BICD 100 Genetics
Spring 2011
B00

Professor: Emily Troemel
Lectures: Tuesday and Thursday 8 am – 9:20 am
Location: ***Ledden Auditorium (HSS 2250)*** *Note change of location*
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, 3/29	Intro to Mendel: monohybrid cross	Chapter 1, 3 (p37-42)
2: Thurs, 3/31	Mitosis and Meiosis, dihybrid cross *Assignment #1 uploaded to website*	Chapter 2, 3 (p42-48)
3: Tues, 4/5	Trihybrid crosses, pedigrees, probabilities, chi-square tests	Chapter 3 (p49-55)
4: Thurs, 4/7	Complementation tests, modifications of Mendelian ratios, e.g. epistasis; *Assignment #2 uploaded to website*	Chapter 4 (p60-73)
5: Tues, 4/12	X-linked traits, maternal effect, mitochon. mutations, imprinting	Chapter 4 (p73-85)
6: Thurs, 4/14	Sex determination, sex chromosomes, sex-limited traits, dosage compensation; *Assignment #3 uploaded to website*	Chapter 5
7: Tues, 4/19	Chromosomes: variations in number and arrangement	Chapter 6
8: Thurs, 4/21	Gene mapping: recombination and linkage, 3-point crosses *Assignment #4 uploaded to website*	Chapter 7 (p132-147)
9: Tues, 4/26	More gene mapping, molecular markers, LOD scores	Chapter 7 (p147-153)
THURS 4/28	MIDTERM	
10: Tues, 5/3	Bacterial genetics: mutations, conjugation, transformation	Chapter 8 (p159-170)
11: Thurs, 5/5	1st half: Guest lecturer Dr. John Curington, Antibiotic resistance 2nd half: Bacteriophage genetics *Assignment #5 uploaded to website*	Chapter 8 (p170-177)
12: Tues, 5/10	DNA structure, base composition rules, DNA marker mapping	Chapter 9
13: Thurs, 5/12	The genetic code, DNA mutations, DNA damage and repair *Assignment #6 uploaded to website*	Chapter 14
14: Tues, 5/17	Regulation of gene expression, lac operon, RNA interference	Chapter 15
15: Thurs, 5/19	Cancer genetics: cell cycle, oncogenes and tumor suppressors *Assignment #7 uploaded to website*	Chapter 16
16: Tues, 5/24	Forward and reverse genetic analysis	Chapter 21
17: Thurs, 5/26	Quantitative traits, heritability estimates, twin studies *Assignment #8 uploaded to website*	Chapter 22
18: Tues, 5/31	Evolutionary and population genetics, Hardy-Weinberg principle	Chapter 23,24
19: Thurs, 6/2	Guest lecturer Professor Deborah Yelon, zebrafish genetics *Assignment #9 uploaded to website*	

FINAL EXAM: Thursday, June 9, 8am-11am

Professor contact information: Emily Troemel (etroemel@ucsd.edu)
Office hours: 4202 Bonner Hall, Tuesdays 10-11 am *(except no office hours on April 12)*
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.SP11/
user name is: bicd100sp11
passcode is: dauer

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

Sections and Teaching Assistants:
Discussion sections will be held by TAs once a week, except the first week. The TAs will lead a discussion based on the Assignments (posted the previous week) to help participating students arrive at the correct answers. The TAs will not provide the answers themselves. To get the most out of Discussion sections, it is therefore critical to have first worked through the Assignments alone or in study groups and then to participate in the discussion during the Discussion sections. Discussion sections are optional, but very strongly recommended. Starting 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 tldunbar@ucsd.edu - Tiffany is the head TA for this class.

Section	Day and time	Room	TA	TA email
B06	W 3:00p - 3:50p	CENTR 201	Tiffany Dunbar	tldunbar@ucsd.edu
B07	W 4:00p - 4:50p	CENTR 201	Tiffany Tang	tytang@ucsd.edu
B08	W 5:00p - 5:50p	CENTR 201	Valentino Gantz	vgantz@ucsd.edu
B09	W 6:00p - 6:50p	CENTR 201	Kristina Chun	klchun@ucsd.edu
B10	W 7:00p - 7:50p	CENTR 201	Michael Tien	mtien@ucsd.edu
B11	Th 4:00p - 4:50p	U413 2	Thomas Stark	tstark@ucsd.edu
B12	Th 5:00p - 5:50p	U413 2	Tal Dror	tdror@ucsd.edu
B13	Th 6:00p - 6:50p	U413 2	Vishnu Prathap	vprathap@ucsd.edu
B14	Th 7:00 - 7:50pm	U413 2	HyeRi Kim	hyk010@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 assignments.
- 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 (60% 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.

ASSIGNMENTS
Class assignments will be posted on the class website on most Thursdays during the quarter (see schedule). Assignments are used as a tool to promote understanding of the discussed topics through problem solving. It is optional to work through the assignments and they are not handed in. However, it is very strongly recommended to work through the assignments either alone or in study groups. The TAs will lead a discussion based on the Assignments to make participating students arrive at the correct answers. The TAs will not provide the answers themselves. To get the most out of Discussion sections, it is therefore critical to have first worked through the Assignments alone or in study groups and then to participate in the discussion during the Discussion sections.

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 100% 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.**