Course Syllabus for Statistics for the Life Sciences: Introduction to Statistics at Cuyamaca College Spring 2009
Section: PSY 5782 and Bio 5021
Instructor: Steve Weinert
Room: H222
Time: 12:30 to 1:50 Mon., 12:30 to 2:50 Wed. and **1 Hour required on the internet.**
Text: Statistics Unplugged, Cadwell
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.

Online: 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 with any changes that we might make to the schedule during the semester.

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.

Short Clips: This is an outline of all of the skills that you need to be able to perform in the class. Each link is a small video (with no narration) that demonstrates the mechanics of each task. These are the videos that are in the outlines for each lab, and only show a specific skill, rather than a complete analysis.

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: There is a risk of students cheating online. Because I am not present, there might be the temptation to turn in material that you did not produce. We have had students in previous semesters copy other students work, and then turn it in as their own. There are checks in place to prevent cheating and if you are caught you will receive a 0 for the lab. It really shows at the end of the semester when you are given your own research project. If you do not know how to perform the skills by the end of the semester, you will not be able to complete the final analysis and will not pass the class. Work together to understand, but do the work yourself.

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!

Day	Class	Book	Online
Monday, January 26, 2009	Course	None	Get book and CD
Wednesday, January 28, 2009	Experimental Design	1	Answer Questions from Chapter 1
Monday, February 02, 2009	Show me the Data	2	Answer Questions from Chapter 2
Wednesday, February 04, 2009			
Monday, February 09, 2009	The Shape of your data	3	Answer Questions from Chapter 3
Wednesday, February 11, 2009	Collect Data - First SPSS		Lab 1 Show me that Data
Monday, February 16, 2009			
Wednesday, February 18, 2009	Finish Lab 1		EXAM 1
Monday, February 23, 2009	Normal Curve	4	Answer Questions from Chapter 4
Wednesday, February 25, 2009	More Distributions	5	Answer Questions from Chapter 5
Monday, March 02, 2009	Confidence intervals	6	Answer Questions from Chapter 6
Wednesday, March 04, 2009			
Monday, March 09, 2009	Are you Normal?		Lab 2 test yourself
Wednesday, March 11, 2009	Finish Lab 2		EXAM 2
Monday, March 16, 2009			
Wednesday, March 18, 2009	Hypothesis Testing	7	Answer Questions from Chapter 7
Monday, March 23, 2009	Hypothesis Testing	8	Answer Questions from Chapter 8
Wednesday, March 25, 2009	Hypothesis Testing	9	Answer Questions from Chapter 9
Monday, March 30, 2009	Lab 3		
Wednesday, April 01, 2009	Finish Lab 3		EXAM 3
Monday, April 06, 2009			
Wednesday, April 08, 2009			
Monday, April 13, 2009	Correlation	12	Answer Questions from Chapter 12
Wednesday, April 15, 2009	Correlation	12	
Monday, April 20, 2009			
Wednesday, April 22, 2009	LAB 4		Food
Monday, April 27, 2009			
Wednesday, April 29, 2009	ANOVA	10	Answer Questions from Chapter 10
Monday, May 04, 2009	ANOVA		
Wednesday, May 06, 2009			
Monday, May 11, 2009	LAB 5		WOW
Wednesday, May 13, 2009	Beyond		
Monday, May 18, 2009			
Wednesday, May 20, 2009			Exam 4
Monday, May 25, 2009			
Wednesday, May 27, 2009			Analysis Due
Monday, June 01, 2009			