SYLLABUS: STATISTICAL METHODS. PSYCHOLOGY 1303, SPRING 2020 (CRN 21531)

Meetings: Mondays & Wednesdays, 4:30 - 5:50 p.m.
Psychology Bldg., Room 308

Instructor: Jacqueline Lechuga, Psychology Bldg., Room 311
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Office Hours: Tuesdays 2:00 - 3:00 p.m. or by appointment

Teaching Assistant: TBA
Teach Assistant's Email: TBA

Required text:

J.M. Wood (2020). *Introductory Statistics for the Behavioral and Health Sciences.*

Each chapter of this book will be posted in pdf format on Blackboard before assigned date.

COURSE OBJECTIVES
At the end of the course, students should be able to:
1. Create and interpret frequency and density histograms.
2. Explain the meaning of the mean and standard deviation, as well as estimate them from a histogram, and calculate them by hand.
3. Identify the main features of the normal curve; state the areas lying within 1, 2 and 3 standard deviations of the mean, as well as convert raw scores, z-scores and percentiles into each other.
4. Interpret correlation coefficients and calculate them by hand from raw scores.
5. Interpret scatter plots and explain their relationship to the correlation coefficient.
6. Interpret regression equations, calculate them by hand, and draw them (approximately) on scatter plots.
7. Explain the principle of least squares and its relationship to the regression line.
8. Explain and estimate the root mean square error of the regression line at a particular point.
9. State and explain basic concepts and terminology from probability theory.
10. Explain the meaning of sampling error and confidence intervals.
11. Explain how a sampling distribution is derived and how it differs from a sample distribution or population distribution.
12. Explain the expected value of the mean and the standard error of the mean, and estimate their value from the standard deviation of a sample.
13. Explain the expected value of the proportion and the standard error of the proportion and estimate their value from the standard deviation of a sample.

14. Construct a 95% confidence interval for the population mean based on information from a sample.
15. Construct a 95% confidence interval for the population proportion based on information from a sample.
16. Explain the purpose and main principles of hypothesis testing, including: the null and alternative hypotheses, Type I and Type II error, p values, and statistical power
17. Explain the sampling distribution of the difference between two means, the expected value and standard error of this distribution, and use estimates of these parameters to perform a t-test.
18. Be able to interpret computer printouts for one-way ANOVA and post-hoc tests.

GRADING

The course grade will be based primarily on the student's performance on quizzes and exams. Quiz and exam scores will be weighted as follows:

Quizzes (best 8 of 10)	40%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam	20%
Total:	100%

The weighted average of exam and quiz grades will be translated into letter grades as follows:

90.0 – 100.0%	= A
80.0 – 89.5%	= B
70.0 – 79.5%	= C
60.0 – 69.5%	= D
59.5% and below	= F

Students may improve their grade in the course by completing the extra credit exercises described later in this syllabus.

Exams

There will be 2 midterm exams during regular class time and 1 final exam. The dates of these exams are listed in the course calendar in this syllabus. The first midterm will cover everything in the readings and lectures up to the midterm. The second midterm will cover everything in the readings and lectures after the first midterm and up until the second midterm. The final exam is cumulative: That is, it will cover everything in the course. Each exam will count for 20% of your grade.

Students who arrive late for an exam will be permitted to take it, provided no other student has already finished the exam. No time extensions will be given to accommodate students who are late. That is, late students must complete the exam in the time allotted to the rest of the class. If a

student arrives AFTER another classmate has already completed the exam, the student will not be permitted to take the exam and will receive a 0 for that exam.

Quizzes

There will be a quiz on nearly every day that a reading and homework assignment is due. The dates are listed in the course calendar included in this syllabus. The quizzes are composed mainly of questions based closely on the homework. Thus, to be successful on a quiz, students MUST complete the homework assigned for a reading. There will be 10 quizzes this semester. The lowest 2 quiz grades will be dropped and the remaining 8 quizzes will be averaged to contribute 40% of students' course grade.

