AAEC 2401-001
Agricultural Statistics
Spring 2023

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Classrooms & Timings:

Media and Comm. 082	Lecture (2401-001)	Tuesday, Thursday	11:00 am – 12:20 pm
Ag. Sciences 126	Lab (2401-502)	Thursday	2:00 pm – 2:50 pm

Office Hours: 1:00 am – 2:00 pm Tuesdays and Thursdays, or by appointment

Textbook:
Fundamentals of Statistics: Informed Decisions using Data & MML Gen & MyStat Pkg by Michael Sullivan, III; 6th edition, Pearson Prentice Hall. Check your TTU email and Blackboard for more info on how to access the book and lab materials.

Prerequisites:
College algebra or higher math.

Course Purpose:
Statistics is the science of collecting, organizing, summarizing, and analyzing information in order to draw conclusions. It is a discipline that plays a major role in decision-making in many different areas. For example, statistical analyses is used in sports to help team management make informed decisions about their playing strategy. It is used to determine the effectiveness of new medications. Agronomists also employ statistical analyses to discover high yielding crop varieties and animal scientists use statistics to find new feeding regimes for animals.

Used appropriately, statistics can help us understand the world we live in. Used inappropriately, statistics can lend support to inaccurate beliefs and understanding. Understanding the methods and procedures of statistics will therefore equip us with knowledge to appreciate and critique studies and experiments. With this ability, we will be an informed consumer of information, which will enable us to differentiate between solid statistical analyses from numerical facts.

AAEC 2401 is a required course for all degree programs in the Agricultural & Applied Economics Department. It is a prerequisite for AAEC 4302, Statistical Methods in Agricultural Research.

Expected Learning Outcomes:
By the end of this course, we will be able to apply statistical techniques to solve practical statistical problems. More particularly, we will be able to:

- Organize and interpret data using graphs and tables and identify and explain important features of a dataset.
- Calculate measures of central tendency and dispersion (e.g., mean, and standard deviation) and use these measures to explain important features of a dataset.
- Estimate and interpret a linear relation between variables and use it in predictions.

- Measure quantitatively the relation between variables and test hypotheses about the relation and interpret the conclusion.
- Calculate and interpret confidence intervals for means and proportions for one and two populations.
- Compute and interpret probabilities for discrete and continuous random variables.
- Explain the concept of a sampling distribution and calculate the mean and standard deviation of the sampling distribution of the mean.
- Test hypotheses about means and proportions and interpret the statistical conclusion in the context of the problem.

The items above require the use of arithmetic computation, algebraic formulas, and statistical/logical reasoning. In this course, we will be required to apply statistical techniques to answer real-world problems. We will practice reading the narrative about a statistical problem, and then express the statistical problem in terms of a statistical hypothesis (using a mathematical formula). Next, we will identify an appropriate statistical technique (from a variety of techniques) to test the hypothesis; and finally, we will draw a statistical conclusion from the statistical tests and prepare a practical (written) interpretation of the conclusion.

Methods for Assessing the Expected Learning Outcomes:
Assessment of the expected learning outcomes will be measured using quizzes, tests, exams, and discussions on individual topics.

Exams
Three tests plus a final exam will be given during the semester. Tests and exam questions will require hand calculations, and explanations of the problem results will require long and short written answers to communicate and interpret the results. Test dates are announced in class.

Lab Assignments
We are required to work on a 1-hour long lab session once a week where we solve computer-generated problems. Lab assignments will be available on *CourseCompass/MyMathLab* (computer software available with the class textbook) a few days prior to the submission date. Lab assignments allow us to develop understanding of statistical concepts by solving statistical problems using active learning. The statistical theory required to solve lab problems will be presented during lectures.

Take-Home Assignments/Homework
Take-home assignments/homework will be assigned on three to four selected topics during the semester. The first homework will tentatively be assigned on the third week, and subsequent homework will be assigned every 3/4 weeks and will generally be due in one week. They will require extensive use of technology (word processing and spreadsheet application software - Excel) to create tables, graphs, and written answers to questions.

Grading:
Our grade will consist of three tests (100 points each, totaling 300 points total), 12 labs (12 points each, totaling 144 points), three take-home assignments/homework (12 points each, totaling 36 points), a final exam (100 points) and attendance (20 points). The lab grades will be sum of all computer-generated lab grades in Pearson. The final exam is optional and can replace your lowest test score.

