AIDS
Unless you are whiz at mental arithmetic you will need a calculator in the exams. Any other kind of electronic device is prohibited. Students using cell phones or other messaging devices in exams will be assumed to be cheating, and will receive a zero grade for the exam.

MAKE-UP EXAMS
There will be no make-up midterms. For students with an excused medical absence from the midterm, the final will count for 90% of the grade. The final exam must be taken on the exam date. **No early or late exams will be given for any reason**. For students with an excused medical absence from the final, a make-up final will be administered as an oral exam by the professor within the first 3 weeks of the next quarter.

GRADING
I will average the point total for the top 5 students in the class and assign that average a value of 100%. Any student with a point total of at least 90% of that average will receive a grade of A- or better. A score of 80% is guaranteed a B- and a score of 70% is guaranteed a C-.

REGRADE POLICY
Regrade requests should be made in writing to the instructor, within 1 week of the exam being returned and specifying the basis for the request. As a rule we will correct clerical errors in grade computation. If your answer was not clear in the first place, additional clarification will not get you a regrade. Exams completed in pencil will not be accepted for regrades.

ACADEMIC INTEGRITY
UCSD policies on academic integrity can be read at:
http://www-senate.ucsd.edu/manual/appendices/app2.htm

Integrity of scholarship is essential for an academic community. The University expects that both faculty and students will honor this principle and in so doing protect the validity of University intellectual work. For students, this means that all academic work will be done by the individual to whom it is assigned, without unauthorized aid of any kind. Instructors, for their part,

will exercise care in planning and supervising academic work, so that honest effort will be upheld.

Students' Responsibilities

Students are expected to complete the course in compliance with the instructor's standards. No student shall engage in any activity that involves attempting to receive a grade by means other than honest effort; for example:

No student shall knowingly procure, provide, or accept any unauthorized material that contains questions or answers to any examination or assignment to be given at a subsequent time.

No student shall complete, in part or in total, any examination or assignment for another person.

No student shall knowingly allow any examination or assignment to be completed, in part or in total, for himself or herself by another person.

No student shall plagiarize or copy the work of another person and submit it as his or her own work.

No student shall employ aids excluded by the instructor in undertaking course work or in completing any exam or assignment.

No student shall alter graded class assignments or examinations and then resubmit them for regrading.

No student shall submit substantially the same material in more than one course without prior authorization.

Suspected cases of academic dishonesty will be reported to the Academic Integrity Coordinator and the Dean of Student Affairs. **If a charge of academic dishonesty is upheld, the penalty will be a failing grade for the course.**