There are no make-ups of any kind for quizzes. Students who arrive late for a quiz will be permitted to take it, provided no other student has already finished the quiz. No time extensions will be given to accommodate students who are late. That is, late students must complete the quiz in the time allotted to the rest of the class. If a student arrives AFTER a classmate has already completed the quiz, the student will not be permitted to take the quiz and will receive a 0 for that quiz.

Curving

Quiz and exam grades will be curved according to the whole class' performance. The steps for this curve are:

1. Raw scores for a test are calculated by summing all the points students earned for correct responses.
2. Raw scores from approximately the top 10% of student grades for the test are averaged to yield a Top Ten Percent Average (TTPA).
3. All students' raw scores are then divided by the TTPA to yield their grade for that quiz or exam.

For example, suppose there are fifty student enrolled in the class. The TTPA will be based on the top five (5/50 = 10%) raw scores in the class. Let's say the top five raw scores for Quiz 1 are 12, 13, 14, 12, and 14. In this example, the TTPAA Quiz 1 is calculated:

$$\frac{12+13+14+12+14}{5} = 13$$

Let's say Josephine's raw score for Quiz 1 is 11. Therefore, Josephine's grade for Quiz 1 is calculated by dividing her raw score (11) by the TTPA for Quiz 1 (13):

$$\text{Josephine's grade for Quiz 1} = \frac{11}{13} = .845 = B.$$

Homework

Homework problems are assigned for each of the readings and are listed on the course calendar included in this syllabus. It is highly important that students complete all homework problems **before** the day that a reading is due. **Answers for all homework problems are provided at the end of each chapter of the textbook.**

Homework problems will **not** be handed in or graded, and will not be used in computing students' course grade. However, most questions for quizzes and exams are highly similar to the assigned homework problems. Students who do the homework problems will have little or no difficulty answering most quiz and exam questions. Students who are unable to perform a homework question should bring the problem to class. The instructor will take time in class before every quiz to answer students' questions about homework problems.

The key to success in this class is to do the assigned readings and homework problems in order to be fully prepared for the quizzes and examinations. Attending the lectures and taking notes will help with a conceptual understanding of the material, but the real road to success is to do the readings and **all the homework questions**. Most students can complete the readings and the homework by working about 3 hours per week outside of class.

Extra credit
There are 5 optional extra credit exercises offered to improve your ability to use Excel for basic statistical tasks. These exercises are not required for the class. However, you can earn extra credit if you perform them correctly and submit your work by the specified deadlines, which are listed in the course calendar later in this syllabus. Specifically, you can increase your course grade by 1% for each correctly performed Excel exercise that you submit by the specified deadline. As an example, let us say that Josephine's course grade based on quizzes and exams is 87%. If Josephine correctly performs all five Excel exercises and submits them on time, she can raise her course grade to 92% -- from B to A!

More details about the Extra Credit exercises, including the deadlines for completing them, will be posted on Blackboard. You are responsible for reading the Extra Credit information on Blackboard and following the rules and deadlines described there. Assignments turned in after the deadline will not earn extra credit. The extra credit assignments build on one another, so you must complete assignment 1 before assignment 2, assignment 2 before assignment 3, and so on. **If you miss one extra credit assignment, you will be ineligible to complete the later extra credit assignments.** For example, if you do not complete extra credit exercises 1 and 2, you will no longer be eligible to complete exercises 3, 4 and 5. Please contact the TA or instructor if you have any questions about this.

Except for the Excel exercises, there are no other opportunities for extra credit in this class.

POLICIES

Calculator
Students should purchase a simple calculator for use on homework, quizzes and exams. Students may use only a **simple calculator** for quizzes and exams. A simple calculator is one that (a) performs addition, subtraction, multiplication, division, square roots, and squares, but (b) does not have any memory or statistical functions. Simple calculators can be purchased for about a dollar at Dollar Tree and some other stores. Calculators with memory or statistical functions **are strictly forbidden** during quizzes and tests, and so are calculators on cell phones.

