

General Genetics

Biology 184 Lecture— Fall 2012

Instructor: Dr. Tom Peavy
Office: SQU 406
Phone: 278-7276
Office hours: Mon & Wed 1-2:30pm or by appointment
Email: trpeavy@csus.edu

I. Class times

Lecture: Section 1, M/W 3:00 -4:15 PM (MND-1003)

II. Course Prerequisites:

BIO 1, BIO 2, and CHEM 1A (or equivalent courses at other institutions)

III. Books

Lecture

Textbook : *Genetics Analysis & Principles* (2012) Fourth edition by Robert J. Brooker
ISBN: 978-0-07-352528-0

Laboratory

Bio 184 Laboratory Manual (Fall 2012) Ballard, R., B. Holland, T. Peavy and M. Loo.
Available at the Hornet Bookstore. Need it during the first week of laboratory in the MW sections.

IV. Course Objectives: *The overall course objective is to increase student knowledge, awareness and appreciation of classical and molecular genetics with emphasis on the formation, transmission, function and organization of the genetic material.*

Learning Outcomes: Specifically you will be able to...

1. Understand a historical perspective of genetics, identifying breakthroughs of discovery, and prominent scientists who were involved in these breakthroughs.
2. Use problem-solving skills to predict genetic outcomes.
3. Describe basic inheritance patterns and the chromosomal basis of heredity.
4. Explain mutation as a source of genetic variability.
5. Understand the role of sex chromosomes in sex determination, sexual dimorphism and chromosomal inactivation.
6. Understand how cells reproduce through DNA and nucleic acids.
7. Describe how DNA transcribes into RNA that ultimately translates into protein.
8. Articulate some of the major issues related to modern biotechnology and genetic manipulation.
9. Develop skills in analysis, problem solving, communication and ethical perspectives as it applies to genetics.

V. Course Structure:

Lectures will provide the students with the conceptual framework of genetics and develop problem-solving skills. Particular emphasis will be given to understanding the scientific method and science-as-way-of-knowing through hypothesis-driven research. Lecture materials will be available one-day prior to lecture within **SacCT 9.1** (<http://www.csus.edu/sacct/>). Students can access the site either using the above link or going to the CSU Sacramento home website and looking for SacCT under the



"Quick Links" (use the link listed as "Click here for the new SacCT 9.1 login" within the SacCT page). Exams and homework assignments will be the basis for points in this portion of the class and worth 2/3rd of the total points towards the grade assignment.

Laboratory will be a combination of learn-by-doing exercises (illustrating central themes of genetics), and lab practical quizzes (testing comprehension of the laboratory exercises). Each laboratory instructor will likely have other assignments (e.g. presentation on a genetic topic) and thus a slightly different structure to their point system, but in the end they will be converted to a percentage and count 1/3rd towards the total points for the course.

VI. Evaluation:

The combined lecture portion of the course will be worth 2/3rd of the student grade and laboratory will be worth 1/3rd.

Lecture

A) Homework/Quizzes (6 @ 10 pts each)	60 pts
B) Examinations (3 @ 100 pts each)	300 pts
Total Lecture points	360 pts

Laboratory

Total Laboratory Points	180 pts
--------------------------------	----------------

TOTAL COURSE POINTS	540 pts
----------------------------	----------------

Final grades will be determined on a percentage basis of the total points possible (540 pts) according to the following scale:

93 - 100 %	A	73 - 76 %	C
90 - 92 %	A-	70 - 72 %	C-
87 - 89 %	B+	67 - 69 %	D+
83 - 86 %	B	63 - 66 %	D
80 - 82 %	B-	60 - 62 %	D-
77 - 79 %	C+	< 60 %	F

A. Homework/Quizzes:

The homework/quizzes are to be completed and submitted within the SacCT course site by the due dates listed in the lecture schedule below. The instructor will inform the students as to when the homework/quizzes are available in class and thru SacCT announcements. Students are responsible for completing these homework/quizzes on time to receive credit. No make-up quizzes will be permitted.

B. Exams:

There will be three exams worth 100 points each given during class (see syllabus for dates). Each exam will cover the material from lectures and homework. The format will be multiple choice and you are required to bring your own Scantron form (Form 882-E) to the exam. Be sure to bring a couple of number 2 pencils for the filling in the scantron. No electronic devices are allowed to be used during exam time (calculators will not be needed). The third and final exam will not be cumulative but rather cover the material since the previous exam. A make-up

exam will be given to a student only if the circumstances surrounding their absence was beyond their control, as deemed by myself. In this case, I will require written documentation to verify the circumstance within one week of the missed exam.

