PSYCHOLOGY 210: INTRODUCTION TO STATISTICS
(SECTION 13E; CLASS # 11045)
SPRING 2011

<u>**LECTURE**</u>: Monday & Wednesday 2-3:15pm
<u>**LAB**</u>: Monday & Wednesday 12:30-1:20pm

<u>**INSTRUCTOR**</u>:   Ricca D. Gardner, M.A.
OFFICE: PSY 213
OFFICE HOURS: Tuesdays & Thursdays 2:30-3:30pm; and by appointment
EMAIL: riccadgardner@yahoo.com

<u>**GRAD ASSISTANT**</u>: Emily Lyons
OFFICE: PSY 314
OFFICE HOURS: Monday 10:00a-12:00p; and by appointment
EMAIL: lyons.csulb@gmail.com

<u>**COURSE DESCRIPTION**</u>: This course introduces you to the field of statistics and hypothesis testing. This is the first of the "basic skills" courses for Psychology majors and it is a required course for students in several other disciplines. It is a course concerned with data – or the information we collect when we do empirical research. In this course you will learn about mathematical techniques that researchers use to organize, summarize and interpret data. You will learn to compute statistical tests by hand using simple data sets. The purpose of these hand calculations is not to learn new math—basic mathematical skills will be sufficient to compute these tests. Doing calculations by hand (and using formulas) will give you an understanding of what goes into the statistical tests. You will also learn to compute statistical tests using SPSS and larger data sets. During the semester you will learn the purpose different statistical tests serve, why they are used, and what questions they can answer. This course introduces descriptive statistics (frequency distributions, measures of central tendency and variability, standard scores, and measures of bivariate association) and basic inferential statistics (the t, F, and r test statistics). Emphasis is placed on understanding the logic of hypothesis testing and its application in each of the inferential tests covered. The importance of probability in statistical decision making is also emphasized.

<u>**LEARNING OBJECTIVES**</u>: At the end of this course you should be able to
- Completely describe a data set (a set of scores) using appropriate descriptive statistics
- Understand the logic and application of hypothesis testing
- Interpret a set of descriptive statistics and understand the limitations of each measure
- Apply the appropriate inferential statistical technique to situations covered in class
- Interpret the results of an inferential test and understand the limitations of each procedure
- Compute descriptive and inferential statistics using a calculator and computer program (e.g., SPSS)
- Enroll in and complete an advanced statistics course

<u>**REQUIRED TEXT**</u>: Gravetter, F.J., & Wallnau, L.B. (2010). *Essentials of Statistics for the Behavioral Sciences (7th ed.*)*. Belmont, CA: Thomson (ISBN: 049581220X)

- OPTIONS:
    1. The 7th edition is also available as a rental from the CSULB Bookstore at less than half the cost of the new book.
    2. You may also buy an older edition (5th or 6th) at considerable savings.

REQUIRED MATERIALS:
- A **calculator** that does basic mathematical operations, squares, and square roots. It does not need to do graphs or major calculus operations. It is your responsibility to understand how the calculator works. Bring the calculator to all class meetings and to all examinations. You must have your own calculator during exams. You will NOT be allowed to share a calculator, use your cell phone, iPod, etc. during an exam.
- A **flash drive**. Label the flash drive with your name, and the class number so that it can be identified and returned to you if you accidentally leave it in the computer.
- An updated **CSULB internet account.** If you do not have a valid campus e-mail account, you can create one by visiting http://www.csulb.edu/misc/NM/. If you have trouble creating an account, contact the CSULB Technology Help Desk at 562-985-4959 or at helpdesk@csulb.edu. All course materials and announcements will be posted on BeachBoard (BB). I will also use email to communicate with you. Go to *MY CSULB* to make any changes to your preferred email address. Otherwise, email from me will go to the email address given to you by CSULB when you enrolled.

ATTENDANCE
Please come to lectures and labs on time. Late arrivals are very disruptive to everyone. Lecture periods will be used to introduce and explain statistical concepts and procedures. Lab sections will be used to practice the procedures by completing lab assignments.

LECTURE:
- Although attendance will not be taken, you will miss out on very important aspects of the class if you are absent. If you are unable to attend, it is your responsibility to find out from fellow classmates what you missed.

LAB:
- You will be required to attend and participate in all lab sessions. You must sign the sign-in sheet everyday during lab. This sheet will be passed around during the first 5 minutes of class. If you arrive after the sign-in sheet has been circulated, you will not be able to sign-in, and you will be counted as absent. This practice encourages attending lab and being on time. During your lab sessions, the data for your assignments will be collected and analyzed. Absences not explained to the instructor's satisfaction will result in points being deducted from the student's lab attendance grade.

