

BUS 228
BUSINESS STATISTICS

COURSE DESCRIPTION:

Prerequisites: MAT 115

Corequisites: None

This course introduces the use of statistical methods and tools in evaluating research data for business applications. Emphasis is on basic probability, measures of spread and dispersion, central tendency, sampling, regression analysis, and inductive inference. Upon completion, students should be able to apply statistical problem solving to business. Course Hours Per Week: Class, 2. Lab, 2. Semester Hours Credit, 3.

COURSE OBJECTIVES:

Upon completion of this course, the student will be able to:

- a. Distinguish between descriptive and inferential statistics.
- b. Take raw data and arrange it into arrays and frequency distributions.
- c. Compute the mean, median, and mode for grouped and ungrouped data and determine which measure is most representative of the data.
- d. Compute the weighted arithmetic mean and visualize the measures of central tendency on graphs.
- e. Calculate the range, variance, and standard deviation for grouped and ungrouped samples and populations.
- f. Compute the coefficient of variation and apply its meaning to statistical analysis.
- g. Apply the addition and multiplication rules of probability under conditions of statistical dependence and independence.
- h. Solve problems involving the binomial distribution using both the binomial formula and the binomial tables.
- i. Measure areas under the normal curve using the standard error of the mean.
- j. Select a random sample using a table of random digits.
- k. Describe a sampling distribution and determine the standard error of the mean.
- l. Calculate point and interval estimates from sample statistics.
- m. Determine appropriate sample size in estimation.
- n. Identify relationships between two variables as direct or inverse as positive or negative from a scatter diagram.
- o. Determine regression line equation by method of least squares and make an estimate based on the regression line.
- p. Compute the standard error of the estimate and use it to generate prediction intervals.
- q. Compute coefficient of determination and correlation and use them to interpret degree of relationship between two variables.
- r. Make inferences about population parameters using the information obtained in regression and correlation analysis.

OUTLINE OF INSTRUCTION:

I. Introduction

- A. Definition of statistics
- B. Difference between descriptive statistics and inferential statistics

II. Arranging data to convey meanings: tables and graphs

- A. Definition of sample and population
- B. Collection of data
- C. Arranging data using the data array and frequency distribution
- D. Graphing frequency distributions

III. Summary measures of frequency distributions

- A. Mean, median, and mode for ungrouped data
- B. Mean, median, and mode for grouped data
- C. Weighted mean
- D. Comparison of mean, median, and mode

IV. Measuring variability

- A. Uses of dispersion
- B. Four measures of dispersion
 - 1.) Range
 - 2.) Quartile deviation
 - 3.) Average deviation
 - 4.) Variance and standard deviation
- C. Chebyshev's Theorem
- D. Coefficient of variation

V. Probability

- A. Terminology associated with probability
- B. Probability rules
 - 1.) Addition rule
 - 2.) Multiplication rule
- C. Conditional probability
- D. Probability distributions
 - 1.) Binomial distribution
 - 2.) Normal distribution

VI. Sampling and sampling distributions

- A. Reasons for sampling
- B. Types of samples
- C. Central limit theorem
- D. Sampling distributions
 - 1.) Binomial distribution
 - 2.) Normal distribution

VII. Estimation

- A. Point estimates
- B. Interval estimates and confidence intervals
- C. Calculating interval estimates of the mean from large samples
- D. Interval estimates using the t-distribution
- E. Determining the sample size in estimation

VIII. Regression and correlation analysis

- A. Determining regression equation by least squares method
- B. Estimation using regression line
- C. Standard error of estimate
- D. Correlation analysis
 - 1.) Coefficient of determination and correlation
 - 2.) Standard error of regression coefficient
- E. Making inferences about population parameters

REQUIRED TEXTBOOK AND MATERIALS:

Levin, Richard I. and David Rubin, Statistics for Management, 7th edition, Prentice-Hall, Inc., 1996.

STATEMENT FOR STUDENTS WITH DISABILITIES:

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 686-3652 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.