VII. Course policies

Cheating and plagiarism are not allowed. Cheating and plagiarism are very serious offences and will be prosecuted accordingly. The Department Chair and Dean of Students will be notified of the event and the student may be dismissed from the course with an "F". Other possible lesser actions may be the loss of all points for the assignment/quiz/exam and/or reduction of the students final grade. All exams are closed book and notes.

VIII. Add/Drop Policy

All adds will be done by the BIO 184 lab instructors since the limitation is 16 students per laboratory. If you are given permission to add, make sure you drop any conflicting classes you are enrolled in otherwise you will not be added.

As for drops, students should first evaluate whether they have the time to devote to the class prior to enrolling in the class. But in the case a student needs to drop, they may do so online within the first 2 weeks of class.

During weeks 3-4, students may drop the course by petition on and no notation will appear on the student's record.

During weeks 5-6, students may no longer simply drop the course but rather need to withdraw from the course resulting in a "W" appearing on the student record.

During weeks 7-12, students may only withdraw from the course for a "serious and compelling reason". A petition must be filed and supporting documentation must be provided.

During weeks 13-15, a withdraw is only permitted in cases of an accident or serious illness and a petition is again required.

Incomplete grade: Students who are unable to meet the BIO 184 course requirements before the end of the semester may petition to be assigned an Incomplete "I" grade. Students can only receive an "I" grade if they have completed the majority of the required coursework in the class and they do not have a passing grade in the class at the time the "I" is requested. This is reserved for extenuating circumstances such as illness or the such that prevented the student from finishing the course. In this case, if the instructor approves the "I" request, conditions will be placed by the instructor for completing the course but the time frame can't exceed one year. If the student does not complete the required work in the specified time, then the "I" grade will be converted to an "F".

IX. Disabilities

Assistance will be provided to all individuals with a disability that affects their ability to succeed in the course. Students with disabilities should contact me as soon as possible (preferably in the first week) to arrange for reasonable accommodations.

X. Common Sense Rules

- A. All pagers and phones should be turned off (or set to vibrate) during class time. I reserve the option of confiscating the phone or pager from a student until the end of class if it becomes a problem.
- B. NO TEXTING during class!!!
- C. Do not talk during class or interrupt other students asking questions. When asking questions, please raise your hand to be acknowledged.
- D. If a student arrives late or needs to leave early, take a seat near the door to avoid disrupting the class.
- E. When communicating through email, please remember this is a professional correspondence. Do not treat it as a text and do not be rude.

Tentative Lecture Schedule (Subject to change)

Date	Topic	Reading (Brooker)	Homework/Quiz Deadline
27-Aug	Introduction to Course	Chapter 1	
29-Aug	Lecture 1: Molecular Structure of DNA and RNA	Chapter 9	
3-Sep	Labor Day Holiday (NO CLASS)		
5-Sep	Lecture 1 continued		
10-Sep	Lecture 1 continued	Chapter 10	
12-Sep	Lecture 2: DNA Replication	Chapter 11	HW #1 (Sept 18)
17-Sep	Lecture 2 continued		
19-Sep	Lecture 3: Gene Transcription and RNA modification	Chapter 12	
24-Sep	Lecture 3 continued		
26-Sep	Review for Exam 1		HW #2 (Sept 27)
1-Oct	Exam 1		
3-Oct	Lecture 4: Translation of mRNA	Chapter 13	
8-Oct	Lecture 4 continued		
10-Oct	Lecture 5: Gene Mutation	Chapter 16	
15-Oct	Lecture 6: Gene Regulation in Bacteria	Chapter 14	HW #3 (Oct 18)
17-Oct	Lecture 7: Gene Regulation in Eukaryotes	Chapter 15	
22-Oct	Lecture 8: Reproduction and Chromosome Transmission	Chapter 3	
24-Oct	Lecture 8 continued		
29-Oct	Lecture 9: Variation in Chromosome Structure and Number	Chapter 8	
31-Oct	Review for Exam 2		HW #4 (Nov 1)
5-Nov	Exam 2		
7-Nov	Lecture 10: Mendelian Inheritance	Chapter 2	
12-Nov	Veteran's Day (NO CLASS)		
14-Nov	Lecture 10 continued		
19-Nov	Lecture 11: Linkage and Genetic Mapping	Chapter 6	
21-Nov	Lecture 11 continued		HW #5 (Nov 22)
26-Nov	Lecture 12: Extensions of Mendelian Inheritance	Chapter 4	
28-Nov	Lecture 12 continued		
3-Dec	Lecture 13: Intro to Developmental and Population Genetics	Chapter 23 & 24	
5-Dec	Review for Exam 3		HW #6 (Dec 6)