PSYC 1303: STATISTICAL METHODS
SUMMER 2022 SYLLABUS

TIME: MTWRF 9:20am – 11:30am
CRN: 33377
Location: Physical Science Building 314

INSTRUCTOR: Isabelle Clough, M.A.
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OFFICE HOURS: Tuesdays & Thursdays 8:00am – 9:00am

COVID-19 PRECAUTION STATEMENT

Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID-19 testing.

The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area. For more information about the current rates, testing, and vaccinations, please visit epstrong.org.

I. COURSE DESCRIPTION

This course provides an introduction to statistics and shows how statistics is used by researchers in the behavioral and health sciences. Topics covered include: Histograms and distributions; the mean, median, percentiles and the standard deviation; z-scores and the normal distribution; correlation, simple regression and scatterplots; polls and surveys; the sampling distribution; hypothesis-testing, and confidence intervals; the t-test, one-way ANOVA, and post-hoc tests.

II. 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 findings for one-way ANOVA and post-hoc tests.

III. TEXTBOOK & OTHER RESOURCES

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

The textbook is posted on Blackboard in both PDF and Word format. It is available **without cost** to all students taking the course. The textbook includes all homework problems and answers.

PowerPoints for all lectures are posted on Blackboard.

IV. COURSE ASSIGNMENTS

There are nine types of Assignments for this course:

(1) Readings
(2) Homework Problems
(3) Video-Recorded Lectures
(4) Question and Answer Sessions
(5) Quizzes
(6) Exams
(7) Review Packets for Exams
(8) Review Sessions for Exams
(9) Extra Credit Exercises

These nine types of Assignments are described in detail in the following paragraphs.

1. Readings.

Readings from the textbook are assigned on a regular basis (approximately one chapter per day) and must be completed by the dates listed in the course calendar.

2. Homework Problems.

Homework problems are assigned for each of the readings and are included in the textbook. It is highly important that students complete all homework problems for each reading. Problems should be completed **before** students take the quiz on a reading. *Answers for all homework problems are provided in the textbook.*

Homework problems will not be collected 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. Therefore, students who wish to pass the course should complete the homework problems for all reading assignments. Students who are unable to perform a homework problem should attend the Q&A Sessions and ask the instructor to explain how to solve the problem.

The key to success in this class is to do the assigned readings and homework problems in the textbook, in order to be fully prepared for the quizzes and examinations. The lectures are designed to help students understand the textbook and homework problems more clearly, 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 day. The lectures usually add about 2-3 hours per day. So, the amount of time that students should devote to this course is about 5-6 hours per day, which includes the readings, homeworks, and lectures.

3. Class Attendance.

Attendance of all the lectures is rather essential part of this course because attending the lectures and taking notes will help with a conceptual understanding of the material. During lectures, the material that is covered will usually be on the quizzes and exams. As such, it is your responsibility to inform me of any extended absences, and to make the necessary arrangements. I do not drop students from the course; this is your responsibility. If, for any reason, you wish to drop the class, I will be happy to meet with you and discuss your options.

4. Question and Answer Sessions.

The instructor will hold Q&A sessions on Zoom on every day with an accompanying lecture, as listed on the Course Calendar. These sessions will usually last approximately 1 hour. Students are urged to attend these sessions and ask any questions that they have about the lectures, the readings, the homework problems, or any other issues concerning the course. Q&A sessions will be recorded and posted to Blackboard. The Zoom link is available below, and on Blackboard.

Q&A Session Zoom Link:
https://utep-edu.zoom.us/j/8053197068?pwd=TTlXdGc2bzg0ZTFhakxiSitPWExyUT09

5. Quizzes.

Students are required to take 10 quizzes during the semester (2-3 per week) on nearly every reading in the course. The dates and topics of quizzes are listed in the course calendar. Quizzes cover the topics in the assigned readings and are intended to make sure that students do the readings each week.

Here is the secret of how to do well on the quizzes: Do the assigned readings and homework. The quizzes are composed mainly of questions based closely on the homework. A student who has done all the homework problems will usually have no trouble doing the problems on the quizzes.

