Quantitative Methods in Biology (Bio 167): Course Information

Spring 2017

Instructor:
Dr. Ron Coleman Office: 119 Humboldt
916-278-3474 (w)
916-705-2606 (cell) until 10 pm
rcoleman@csus.edu
or rcoleman@cichlidresearch.com
website: http://cichlidresearch.com
or http://www.csus.edu/indiv/c/colemanr/index.html

Course Location & Times:

Lec:	#33765	T, Th 8:00 to 8:50 am	Room 118 SQU
Lab:	#33766	Th 9:00 to 5:00pm	Room 118 SQU

Each student must attend both the lectures and the laboratory

Office hours:

Ron Coleman	Wed 2:00 - 5:00pm	Room 119 HMB

Course description:.

Focuses on statistical hypothesis testing and experimental design in the biological sciences. Topics include the development of a hypothesis, study design and implementation, management and presentation of data, identification of data types, and appropriate use of statistical procedures. General application to a wide range of biological disciplines and will emphasize the scientific process, critical thinking skills, and the interpretation of statistical results, which will include a project culminating a scientific paper and presentation. Lecture two hours; laboratory three hours.
Prerequisite: STAT 1 and BIO 100 or graduate status

Learning Objectives:

Conceptual

- Appreciate and understand hypothesis testing and experimental design
- Be familiar with a range of statistical analyses
- Understand the interpretation of statistical results
- Develop an understanding of the cost/benefit, optimality and game theoretic approaches to the study of behavior

Practical

- Learn to use various statistical software packages (Excel, R, SPSS) for analysis
- Read and use the primary literature
- Learn to produce scientific grade graphics
- Work with and manage large amounts of data
- Learn to create and present an effective PowerPoint presentation
- Design, implement, analyze, writeup and present an hypothesis-based experiment

Attendance and Deadlines:

I expect you to attend every lecture and lab; you miss class at your own risk. Anything I say is fair game for exams, whether it is in the text or not. Some things I say will definitely not be in the text, and some may contradict the text. In the latter case, what I say is taken to be the correct answer. If there is a difference between what I say and what is in the text or what you have learned elsewhere, **please ask about** it in lecture or after class and we will discuss the differences.

My goal as a lecturer is to guide and assist you in learning about this material. I can't do that if you aren't in class or if you don't tell me what you don't understand.

If you miss a class, it is your responsibility to get the notes from another student, not from me. I DO NOT hand out lecture notes, nor do I post them to the web.

Deadlines are strictly adhered to. It is not fair to students that complete work on time for other students to have extra time to do the same work. Plan ahead and schedule your time. Most importantly, don't leave things to the last minute; you don't need that kind of stress!

Email policy:

This course does not use SacCT. However, we do make regular use of email. On occasion, I may send important messages to your Saclink account. As a Sac State student, you are responsible for regularly checking your Saclink email account (i.e., daily). Failing to do an assignment because you did not check your Saclink email account is your problem. Furthermore, when corresponding with me about this course, you MUST use your Saclink email account, not a gmail, yahoo or any other email account. This is an official University policy.

Textbook:

Whitlock, Michael and Dolph Schluter. 2014. The Analysis of Biological Data. Second Edition. MacMillan. **REQUIRED**. ISBN: 9781936221486

Exams:

There will be two midterms and a final for the lecture portion of the course. There will be a midterm and a final in the lab, both held during lab time. Midterms are held during the lecture period and will be a mixture of fill-in the blank, short-answer and essay questions. I do not believe in multiple choice questions and do not use them.

Exams will be comprehensive, i.e., anything in the whole course up to that point in time is fair game. My previous students comment on two aspects of my exams: I am a hard grader and I am a fair grader. You can expect long exams that test your knowledge, but they will be exams without tricks. My goal is to have you tell me what you know and understand. You will have to work very quickly.

Grading:

This course is worth 3 units.

The number of points/questions on a particular exam is irrelevant to the exam's worth -- it is merely a tool for grading. What matters are the following percentages.

Your lecture grade will be calculated according to the following scheme:

Midterm I	30
Midterm II	30
Final Exam	40

	100%

Your lab grade will be calculated according to the following scheme:

Midterm	20
Final	20
Project	30
Other Labs	30

	100%

NOTE: You must retain in some orderly fashion all assignments and graded materials until after the end of the semester (i.e., June). You may be asked to produce these at the end of the semester. Failure to produce an assignment will result in a grade of 0 for that assignment.

Your course grade will be a combination of your lecture and lab grades as follows:

Lecture	2/3	Lab	1/3

Your letter grade will be calculated according to the following table:

A = 93 to 100%	C+ = 77 to 79.9%
A- = 90 to 92.9%	C = 73 to 76.9%
B+ = 87 to 89.9%	C- = 70 to 72.9%
B = 84 to 86.9%	D+ = 67 to 69.9%
B- = 80 to 83.9%	D = 60 to 66.9%
	F = 0 to 59.9%

I generally do not adjust or curve or scale grades; If you want an "A", work for it and make it happen!

I do not hesitate to correct any errors I make in grading (e.g., incorrect addition or if I missed grading an answer), but keep in mind that I am looking for clear, succinct answers, not answers that sort-of-show-you-possibly-might-know-what-you-mean. If you feel that your answer deserves a better grade, please return it to me promptly.

I do not use "extra credit" assigments.

Health and Safety:

Read and sign the separate Safety sheets.

Honor Code:

Please don't cheat. Besides the fact that we will be forced to take strong measures if we catch you -- including recommending your dismissal from the class and from the university -- I will be profoundly disappointed in you.

Don't even think about doing any of the following:

a. giving or receiving information from another student during an examination
b. using unauthorized sources for answers during an exam such as writing answers on hats, clothing or limbs
c. illegally obtaining the questions before an exam
d. altering the answers on an already-graded exam
e. any and all forms of plagiarism
f. destruction and/or confiscation of school and/or personal property

Feedback:

I appreciate your feedback on this course. It is most useful to tell me things while the course is in progress, rather than waiting until the end of the course. If there is something that needs changing, LET ME KNOW and I will see what I can do about it. This course is a collaboration between you and me. I really enjoy teaching this class and I want you to have a great time as well.