

PSY 2301: Introduction to Statistics

Class MWF 10:00-10:50, ELA 118 (Section 251)

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Office hours: Monday 11:30-1:30,
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Office hours: TBD

GENERAL COURSE INFORMATION:

Course: The purpose of this course is to provide you with an introduction to statistics and its use in the social sciences. During the course I will present the theory behind and application of a number of different statistical measures. My primary goal is to ensure that students understand not only how to calculate each statistical measure, but also when and why it is used through the use of examples that are applicable to real-world research questions.

Course Prerequisites: PSY 1300, MATH 1312 (or higher)

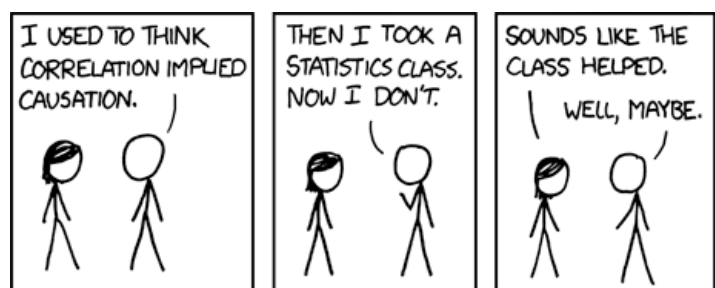
Course Objectives:

1. Students will develop their mathematical and statistical reasoning abilities through firsthand practice with key statistical measures. They will be able to demonstrate this ability during in- and out-of-class assignments that showcase the application of these measures to questions related to social sciences research.
2. Students will strengthen their ability to effectively communicate the results of statistical analyses to both a scientific and lay audience. Students will demonstrate this ability through in-class discussion and critical thinking exercises on in- and out-of-class assignments.

Department of Psychology PSY 2301 Student Learning Outcomes:

1. Demonstrate understanding of statistical concepts and an ability to evaluate the appropriateness of research conclusion.
2. Identify and carry out the appropriate statistical procedure for many basic research situations.
3. Understand and be able to explain to others the statistical analyses in behavioral and social science research reports.
4. Develop quantitative and analytic thinking skills.
5. Prepare for more advanced courses in statistical methods.

Student Learning Outcomes will be assessed at one or two points during the semester. This assessment is mandatory for all students and is a requirement for the University's re-accreditation with the Southern Association of Colleges (SACS). Accreditation through SACS is completed every ten years and is an important part of maintaining the value of your degree.



Comic credit: XKCD.com

REQUIRED TEXTS

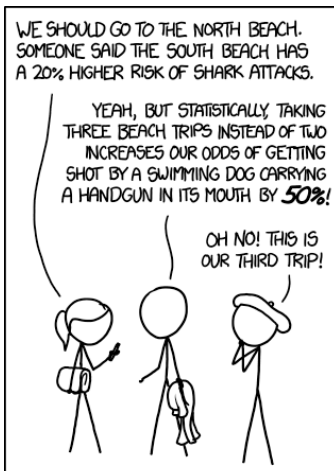
This book is available at the book store and online.

Heiman, G. (2014). *Behavioral Sciences STAT 2nd Edition*. Cengage Learning: Stamford, CT.
ISBN: 978-1285458144

I hope you find this book to be an informative and interesting companion to lecture. I have evaluated many introductory statistics texts and found this book to be one of the best written and most engaging (albeit with some very interesting image choices). Moreover, the author works to integrate examples that cover a diversity of interesting research topics in the social sciences.

All versions of the book (EBook and paperback) are appropriate for this class, but you do need to be sure to buy the **2nd Edition**. You will **NOT** need access to the online material for this class, so buying a used copy without an access card is okay.

Additional required readings may be made available on our class's TRACS site.



REMINDER: A 50% INCREASE IN A TINY RISK IS *STILL TINY*.

CLASS ATTENDANCE

Given the large amount of material being covered in this class, attendance is critical. To encourage attendance, I have two policies:

1. *Extra credit* – We will have 37 class sessions (NOT including exam days). If you attend 33/37 class sessions, you will receive 20 extra credit points toward your total grade.

Attendance will be taken via the attendance check-in feature on TRACS. Each class, there will be a code on the board. **It is your responsibility to enter the code on TRACS at the beginning of class to be counted as present and on time.** If you forget to check in, there is a link on TRACS for you to fill in within 24 hours.

