Instructor: Dr. Jose Lopez
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Class Time: Web Based Course

Office Hours: You can contact me via email at Jose.Lopez@tamuc.edu. Alternatively, you can email me from eCollege (http://www.online.tamuc.org/). I generally answer emails within 1 business day (8:00 AM-5:00 PM). Emails that arrive after 5:00 PM will be answered the next business day. I don't answer emails on weekends, so make sure you contact me in time. If you wish to visit with me in person, I will be available for immediate consultation on Mondays and Wednesdays from 10:30 a.m. - 11:30 p.m., and Tuesdays and Thursdays from 2:00 p.m. – 5:00 p.m. or by appointment.

Required Text: *Statistics: Informed Decisions Using Data*, by Michael Sullivan, Prentice-Hall, Inc., New York, 3rd Edition, 2011. (ISBN-13: 978-0-321-56802-1 or ISBN-10: 0-321-56802-8)

Required Software: Microsoft Excel 2010 or newer version. Note: Older versions will work fine but procedures may not be the same as in Excel 2010 or in a newer version. The student will be responsible for figuring out the steps and procedures if using an older version than Excel 2010.

Prerequisites: None.

Teaching Philosophy:
1. A course must deliver information, concepts and methods that will be useful in the student's professional life. However, learning analytical reasoning skills and improving the ability to process and use information efficiently is more important than memorizing facts and formulas and performing procedures repeatedly.
2. Students learn best when theories, concepts and procedures are explained in plain language as well as formally, and are complemented with examples or applications that are relevant to the students.

Character Formation: It is important during your graduate education to learn the values and rewards of hard work, responsibility, and honesty. The professor will promote character formation while teaching the course.

Course Description: Discussion of descriptive statistics, probability distributions, inference, and regression analysis.

Student Learning Outcomes: Upon satisfactory completion of the course the students will be able to:

- To compute measures of central tendency and dispersion, and use them to analyze and summarize datasets.
- To compute and measure the correlation between two agricultural variables and explain the difference between correlation and causation.
- To understand different probability distributions.
- To conduct hypothesis tests (*t* tests, and *z* tests) using one sample.
  - To determine null and alternative hypotheses, explain Type I and Type II errors, and state conclusions to hypothesis tests for population mean with known or unknown population standard deviation and for a population proportion.
- To conduct hypothesis tests (*t* tests, and *z* tests) using two samples.
  - To determine null and alternative hypotheses, explain Type I and Type II errors, and state conclusions to hypothesis tests for two means when samples are dependent, two means when samples are independent, and two population proportions.
- To conduct hypothesis tests for three or more means using one-way analysis of variance (one-way ANOVA).
  - To determine null and alternative hypotheses, explain Type I and Type II errors, and state conclusions to hypothesis tests for three or more means
- To conduct post hoc tests on one-way ANOVA using Tukey test.
  - To summarize the conclusions of Tukey test

Topics:
Part I: Descriptive Statistics
- **Topic 1: Numerically Summarizing Data**
  - Measures of Central Tendency
    - Discussion, computation, and interpretation of measures of central tendency (mean, media, and mode) and the relationships between them; explanation of resistance.
  - Measures of Dispersion
    - Discussion, computation, and interpretation of measures of dispersion (range, variance, and standard deviation) and the relationships between them; use of the empirical rule to describe data that are bell shaped (percent of observations lying within one two, and three standard deviation from the mean).
  - Measures of Position and Outliers
    - Explanation of measures of positions (the z-score, the percentile, the interquartile, the interquartile range, and outliers); computation and interpretation z-scores, percentiles, quartiles, and interquartile range; checks for outliers.
- **Topic 2: Describing the Relation between Two Variables**
  - Pearson product moment correlation coefficient
    - Properties, computation, and interpretation of the linear correlation coefficient; discussion of confounding and lurking variables.

Part II: Probability Distributions
- **Topic 3: Probability Distributions**
  - Normal distribution
  - Standard Normal Distribution
  - Chi-Square Distribution