ETIQUETTE
Absolutely NO food or drinks are allowed in the lab. Turn off and put away all electronic devices before the start of class. Cell phones should not be on your lap nor on your desk during class or lab time. Please no not sleep in class; if you are sleeping, you are clearly not "attending." Be on time to class and be prepared to spend the entire class period. If you must leave early, kindly let me know in advance. Slamming your books/notebooks shut early won't hurry me along – it will just make me slow down!

ANNOUNCEMENTS
All announcements will be made in class or lab as appropriate and also through BeachBoard and/or email. You are responsible for providing me with a current e-mail address and for checking BeachBoard regularly. If you are not in class or lab, and you do not check BeachBoard, you may miss

important announcements. You are responsible for all information sent to you by email, posted on BeachBoard and/or announced in class.

HOMEWORK

To assist in your understanding of the material covered in lecture and lab, homework will be assigned for each topic. All suggested homework questions will be posted on beachboard. These assignments will be useful in your skill development; however, you will not be required to turn it in and we will not grade them. Homework will be given merely for your practice and are a good way to check your knowledge as you prepare for exams. It is highly recommended that you complete these suggested assignments as success in this course will require practice. I encourage you to visit me or your GA if you have any questions regarding your homework. If we do not see you, we assume that you understand how to do the problems. Answers to all suggested homework questions will be posted on beachboard approximately one week after they are assigned.

COURSE REQUIREMENTS

- **Exams (4 exams; 100 points each; Total points = 400)**
  There will be three non-cumulative examinations and a partially cumulative fourth exam. All four exams are in-class and are each worth 100 points. Each of the non-cumulative exams will cover all of the information since the previous exam. The fourth exam will focus heavily on the material covered in the last third of the course (i.e., since exam #3) but will have a few questions from earlier in the semester. Approximately 70% of the exams will consist of multiple choice and true-false items. In addition, about 30% of the points on each exam will come from problems and essay questions. Bring the following to each exam: (1) a Scantron sheet (Form #882-E) (color = green), (2) two separate #2 pencils, (3) a blue or black ink pen, and (4) a calculator.
- **Lab Assignments (10 assignments; 15 points each; Total points = 150)**
  There will be 10 lab assignments which will entail solving problems both by hand and using the SPSS statistical computer program. Students will work on the assignments during the lab portion of the class. However, some assignments may require additional work that you may need to complete on your own. Unless otherwise specified, assignments will be due at the beginning of your laboratory period on the specified dates. Note the due dates on the course schedule.
- **Quizzes (5 quizzes; 10 points each; Total points = 50)**
  There will be six quizzes over the course of the semester. Quizzes will be given in the first 10 minutes of class so please arrive promptly. Late quizzes are not given, so if you show up late and are unable to hand in your completed quiz you will receive zero points. Quizzes will be derived from both lectures and readings. The format of the quizzes will involve a combination of short answer questions, multiple choice questions, and/or fill-in-the-blank. To complete a quiz, it will be necessary for you to bring a pencil or pen only (I will provide the quiz answer sheet). The quizzes are closed book and closed notes. I will drop your lowest quiz and keep the remaining five quiz scores. This means that a total of 50 points towards your overall class grade will come from quizzes. Each quiz will always ask the same two questions (worth 2 points each) – (1) What is the conceptual definition of the measure or test (e.g., what is it and/or what is it designed to do)? and (2) Give an example of a research question that would use this measure or statistical procedure. The dates of the quizzes are marked on the schedule towards the end of this syllabus.
- **Lab Attendance (40 points)**
  As mentioned earlier, attendance in lab is mandatory. Each lab is worth approximately 2 attendance points each.

GRADING

Grading will be based four exams, 5 quizzes, 10 lab assignments, and lab attendance. Grading will be on an absolute scale (i.e., ≥ 90%, B ≥ 80%, C ≥ 70%, D ≥ 60%, F < 60%). See below for partitioning of your grade.

