Course Syllabus for Statistics for the Life Sciences: Introduction to Statistics at Cuyamaca College Fall 2009
Section: PSY 1728 and Bio 1046
Instructor: Steve Weinert
Room: H222
Time: 12:30 to 2:20 Monday and Wednesday with an additional **1 Hour required on the Internet.**
Text: Statistics Unplugged, Caldwell 3rd edition. ISBM: 945-60218-3
REQUIRED SOFTWARE: SPSS 11 (or higher) Student version.
Office: F510
Contact: steve.weinert@gcccd.edu or 619-660-4552
Office Hours: Please see web.
Course Description: 2 hours lecture and 3 hours lab practicum in the use of statistics in life sciences.
Prerequisite: Bio 130 or Psy 120; Math 110 or equivalent
Course Objectives: At the end of the semester students will be able demonstrate that they can:

a) Evaluate measures of central tendency and graphs to describe samples of data.
b) Calculate and interpret data using correlations, proportionate reduction in error, and regression analysis.
c) Calculate and assess the mathematical formulas of probability and apply them to statistical hypothesis testing.
d) Take a written hypothesis and produce the relevant statistical hypotheses and determine the appropriate statistical method to evaluate a variety of types of variables.
e) Discuss the computation and use of statistical power, its implications, and relevance in determining statistical significance.
f) Explore the limitations and assumptions that underlie hypothesis testing and test for statistical significance.
g) Correctly calculate t tests for dependant and independent means.
h) Compare and contrast the differences in the error terms of z scores, t tests and analysis of variance and their role in evaluating a statistical hypothesis.
i) Explain the basic components of the formula for the z score, F ratio, and t score.
j) Investigate a hypothesis through literature research, development of proper experimental methods and research protocol, analysis and a written conclusion.
k) Use a Multivariate Analysis of Variance to validate a hypothesis explaining all main effects and interaction effects found in the analysis.

Attendance: For successful completion of the course you must attend class. Attendance and participation in activities are required. If you are going to miss class for some reason make sure you e-mail the instructor. You must log in to blackboard while in class to get credit for the day. Make sure that any missed assignments can be completed, and that you keep track on the web of your scores and to see assignments in the lab.

Behavior Guidelines and Conduct: Some of the class will be direct instruction, but the majority of the course will be working in groups and completing assignments. Math is practice. If you follow instructions and do the work, you will successfully complete the course. If you are having trouble, ask for help. If your instructor does not answer your question, then ask louder.

How the Class will work: The first 50 minutes of each class will be theoretical concepts behind the statistics. The remaining time in each class will be spent reviewing material that pertains to the lab, giving lab quizzes and reviewing lab assessments. On the Web, the majority of the lab instruction will be given through outlines with videos. I have recorded the screen of my computer modeling the tasks required for lab completion. I also have produced outlines that step you through each lab. It should take you about 1 hour a week to complete the assignments.

On line: The lab for this course is set up in Web based platform. During the first week of class, we will make sure that you can log in and are able to access the web from home or from the lab. If you are having any problems tell me as soon as they develop so we can attempt to fix them. This is not a class about using the computer, and I am not able to fix problems that you have with your computer. **I will make sure you can log into Blackboard the first Wednesday.**

At home you can log in whenever you want and do the labs at any time (there is some time Saturday evenings when the web site is not working, but you should be resting then anyhow). I will be available during my office hours or on e-mail for questions or concerns.

Assignment Grades: The online scores are a part of your semester grade for the class. Each Lab is designed to demonstrate the mastery of specific skills. Your grade is based on the completion of those skills, and your ability to communicate your understanding of the data. Each lab will have points applied to it and will be added to your exams scores to produce your grade in the class.

How to use the Online Lab: Each new unit in the class has a lab that corresponds to the material from lecture. The purpose of the lab is to **USE** the statistics to reinforce the concepts.

Syllabus: This document (that you are reading) is up to date. Any changes that we might make to the schedule during the semester will be posted online on the campus web page.

Assignment completion: At the end of each assignment, you must turn in your work. If you are not finished, turn in what you have to get some points. The assignment files must be turned in to the assignment folder.

Lab Instructions: I will post the experiment that produced the data, the basic outline of what needs to be accomplished during the lab, and a step by step video that shows me performing the lab. I also will have short video clips that go along with the outline to show the correct use of the software.

