

Psychology 320: Statistical Methods in Psychological Research
Lecture 11657 12-12:50pm TTH in SH365
Lab 11665 1-1:50pm TTH SH363 or Lab 11666 2-2:50pm TTH SH363

PLEASE NOTE THAT IF YOU ARE IN PSY 320 LECTURE (CLASS #11657) YOU MUST BE ENROLLED IN PSY 320/LAB (#s 11665 or 11666). YOU CANNOT ENROLL IN LECTURE/LAB SECTIONS WITH DIFFERENT INSTRUCTORS!

If you are not enrolled in both lecture and lab, your work will not be graded and you will receive an "F" grade.

Information:

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Website: <http://www.csun.edu/~ata20315/psy320>

Office: ST 302 **Phone:** 677-3898

Office Hours: Office hours are not just for students who are lost or behind. It is an opportunity for any of you to come and talk to me one-on-one. Please come in and see me to talk about statistics (or psych in general) and help me connect your names with your faces.

Office Hours: M 3-4pm or by appointment

Teaching Assistants:

1-1:50pm Lab 11665:

Chaya Greisman **Email:** chayagreisman@gmail.com **OH:** T 12-1 or by appointment

2-2:50pm Lab 11666:

Elizabeth Seaton **Email:** elizabeth.seaton@csun.edu **OH:** MW 4-5pm SH308a

Required Textbook:

Howell, David C. (2007). *Fundamental Statistics for the Behavioral Sciences* (6th Edition). Belmont, CA: Brooks/Cole – Thomson Learning.

Course Description:

Analysis of psychology research data using computational methods as well as packaged computer programs. Standard techniques (e.g. correlation, t-tests, ANOVA) with applications in psychology are covered. Choice of analytic technique is discussed, as are methods of screening data to assure appropriateness of techniques. Lab provides direct experience with computing facilities for conducting analyses and computational methods extending statistical analysis provided by computer output.

Catalog:

Analysis of the statistical decision-making procedures used in psychological research. Lab considers problem-solving techniques and computational methods needed to analyze data obtained in psychological experiments.

Absences:

The pace at which we will be covering the complex field of statistical concepts and methods over the course of the semester will appear both rapid and comprehensive. As such, missing even one class will put you at a disadvantage in mastering the material. I plan on making each lecture as interesting, challenging, and as interactive as possible. Your absence impedes my ability to meet these goals.

If you miss a class, I encourage you to obtain missing notes from one of your classmates. You should also arrange to have someone turn in your homework assignment and collect the next one, if necessary.

Exams:

Midterm examinations are scheduled for **Wednesday, October 1st and Friday, October 31st**. Each preliminary examination will be given during regular class time and will consist of approximately 10 T/F, 10 multiple-choice and 5 short answer questions. Content for each preliminary examination will be drawn from both the assigned readings and the lecture material. Please remember to bring a Scantron form and #2 pencil to class on these days!

The final exam is scheduled for **Wednesday, December 17th from 12:45pm until 2:45pm**. The final will be approximately 10 T/F, 10 multiple-choice and 10 short answer questions and will **NOT** include material from the previous three examinations. Again, don't forget your Scantron form and #2 pencil!

If any of these dates present a particular problem for you, please see me as soon as possible. Due to the rapid pace of the course and the large number of students enrolled, make-up exams are extremely difficult to arrange unless they are scheduled in advance. If you miss an exam without prior notice, please ensure that you have appropriate documentation to support your absence. I will deal with these situations on a case-by-case basis.

Grades

Class Grading:

| | | |
|-----------|-------------|--|
| Midterm 1 | (Wed 10/1) | 25-30 questions (T/F, Multiple Choice, Short Answer) |
| Midterm 2 | (Fri 10/31) | 25-30 questions (T/F, Multiple Choice, Short Answer) |
| Final | (Wed 10/17) | 25-30 questions (T/F, Multiple Choice, Short Answer) |
| Homework | | 11 homework assignments throughout the semester |
| Quizzes | | Pop quizzes (about 1 per week) throughout the semester |

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.