Requirement	Points	Percentage of Final Grade
Top 5 Quizzes (worth 10 pts each)	50	7.81% of your final grade
10 Lab Assignments (worth 15 pts each)	150	23.43% of your final grade
Exam 1	100	15.62% of your final grade
Exam 2	100	15.62% of your final grade
Exam 3	100	15.62% of your final grade
Cumulative Final	100	15.62% of your final grade
Lab Attendance	40	6.25% of your final grade
Total Points:	**640**	

Points Necessary for Each Grade

A = 576 points
B = 512 points
C = 448 points
D = 384 points

There are no extra-credit assignments in this class

LECTURES

I use powerpoint for all lectures. I will not give out my powerpoint slides; however, I provide an outline of my powerpoint lectures via beachboard prior to class. It is ***your*** responsibility to bring the outlines to class and get the notes you missed from an absence from a fellow classmate.

LATE ASSIGNEMTS & MAKE-UP TESTS

As mentioned earlier, laboratory assignments are due at the beginning of your laboratory period and must be turned **in person** either to me or to the GA. A late assignment will be penalized **10% per day** it is late. The only exception to this rule is a documented medical situation. The <u>only</u> acceptable way of turning an assignment in late is to turn it in to the psychology office. Ask the secretary nicely to time/date stamp it and put it in my mailbox. **Do not** e-mail your assignment to me, slip it under my office door, etc.

Pursuant to university policy, requests to take make-up tests will **only** be granted under the following situations: (1) illness or injury to the student; (2) death, injury, or serious illness of an immediate family member or the like; (3) religious reasons (California Education Code section 89320); (4) jury duty or government obligation; (5) University sanctioned or approved activities. Students may be required to submit documentation to support their petition for a make-up test.

When you miss a test, you need to contact the professor within <u>24 hours</u> of the exam to reschedule at a date and time that is reasonable for both the professor and the student. In addition, the make-up exam needs to be scheduled <u>within 1 week</u> of the original exam date. The only exception to this is if a documented medical situation precludes you from following the above requirements. Any student failing to have an acceptable reason for missing an examination date will receive a score of zero for that exam.

<u>TIPS AND STRATEGIES FOR SUCCEEDING IN THIS COURSE</u>
I am aware that some students might have negative expectations or are nervous about taking this course. **I believe that anyone can do well in this course if he or she is willing to do the work.** Here are some suggestions to help you succeed in this course.

- <u>Put in the time to do well</u>. Please make sure that you allocate a sufficient amount of time to reading, practicing, and studying.
- <u>Do not fall behind</u>. The material in this course is *cumulative*. The information learned in Chapter 1 will be used in Chapter 2, and so on.
- <u>Reading preparation</u>. Read the chapter on a topic in advance of the lecture on that topic. This is an important aspect of learning. To understand a statistics chapter, you should carefully follow the examples and explanations presented in the chapter. Try to understand how the numbers were obtained before going on the next topic. Write down concepts that you don't understand. If I don't clarify these areas in the course of the lecture, ask me about them! If you are still not sure of your grasp of a concept, see me during my office hours.
- <u>Learn the language</u>. Many symbols are used in statistics courses because symbols make up the language of statistics. When a new symbol is introduced, take time to thoroughly learn what it means.
- <u>Know your calculator</u>. You may be surprised to know that most $20 calculators will do the majority of the statistical procedures covered in this class. Knowing the full capabilities of your calculator can save you time doing labs and allow you to check your work on exams, only if you know how to use them! If you purchase a calculator keep the manual (even if it is only a page or two.) and learn to use its statistical functions. Also, be careful when borrowing a calculator. Some students get calculators from friends that do everything but make coffee, yet these can be difficult to learn to use.
- <u>Practice, practice, practice, practice, practice . . . .</u> You are learning new cognitive skills in this course. As with any skill (e.g. shooting free throws, dancing, skateboarding, playing a new video game, etc.) practice is essential! You will never lead the NBA in free throw shooting, or win a gold medal by reading a book on the subject - You must do it!! Statistics is no exception. You can find additional practice problems at the end of each chapter, even if they are not specifically assigned.
- <u>Relax - - It's O.K. to be uncomfortable!</u> It is perfectly natural to feel uncomfortable when learning a new skill. (Think about the first time you tried to ride a bike, snowboard, or drive a car.) Don't let your frustration get the better of you!
- <u>Study in groups</u>. During lab periods, you can work in small groups on assignments. I suggest that you study for exams in the same manner. However, working in groups does not mean waiting for someone else to solve the problem! - the more you put in, the more you will get out! If you think you understand the material, try explaining it to a classmate who is having difficulty - this is the best test of your understanding.
- <u>Ask questions/seek help as soon as possible</u>. If you are at all unsure about something being discussed in class or lab, please ask for clarification. It is okay to say "I have no idea what you are talking about!" Also, take advantage of office hours. I am willing to explain a concept,

problem, etc. as many times as necessary. You may also meet with me outside of office hours, but please contact me ahead of time to ensure I will be available. I will also attempt to respond to emails within 24 hours, except on weekends. And don't forget your GA, Emily, is here to assist you as well. The following is an on-campus source of learning assistance:

> CSULB Learning Assistance Center
> Library East Room 12
> http://www.csulb.edu/centers/lac/index.html
> (562) 985-5350

SPECIAL ACCOMMODATIONS

Some students have special needs and not all disabilities are obvious. If you have a disability and wish to receive special accommodations (e.g., class note taker, large fonts on exams, etc.) then please consult with me as soon as possible, but no later than two weeks from the first day of class. Information regarding disabilities and accommodations will not be shared with other students. For details about qualifying disabilities and accommodations, students may contact the Office of Disabled Student Services in Brotman Hall 270 or call (562) 985-5401.

GRADE REVIEW PROCESS

Students are welcome to talk to the professor if they feel that they have received an incorrect grade on a paper or test and ask for the grade to be altered. In so doing, please note the following points:
- When making the request for a grade change, please have a specific reason why you should receive additional points (e.g., point to something specific in the text or class notes that you feel substantiates your claim).
- The goal of grading a test or an assignment is to provide an accurate assessment of a student's performance. With that goal in mind, the professor reserves the right to either (a) add additional points to the student's grade if he feels that a sufficient number of points was not initially given, (b) subtract points from the student's grade if he feels that, upon further review, too many points were given originally, or (c) let the original point assignment stand if he feels that it is accurate.
- All requests must be made to the professor on or before the day of the final exam (except for grade change requests on the final exam itself). Requests for grade changes on items other than the final exam will not be considered after that date.

CHEATING AND PLAGIARISM POLICY

The following is taken from University Policy Statement #85-19:
- Definition of Cheating: Cheating is defined as the act of obtaining or attempting to obtain or aiding another to obtain academic credit for work by the use of any dishonest, deceptive or fraudulent means. Examples of cheating during an examination would include, but not be limited to the following: copying, either in part or in wholes, from another test or examination; discussion of answers or ideas relating to the answers on an examination or test unless such discussion is specifically authorized by the instructor; giving or receiving copies of an exam without the permission of the instructor; using or displaying notes; "cheat sheets," or other information or devices inappropriate to the prescribed test conditions, as when the test of competence includes a test of unassisted recall of information, skill, or procedure; allowing someone other than the officially enrolled student to represent the same.

- Definition of Plagiarism: Plagiarism is defined as the act of using the ideas or work of another person or persons as if they were one's own, without giving credit to the source. Such an act is not plagiarism if it is ascertained that the ideas were arrived at through independent reasoning or logic or where the thought or idea is common knowledge.

  Acknowledge of an original author or source must be made through appropriate references, i.e., quotation marks, footnotes, or commentary. Examples of plagiarism include, but are not limited to, the following: the submission of a work, either in part or in whole, completed by another; failure to give credit for ideas, statements, facts or conclusions with rightfully belong to another; in written work, failure to use quotation marks when quoting directly from another, whether it be a paragraph, a sentence, or even a part thereof; close and lengthy paraphrasing of another writing or paraphrasing should consult the instructor.

  Students are cautioned that, in conducting their research, they should prepare their notes by (a) either quoting material exactly (using quotation marks) at the time they take notes from a source; or (b) departing completely from the language used in the source, putting the material into their own words. In this way, when the material is used in the paper or project, the student can avoid plagiarism resulting from verbatim use of notes. Both quoted and paraphrased materials must be given proper citations.

- Response to Cheating and Plagiarism: One or more of the following academic actions are available to the faculty member who finds a student has been cheating or plagiarizing. These options may be taken by the faculty member to the extent that the faulty member considers the cheating or plagiarism to manifest the student's lack of scholarship or to reflect on the student's lack of academic performance in the course. These actions may be taken without a request for or before the receipt of a Report from the Academic Integrity Committee.
  (a) Review -- no action.
  (b) An oral reprimand with emphasis on counseling toward prevention of further occurrences;
  (c) A requirement that the work be repeated;
  (d) Assignment of a score of zero (0) for the specific demonstration of competence, resulting in the proportional reduction of final course grade;
  (e) Assignment of a failing final grade;
  (f) Referral to the Office of Judicial Affairs for possible probation, suspension, or expulsion.