If you arrive or check-in more than 15 minutes after the start of class, you will be counted as late. Two late arrivals will count as one absence. Leaving early without prior approval from Dr. Clegg-Petz is also not permitted. If you leave before the end of class, this will be noted and your attendance will be recorded as **late**.

2. *Practice problems* – Each unit, there will be practice problems built into the material. These problems will be very similar to the homework and will also prepare you for the kinds of problems to expect on that unit's exam. Being present and actively participating in the completion of these practice problems will be very beneficial to your success in the class.

Missing class:

If you miss class, I encourage you to come to office hours or schedule a time to meet to discuss any material that was missed. There may also be announcements made about assignments and documents handed out. Most documents will be available on TRACS but be sure to check in

with a classmate about announcements. *If you anticipate the need for an extended absence at any point in the semester, please contact me (Dr. Clegg-Petz) to talk about a plan for staying up to date with material and assignments.* I have built in multiple practice opportunities in class, so it is important to attend as many class sessions as possible to gain a better understanding of the material being presented.

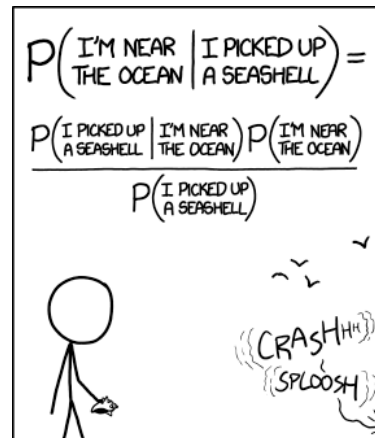
ASSIGNMENTS & GRADING:

The following assignments were designed to provide multiple opportunities for gaining skills, building on these skills, and then in final assignments, showing mastery.

Homework: (200 points)

Throughout the semester, students will be asked to complete 11 homework assignments. Each homework assignment will be worth 20 points (graded for accuracy). Students will need to submit their answers on TRACS by 6:30 pm on the day the assignment is due. Each student's lowest homework grade will be dropped.

- Homework assignments are open-book and can be completed collaboratively. Students can work with **up to two other students** to complete each homework assignment.
- If students work collaboratively, only one student will need to turn in the assignment, but that student should provide the names of their homework partners and certify that all partners contributed equally to the execution of the assignment.
- Late homework assignments will **NOT** be accepted without prior approval. Students are encouraged to plan ahead so that their assignments are turned in on time.
- Homework due dates are marked on the syllabus schedule.



STATISTICALLY SPEAKING, IF YOU PICK UP A SEASHELL AND DON'T HOLD IT TO YOUR EAR, YOU CAN PROBABLY HEAR THE OCEAN.

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Exams: (400 points)

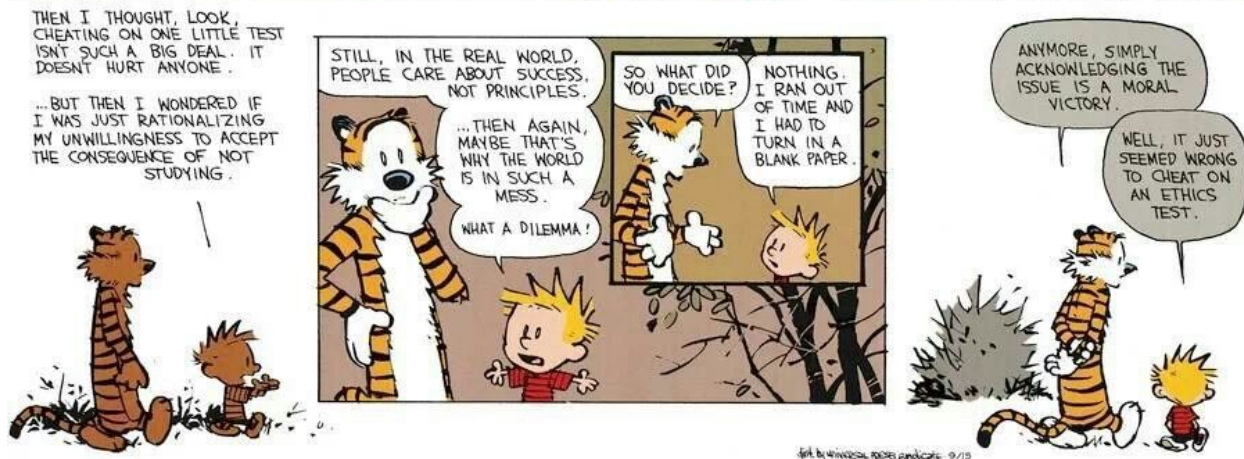
Students will complete 4 unit exams and 1 final exam this semester. A Study Guide will be provided before each exam, but I encourage students to study throughout the semester by completing the practice questions available in each chapter of the textbook.