Your grade for each quiz will be calculated by the TA, usually within one week of the exam, and your raw and curved scores will then be posted on "My Grades" in Blackboard. The answer keys for the quiz will be posted to Blackboard after they have been handed back to students. At the end of the semester your lowest 3 quiz grades will be dropped, and the remaining 7 quizzes will be averaged to contribute 40% of your course grade.

More information on curving is provided in the following section of this syllabus entitled "Grading."

6. Exams.

Students are required to take three exams (Midterm 1, Midterm 2, and the Final Exam) during the semester. The dates of the exams are listed in the course calendar. Midterm 1 will cover all readings and lectures assigned until Midterm 1. Midterm 2 will cover all readings and lectures assigned between Midterm 1 and Midterm 2. The Final Exam will be "cumulative." That is, it will cover all readings and lectures for the entire course from its beginning to its end.

Students who arrive late for a test will be permitted to take the test in the time allotted to the rest of the class. No time extensions will be given to accommodate students who are late to a test. However, if a student arrives AFTER another classmate has already completed the exam, the student will not be permitted to take the exam (earning a 0 for that exam).

Here is the secret of how to do well on an exam: (1) Do the assigned readings and homework, (2) Review the questions on the quizzes, and (3) Do the problems in the Review Packet for the exam (review packets described in next section).

Exam questions are usually very similar to the homework problems, to problems that have already appeared on the quizzes and to problems in the Review Packets. A student who has done all the homework problems, reviewed the quiz questions, and practiced the problems in the Review Packet, will usually have no trouble answering the exam questions.

7. Review Packets for Exams (before each exam).

Approximately three days before each exam (the two midterm exams and the final exam) a packet of review problems will be posted on Blackboard. The review packets will include detailed answers for each problem in the packet.

The questions in a review packet will be similar to the questions that will appear on the exam. Students who want to do well on the exam should practice doing the problems in the review packet.

8. Review Sessions for Exams (before each exam).

Before each exam (the two midterm exams and the final exam), the instructor will hold a live review session in class, as listed on the Course Calendar. Each review session will last the class period and will be one or two days before the exam. Students are urged to attend review sessions and ask any questions that they have about the questions in the review packets for the exam. In addition, students can ask about homework problems, quiz questions, or any other issues concerning the course.

9. Extra Credit Exercises.

There are 5 optional extra credit exercises available on Blackboard to improve your ability to use Excel for basic statistical tasks. Students can earn extra credit by performing the exercises correctly and submitting their work by the specified deadlines, as listed in the Course Calendar.

As an alternative the student will be allowed to complete up to five hours of research participation credit through UTEP's SONA system (see Blackboard for instructions). Research participation must be finished by **Friday, July 29th**.

You could do some combination of Excel exercises/research participation to receive extra credit — the total of which cannot be more than five. *Neither the Excel exercises nor research participation are required for the class.*

More information on the Extra Credit exercises is provided in the following section of this syllabus entitled "Grading" and in the "Extra Credit" folder on Blackboard.

V. 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 7 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

Rules for Quizzes and Exams.

1. Students may be 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. If a student shows up after someone has already turned a quiz or exam in, they will not be permitted to take that quiz or exam and will earn a 0 for that assignment.

Curving.

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

1. The five highest raw scores for the quiz are averaged to obtain the "Top Five Average".

2. The Top Five Average is truncated (that is, all digits to the right of the decimal point are dropped, so that for instance 15.66 would become 15) to obtain the Truncated Top Average.

3. Each student's raw score on the quiz is divided by the Truncated Top Average (TTA), to obtain the student's curved grade for that quiz or exam.

For example, let's say the top five raw scores for Quiz 1 are 12, 13, 14, 12, and 14. In this example, the TTA for 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 curved grade for Quiz 1 is calculated by dividing her raw score (11) by the TTA for Quiz 1 (13):

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

Extra Credit.

Students may improve their grade in the course by completing extra credit. You can increase your course grade by 1% for each correctly performed Excel exercise that you submit by the specified deadline, and/or for each hour of credit earned from research participation through the SONA system. 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, are posted on the Blackboard in the folder named "Extra Credit". 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. Please contact the TA or instructor if you have any questions about the extra credit.

