

**INTRODUCTION TO GENETICS, EVOLUTION, AND ECOLOGY
BIOLOGY 190**

LECTURE: Monday, Wednesday, Friday 11:15am-12:10pm; Kroc IPJ 214

PRECEPTOR/PROFESSOR: Dr. Geoff Morse

OFFICE: Shiley Science Bldg. ST479; Laboratory: ST474; x7914; e-mail: gmorse@sandiego.edu

OFFICE HOURS:

Monday 1:30pm—3:00pm

Tuesday 8:30am—10:00am

Wednesday 1:00pm—2:00pm

Friday 1:30pm—2:30pm

Also by appointment.

Note: If Prof. Morse is not in ST479 during his office hours, please proceed to his laboratory in ST474.

REQUIRED TEXT: *Biology*. 9TH Edition, 2011 by J.B. Reece, L.A. Urry, M.L. Cain, S.A. Wasserman, P.V. Minorsky, & R.B. Jackson.

OBJECTIVES: This course is intended to provide a framework for the study of life, the foundation upon which all other courses in biology will build. Using evolution as our central organizing principle, we will examine the material and processes of inheritance, the forces that drive biological diversification, and the patterns and phenomena that result from these processes. The student will also gain expertise in locating, reading, and assessing scientific literature, which will be regularly discussed during class meetings. Ideally, the student will leave the course not only with the background necessary for advanced biology courses, but also with the ability to understand and contribute to the discussion of biological issues in the public forum.

This course has no prerequisites, but it is designed to be the introductory course for biology majors, therefore experience with high school biology and chemistry will certainly be helpful. If the pace is not to your liking (either too fast or too slow), please either be patient or seek my help outside class time. The course will review biological facts and theories that are based in science and embraced by the vast majority of working biologists. Although I cannot devote class time to debates outside the scope of science, I would be happy to meet with you outside of class, either during office hours or whenever you can find me, to discuss anything you wish.

At the end of the Biology 221 course, you should be able to:

- Describe the role of evolution in giving rise to the diversity of organisms.
- Explain how natural selection leads to adaptation.
- Relate changes in DNA and gene expression to changes in the structure and function of organisms.
- Solve basic Mendelian genetic and Hardy-Weinberg problems.
- Explain how organisms interact in populations, communities, and ecosystems.
- Describe the diversity and complexity of ecological communities.
- Articulate how knowledge is acquired and evaluated in science.

GRADING:

- Your course grade will be earned by your performance on exams and assignments. Midterm exam dates are listed on the lecture schedule and will not be changed (unless there is a campus emergency). The exams will be worth 100 points each and cover lecture material.
- Your final exam will be cumulative. It is worth 150 points and is scheduled for **December 16, 2011, 11:00am – 1:00pm**.
- There will likely be some homework assignments during the course of the semester, although the number, extent, and difficulty of these will be determined as the course continues. They will range in value from 5 to 25 points
- Note that all of these assignments are to be completed individually—they are not team assignments. You are expected to follow the University of San Diego's code of conduct.**
- Final grades are determined by total points accumulated from the exams, quizzes, and assignments, in this manner:

A	93% - 100%	C+	77% - <80%
A-	90% - <93%	C	73% - <77%
B+	87% - <90%	C-	70% - <73%
B	83% - <87%	D+	67% - <70%
B-	80% - <83%	D	57% - <67%
		F	<57%

IMPORTANT DATES

- Wednesday, August 31st: First day of class
- Monday, October 3rd: First midterm examination
- Monday, November 7th: Second midterm examination
- Wednesday, December 16th: Final examination (11:00am – 1:00pm)
- Monday, September 12th: Last day to add classes or withdraw from classes without a 'W'
- Tuesday, November 8th: Last day to withdraw from classes
- Friday, October 14th: Fall Holiday, no classes
- Wednesday—Friday, November 23rd-25th, Thanksgiving Holiday, no classes.

WEB CT/CE6: We will be using Web CT extensively throughout the course. Review material, a glossary of definitions, supplementary articles, lecture outlines (primarily with graphics from lectures), and homework assignments will be posted. The Discussion Board FAQ will also be extensively used. **Note that you should not e-mail the instructor with course-based questions. These should be submitted to the Discussion Board FAQ on Web CT. If you do e-mail the instructor with course-based questions, you will be directed to the Web CT site. I will address questions on Web CT within 2 days after their posting. I also encourage students to help provide feedback to questions.** You can access the course Web CT site using <http://pope.sandiego.edu>. If you need more information, please visit <http://www.sandiego.edu/its/idt/CE6/students/index.php> or contact Information Technology Services.