Unit Exams:

Each unit will end with a 100-point test that will assess students' understanding and application of that unit's material. At the end of the semester, each student's **lowest unit exam grade** (out of 4) will be dropped. Each unit test will include both an in-class component (50 pts.) and a take-home component (50 pts.).

- The **in-class component** will be closed-note. Typically, there will be between 15 and 30 questions that will include a mix of multiple choice, true/false, fill in the blank, and/or short answer questions.

- The **take-home component** will be open-note. Students will be asked to assess data related to a study and apply the unit's content to that data. Take-home exams will only be distributed to students that attend the in-class portion of the exam or to students who have made prior arrangements with Dr. Clegg-Petz.
 - **Academic honesty and take-home exams:** Students are expected to work on their take-home exams individually. If it is found that students have collaborated on a take-home exam, all students involved will receive 0 points for the assignment and may need to schedule any future take-home exams to be completed under supervision. This violation will also be reported to the Texas State Honor Council.



Comic credit: Calvin and Hobbes by Bill Waterson

Final exam:

The final exam will include questions related to the last unit of the semester (Unit 5) and students will also be asked to integrate their knowledge from the semester to determine what statistical measures should be used in a series of study and data examples. The final will **NOT** be dropped.

Missing an exam: Students are welcome to take any exam (with the exception of the final) up to 2 business days before it is administered to the class due to a documented out-of-town commitment. Students need to contact Dr. Clegg-Petz about taking the exam early no less than 5 business days before the exam. Students who miss the exam due to a documented medical emergency will need to contact Dr. Clegg-Petz within **24 hours** of the exam to arrange for a make-up. All make up exams need to be completed within 3 business days of the missed exam.

Extra credit opportunities:

Attendance: To encourage regular attendance, students will receive 20 points added to their course point total if they attend 33/37 classes (see attendance policy for late arrivals/early departures). It is students' responsibility to ensure that they are checked in via TRACS at the beginning of class. If you forget to check in or notice an error in your attendance check-in, you will need to complete the form linked on TRACS within 24 hours.

Statistics in the Real World: Students have the option of completing a "Statistics in the Real World" assignment in place of participating in research for 5 extra credit points. Students will

need to complete ALL parts of the assignment to receive credit – partial credit will not be assigned. *Students need to be complete this assignment by Friday, May 1.*

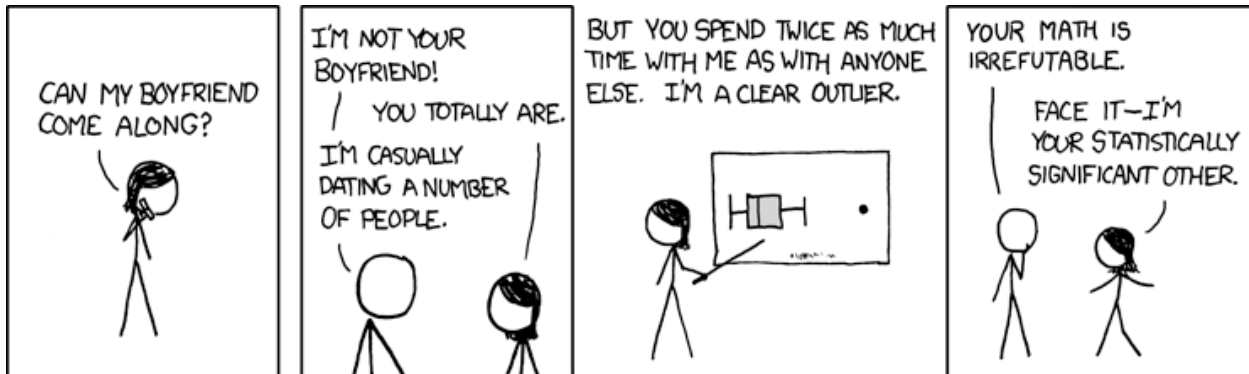
CALCULATING YOUR FINAL GRADE:

Over the course of the semester, you have the opportunity to earn 600 points. Extra credit points will be added to your total course points. To calculate your grade, you will need to add up your total points received (excluding the drops outlined in the syllabus).