Blackboard

Be sure to visit Blackboard online regularly. If you do not know what Blackboard is or how to access it, ask the instructor or another student. Among other things, Blackboard provides (a) the readings and homework exercises for this class, (b) instructions for Extra Credit assignments, (c) the PowerPoint slides for all lectures, and (d) a copy of this syllabus. Students who miss a lecture should review the PowerPoint slides to learn what they missed.

Rules for quizzes and exams

1. Students are expected to sit in assigned seats or change seats if requested to do so by the instructor or proctor.
2. Only simple calculators are allowed during quizzes or exams. Use of any other electronic devices, including cell phones, smart watches, or calculators with memory or statistical functions, is forbidden. Students are asked to place all such devices in their backpacks or sufficiently far away from them to ensure that they cannot be used during the exam.
3. No notes or references of any kind are allowed.
4. No communication of any form between students is allowed.
5. Students who need to leave the testing room during a quiz or exam are asked to place their materials face down on their desk and leave all possessions inside the room.
6. Students who receive an audible call (including audible vibrations) during a quiz or exam are asked to inform the instructor or proctor that their phone has gone off and immediately silence their ringer. If the student deems the call to be an emergency, the student is asked to leave the room to ensure others are not disturbed.
7. A student is not permitted to begin a quiz or exam after another student has already completed the quiz or exam. Students who show up after someone has already completed the quiz or exam will not be permitted to take it and will earn a grade of 0.

Attendance

Doing the readings and homework is the key to success in this class. Attending lectures is also important because the lectures help students understand and solidify what they learn from the readings and homework. A student who misses a lecture should review the PowerPoint slides and script/guide for the lecture on Blackboard. The instructor does not drop students from the course; This is the student's responsibility. If, for any reason, a student is thinking about dropping the class, the instructor will be happy to meet with the student to discuss their options.

IMPORTANTLY, if you choose to attend class, you must conduct yourself in a professional manner. This means you must arrive on time. You should stay for the entire class period unless you have made prior arrangements with the instructor to leave early. Do not disrupt the class by talking or texting on your cell phone or engaging in behavior that your classmates may find distracting. Please be respectful of your classmates and your instructor: Being late or leaving early can be disruptive to everyone around you.

Excused Absences for University-Recognized Activities

Students who will be absent while representing the University in officially recognized University activities (sports, band, professional conferences, etc.) must notify the Dean of Students not less than ten (10) days prior to the absence. The Dean of Students will provide the student with a letter of excuse for the instructor. It is the student's responsibility to give the letter to the instructor prior to the official recognized activity. Students following these procedures will be permitted to make up both assignments and examinations in consultation with faculty. Excused absences are not permitted *unless* the student is representing the University in officially recognized University activities and has followed the procedures described here. UTEP policies regarding excused absences are posted online at http://catalog.utep.edu/undergrad/academic-regulations/curriculum-and-classroom-policies/

Make-up work

There are no make-ups for quizzes. However, students' two lowest quiz scores will be dropped when course grades are calculated. Thus, if a student misses class because of illness or an emergency and receives a score of 0 on a quiz that day, the quiz score will typically be one of the two grades that are dropped when the course grades are calculated at the end of the semester.

There are no make-up exams for midterms or the final **WITHOUT** prior arrangement. If you will miss a midterm or the final, you should talk with the instructor **BEFOREHAND** or notify the instructor by email (not by phone) **BEFORE** the exam is given. The student must also contact the teacher by email before the exam, or no later than one day after the exam, to arrange for a make-up exam. The instructor will then set the date and time for the make-up. The make-up for a midterm must be taken either before the scheduled date of the exam or during the week afterward. The make-up for a final must be taken during the two weeks before the scheduled date of the final. Students who fail to observe the time limits regarding missed exams and make-up exams will receive a failing grade for that exam.

Resolving grading disputes
A student who disagrees with their grade on a quiz, exam, or assignment should submit a written request for a grade change to the instructor via email. If the request concerns the grade for a quiz or exam, the request must be submitted within 14 days of the date that the quiz or exam grades are returned to the class. If the request concerns the grade for an assignment, the request must be submitted within one week after the student receives the grade. The request to the instructor must contain a detailed explanation for why the grade should be changed. The instructor will review the request and make a decision in a timely manner, but usually not "on the spot". Grade changes will not be made by the instructor unless the student has submitted their request within the time limits described here.