VI. ATTENDANCE POLICY

Students should complete all assigned readings and homework problems and attend the lectures. The readings, homework problems and lectures provide the knowledge and skills necessary to perform well on quizzes and exams. However, students' completion of readings, homework and lectures is not monitored by the instructor or used to determine course grades.

The Q&A Sessions and Exam Review Sessions are optional. However, many students report that these sessions are very helpful. Therefore, you are urged (but not required) to attend.

Taking quizzes and exams is required for the course. Students who miss (a) four or more quizzes or (b) either of the midterm exams should usually drop the course, in order to preserve their GPA. Under most circumstances, the instructor will *not* drop a student from the course unless the student has contacted the instructor and requested it.

VII. OTHER POLICIES

Calculator.

Students should purchase a simple calculator for use on homework, 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.

Blackboard.

Be sure to visit Blackboard online regularly for this course. On Blackboard you can find:

1. Free copies of the textbook for this course in pdf and Word. The textbook includes all readings and homework problems.
2. Instructions for Extra Credit assignments.
3. Review packets for exams.
4. Your grades for quizzes, exams, and extra credit exercises

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 **prior to the exam/quiz**. Excused absences are not permitted unless the student is representing the University in officially recognized University activities. 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' three lowest quiz scores will be dropped when course grades are calculated. Thus, if a student fails to take a quiz on the assigned day, the student will receive a score of 0 on that quiz and 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** permission from the instructor, even for school sanctioned events. Instructors will generally not grant permission for make-up exams except under special circumstances with appropriate documentation provided by the student. The make-up for a midterm must be taken either before the scheduled date of the exam or during the day immediately after the exam. The make-up for a final exam must be taken during the two weeks before the scheduled date of the final. Students who fail to observe these time limits regarding missed exams and make-up exams will receive a failing grade for that exam.

Athletes with games or students who miss a quiz or exam due to a school sanctioned events must email the instructor prior to missing a quiz or exam to schedule a makeup. Makeups will not be allowed, even if sanctioned, if there was not communication with the instructor beforehand. `

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. The request to the instructor must be submitted within 7 days following the quiz, exam or assignment and should provide a detailed explanation for why the grade should be changed. The instructor will review the request and make a decision in a timely manner. 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:

1. **Cheating**: Use or attempted use of unauthorized materials, student aids or information in any academic exercise.
2. **Fabrication**: Falsifying or inventing information or data in an academic assignment.
3. **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 receive or provide help from another person while taking a quiz or exam and you may not share information about a quiz or exam with anyone else until the quiz or exam has been graded and posted on "My Grades" on Blackboard. If you participate in the extra credit, you must do your own work. 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 17. For additional information, please visit the CASS website at www.sa.utep.edu/cass.

Syllabus Updates.

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 CALENDAR

Class	Date	Topic	Assignments Due
1	Tuesday 7/5/2022	Course introduction. Variables and values. Histograms. The normal distribution. Symmetric & skewed distributions.	*Q&A Session 12:00pm (link above)*
2	Wednesday 7/6/2022	Mean, median & percentiles. Distance from the mean and deviations. The Standard Deviation	**Textbook Chapter(s) & HW Problems:** • Chapter 1. What are Statistics and Why Study Them? • Chapter 2. Variables and Histograms. **Quiz #1** on Chapters 1 & 2 *Q&A Session 12:00pm (link above)*
3	Thursday 7/7/2022	Z-scores. Calculating z-scores and raw scores from each other	**Textbook Chapter(s) & HW Problems:** • Chapter 3. The Mean, Median and Standard Deviation. **Quiz #2** on Chapter 3 **Excel Extra Credit 1 Request Due** *Q&A Session 12:00pm (link above)*
4	Friday 7/8/2022	Transforming z-scores, raw scores, & percentiles	**Textbook Chapter(s) & HW Problems:** • Chapter 4. Z-Scores, Standardization, and Transformations. **Quiz #3** on Chapter 4 *Q&A Session 12:00pm (link above)*