Exam Grade Estimation

First convert your raw test score and convert it to a Z-score using the Z formula:

$$Z_{\text{testscore}} = \frac{X_{\text{raw test score}} - \bar{X}_{\text{test mean}}}{S_{\text{test standard deviation}}}$$

This formula is not something you should be familiar with right now, but before your first exam you should understand this formula, what it means and how to interpret your grade based on the Z-score you receive.

Using you raw score, the mean and standard deviation of the scores to calculate your Z-score you can then look up your Z-score on the table below to see your grade estimation

| | | |
|---------------|---|----|
| 1.28 or above | = | A |
| 1.05 | = | A- |
| 0.84 | = | B+ |
| 0.52 | = | B |
| 0.39 | = | B- |
| 0.26 | = | C+ |
| -0.26 | = | C |
| -0.39 | = | C- |
| -0.52 | = | D+ |
| -0.84 | = | D |
| -1.05 | = | D- |
| below -1.05 | = | F |

You grade in the class will be determined by either your average z-score on the 3 exams and your homework or your z-score on your total score (i.e. adding the exams and homework together). I will calculate your grade both ways and you will receive the better of the 2 grades if there is a difference.

Lab Grading:

Your lab grade is based on your scores on 13 laboratory assignments that are intended to teach you how to analyze data using statistical programs available to you in the stats (and others) lab.

Testing Procedure

On exam days you need to bring your student ID in order to be allowed to turn in your exam at the end of the test period. As you enter the classroom on a testing day sit in any seat **except for those in the first row** in order to reserve those seats for late arriving students. Also, if you are asked to change seats during the exam don't freak out just quietly move and resume your test. We may be asking you to move for a number of reasons (e.g. your neighbor's eyes are wandering a bit and it's easier to move you) so unless you are told you are in trouble don't worry about it. If you need to use the restroom during an exam you will need to bring you test and scantron up to the front and turn it in and one of the TAs or I will escort you.

Missing-Exams

Under certain **EXTREME** conditions (severe medical illness with **complete** medical documentation or death of an **IMMEDIATE** family member), an alternative testing arrangement can be made under my discretion.

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 Completion

The T/F and Multiple choice answers on the exam will need to be bubbled in on a scantron form. It is your responsibility to have these answers bubbled in by the end of the exam period. Why am I telling you this? Because if I don't mention this now, some students will wait until the end of the exam to transfer their answers from their exam to the scantron, which would effectively give them more time than the other students. **That's simply not fair and it will not be allowed.**

When time runs out during the exam, students will not be allowed to write anything more on their scantrons.

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.

Book and Calculator

You may not use your book for the exams but you will need a calculator. (Bring extra fresh batteries.) Failing to bring a calculator will severely compromise your ability to complete the exams.

Calculator Type

Your calculator **MUST HAVE** the following functions **AND NOTHING MORE**.

Multiplication, Division, Subtraction, Addition and Square Root.

Optional functions:

A one item memory function ($\Sigma+$, M+, M-, MR), Squaring function and %

Any calculator that has more functions than this is **NOT ALLOWED**. If you are caught using one a calculator that has more functions than this, **you will lose 5 points on the exam which will really hurt your grade**. Why are we so harsh with this? We want all students to have the same calculator because that is the only **FAIR** way to do it. If your calculator has any extra functions, then it gives you an unfair advantage. A calculator with these allowed functions costs roughly 5-10\$ and can be bought in a million different places. Please give us a break and just buy the calculator. It may seem silly that you have to buy a new calculator when you already have a texas instruments 4 million that does all this stuff, but it's the only way we can make sure that everyone is playing fair.

Formula Sheets

No formula sheet or notes will be allowed during the first exam. For the second exam and the final a sheet with some select formulas will be given to you but the formulas will not be identified (e.g. it won't say "Pooled Variance" above the formula), it is your responsibility to know the formulas well enough to identify them on sight. The formula sheets will be supplied simply to help you remember the specifics of the more complicated formulas. 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 (hopefully) – the formula cannot be separated from the concept and in some cases the formula **IS** the concept.