Academic honesty and conduct
Each student has a responsibility to understand, accept, and comply with the University's standards of academic conduct. http://sa.utep.edu/osccr/academic-integrity/
http://sa.utep.edu/osccr/student-conduct/student-conduct-process-appendix/
Academic dishonesty is unacceptable. Academic dishonesty includes but is not limited to the following:

> * **Cheating** – use or attempted use of unauthorized materials, student aids or information in any academic exercise
> * **Fabrication** – falsifying or inventing information or data in an academic assignment
> * **Collusion** – aid or attempt to aid another student in committing academic misconduct

Students in this class are responsible for their own work. You may not get help from another student or resource (e.g., notes sheet, cell phone, textbook) during quizzes or exams. If you participate in the extra credit, you must do your own work. Changing answers to quiz or exam questions after they have been graded in an effort to dispute or improve your grade is considered academic dishonesty. All quizzes and exams are scanned prior to being returned to students, to ensure that this does not happen. Evidence of academic dishonesty or any other violation of the Standards of Conduct WILL BE REPORTED to the Dean of Students. Students may be suspended or expelled and may have permanent notes included in their records.
UTEP's code of student conduct and discipline may be found at the following locations:
http://admin.utep.edu/Default.aspx?tabid=73922
http://admin.utep.edu/LinkClick.aspx?link=docs%2fStudent+Conduct+and+Discipline.pdf&tabid=71896&mid=163588

Disabilities:
The Center for Accommodations and Support Services (CASS) provides students with accommodations, resources, advocacy, and outreach to enhance and support their pathway to academic and occupational success. As an outcome, students will be able to engage as active members of the campus community, and benefit from participation in an inclusive and supportive academic environment. If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass.

Information on this syllabus:
The instructor reserves the right to modify information on this syllabus and class schedule, and will provide students with reasonable notification of such changes.

COURSE SCHEDULE

Class	Date	Topic	Assignments due
1	Wednesday 01/22/2020	Course introduction. Variables and values.	NONE
2	Monday 01/27/2020	Histograms. The normal distribution. Symmetric & skewed distributions	NONE

3	Wednesday 01/29/2020	Mean, median & percentiles. Distance from the mean and deviations.	Quiz #1 on Chapters 1 and 2 (in class)
			
			Readings due:
			Chapter 1. What are Statistics and Why Study Them?
			Chapter 2. Variables and Histograms.
			  (Do all homework exercises
			    for both chapters)

4	Monday 02/03/2020	The Standard Deviation	NONE
5	Wednesday 02/05/2020	z-scores. Calculating z-scores and raw scores from each other.	Quiz #2 on Chapter 3 (in class) Reading due: Chapter 3. The Mean, Median and Standard Deviation. (Do all homework exercises for chapter)
		CENSUS DAY – last day to drop the course without a "W".	
Thursday, 02/06/2020		**Last day to email TA and request numbers for Extra Credit Exercise 1**	
6	Monday 02/10/2020	Transforming z-scores, raw scores & percentiles.	Quiz #3 on Chapter 4 (in class) Reading due: Chapter 4. Z-Scores, Standardization, and Transformations. (Do all homework exercises for chapter)

Class	Date	Topic	Assignments due
7	Wednesday 02/12/2020	Review for Midterm Exam 1	NONE
Thursday, 2/13/2020 --- Last day to turn in completed Extra Credit Exercise 1 assignment to TA			
8	**Monday 02/17/2020**	**FIRST MIDTERM EXAMINATION**	
9	Wednesday 02/19/2020	Plotting points on scatterplots. The slope, intercept & equation of a line	NONE
Thursday, 02/20/2020 --- Last day to email TA and request numbers for Extra Credit Exercise 2 ---			
10	Monday 02/24/2020	Scatterplots of z-scores. Hybrid scatterplots. The Point of Averages.	Quiz #4 on Chapter 5 (in class) Reading due: Chapter 5. Scatterplots. (Do all homework exercises for chapter)
11	Wednesday 02/26/2020	Positive and negative correlations. The strength of correlations	NONE
Thursday, 02/27/2020 --- Last day to turn in completed Extra Credit Exercise 2 assignment to TA ---			
12	Monday 03/02/2020	Calculating the correlation coefficient.	Quiz #5 on Chapter 6 (in class) Reading due: Chapter 6. Correlation. (Do all homework exercises for chapter)
13	Wednesday 03/04/2020	Predictions using the group mean, conditional means, and regression line	NONE
Thursday, 03/05/2020 --- Last day to request numbers for Extra Credit Exercise 3 ---			