Class	Date	Topic	Assignments Due
5	*Monday 7/11/2022	Review for Midterm Exam 1	**Midterm Exam 1 Review Packet:** Download and begin working on problems to bring questions to review session. **Excel Extra Credit 1 Submission Due**
6	***Tuesday 7/12/2022**	**MIDTERM EXAM 1** **Excel Extra Credit 2 Request Due**	
7	*Wednesday 7/13/2022	Plotting points on scatterplots. The slope, intercept, & equation of a line. Scatterplots of z-scores. Hybrid scatterplots. The Point of Averages.	**Textbook Chapter(s) & HW Problems:** • Chapter 5. Scatterplots. **Quiz #4** on Chapter 5 *Q&A Session 12:00pm (link on Blackboard)*
8	*Thursday 7/14/2022	Positive and negative correlations. The strength of correlations. Calculating the correlation coefficient	**Textbook Chapter(s) & HW Problems:** • Chapter 6. Correlation. **Quiz #5** on Chapter 6 **Excel Extra Credit 2 Submission Due** *Q&A Session 12:00pm (link on Blackboard)*

Class	Date	Topic	Assignments Due
9	*Friday 7/15/2022	Predictions using the group mean, conditional means, and regression line. The standardized equation of the regression line. Using this equation to predict raw scores and percentiles.	**Textbook Chapter(s) & HW Problems:** • Chapter 7 (sections 1-6). Regression. **Quiz #6** on Chapter 7 **Excel Extra Credit 3 Request Due** *Q&A Session 12:00pm (link on Blackboard)*
10	Monday 7/18/2022	Finding the unstandardized equation of the regression line. The R.M.S. error of the prediction. Find the regression equation for (a) a scatterplot or (b) raw data	**Textbook Chapter(s) & HW Problems:** • Chapter 7 (sections 7-12). Regression. **NO QUIZ** *Q&A Session 12:00pm (link above)*
11	Tuesday 7/19/2022	Review for Midterm Exam 2	**Excel Extra Credit 3 Submission Due** **Midterm Exam 2 Review Packet:** Download and begin working on problems to bring questions to review session.
12	**Wednesday 7/20/2022**	**MIDTERM EXAM 2** **Excel Extra Credit 4 Request Due**	
13	Thursday 7/21/2022	Introduction to Probability	**Textbook Chapter(s) & HW Problems:** • Chapter 8. Introduction to Probability. **Quiz #7** on Chapter 8 *Q&A Session 12:00pm (link above)*

Class	Date	Topic	Assignments Due
14	Friday 7/22/2022	Surveys and Polls: Populations, samples and the sampling distribution Surveys and Polls: The expected value and the standard error.	**Textbook Chapter(s) & HW Problems:** • Chapter 9. Sampling, Surveys and Political Polls. **Quiz #8** on Chapter 9 **Excel Extra Credit 4 Submission Due** *Q&A Session 12:00pm (link above)* **DROP/WITHDRAWAL DEADLINE** – last day to drop with automatic "W"
15	Monday 7/25/2022	Confidence Intervals: Part 1 Confidence Intervals: Part 2	**Textbook Chapter(s) & HW Problems:** • Chapter 10. Confidence Intervals. **Quiz #9** on Chapter 10 **Excel Extra Credit 5 Request Due** *Q&A Session 12:00pm (link above)*
16	Tuesday 7/26/2022	Null hypothesis significant testing and t-test: Part 1 Null hypothesis significant testing and t-test: Part 2	**Textbook Chapter(s) & HW Problems:** • Chapter 11. Null Hypothesis Significance Testing and the t-Test. **Quiz #10** on Chapter 11 *Q&A Session 12:00pm (link above)*
17	Wednesday 7/27/2022	Type I & Type II error. Statistical Power.	**Textbook Chapter(s) & HW Problems:** • Chapter 12. Type II Error and Statistical Power. • Chapter 13. Introduction to ANOVA. **NO QUIZ** **Excel Extra Credit 5 Submission Due** *Q&A Session 12:00pm (link above)*

Class	Date	Topic	Assignments Due
18	Thursday 7/28/2022	Review for Final Exam	**Final Exam Review Packet:** Download and begin working on problems to bring questions to review session.
19	Friday 7/29/2022	***No Class*** *– Study Day for Final Exam*	*Q&A Session 12:00pm (link above)*
20	**Monday 8/1/2022**	**FINAL EXAM (Cumulative)**	

**Dates that another instructor will be teaching.*