Students with Special needs: Students with special needs who need academic accommodations should notify the instructor immediately (and no later than the second week of class).

Cheating: Cheating and plagiarism (using as one's own ideas writings, materials, or images of someone else without acknowledgement or permission) can result in any one of a variety of sanctions. Such penalties may range from an adjusted grade on the particular exam, paper, project, or assignment (all of which may lead to a failing grade in the course) to, under certain conditions, suspension or expulsion from a class, program or the college. For further clarification and information on these issues, please consult with your instructor or contact the office of the Associate Dean of Student Affairs.

Quizzes: Quizzes will be given online, or in the Lab. You may use outputs and other material from the class to answer the questions. The purpose of the quiz is to measure your ability to comprehend the material and use it in an applied setting.

Projects: There are two projects during the semester. A project is worth over 100 points and is based on the completion of the labs and the production of a word document describing your analysis. Details will be provided.

Final Exam: You will develop a hypothesis about student behavior from a literature search. You will then develop questions to ask introduction to psychology students. You will import data into SPSS and complete an analysis of the data.

Grading in the course: Your grade is based on the percentage of points that you earn during the course.

90% and above you receive an A	80% and above you receive a B
70% and above you receive a C	60% and above you receive a D

I round to two decimal places when I finish the grades, and it is important that you keep track of your grades so there are no surprises at the end of the semester. Here is a rough outline of the lectures and labs for the semester

PLEASE NOTE: Due to the nature of a class that has mathematics as the core element…This class can be difficult for some people, easy for others and boring for most. To get the most out of this class, you must come to class, and ask questions. Some of the best learning in the past has been driven by students who have reached that frustration/anger point. All students feel some sort of anxiety or stress about statistics, and if you hold it in, it will fester and make the class less enjoyable.

Here is an outline for the semester, if it changes it will change on the web first!

Date	Topic	Chapter	Web
Monday, August 24, 2009	Go to Class	go to class	Go to Website
Wednesday, August 26, 2009	Show me the Data	None	Get book and CD
Monday, August 31, 2009	More data	1	Answer Questions from Chapter 1
Wednesday, September 02, 2009		2	Answer Questions from Chapter 2
Monday, September 07, 2009			
Wednesday, September 09, 2009	The Shape of your data	3	Answer Questions from Chapter 3
Monday, September 14, 2009	Collect Data - First SPSS		Lab 1 Show me that Data
Wednesday, September 16, 2009	**Finish Lab 1**		**EXAM 1**
Monday, September 21, 2009	Normal Curve	4	Answer Questions from Chapter 4
Wednesday, September 23, 2009	More Distributions	5	Answer Questions from Chapter 5
Monday, September 28, 2009	Confidence intervals	6	Answer Questions from Chapter 6
Wednesday, September 30, 2009	Are you Normal?		Lab 2 test yourself
Monday, October 05, 2009	**Finish Lab 2**		**EXAM 2**
Wednesday, October 07, 2009			
Monday, October 12, 2009	Experimental Design		Online questions..
Wednesday, October 14, 2009			
Monday, October 19, 2009	Hypothesis Testing	7	Answer Questions from Chapter 7
Wednesday, October 21, 2009		8	Answer Questions from Chapter 8
Monday, October 26, 2009	Hypothesis Testing	9	Answer Questions from Chapter 9
Wednesday, October 28, 2009	Lab 3		
Monday, November 02, 2009	**Finish Lab 3**		**EXAM 3**
Wednesday, November 04, 2009			
Monday, November 09, 2009	ANOVA	10	Answer Questions from Chapter 10
Wednesday, November 11, 2009	ANOVA	11	Answer Questions from Chapter 11
Monday, November 16, 2009	ANOVA	12	Answer Questions from Chapter 12
Wednesday, November 18, 2009			
Monday, November 23, 2009	Correlation	Fun	Food analysis
Wednesday, November 25, 2009	Correlation		
Monday, November 30, 2009	Regression		
Wednesday, December 02, 2009			
Monday, December 07, 2009			**Exam 4**
Wednesday, December 09, 2009	Food Lab		
Monday, December 14, 2009	Beyond		Analysis Due