- The F-Distribution

Part III: Inference
- **Topic 4: Hypothesis Tests Regarding a Parameter**
  - The Language of Hypothesis Testing
    - Determination of the null and alternative hypothesis; explanation of Type I and Type II errors; and stating conclusions to hypothesis testing.
  - Hypothesis Tests for a Population Mean – Population Standard Deviation Known
    - Hypothesis testing about a population mean with standard deviation known using the classical approach, using P-values, and using confidence intervals with small and large samples; consideration one and two tail tests; discussion of statistical significance and practical significance.
  - Hypothesis Tests for a Population Mean – Population Standard Deviation unknown
    - Hypothesis testing about a population mean with standard deviation unknown using the classical approach, using P-values, and using confidence intervals with small and large samples; consideration of one and two tail tests.
  - Hypothesis Tests for a Population Proportion
    - Hypothesis testing about a population proportion with small and large samples; consideration of one and two tail tests.
- **Topic 5: Inference on Two Samples**
  - Inference about two means: dependent samples
  - Inference about two means: independent samples
  - Inference about population proportions
  - Inference for two population standard deviations
- **Topic 6: Inference on Categorical data**
  - Goodness-of-Fit Test
    - Chi-square distribution
    - Expected counts
  - Test for independence and the Homogeneity of Proportions
- **Topic 7: Compering three or more means**
  - One-way analysis of variance
    - Requirements to perform a one-way ANOVA
    - Test a hypothesis regarding three or more means using one-way ANOVA
      - ANOVA F-Test Statistic
  - Tukey Test
  - The randomized complete block design
  - Two-way analysis of variance

Grading:

Exam 1	23.33%
Exam 2	23.33%
Exam 3	23.34%
Exercises	20.00%
Labs	10.00%
	100.00%

<u>Note:</u> There would be an optional final comprehensive exam (Exam 4). The optional final comprehensive exam will replace your lowest exam grade (if you decide to take it).

Grading Scale:

Range	Grade
90-100.00	A
80-89.99	B
70-79.99	C
60-69.99	D
Less than 60	F

Exams: Make sure you take all the mandatory exams (see Class Schedule below). No makeup exams will be offered. A grade of zero will be assigned to any missed mandatory exams. Exams and quizzes will be administered through eCollege. Exams will be timed and are to be completed by 11:59 PM on the due date. Make sure you have internet access and that your laptop battery is fully charged (if using a laptop computer).

Exercises: Exercises will be graded and should be considered very important course material for your exam preparation. Exercises will involve the use of agricultural datasets or will relate to agricultural statistics decisions that students may encounter in their career as a professional. Students will be required to submit their individual answers via eCollege according to the class schedule provided (see Class Schedule below). You will have access to the corresponding course exercises on Monday and Wednesday mornings and they are to be completed by 11:59 PM on the date provided in the Class Schedule below.

Review Questions: Review Questions will NOT be graded. Students are welcome to ask questions during office hours. Review Questions are designed to help you understand and/or highlight the material you should understand after you complete a module. The students are NOT required to submit their answers to the Review Questions.

Practice Questions: Practice Questions will NOT be graded. Students are welcome to ask questions during office hours. Practice Questions will be selected from the textbook. Practice Questions are provided for those students who wish to practice additional questions than the ones provided in each of the section Exercises (refer to Exercises section above). The students are NOT required to submit their answers to the Practice Questions.

Class preparation and attendance: It is your responsibility to read and study the book chapters that will be covered, to read and study all handouts, to complete and submit all course assignments in-time, and to take all the mandatory exams before the deadline. Students are strongly encouraged to contact the instructor if they have any questions or comments. Email is the best way to contact me. I will be available for in-person consultation in my office by appointment only.

Students with Disabilities: The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library
Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamuc.edu

Counseling Center: A student that faces a crisis or a serious and unforeseeable event that affects his/her class performance must contact the Counseling Center, Student Services Building, Room 204, Phone (903) 886-5145. If important class material or course assignments are missed because of such crisis or event, the student must contact the instructor as soon as possible.

General Policies for Classes: All students enrolled at the University will follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. See Student's Guide Handbook, Rules and Procedures, Code of Student Conduct (*http://www.tamuc.edu/CampusLife/documents/studentGuidebook.pdf*).

Academic Integrity: Students must follow the *Code of Student Conduct* in the *Student Guidebook (*http://www.tamuc.edu/admissions/onestopshop/undergraduateAdmissions/studentGuidebook.aspx*).* Any form of plagiarism or academic dishonesty will not be tolerated. Academic honesty is defined on *Chapter 13 Students (Academic)* of the *TAMUC Rules and Procedures (*http://www.tamuc.edu/aboutus/policiesproceduresstandardsstatements/rulesProcedures/default.aspx*)*:

"Academic dishonesty" includes, but is not limited to, plagiarism (the appropriation or stealing of the ideas or words of another and passing them off as one's own), cheating, collusion (the unauthorized collaboration with others), and abuse (destruction, defacing, or removal) of resource material.

Course Design: The dates for all class activities and exams are announced in the Class Schedule provided at the end of this syllabus.

Course access and navigation: This course will be facilitated using eCollege. Students are required to access important class material from the eCollege website for the course. To get started with the course, go to: http://www.online.tamuc.org/. You will need your CWID and password to log in to the course. Make sure you visit this website every day.