Quizzes

Pop quizzes will be given out in the first 5-10 minutes of class. They will consist of 2 or 3 questions based on the required reading and/or previous class lecture. Grades on the quizzes will be used to both track your attendance and to decide borderline grades.

Tentative Class Schedule

| Week | Day | Date | Topic | Chapter | HW | Lab |
|------|------|-------|--|---------|-------------------|-----------------------------------|
| 1 | M | 8/25 | Intro | 1 | #1 (Ch. 1,2,3) | Intro to SPSS |
| | W | 8/27 | Measurement | 2 | | Lab 1: Displaying Data |
| | F | 8/29 | | | | |
| 2 | M | 9/1 | Labor Day | | | |
| | W | 9/3 | Displaying Data | 3 | | Lab 2: Central Tendency |
| | F | 9/5 | | | | |
| 3 | M | 9/8 | Central Tendency | 4 | #1 Due | Lab 3: Variability |
| | W | 9/10 | | | #2 (Ch. 4,5) | |
| | F | 9/12 | Variability | 5 | | |
| 4 | M | 9/15 | Normal Distribution | 6 | #2 Due | Lab 4: Normal Curve |
| | W | 9/17 | | | #3 (Ch. 6,7) | |
| | F | 9/19 | | | | |
| 5 | M | 9/22 | Probability | 7 | | Lab 5: Probability |
| | W | 9/24 | | | #3 Due | |
| | F | 9/26 | | | | |
| 6 | M | 9/29 | Review for Midterm 1 | | | |
| | W | 10/1 | Midterm 1 | | #4 (Ch. 8) | NO LAB |
| | F | 10/3 | Sampling Distributions | 8 | | |
| M | 10/6 | | | | Go over Midterm 1 | |
| 7 | W | 10/8 | One Sample tests | 12 | #4 Due | Lab 6: Sampling Dist |
| | F | 10/10 | | | | |
| 8 | M | 10/13 | Related Samples Tests | 13 | #5 | Lab 7: Single and related Samples |
| | W | 10/15 | | | | |
| | F | 10/17 | Independent Samples Tests | 14 | | |
| 9 | M | 10/20 | Power | 15 | #5 Due | Lab 8: Independent Samples |
| | W | 10/22 | | | #6 | |
| | F | 10/24 | | | | |
| 10 | M | 10/27 | Review for Midterm 2 | | #6 Due | |
| | W | 10/29 | | | | |
| | F | 10/31 | | | Midterm 2 | |
| 11 | M | 11/3 | One-Way Analysis of Variance | 16 | #7 | Go over Midterm 2 |
| | W | 11/5 | | | | Lab 9: One Way ANOVA |
| | F | 11/7 | | | | |
| 12 | M | 11/10 | Factorial Analysis of Variance | 17 | #7 Due | Lab 10: Factorial/Repeated ANOVA |
| | W | 11/12 | | | #8 | |
| | F | 11/14 | | | | |
| 13 | M | 11/17 | Repeated Measures Analysis of Variance | 18 | #8 Due | Lab 11: Correlation |
| | W | 11/19 | | | #9 | |
| | F | 11/21 | Correlation | 9 | | |
| 14 | M | 11/24 | Regression | 10 | #9 Due | Lab 12: Regression |
| | W | 11/26 | | | #10 | |
| | F | 11/28 | | | Thanksgiving | |
| 15 | M | 12/1 | Regression | 10 | #10 Due | |
| | W | 12/3 | | | #11 | |
| | F | 12/5 | Chi Square | 19 | | |
| 16 | M | 12/8 | Review for Final | | #11 Due | Lab 13: Chi Square |
| | W | 12/10 | | | | |
| 17 | W | 12/17 | Final 12:45 - 2:45 | | | |