

Psychology 100A: Psychological Statistics  
Fall 2009

**Lectures:**

Class: TR 12:30 – 1:45, Franz 1178

Discussion: (optional) F 12:00-12:50, Humanities A51

**Instructor:**

Sean McAuliffe

Office hours: Tue 11:00-12:00 & Thu 2:00-3:00

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**Website:**

[www.TheBestStatistics.Info](http://www.TheBestStatistics.Info) is a comprehensive statistics website. There is a free version and a subscription version.

The free version ([www.thebeststatistics.info/freeindex.html](http://www.thebeststatistics.info/freeindex.html)) contains ...

- \* Comprehensive overviews of all material for this class
- \* Review questions/answers on each topic

The subscription version (\$30 for a 3 month subscription) **also** contains ...

- \* Customizable step-by-step problem solvers for statistical analyses with graphical displays
- \* Interactive demonstrations to illustrate important concepts

**Subscribing to the site is NOT required for the course, but students in the past have found it very useful (The median rating is 9 out of 10).**

The website will frequently be used in class to show how to solve problems as well as visually demonstrate important concepts.

### **Textbook:**

Because the free and subscription websites provide detailed overviews of the material, **no textbook is required for this course.** The recommended OPTIONAL text is “Statistical Concepts for the Behavioral Sciences (3rd Edition)” by Harold KIESS (available in the UCLA bookstore). One problem is that the textbook will cover additional topics not presented in class, and in some cases will use different terminology which some students find confusing.

### **Review materials:**

To facilitate learning, comprehensive review materials will be posted on the course web page for every lecture.

### **Friday discussion sections:**

There will be **no new material** introduced in the Friday discussion sections, so you are not required to attend, but many students find them helpful.

### **Overview:**

In this course, we will cover the basic data-analysis concepts and procedures used by research psychologists. The course will briefly review ways of describing data (descriptive statistics) and methods of evaluating hypotheses and testing psychological theories (inferential statistics). Examples will be drawn almost exclusively from the psychological literature. Specific topics include correlation, t-tests, and ANOVA.

### **Course Requirements and Grading:**

It is **very important that you attend all classes** in order to keep up with the material. Your grade will depend on your performance on the midterms and final exams. If you miss some lectures and get lost, you will be in serious trouble because concepts build on other concepts. Statistics is **cumulative** but the exams emphasize recent materials. All exam material will come from lectures.

### **Grading basis:**

<b>Exam</b>	<b>When</b>	<b>Total Points</b>	<b>Format</b>
Exam 1	Thursday Oct 15 (in class)	30	15 Multiple Choice, 15 One Answer
Exam 2	Thursday Nov 19 (in class)	30	15 Multiple Choice, 15 One Answer
Final	Friday Dec 11 (11:30-2:30)	60	30 Multiple Choice, 30 One Answer

As you will learn in the course, the distribution of scores can be described in a standardized way. A **Z-score** is a standardized score which indicates how far a particular score is away from the mean (or average) score in terms of standard deviations (a measure of how wide a distribution is). Exam scores that are above the mean will have a positive Z-score, exam scores below the mean will have a negative Z-score. **Your average Z-score on all the exams will determine your grade.** The final exam will count twice as much as the other exams in this average. Below is the correspondence between the average Z-score and the grade you will receive. Next to the Z score is the approximate % of the class that will get that grade.

Average Z-score	Grade	Approximate % of class receiving score
>1.30	A	10
>0.85	A-	10
>0.55	B+	10
>0.25	B	10
>0.00	B-	10
>-0.25	C+	10
>-0.85	C	20
>-1.30	C-	10
>-1.70	D	5
<-1.70	F	5

**I will not respond to any emails asking me what your grade means or where you stand in the class** – your z-score tells you everything you need to know. Here is an example to clarify.

Exam 1 – Z score = -1.0

Exam 2 – Z score = -0.4

Final Exam Z score = -1.3

Average z-score =  $(-1.0 + -0.4 + -1.3 + -1.3) / 4 = (-4) / 4 = -1.0 = C-$ .

**Your grade is up to you.** While the course is going on, I will do as much as I can to make sure you learn as much as you can about this material. If you want to learn more or you are confused, **COME TO OFFICE HOURS.** I may be ugly, but I am not that scary in my office.

At the end of every quarter after the final, there are inevitably a handful of students who beg me for a way to increase their grade because they didn't seek help when they had the chance. My answer to these requests to change grades is always the same – **No. No. No. No. No.** It would be grossly unfair to all students if I ever allowed anything but the scores determine the grade. Fairness is very important and fairness is the reason why a student will NEVER be able to increase their grade after the course is done.