If you do not know your CWID or have forgotten your password, contact Technology Services at 903.468.6000 or helpdesk@online.tamuc.org

Technology Requirements: The following information has been provided to assist you in preparing to use technology successfully in this course.
- Internet access/connection – high speed recommended (not dial-up)
- Word Processor (i.e. MS Word or Word Perfect)

Additionally, the following hardware and software are necessary to use eCollege:

Our campus is optimized to work in a Microsoft Windows environment. This means our courses work best if you are using a Windows operating system (XP or newer) and a recent version of Microsoft Internet Explorer (6.0, 7.0, or 8.0).

Your courses will also work with Macintosh OS X along with a recent version of Safari 2.0 or better. Along with Internet Explorer and Safari, eCollege also supports the Firefox browser (3.0) on both Windows and Mac operating systems.

It is strongly recommended that you perform a "Browser Test" prior to the start of your course. To launch a browser test, login in to eCollege, click on the 'myCourses' tab, and then select the "Browser Test" link under Support Services.

Important Dates:

Sep. 1st, Monday	First day of class.
Sep. 3rd, Thursday	Last Day to Add Courses without Dean and Instructor Approval.
Sep. 7th, Monday	Last Day to Withdraw (Drop ALL courses) with 80% Refund.
Sep. 16th, Wednesday	Last Day to Drop Individual 16 Week Courses with 100% Refund.
Sep. 21th, Monday	Last Day to Withdraw (Drop ALL Courses) with 50% Refund.
Sep. 28th, Monday	Last Day to Withdraw (Drop ALL Courses) with 25% Refund.
Nov. 5th, Thursday	Last Day to Drop Individual 16 Week Courses with a Q Grade (No Refund).
Dec. 6th, Sunday	Last Day to Withdraw (Drop ALL Courses) (NO Refund).
Dec. 11th, Friday	Last day of class.
Dec. 12 – Dec. 18	Fall Final Week.

The instructor reserves the right to make modifications to this syllabus during the semester.

AG 505 - STATISTICAL METHODS IN AGRICULTURE
Class Schedule, Fall 2015
Web Based Class

Week	Subject/Material Covered	Assignment Due By 11:59 PM on Date Provided
Week 1 Aug 31 - Sep 4	Module 1 Sec. 3.1 + 3.2: Measures of Central Tendency and Dispersion	Exercise - MC Exercise - SE or SA Lab
Week 2 Sep 7 - Sep 11	Module 2 Sec. 3.4 + 3.5: Measures of Position, Outliers, and Boxplots	Exercise - MC Exercise - SE or SA Lab
Week 3 Sep 14 - Sep 18	Module 3 Sec. 4.1: Scatter Diagrams and Correlation	Exercise - MC Exercise - SE or SA Lab
Week 4 Sep 21 - Sep 25	Exam 1 (CH03 + Sec. 4.1, excludes Sec. 3.3)	Exam 1
Week 5 Sep 28 - Oct 2	Module 4 Prob. Distributions + Sec. 10.1: The Language of Hypothesis Testing	Exercise - MC Exercise - SE or SA Lab
Week 6 Oct 5 - Oct 9	Module 5 Sec. 10.2 + 10.3: Hypothesis Tests for a Population Mean	Exercise - MC Exercise - SE or SA Lab
Week 4 Oct 12 - Oct 16	Module 6 Sec. 10.4: Hypothesis Tests for a Population Proportion	Exercise - MC Exercise - SE or SA Lab
Week 7 Oct 19 - Oct 23	Exam 2 (Prob. Distributions + CH10)	Exam 2
Week 9 Oct 26 - Oct 30	Module 7 Sec. 11.1 + 11.2: Inference about Two Means	Exercise - MC Exercise - SE or SA Lab
Week 10 Nov 2 - Nov 6	Module 8 Sec. 11.3: Inference about Two Population Proportions	Exercise - MC Exercise - SE or SA Lab
Week 11 Nov 9 - Nov 13	Module 9 Sec. 12.1: Goodness-of-Fit	Exercise - MC Exercise - SE or SA Lab

Week 12 Nov 16 - Nov 20	Module 10 Sec. 12.2: Test for Independence and Homogeneity of Proportions	Exercise - MC Exercise - SE or SA Lab
Week 13 Nov 23 - Nov 27	Exam 3 (CH 11 + CH12)	Exam 3
Week 14 Nov 30 - Dec 4	Module 11 Sec. 13.1: One-Way ANOVA	Exercise - MC Exercise - SE or SA Lab
Week 15 Dec 7 - Dec 11	Module 12 Sec. 13.2: Post Hoc Test on One-Way ANOVA	Exercise - MC Exercise - SE or SA Lab
Week 17 Dec 15 - Dec 18	Exam 4 - Optional Final Comprehensive Exam	Exam 4

This is a tentative class schedule. The instructor reserves the right to make any modification.