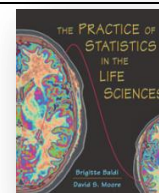


## BIOLOGY 215 - GENERAL COURSE INFORMATION

<b>Course</b>	<b>Biology 215, Biostatistics (3 Units)</b>																						
<b>Instructor</b>	Prof. Douglas Deutschman																						
<b>Contact Info</b>	PS 150A (Physical Sciences Bldg) 594-5391, ddeutschman@sciences.sdsu.edu																						
<b>Office Hours</b>	Mon: 1pm – 2pm, Wed: 11 am – 12pm, or by appointment																						
<b>Web Site</b>	Blackboard Course Supplements 1) A blackboard section for lecture (created in the 3 <sup>rd</sup> week of the semester) 2) a separate blackboard section for lab managed by your Lab Instructor (TA)																						
<b>Lecture</b>	M/W, 15:30-16:20 in NE-060																						
<b>Lab</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">All Sections Meet in LS-126</th> <th style="width: 15%;">Schedule #</th> <th style="width: 15%;">Lab Instructor</th> </tr> </thead> <tbody> <tr> <td>Sec 1    Tue    0800-1040</td> <td>20442</td> <td>Sean Ryan</td> </tr> <tr> <td>Sec 2    Thu    1400-1640</td> <td>20443</td> <td>Sean Ryan</td> </tr> <tr> <td>Sec 3    Wed    0800-1040</td> <td>20444</td> <td>Alissa Brown</td> </tr> <tr> <td>Sec 4    Wed    1700-1940</td> <td>20445</td> <td>Alissa Brown</td> </tr> <tr> <td>Sec 5    Thu    0800-1040</td> <td>20446</td> <td>Lorenzo Cipani</td> </tr> </tbody> </table>					All Sections Meet in LS-126	Schedule #	Lab Instructor	Sec 1    Tue    0800-1040	20442	Sean Ryan	Sec 2    Thu    1400-1640	20443	Sean Ryan	Sec 3    Wed    0800-1040	20444	Alissa Brown	Sec 4    Wed    1700-1940	20445	Alissa Brown	Sec 5    Thu    0800-1040	20446	Lorenzo Cipani
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<b>Exams</b>	<b>Exam 1:</b> Wed. Sep 30 (in class) <b>Exam 2:</b> Mon, Nov 9 <sup>th</sup> (in class) <b>Final Exam:</b> Fri Dec 18, 3:30 to 5:30 pm																						
<b>Textbooks and Materials</b>	<p><b>(Required - Lecture)</b> <u>The Practice of Statistics in the Life Sciences</u> by Baldi and Moore. 1<sup>st</sup> edition, 2009.</p> <p><b>(Required – Lab)</b> <u>Biology 215 Lab Manual</u> Should be available on or before Sep 4<sup>th</sup> at the SDSU Bookstore. Price will be around \$12. The first two labs will be posted on Blackboard.</p>																						



### *From the 2009-2010 Catalog:*

**BIOL 215.** Biostatistics (3) [GE] Two lectures and three hours of laboratory.

*Prerequisites:* Credit or concurrent registration in Biology 203, 203L or 204, 204L and Mathematics 121 or 141.

Methods and experience in defining and solving quantitative problems in biology, including design of experiments, and parametric and nonparametric statistical techniques. Students with credit or concurrent registration in the following lower division courses will be awarded a total of four units for the two (or more) courses: Biology 215; Administration, Rehabilitation and Postsecondary Education 201; Civil Engineering 160; Economics 201; Political Science 201; Psychology 270; Sociology 201; Statistics 119, 250.

## COURSE GOALS AND LEARNING OBJECTIVES

This course is an introduction to biostatistics that develops and illustrates fundamental ideas in statistics with examples and applications from biology and the health sciences. Through the lectures, readings, assignments, and computer labs you will get experience in applying concepts and using statistical methods to collect, analyze, and interpret data from a diverse set of topics in biology.

At the end of the course students will be able to:

- Understand and explain why biologists need a background in statistics
- Understand statistical analyses in the context of the scientific method
- Read and interpret biological research presented in the scientific literature and popular publications
- Learn, use, and apply statistical software to enter data, graph and analyze data, test hypotheses, and interpret results from simple samples and experiments
- Write about, explain, and communicate statistical concepts and results

Over the course of the semester, students will learn:

- how to produce data through observational studies and experiments,
- how to visualize biological data,
- how to describe the distribution of single variables,
- how to examine and describe relationships between variables,
- how to draw inferences from a sample to a population,
- how to test statistical hypotheses.

### CSU FURLOUGH INFORMATION

The California State University (CSU) defines a “furlough” as “a mandated period of time off without pay.” As a result of devastating California state budget cuts, faculty and staff at SDSU are prohibited from working on two days per month (and a total of 4 days in one single month) during the 2009-10 academic year.

The faculty furlough plan prohibits professors from teaching, being on campus, and consulting with students during furlough days. Exact dates designated as “furlough days” vary from person to person. During the Fall 2009 semester, the furlough days for Dr. Deutschman are:

Aug 24, Sep 11 and 24, Oct 5 and 22, Nov 13 and 25, Dec 7 and 22

*On those days, classes and office hours are cancelled, and telephone and e-mail messages will not be answered until the following day.*

### OTHER COURSE INFORMATION

#### Grading Policy and Exams

The majority of students will receive grades in the B- to C- range. Please remember that long-standing University policy considers a grade of A to be indicative of "outstanding achievement; available only for the highest accomplishment," while a grade of B indicates a "praiseworthy performance; definitely above average." We don't use particular numerical scores that must be achieved to get a particular letter grade. Instead, letter grades will be assigned to scores after each exam on the basis of the class average and our judgment regarding class performance.