Category	Points possible	% of Final Grade
Homework	200	33%
Exams	400	67%
Total	600	100%

Final grades will be assigned based on the following point distributions:

Grade	Total Points Earned
A	530.0 – 600
B	470.0 – 529.9
C	410.0 – 469.9
D	350.0 – 409.9
F	349.9 or below



Comic credit: XKCD.com

Due dates and late assignments policies: All of the assignments are due by the times noted in the syllabus or class. **Late assignments will not be accepted without prior approval.** I have built in “drops” for all assignments other than the final exam, so if you do miss a homework, test, or in-class assignment that can count as a drop.

Note. I have made all homework and test due dates available with this syllabus (in multiple places), please make sure to mark these dates and start planning for completing your assignments.

I understand that each of you has a life outside of being a student and that unforeseen circumstances can arise. If you feel that you will need an extension or are having trouble

completing an assignment, please contact me AS SOON AS POSSIBLE and **no less than 3 business days** before the assignment is due.

Challenging grades/regrading assignments: I am open to reviewing and discussing grades. Disagreements on grades can reflect deeper reflection about the material and offer opportunities for further discussion. Challenges to grades will need to be put in writing – you will need to carefully explain your reasons for challenging your grade. Please turn this in with the original graded copy of your assignment and any accompanying rubric **by the beginning of the next class meeting**. I will read over your challenge justification and then provide in writing my reasons for adjusting or not adjusting your grade.

COURSE POLICIES:

Attendance: Class attendance is not mandatory, but lecture content will be featured heavily in homework and tests and a large extra credit possibility in the class is based on attendance.

Religious holidays: Religious holy days might conflict with the assignment due date schedule I have outlined. If you are missing a class due to the observance of a religious holiday, please contact me at least 3 business days prior to your anticipated absence so we can work out when any assignments due on that day can be turned in.

Technology policy: **No computers, tablets, or phones will be allowed in class unless their use is required for a class activity.** A number of studies (see Sana, Weston, & Cepeda, 2013 for an overview) have indicated that laptops hinder learning for both laptop users and those around them. I will make copies of presentations available on TRACS to help structure your note taking.

Calculator: You are permitted to use a basic calculator with a square root function (ex. https://www.amazon.com/Victor-900-Standard-Function-Calculator/dp/B0006ZIJ7K/ref=sr_1_6?ie=UTF8&qid=1547477586&sr=8-6&keywords=calculator+square+root+function). **You will not be allowed to use your computer, phone, tablet, or smart watch as a calculator during exams.** You will be responsible for ensuring that you have a calculator for in-class exams.

Email: I will do my best to respond to emails within 24 hours on weekdays. On weekends (Friday, 5 pm – Monday, 9 am) I will do my best to respond promptly, but please give me until Monday morning. If your email is urgent, please write URGENT in the subject (this should be reserved for emergencies).

To help model proper communication with future employers, research colleagues, etc., I encourage all of you to be cognizant of the following **email etiquette guidelines**:

1. Use a *descriptive subject line* that includes our course number (PSY2301) and a brief summary of your message (ex., Homework 1).
2. Start your email with a greeting or salutation. For example, if you are emailing me, *Dear Dr. Clegg-Petz* or *Hello Dr. Clegg-Petz* would be appropriate.
3. Compose your email in paragraph form with complete sentences. Be sure to proofread!
4. End your email with a closing (ex., Sincerely) and your first and last name.

Academic Integrity: Academic dishonesty will not be tolerated. All forms of cheating, including working together without explicit permission to do so, violate the academic integrity policy at Texas State. Consequences for all forms of cheating will be in accordance with University policies. Cheating on quizzes, plagiarism, or receiving unapproved aid on class assignments

undermines your learning opportunities and the integrity of Texas State as an academic institution.