EXAMS: Students will be expected to learn examples and principles used in the lectures, as well as those covered in the assigned reading. The final examination will be cumulative. Exams will be given **only** at the scheduled times, not earlier or later. Any re-scheduling will require: **(1) a written request in the form of a justification and at least two weeks prior notice; or (2) in the case of an emergency and failure to attend an exam, a written justification and note from an appropriate authority (physician, funeral home director, etc.); and you must make arrangements to call me or x4729 prior to the exam period.** If you miss an exam and do not meet these requirements, you will get a zero for that exam. There are no make-up exams, you must take the exam during the scheduled period unless prior arrangements have been made through Disability Services. No adjustments will be made to fit vacation travel plans. No extra credit will be given *in lieu* of successfully completing regular course work.

DISTURBANCES: YOU WILL BE PENALIZED FOR CREATING DISTURBANCES OR DISTRACTIONS DURING LECTURES. **This includes the use of cellular telephones or handheld devices in any way, including receiving calls, sending calls, text-messaging, or playing games.** If you need to use a laptop to take notes, then you may not surf the web, check e-mail, or do other activities that are not related to the lecture. In the past I have had numerous complaints from students about the distracting use of these devices during lectures. For the first offense you will be penalized 10 points, for the second 20 points, and 40 points for each offense thereafter.

TIPS, HINTS, AND SUGGESTIONS:

This course is fun, but will be intimidating and overwhelming if you do not keep up. Read the textbook readings *before* coming to class, and again after lecture. In class, pay attention to the *major points* that are being emphasized; do not get bogged down in detail, nor become overly concerned if you miss a biological term or two. After class, **review and rewrite your notes** and review the chapter. If you do this, you will breeze through the examinations and look forward to the next topic. If you do not understand something, ask questions. If you need additional help please see me during office hours.

Read the textbook: Read through the sections of the textbook that are assigned reading, even if the material in the readings was not specifically mentioned in lecture. Pay particular attention to the graphs as these frequently contain important information. I always ask a few questions on exams that are in the textbook but not in my lectures. Answering the review questions at the back of the chapters is an excellent way to test your understanding of the material.

Attend the lectures: Perhaps the simplest way to get a good grade is to attend all of the lectures and pay attention. The lectures will generally include material that is not found in the textbook but will appear on exams. If you miss a lecture you may never be exposed to some information on which you will be tested.

Note taking: The best way to capture a concept in your notes is to draw a graph or figure that illustrates the principle. If I show a graph, make sure you understand what that graph is telling you.

KEEP UP: Falling behind is the easiest way to get a bad grade. Do your best to keep up-to-date with lectures, notes, assignments, and readings. It's much easier to read 10 pages of the textbook twice each week than to read 200 pages the day before the exam...

Tentative Lecture Schedule

Week starting:	Topics	Chapters in Campbell
Aug 31 (Wed & Fri)	Introduction, defining life; The components of life	1 4, 5
Sept 7 (Mon. is Labor Day)	Early earth & the origin of life; History of evolutionary thought	25 22
Sept 12	The Darwinian revolution; The cell cycle and mitosis;	22 12
Sept 19	Meiosis; Heredity and Mendelian genetics QUIZ (25 pts): Wed. 9/21	13 14
Sept 26	Linkage, recombination, human genetics	15
Oct 3	Population genetics and Hardy-Weinberg theory; EXAM 1: Mon. 10/3	23
Oct 10	Microevolutionary processes and natural selection; The origin of species Fall Holiday is Friday, Oct. 14	24
Oct 17	Macroevolution; The fossil record, biogeography and extinction	24 25
Oct 24	Phylogeny and systematics	26
Oct 31	Evolution and ecology; Animal behavior	52 51
Nov 7	Population ecology: pop. dynamics, life history evolution, pop. growth, and carrying capacity EXAM 2: Mon. 11/7	53
Nov 14	Community ecology: interactions and coevolution	54
Nov 21	Community ecology: structure, disturbance, & succession Thanksgiving holiday: no classes Wed-Fri	54
Nov 28	Ecosystem ecology: trophic structure, energy flow, nutrient cycling, and disturbance	55
Dec 5	Biodiversity and conservation biology	56
Dec 12 (last day)	Summary and review	
FINAL EXAM:	Friday, December 16, 11:00 am-1:00 pm, KIPJ 214	