There will be three 1-hour exams and many smaller assessments including writing assignments, homework, and quizzes. The exams dates are listed on the first page of this syllabus. Any changes in the schedule for exams will be announced a minimum of two weeks before the date of the examination.

**Final Grades will be calculated using the following:**

Lecture (475 pts – 60%)		Laboratory (325 pts – 40%)	
Assignments	(75)	Quizzes and Homework	(75)
Exam 1	(100)	Lab Practical 1	(100)
Exam 2	(100)	Lab Practical 2	(100)
Final Exam	(200)	Participation	(50)

**Note:** *You must pass both the lecture and lab portion of the class in order to receive a grade of C or higher for the class.*

#### Other Notes on Grading

Please check the grade for each assignment for errors. We require that any concerns (errors, disputes) be brought to our attention in writing within 2 weeks. Please double check your grade against the posted grades recorded in the Blackboard gradebook. Finally, we keep students materials for 1 year after the completion of the class.

**Missed Exams**

If illness or other serious problem beyond your control prevents you from taking an exam, you are expected to provide some kind of verification of the reason, such as a note from student health services. Missing an exam because your employer wants you to work is not an adequate justification. Arrangements will be made so that you are not penalized for missing a midterm if you have a bona fide reason for having done so, but no makeups will be given for missed writing assignments, activities, and quizzes. However, your points will be adjusted so that you are not penalized for missing an assignment provided that you present good evidence that your absence was the result of a serious, unavoidable problem.

**Labs**

Lab is an integral part of the course (and 40% of the final grade). An important part of the lab will consist of written assignments. Your grade will depend not only on the accuracy and appropriateness of the statistical analysis that you carry out, but also on your writing. Assignments that are poorly organized or sloppy (including grammatical mistakes and misspellings) will be severely graded down or rejected as unacceptable. Attendance at lab is important and missing lab without a valid and verifiable excuse will result in lost participation points.

**Dropping**

The last day to drop classes without the risk of penalty comes very early in the semester (Sep 14). If you are unsure what to do, please feel free to talk with me (or your lab instructor) about your concerns. Drop/Add dates and procedures are listed on the SDSU website.

**Academic Misconduct**

Academic misconduct is an important concern for faculty and students. The University takes standards of integrity very seriously stating “Students are expected to be good citizens and to engage in responsible behaviors...”<sup>1</sup>. Please review the information on students’ rights and responsibilities. The guidelines are on the website of the Center for Student Rights and Responsibilities (<http://csrr.sdsu.edu/>)

<sup>1</sup> Standards for Student Conduct: <http://csrr.sdsu.edu/conduct1.html>. Accessed Aug 25 2009.

**STUDY TIPS**

<b>Ask Questions!</b>	Ask questions in lecture and lab. There is no such thing as a dumb question.
<b>Make a Binder</b>	Keep your notes, lecture handouts, and other information in a binder.
<b>Be prepared</b>	Read the appropriate section of <u>The Practice of Statistics in the Life Sciences</u> . Reread your notes from last class soon after class. Do not wait until the night before the test!
<b>Study Actively</b>	Make study sheets, flash cards, take notes on the book. Be an active learner.
<b>Collaborate</b>	Work together to solve problems.

**Any changes to this Syllabus will be announced in class and Posted on Blackboard**

LECTURE AND LAB SCHEDULE (CURRENT AS OF AUG 30<sup>TH</sup>, 2009)

Week	Mon	Topic	Wed	Topic	Lab
					Systat
1	31-Aug	Welcome, Why Biostatistics	2-Sep	Producing Data: Samples	<b>No Lab</b>
2	7-Sep	<b>Labor Day</b>	9-Sep	Producing Data: Experiments	Producing Data
3	14-Sep	Visualizing Data	16-Sep	Summarizing Data: SUMS, Central Tendency	Graphing
4	21-Sep	Summarizing Data: SUMS, Variability	23-Sep	Bivariate Relationships: Scatterplot, Correlation	SUMS
5	28-Sep	Bivariate Relationships: Regression	30-Sep	<b>Midterm #1</b>	Bivariate
6	5-Oct	<b>Furlough</b>	7-Oct	Normal Distribution: Working with Z scores	<b>Lab Furlough</b>
7	12-Oct	SEM and CI's	14-Oct	Intro to Hypothesis Tests	Normal Curves, SEM, and CI
8	19-Oct	1-sample t-tests	21-Oct	Paired-sample t-tests	<b>LAB Practical</b>
9	26-Oct	2-sample t-tests	28-Oct	Intro to Categorical Data	t-tests
10	2-Nov	1way and 2way Tables	4-Nov	Review for Midterm	Chi Square
11	9-Nov	<b>Midterm #2</b>	11-Nov	<b>Veteran's Day</b>	<i>Make-Up lab</i>
12	16-Nov	Regression	18-Nov	ANOVA #1	Regression
13	23-Nov	ANOVA #2	25-Nov	<b>Furlough</b>	ANOVA
14	30-Nov	Summary of Hyp Tests	2-Dec	Hyp Tests - Case Studies	Review for Practical
15	7-Dec	<b>Furlough</b>	9-Dec	Review for Final	<b>LAB Final</b>
<b>Final</b>	<b>Friday Dec 18th, 3:30-5:30</b>				