### **Missing-Exam:**

Under certain **EXTREME** conditions (severe medical illness with **complete** medical documentation or death of an **IMMEDIATE** family member), **ONE** missing midterm exam can be substituted with the lowest Z-score of the remaining exams. In this way, students who are consistent good performers need not be hurt by a missing exam.

For example:

Exam 1  $Z=1.0$

Exam 2 Missing due to **EXTREME** case of Ebola

Final Exam  $Z = 1.2$

In this case, the missing exam would be scored as  $z=1.0$  because 1.0 was the lowest z-score of the remaining exams. In this case, the average z score would be  $(1.0+1.0+1.2+1.2)/4 = 4.4/4 = 1.1$  which would be an A-.

**Missing the FINAL exam will result in an F.**  
**Only ONE of the 2 midterm exams can be missed.**

No incompletes, extra credit, etc. are given in 100A.

### **Exam Difficulty:**

The exams are **DIFFICULT**. The scores are curved so this is really not a problem. In fact, hard exams are good because they allow the students who know more to distinguish themselves from those who don't know very much. An exam that is too easy does not allow for a wide enough spread in the distribution. Some of the exam questions will be similar to questions in the book or examples done in class. Some of the questions will require you to understand the concepts well enough to relate them to each other in a potentially novel way.

### **Exam Format:**

Why are 1/2 of the exam questions not multiple choice?: Because multiple choice exams are unfair. They are unfair because they are greatly affected by guessing. In addition, life is not a multiple choice exam. You won't get asked multiple choice questions in a job interview. Although we would love to give you all one-answer questions, grading a large number of one-answer exams would be too time-consuming. Therefore, we have 1/2 multiple choice questions and 1/2 one-answer questions. This is not perfect, but not much in life is.

### **Cheating:**

We hate cheaters and will do everything possible to get you kicked out of school if we catch you. No kidding here – cheating is serious business and if we catch you, then you are history. Note – we have had a lot of experience at catching cheaters, so just don't do it. Despite what you may have heard, UCLA will kick you out of school for a couple of semesters (or more) if you caught cheating.

## **Calculator Type:**

**Fairness is very important in this class. The only way to be fair is to require that everyone has EXACTLY the same calculator.** Go to the UCLA bookstore (on the B-level where the computers are), and buy the following calculator for about \$4:

Aurora HC108X

Many students will be annoyed that they have to buy a new calculator when they already have one, but there is no way of making sure that different calculators have the same functionality (we can't check 150 calculators during the exam). Remember, you are not required to buy a textbook, which costs far more than a calculator.

**Any other calculators will not be allowed – NO EXCEPTIONS. In fact, you will lose 5 points on exam if you do not have the official calculator** – your unofficial calculator will be taken during the exam period and you will be given an official calculator for the exam. 5 points is a lot of points.

## **Formula Sheets:**

**No formula sheet** will be given out for use during the exams. Students often complain that memorizing a bunch of formulas is stupid because it is not conceptual. Unfortunately, this thinking is wrong. As you will learn in this course – the formula cannot be separated from the concept and in some cases the formula IS the concept.

<b>Date</b>	<b>Day</b>	<b>Material</b>
Sep 24	Thu	Introductory Materials
Sep 29	Tue	Central tendency and variability
Oct 01	Thu	Normal Distribution
Oct 06	Tue	Sampling Distributions, Confidence Intervals
Oct 08	Thu	Hypothesis testing
Oct 13	Tue	Review for Exam 1
Oct 15	Thu	<b>MIDTERM EXAM 1</b>
Oct 20	Tue	two sample dependent T-tests
Oct 22	Thu	two sample independent T-tests
Oct 27	Tue	power, experimental design
Oct 29	Thu	power, experimental design
Nov 03	Tue	Power/one-way ANOVA (between)
Nov 05	Thu	one-way ANOVA (between)
Nov 10	Tue	one-way ANOVA (within)
Nov 12	Thu	two-way ANOVA (between)
Nov 17	Tue	Review for Exam 2
Nov 19	Thu	<b>MIDTERM EXAM 2</b>
Nov 24	Tue	Correlation
Nov 26	Thu	<b>No Class - Thanksgiving</b>
Dec 01	Tue	Regression & Chi-square
Dec 03	Thu	Final review
Dec 11	Fri	<b>FINAL EXAM 11:30-2:30 in class</b>