

# Course Syllabus for Statistics for the Life Sciences: Fall 2011

**Section:** PSY 1728

**Instructor:** Steve Weinert

**Room:** E206

**Time:** 12:30 to 2:50 TTH .

**Textbook - Essentials of Statistics for the Behavioral Sciences**, 7th Edition

Frederick J Gravetter; Larry B. Wallnau

Textbook ISBN-10: 0-495-81220-X

Textbook ISBN-13: 978-0-495-81220-3

**REQUIRED SOFTWARE: (We will talk about this in class).**

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**Office Hours:** Please see web.

**Course Description:** 2 hours lecture and 3 hours lab practicum in the use of statistics in life sciences.

**Prerequisite:** 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. I am going to be very firm this semester on late work.

**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 a skill. To get better you have to 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 and more frequently.

**Online Work:** The lab for this course is set up in web based Blackboard 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. 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 on-line 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.

**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 know how to do the work yourself.

**Assessments:** Quizzes and labs will be given and graded on-line, 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. The total points for the semester can range between 500 and 600 points. Labs and the short answer questions are where the majority of the points are earned. Tests and quizzes are a small percentage of the total points possible. A + and – system will be used for percentages .02 percent above and .02 percent below each grade level.

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:** 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.

## ***Cuyamaca Fall 2011 CALENDAR***

**August 22**

August 22 - September 2

September 2

September 2

September 2

**September 5**

September 6

September 23

October 14

October 15

**October 17**

November 10 (Thursday)

**November 11 & 12 (Friday & Saturday)**

**November 24 - 26 \*\***

December 10

**December 12, 13, 14, 15, 16, 17, & 19 Final Examination Days**

December 19

**December 20**

**Regular Day & Evening Classes Begin**

Program Adjustment Period

Last Day to Add Semester-Length Classes\*\*\*

Last Day to Drop Semester-Length Classes Without a "W" Appearing on Transcripts

Last Day to Receive a Refund for Semester-Length Classes\*\*\*

**Labor Day Holiday**

Census Day

Last Day to Apply for P/NP - Semester Length Classes

Last Day to Apply for Fall 2011 Degree/Certificate

End of First 8-Week Session

**Second 8-Week Session Begins**

Last Day to Drop Semester-Length Classes

**Veteran's Day Holiday**

**Thanksgiving Holiday Weekend**

End Second 8-Week Session for Weekday (M-F) classes

Close of Fall Semester

**Instructor Grade Deadline**

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

Date	Chapters	Topics	HOME WORK
23-Aug	Welcome		Login! Get SPSS
25-Aug	Chapter 1	What are statistics	SHOW ME THE DATA
30-Aug	Chapter 2 - 3	Ways to Describe Distributions	Chapter 2 questions
1-Sep	Chapter 4	Measures of variability	Chapter 3 questions
6-Sep			Chapter 4 questions
8-Sep	SPSS FUN!	Calculating all of the above with SPSS	
13-Sep	Exam 1		
15-Sep	Chapter 5	z scores in normal distributions	Chapter 5 questions
20-Sep	Chapter 5 and 6	Probability	Chapter 6 questions
22-Sep			
27-Sep	Chapter 6 and 7	Calculation of probability with different curves	Chapter 7 questions
29-Sep			
4-Oct	SPSS FUN!		
6-Oct	Exam 2		
11-Oct	Project 1	Collect and analyze data	
13-Oct			
18-Oct	Chapter 8	Introduction to Hypothesis Testing	Chapter 8 questions
20-Oct	Chapter 9	T	Chapter 9 questions
25-Oct	Chapter 10		Chapter 10 questions
27-Oct			
1-Nov	SPSS FUN!		
3-Nov	Exam 3		
8-Nov	Chapter 11	More T	Chapter 11 questions
10-Nov	Chapter 12	Estimation	
15-Nov	Chapter 13	ANOVA	Chapter 13 questions
17-Nov			
22-Nov	SPSS FUN!		
<b>24-Nov</b>			
29-Nov	Chapter 15	Regression	Chapter 15 questions
1-Dec			
6-Dec	Exam 4		
8-Dec	Final Project		
13-Dec	Present Final Project		

LABS:

Lab 1	Using SPSS	Enter Data - manage spreadsheet - graphs
Lab 2	Samples	Organize data into groups - make error bar graphs
Lab 3	pre-project	Collect data - enter into spreadsheet
Lab 4	z scores	Using the Compute statement and recoding variables
Lab 5	Project 1	SHOW ME THE DATA!!
Lab 6	T tests	Calculate t tests - independent - and repeated measures
Lab 7	ANOVA	One-way, repeated measures and two way ANOVAs
Lab 8	Regression	Correlations - multiple regression without interactions
Lab 9	ALL OF IT!	
Lab 10	Final Projects	