AGB 327
Agribusiness Data Analysis
Spring Quarter 2018

INSTRUCTOR
Cristina Connolly
Bldg. 22, Room 301
E-mail: crconnol@calpoly.edu

OFFICE HOURS
12:10-2 Monday
12:10-2 Wednesday

CLASS HOURS
MW (2:10-4), F (2:10-3)

CLASS LOCATION
10-215

CLASS WEBSITE PolyLearn

TEXTBOOK (Required)

Donnelly, Robert A., *Business Statistics*. Pearson.
> **Selected Chapters:** 1269282255
> **Full:** 10 0-13-214539-1

COURSE OBJECTIVES:
Agribusiness Data Analysis builds on the fundamentals taught in STAT 251 and AGB 260. Data analysis tools including two-sample inference, regression analysis, analysis of variance, and time series analysis are developed and used to examine agribusiness data. The quantitative tools taught in AGB 327 are designed to enhance critical thinking and problem solving skills and will be applied in Agribusiness Advanced Applied courses. The primary objective of this course is to get you to think of statistical analysis from a big picture system-approach while being introduced to the necessary tools used in the discipline.

LEARNING GOALS:
By the end of the course you should be able to conduct and interpret data analysis under the following topic areas:
  A. Two-Sample Inferences
  B. Analysis of Variance
  C. Categorical Data Analysis
  D. Simple Linear Regression
  E. Multiple Linear Regression

For each topic area you should be able to decide the appropriate statistical technique to use, understand the basic assumptions of that technique, and employ the relevant calculation methods.

ASSESSMENT:

Each of the assessments has been designed to test how you are progressing toward the learning goals. Your progress will be measured through PolyLearn reading questions, applied homework exercises, in-class exams and a final project.

Assignment Weights	
Type of Assignment	**Weight**
Reading Questions	8%
Exams	60%
Homework Assignme	15%
Final Project	17%
Total	100%

The grading scale used for this course is:

A	93.0 – 100	C+	76.7 – 79.9
A-	90.0 – 92.9	C	73.3 – 76.6
B+	86.7 – 89.9	C-	70.0 – 73.2
B	83.3 – 86.6	D+	66.7 – 69.9
B-	80.0 – 83.2	D	60.0 – 66.6

Reading Questions

In order to get the most out of this class it is essential that you first complete the assigned readings. As a method of ensuring that everyone is keeping on track there will be weekly questions about the reading posted on PolyLearn. Each online set of reading questions will close at 12 before the corresponding class period and they are a good way to assess what part of the topic you are most struggling with.

Exams

The three exams are equally weighted and based upon your general understanding and application of the different statistical tools learned. I will provide you with a formula sheet for each exam. This can also be found on PolyLearn. The first exam is **April 30** and the second is **May 23**. The final exam is "optional", but it **will be counted** if you choose to take it.

Homework Assignments

There are 5 homework assignments that will help you practice using Excel as a tool for statistical analysis. Please take careful note of the following rules regarding homework for the course.

- All answers, unless specifically stated otherwise, must be reported in a single Excel file.
- Assignments are submitted via PolyLearn. The due date is also the cutoff date and I will not accept late assignments without a note for an excusable absence from coursework. <u>No</u>

<u>exceptions.</u> If you are having problems uploading to PolyLearn, email your assignment to me before it is due.

- You are free to work in pairs for each assignment. However, two is the maximum number of people who can submit an assignment jointly. An assignment with more than two names on it will receive a score of zero.
    - If you work with a partner, be sure both names are on the assignment.
    - If you work with a partner, be sure to check that you received a grade and that it is the same grade as your partner. Any discrepancies in this respect must be brought to my attention prior to the final, or they will not be considered.
    - Your name can only be on <u>one</u> submitted assignment. If it is on more than one, you will receive a score of zero for that assignment.
- Your lowest homework score will be dropped**.**

Final Project
The final project will require a statistical analysis, interpretation, and discussion of various agribusiness data. Students will be required to devise the appropriate method for analyzing a unique data set and interpret the data as if they were working for a consulting firm. The dataset will be posted on PolyLearn, the rigorous analysis of which will satisfy the completion of the final project. Students are encouraged, but not required, to work in groups of up to **four** for the final project.

WEEKLY SCHEDULE (subject to change):
CONTENT   WEEK

A. HYPOTHESIS TESTING REVIEW   1

B. TWO-SAMPLE INFERENCES   2
    a. Estimating differences between two population means
    b. Hypothesis tests for two population means
    c. Inferences based on paired data
    d. Inference for two population proportions

C. ANALYSIS OF VARIANCE   3-4
    a. One-way and Randomized Block ANOVA
    b. Two-Way Anova

D. CHI-SQ TESTS   5
    a. Inference for 3+ population proportions
    b. Independence of two samples
    c. Goodness of fit tests

E. EQUALITY OF VARIANCE   6

F. SIMPLE LINEAR REGRESSION   6-8
    a. Linear regression model and least squares
    b. Coefficients of determination and correlation
    c. Inference for the slope
    d. Using the model for estimation and prediction

G. MULTIPLE LINEAR REGRESSION   9-11
    a. Multiple regression model and least squares
    b. Multiple coefficient of determination and global F test
    c. Inferences about individual coefficients
    d. Using the model for estimation and prediction
    e. Dummy variables

	Week	Day	Topics	Reading	Assignments
(1)	M	(4/2)	Review of Hypothesis Testing	Ch. 9	
	W	(4/4)			
(2)	M	(4/9)	Two-Sample Inferences	Ch. 10	
	W	(4/11)			
(3)	M	(4/16)	Analysis of Variance	Ch. 11 (One Way and Randomized Block)	
	W	(4/18)			
(4)	M	(4/23)	Analysis of Variance	Ch. 11 (Two-Way)	
	W	(4/25)			
(5)	M	(4/30)			**Exam 1**
	W	(5/2)	Chi-Sq Tests	Chapter 12	*Groups and variables dues*
(6)	M	(5/7)	Equality of Variance	Chapter 13	
	W	(5/9)	Simple Linear Regression	Chapter 14	
(7)	M	(5/14)	Simple Linear Regression		
	W	(5/16)			*Paper Draft Due*
(8)	M	(5/21)	Simple Linear Regression		
	W	(5/23)			**Exam 2**
(9)	M	(5/28)	**No Class**		
	W	(5/30)	Multiple Linear Regression	Chapter 15	
(10)	M	(6/4)			
	W	(6/6)			
			Final Exam: Friday June 15, 1:10-4pm		