UNIVERSITY WITHDRAWAL POLICY:

It is the student's responsibility to withdraw from classes. Instructors have no obligation to withdraw students who do not attend courses, and may choose not to do so.
The deadline to withdraw from a class without a "W" is February 6, 2011.
Withdrawal from a course with a "W" after the first 2 weeks of instruction is permissible only for serious and compelling reasons and requires the signature of the instructor and the department chair. **The university deadline to withdraw from classes in Spring 2010 is Friday, April 22nd.**

AFTER April 22nd:
DURING THE LAST THREE WEEKS OF INSTRUCTION YOU MAY NOT DROP (WITHDRAW FROM) A CLASS EXCEPT FOR A VERY SERIOUS REASON THAT IS CLEARLY BEYOND YOUR CONTROL, SUCH AS INJURY OR ACCIDENT **(WHICH MUST BE DOCUMENTED)**. USUALLY, SUCH CIRCUMSTANCES MEAN THAT YOU WILL BE WITHDRAWING FROM ALL YOUR CLASSES. YOU WILL NEED THE APPROVAL OF THE COLLEGE DEAN AS WELL AS THAT OF THE CLASS INSTRUCTOR AND DEPARTMENT CHAIRPERSON FOR EACH CLASS YOU DROP.

The College of Liberal Arts adheres to this policy strictly, and <u>does not sign</u> withdrawal forms in the final three weeks of instruction for other reasons.

<u>**SYLLABUS CHANGES**</u>
The following schedule is tentative. All schedule changes will be announced in class and posted on beachboard. You are responsible for any changes that occur. Coverage of the material may shift. An exam date will not change unless there is a major event that prevents it from taking place.

COURSE SCHEDULE (TENTATIVE)

DATE	LAB	LECTURE TOPIC	READING
Jan. 24 Jan. 26		Syllabus and Introduction Introduction to Statistics	Chapter 1
Jan. 31 Feb. 2	Intro to lab Intro to lab	Frequency Distributions Central Tendency	Chapter 2 Chapter 3
Feb. 7 Feb. 9	Lab 1 Lab 1	Variability z-Scores	Chapter 4 Chapter 5
Feb. 14 Feb. 16	Lab 2 Lab 2	**QUIZ #1;** Probability Chapter Continued; Review EXAM 1	Chapter 6 Chapter 1 to 6
Feb. 21 Feb. 23	 Lab 3	**EXAM #1—CHAPTERS 1-6** The Distribution of Sample Means (I)	 Chapter 7
Feb. 28 Mar.2	Lab 3 Lab 3	The Distribution of Sample Means (II) Introduction to Hypothesis Testing	Chapter 7 Chapter 8
Mar. 7 Mar. 9	Lab 4 Lab 4	Introduction to The t Statistic (I) **QUIZ #2;** Introduction to The t Statistic (II)	Chapter 9 Chapter 9
Mar. 14 Mar. 16	Lab 5 Lab 5	The t Test for Independent Samples (I) **QUIZ #3;** The t Test for Independent Samples (II)	Chapter 10 Chapter 10
Mar. 21 Mar. 23		Chapter Continued; Review EXAM 2 **EXAM #2—-CHAPTERS 7-10**	Chapters 7 to 10 Chapters 7 to 10
Mar. 28 **April 1**		**NO CLASS—SPRING BREAK**	
April 4 April 6	Lab 6 Lab 6	The t Test for Dependent Samples (I) The t Test for Dependent Samples (II)	Chapter 11 Chapter 11
April 11 April 13	Lab 7 Lab 7	**QUIZ #4;** Introduction to ANOVA (I) Introduction to ANOVA (II)	Chapter 13 Chapter 13
April 18 April 20	Lab 8 Lab 8	Two-Factor ANOVA Repeated-Measures ANOVA	Chapter 14 Chapter 14
April 25 April 27	Lab 9 Lab 9	**QUIZ #5;** Repeated-Measures ANOVA Chapter Continued; Review EXAM 3	Chapter 14 Chapter 14
May 2 May 4	 Lab 10	**EXAM #3—CHAPTERS 11, 13 and 14** Correlation	Chapters 11 13 & 14 Chapter 15
May 9 May 11	Lab 10 Lab 10	**QUIZ #6**; Regression Review and Preparation for Final EXAM	Chapter 15 ALL CHAPTERS

FINAL EXAM—MAY 16, 12:30 PM TO 2:30 PM