Total Score Breakdown:

Exam 1	100 points (20%)
Exam 2	100 points (20%)
Exam 3	100 points (20%)
Take-home assignment/Homework	3 x 12 points each HW = 36 points (7.2%)
Labs	12 x 12 points each lab = 144 points (28.8%)
Attendance	20 points (4%)
Total	**500 points**

The minimum percentage required to achieve a given letter grade will be:
A=90%
B=80%
C=70%
D=60%
F= lower than 60%

Class Content and Tentative Schedule:

Week	Text Material
1	Chapter 1.1-1.5
	Chapter 2.1-2.2
2	Chapter 2.3-2.4
	Chapter 3.1-3.2
3	Chapter 3.3-3.5
	Chapter 4.1
Test #1. Date will be announced in class and Blackboard 7 days before the test.	
4	Chapter 4.2-4.3, 14.1
5	Chapter 5.1 (and a bit of Chapter 5.2-5.4)
	Chapter 6.1-6.2
6	Chapter 7.1-7.4
7	Chapter 8.1
Test #2. Date will be announced in class and Blackboard 7 days before the test.	
8	Chapter 8.2
	Chapter 9.1
9	Chapter 9.2-9.4
	Chapter 10.1
10	Chapter 10.2-10.5
11	Chapter 11.1
Test #3. Date will be announced in class and Blackboard 7 days before the test.	
12	Chapter 11.2-11.5
	Chapter 12.1-12.3
13	Chapter 13.1-13.2, 13.4
14	Chapter 14.2-14.3

Final Exam: Saturday, May 6, 1:30 p.m. to 4:00 pm (TTU final exam schedule)

ADDENDUM

If Texas Tech University campus operations are required to change because of health concerns related to the COVID-19 pandemic, it is possible that this course will move to a fully online delivery format. Should that be necessary, students will be advised of technical and/or equipment requirements, including remote proctoring software.

Late Work and Course Policy

Changes in the course policies, such as changes in due dates for assignments or corrections to assignments will be announced in class and on Blackboard. Announcements between class meetings will be made on Blackboard as well as via emails, and hence you should check the system and email on a routine basis. If you miss class, it is your responsibility to find out what you missed.

Department of Agricultural & Applied Economics - Classroom Rules and Behavior

Students are expected to show respect to classmates, instructors, and especially guest speakers. Consistent with the stated assumptions and beliefs of Texas Tech University, the department has composed and the AAEC Student Association has endorsed the following set of rules for appropriate student classroom behavior.

- Do not talk during class meetings. Talking is disruptive to the instructor and to your fellow classmates.
- Do not arrive late to class and do not leave the classroom during class meetings. Exceptions may occur for medical emergency, physiological urgency, or situations where prior instructor approval has been granted.
- Do not use (including viewing of) communication devices (phones, etc.) and other unassigned materials (newspapers, magazines, etc.) during class meetings.
- Do not exhibit disruptive posture during class meetings. e.g., sleeping, slouching, laying, resting feet/head on furniture, etc.
- Do not use notebook computers (unless used for notetaking) during class meetings unless prior instructor approval has been granted.

As stated above, these guidelines should be followed in every AAEC class meeting and represent the minimum level of respect expected from students.

Illness-related absences

Please email me to let me know that you are unable to attend so I do not penalize your absence. Email me your doctor's note when you are ready to return to class. You have 10 days to complete missed assignments after their return to class.

Absence due to religious observance

A student who is absent from classes for the observance of a religious holy day will be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence (*University Catalog*). Notification must be made in writing and delivered in person no later than the 15th class day of the semester.

Absence due to officially approved trips

A student who is absent due to an official trip should obtain a letter to that effect from the person responsible for the student missing class. The student will not be penalized and is responsible for the material missed (*University Catalog*).

ADA Statement

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.

Academic Integrity Statement

Academic integrity is taking responsibility for one's own class and/or course work, being individually accountable, and demonstrating academic honesty and ethical behavior, even when no one is looking. Academic integrity is a personal choice to abide by the standards of intellectual honesty and responsibility. Because education is a shared effort to achieve learning through the exchange of ideas, students, faculty, and staff have the collective responsibility to build mutual trust and respect. Ethical behavior and independent thought are essential for the highest level of academic achievement, which then must be measured. Academic achievement includes scholarship, teaching, and learning, all of which are shared endeavors. Grades are a device used to quantify the successful accumulation of knowledge through learning, as imperfect as they are. Adhering to the standards of academic integrity ensures grades are earned honestly. Academic integrity is the foundation upon which students, faculty, and staff build their educational and professional careers. [from Texas Tech University Quality Enhancement Plan, Academic Integrity Taskforce, 2010].

Useful links for students

Student Health Services
Student Affair COVID-19
Texas Tech Commitment
deanofstudents@ttu.edu