Unpermitted collaboration: Students are permitted to work together on homework assignments but **must work INDIVIDUALLY on the take-home portion of their exams.**

From Texas State's Honor Code: All students are required to abide by the Texas State University Honor Code. The pledge for students states, "*Students at our university recognize that, to insure honest conduct, more is needed than an expectation of academic honesty, and we therefore adopt the practice of affixing the following pledge of honesty to the work we submit for evaluation: I pledge to uphold the principles of honesty and responsibility at our university.*"

The complete University Honor Code may be found at:

<http://www.txstate.edu/effective/upps/upps-07-10-01.html> & <http://www.txstate.edu/honorcouncil/>

Students with disabilities: I welcome the opportunity to work with students with diverse abilities and background experiences. Any student who needs an accommodation based on the impact of a documented disability should contact me before or after class, during office hours, or via email to discuss your specific needs so that we can work on a plan that best fits you. Please email me as soon as possible or as soon as you become aware of your disability to arrange a meeting. During our meeting, please be sure to provide me with a copy of your official Accommodation Letter outlining authorized accommodations.

Students with documented disabilities who require but do not yet have an Accommodation Letter should contact the Office of Disability Services at 512-245-3451 as soon as possible to request an official letter outlining authorized accommodations.

I reserve the right to change or make exceptions to this syllabus (both topics schedule and assignments) to best meet the needs of the students.

Date	Class #	Topic	Reading	Assignment Due
Jan. 22	1	Syllabus; Why statistics		
Jan. 24	2	Introduction to key concepts	Chapter 1	
Jan. 27	3	Creating and using frequency distributions	Chapter 2	
Jan. 29	4	Measures of central tendency	Chapter 3	
Jan. 31	5	Practice - Frequency distributions and central tendency		Homework #1
Feb. 3	6	Measures of central tendency, variability	Chapter 4	
Feb. 5	7	Measures of variability	Chapter 4	
Feb. 7	8	Practice & Exam 1 Review		Homework #2
Feb. 10	Exam	UNIT 1 EXAM: Ch. 1-4		
Feb. 12	9	Z-scores and the normal distribution	Chapter 5	
Feb. 14	10	Practice - Z-scores		Homework #3
Feb. 17	11	Probability part 1	Chapter 6	
Feb. 19	12	Probability part 2		
Feb. 21	13	Practice - Probability		Homework #4
Feb. 24	14	Hypothesis testing part 1	Chapter 7	
Feb. 26	15	Hypothesis testing part 2		
Feb. 28	EC	Out of class review (Extra credit opportunity)		Homework #5
Mar. 2	Exam	UNIT 2 EXAM: Ch. 5-7		
Mar. 4	16	One-sample t -tests	Chapter 8	
Mar. 6	17	Practice - One-sample t -tests, general t -test background		Homework #6
Mar. 9	18	Independent samples t -tests	Chapter 9	
Mar. 11	19	Paired samples t -tests		
Mar. 13	20	Practice - Independent and paired samples t -tests		Homework #7
Mar. 16-20		SPRING BREAK		
Mar. 23	21	t -test Make-up day		
Mar. 25	22	Practice - Exam 3 review		
Mar. 27	Exam	UNIT 3 EXAM: Ch. 8-9		
Mar. 30	23	ANOVA pt. 1	Chapter 11	
Apr. 1	24	ANOVA pt. 2		
Apr. 3	25	Practice - ANOVA		Homework #8
Apr. 6	26	Factorial ANOVA pt. 1	Chapter 12	
Apr. 8	27	Factorial ANOVA pt. 2		
Apr. 10	28	Practice - Factorial ANOVA		Homework #9

Date	Class # Topic	Reading	Assignment Due
Apr. 13	29 Exam 4 Review		
Apr. 15	Exam UNIT 4 EXAM: Ch. 11-12		
Apr. 17	30 Chi-square pt. 1	Chapter 13	
Apr. 20	31 Chi-square pt. 2		
Apr. 22	32 Practice - Chi-square		
Apr. 24	33 Correlation/Regression pt. 1	Chapter 10	Homework #10
Apr. 27	34 Correlation/Regression pt. 2		
Apr. 29	35 Practice - Correlation/Regression		
May 1	36 Choosing the right statistical test		Homework #11
May 4	37 Practice - Choosing the right statistical test		
May 8 (Friday 11:00-1:30)	FINAL EXAM: Ch. 10, 13, & Choosing the right statical test		