Course Objectives

This course is designed to develop intermediate level competency in statistical methods as applied in business settings.

The student will know the theoretical differences between the following statistical tools: chi-square analysis; analysis of variance; correlation; simple regression; multiple regression; and time series analysis as they apply to business and economic problems and situations.

The student will be able to test hypotheses using all of the aforementioned tools.

The student will appreciate the role and value of quantitative analysis to inform business decision making.

To this end, the course will equally stress the derivation and interpretation of the results of these procedures. Computers will assist the student by handling the more complex empirical problems and to demonstrate the use of computers in business and research environments. The ultimate objective of the course is to familiarize the student with the important statistical techniques used in business and economics, and to develop a strong foundation for more advanced applications of statistics in her or his field of study.

Course Information and Requirements

TEXTBOOK


COURSE PROCEDURES

Departmentally, computer assignments will be worth at most 10 percent of the final grade. The final exam, worth 30 percent of the final grade, is also departmental and comprehensive in scope. The remaining portion of the grade and all other procedural matters will be determined by the individual instructor.
UNIVERSITY POLICIES

Please see the associated policy pages included with this syllabus for University policies concerning: Academic Honesty and Integrity; Documentation and Accommodation of Disabilities; and Mutual Respect, Discrimination, and Bias.

OUTLINE

The following is a tentative outline of topics to be covered, required readings and important dates. Your instructor may announce some changes during the semester.

1. January 12 – 23

   Interval Estimation, Confidence Intervals and Hypothesis Testing: One population tests of means and proportions
   TEXT: Pages 306-325; 340-373

   NOTE: January 19 Martin Luther King Day NO CLASSES
   NOTE: Course changes and late registration through January 16
   NOTE: January 16 DEADLINE for all schedule changes.

2. January 26 - 30

   Hypothesis tests continued. Chi –square distribution, goodness of fit test
   TEXT: Pages 340-373; 648-689

3. February 2 -6

   Chi square distribution continued. Tests of independence, F distribution to compare two population variances, analysis of variance
   TEXT: Pages 419-426; 438-451

4. February 9 – 13

   Analysis of variance continued. Completely randomized designs, sums-of-squares, types of variation, confidence intervals
   TEXT: Pages 438-465

5. February 16 – 20

   Correlation analysis, correlation coefficients, simple linear regression, model assumptions, “least-squares”.
   TEXT: Pages 488-512
6. February 23 - 27
Simple regression continues: regression equations, testing the significance of the model, interpretation of regression coefficients.
TEXT: Pages 512-530

7. March 2 – 6
NO CLASSES SPRING BREAK

8. March 9 - 13
Simple regression continues: testing the significance of variables, measures of explanatory power.
TEXT: Pages 512-530
NOTE: March 9 (Monday) Classes Resume
NOTE: March 11 Midterm Grades Due

9. March 16 - 20
Simple regression continues: estimation and prediction, residual analysis
TEXT: Pages 488-530

10. March 23 – 27
Multiple regression, model and assumptions, interpretation of the coefficients, the goodness of the fit, $R^2$, adjusted $R^2$
TEXT: Pages 546-563

11. March 30 - April 3
Multiple regression continues: testing the model, ANOVA in regression settings, hypothesis tests of slope coefficients.
TEXT: Pages 546-575

NOTE: April 1 (Wednesday) Friday classes meet
NOTE: April 2- 6 NO CLASSES Easter Break

12. April 6 - 10
Multiple regression continues: confidence and prediction intervals for $Y$, confidence intervals for slope coefficients
TEXT: Pages 546 – 575
NOTE: April 6 (Monday) NO CLASSES
NOTE: April 7 (Tuesday) Monday classes meet
13. **April 13 – 17**  
   Residual Analysis: Error Assumptions and violations; non-constant variance; autocorrelation; Durbin-Watson test; multicollinearity  
   TEXT: Pages 575 - 585

13. **April 20 - 24**  
   Model building; dummy variables; non-linear models; variable-selection procedures  
   TEXT: Pages 546 – 585

14. **April 27 - May 1**  
   Time series analysis, linear trend models, seasonal dummy variables  
   TEXT: Pages 600 – 618; 620 -- 622; 628 -- 633

**NOTE:** April 30 (Thursday) – Last Day of Classes

**NOTE:** May 1 (Friday) Reading Day

**FINAL EXAM:** **Tuesday, May 5, 2015 8:00 - 9:50 AM**