Class	Date	Topic	Assignments due
14	Monday 03/09/2020	The standardized equation of the regression line. Using this equation to predict raw scores and percentiles.	Quiz #6 on Chapter 7 (in class) Reading due: Chapter 7. Regression. Sections 1-6 only. (Do all homework exercises for these sections)
15	Wednesday 03/11/2020	Finding the unstandardized equation of the regression line. The R.M.S. error of the prediction.	NONE
Thursday, 03/12/2020 --- Last day to turn in completed Extra Credit Exercise 3 assignment to TA ---			
Spring Break. No classes. Sunday, 03/15/2020 through Sunday, 03/22/2020			
16	Monday 03/23/2020	Find the regression equation for (a) a scatterplot or (b) raw data	No quiz. Reading due: Chapter 7. Regression. Sections 7-12. (Do all homework exercises for these sections)
17	Wednesday 3/25/2020	Review for Midterm 2	NONE
Thursday, 03/26/2020 --- Last day request numbers for Extra Credit Exercise 4 ---			
18	**Monday 03/30/2020**	**SECOND MIDTERM EXAMINATION**	
19	Wednesday 04/01/2020	Introduction to Probability	Quiz #7 on Chapter 8 (in class) Reading due: Chapter 8. Introduction to Probability. (Do all homework exercises for chapter)
Thursday, 04/02/2020 --- Last day to turn in completed Extra Credit Exercise 4 assignment to TA ---			
Friday 04/03/2020 – DROP DEADLINE – last day for students to drop with a "W"			
20	Monday 04/06/2020	Surveys and polls: Populations, samples, and the sampling distribution	NONE

Class	Date	Topic	Assignments due
21	Wednesday 04/08/2020	Surveys and polls: The expected value and the standard error	Quiz #8 on Chapter 9 (in class) Reading due: Chapter 9. Sampling, Surveys and Political Polls. (Do all homework exercises for chapter)
Thursday, 04/09/2020 --- Last day to request numbers for Extra Credit Exercise 5 ---			
22	Monday 04/13/2020	Confidence intervals: Part 1	NONE
23	Wednesday 04/15/2020	Confidence intervals: Part 2	Quiz #9 on Chapter 10 (in class) Reading due: Chapter 10. Confidence Intervals. (Do all homework exercises for chapter)
Thursday, 04/16/2020 --- Last day to turn in completed Extra Credit Exercise 5 assignment to TA---			
24	Monday 04/20/2020	Null hypothesis significance testing & t-test. Part 1.	NONE
25	Wednesday 04/22/2020	Null hypothesis significance testing & t-test. Part 2.	Quiz #10 on Chapter 11 (in class) Reading due: Chapter 11. Null Hypothesis Significance Testing and the t-Test. (Do all homework exercises for chapter)
26	Monday 04/27/2020	Type I & II error. Statistical power	No quiz Reading due: Chapter 12. Type II Error and Statistical Power. (Do all homework exercises for chapter)
27	Wednesday 04/29/2020	ANOVA	No quiz Reading due: Chapter 13. Introduction to ANOVA. (Do all homework exercises for chapter)
28	Monday 05/04/2020	Printouts distributed with grades so far. Preview for final.	NONE
29	Wednesday 05/06/2020	Review for final exam	NONE
30	**Monday 05/11/2020**	**FINAL EXAMINATION 4:00 p.m. – 6:45 p.m. IN REGULAR MEETING ROOM FOR CLASS.**	