



COURSE OUTLINE

BCO208

Prepared: NCCP Approved: Sherri Smith

| Course Code: Title | BCO208: STATISTICS | | | | | | |
|--|--|-----------------|-------------------|-------------|-----|-------|-----|
| Program Number: Name | 2035: BUSINESS | | | | | | |
| Department: | MATHEMATICS | | | | | | |
| Semester/Term: | 18W | | | | | | |
| Course Description: | In this course, students will develop the necessary mathematical skills for conducting descriptive and inferential statistical analyses with business applications. Topics will include data description and presentation, probability, probability distributions, sampling distributions, estimation, hypothesis testing, regression and correlation. | | | | | | |
| Total Credits: | 4 | | | | | | |
| Hours/Week: | 4 | | | | | | |
| Total Hours: | 60 | | | | | | |
| Vocational Learning Outcomes (VLO's): | #4. Apply basic research skills to support business decision making. | | | | | | |
| <small>Please refer to program web page for a complete listing of program outcomes where applicable.</small> | | | | | | | |
| Essential Employability Skills (EES): | #2. Respond to written, spoken, or visual messages in a manner that ensures effective communication. #3. Execute mathematical operations accurately. #4. Apply a systematic approach to solve problems. #5. Use a variety of thinking skills to anticipate and solve problems. | | | | | | |
| Course Evaluation: | Passing Grade: 50%, | | | | | | |
| Evaluation Process and Grading System: | <table border="1"> <thead> <tr> <th>Evaluation Type</th> <th>Evaluation Weight</th> </tr> </thead> <tbody> <tr> <td>Assignments</td> <td>40%</td> </tr> <tr> <td>Tests</td> <td>60%</td> </tr> </tbody> </table> | Evaluation Type | Evaluation Weight | Assignments | 40% | Tests | 60% |
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| Assignments | 40% | | | | | | |
| Tests | 60% | | | | | | |
| Books and Required Resources: | Texas Instruments BAII Plus Financial Calculator (*optional) | | | | | | |



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Course Outcomes and Learning Objectives:

Course Outcome 1.

Demonstrate the use of statistical terminology relating to the types of statistics, variables, and levels of measurement.

Learning Objectives 1.

- 1.1 Summarize the differences between descriptive statistics and inferential statistics.
- 1.2 Illustrate the differences between a sample and a population.
- 1.3 Illustrate the differences between qualitative and quantitative variables.
- 1.4 Compare discrete and continuous variables.
- 1.5 Classify variables within the four levels of measurement.

Course Outcome 2.

Produce frequency distributions and graphical representations of data.

Learning Objectives 2.

- 2.1 Construct frequency tables, bar charts, and pie charts for qualitative data.
- 2.2 Construct frequency distributions, histograms, and frequency polygons for quantitative data.

Course Outcome 3.

Analyze data by calculating and interpreting variables relating to central tendency and dispersion.

Learning Objectives 3.

- 3.1 Explain the concepts of central tendency and dispersion.
- 3.2 Describe and compute the arithmetic mean, geometric mean, median and mode.
- 3.3 Describe and compute range, variance, and standard deviation.
- 3.4 Describe the shape of a data set and the relative positions of the mean, median, and mode.
- 3.5 Identify and compute measures of relative standing (location).



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Course Outcome 4.

Apply various probability concepts in problem solving.

Learning Objectives 4.

- 4.1 Define terms used in reference to probability and approaches to assigning probabilities.
- 4.2 Determine the number of outcomes in an event by using the appropriate principle of counting (multiplication, permutation and combination formulas).
- 4.3 Calculate the probability of an event using the special and general rules of addition and multiplication.
- 4.4 Organize and compute probabilities using contingency tables or tree diagrams.

Course Outcome 5.

Use discrete probability distributions in problem solving.

Learning Objectives 5.

- 5.1 Define terms used in reference to discrete probability distributions.
- 5.2 Compute the mean, variance and standard deviation of a discrete probability distribution.
- 5.3 Describe the characteristics of, and compute probabilities for a binomial distribution.
- 5.4 Describe the characteristics of, and compute probabilities for a hypergeometric distribution.
- 5.5 Describe the characteristics of, and compute probabilities for a Poisson distribution.

Course Outcome 6.

Use continuous probability distributions in problem solving.

Learning Objectives 6.

- 6.1 Define terms used in reference to continuous probability distributions.
- 6.2 Describe and compute probabilities using the uniform distribution.
- 6.3 List the characteristics of the normal distribution.
- 6.4 Convert a normal distribution to the standard normal distribution.



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- 6.5 Compute probabilities for a normally distributed random variable.
- 6.6 Determine the value of a normally distributed random variable for a given probability.

Course Outcome 7.

Describe the benefits of sampling as a means of estimating population parameters and predict the nature of samples using sampling distribution concepts.

Learning Objectives 7.

- 7.1 Explain why a sample is often the only feasible way to learn something about a population.
- 7.2 Describe methods to select a sample.
- 7.3 Describe and apply concepts relating to the sampling distribution of the sample means.
- 7.4 Explain the central limit theorem.
- 7.5 Define the standard error of the mean.
- 7.6 Apply the central limit theorem to find probabilities of selecting possible sample means from a specified population.
- 7.7 Construct a sampling distribution of a proportion.

Course Outcome 8.

Describe the principles and solve problems relating to confidence intervals.

Learning Objectives 8.

- 8.1 Define a point estimate.
- 8.2 Describe a confidence interval using relevant terminology.
- 8.3 Construct a confidence interval for a population mean when the population standard deviation is known.
- 8.4 List the characteristics of the t-distribution and apply the concepts to problem solving.
- 8.5 Construct a confidence interval for a population mean when the population standard deviation is unknown.
- 8.6 Construct a confidence interval for a proportion.
- 8.7 Calculate the required sample size to estimate a population proportion or population mean.

Course Outcome 9.



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Use hypothesis testing concepts to test the validity of statistical statements involving one and two samples.

Learning Objectives 9.

- 9.1 Apply the hypothesis testing procedure to conduct a one-tailed test and a two-tailed test of hypothesis about a population mean (known standard deviation).
- 9.2 Apply the hypothesis testing procedure to conduct a one-tailed test and a two-tailed test of hypothesis about a population mean (unknown standard deviation).
- 9.3 Conduct a test of hypothesis about a population proportion.

Course Outcome 10.

Develop single and multiple regression models to provide managers with a valuable forecasting tool.

Learning Objectives 10.

- 10.1 Differentiate between dependent and independent variables and use terms relating to regression and correlation.
- 10.2 Apply and interpret regression analysis to estimate the linear relationship between two variables
- 10.3 Evaluate a regression equation to predict the dependent variable.
- 10.4 Calculate and interpret the standard error of estimate, coefficient of determination and correlation coefficient.
- 10.5 Calculate and interpret confidence and prediction intervals.
- 10.6 Calculate, test and interpret the relationship between two variables using the correlation coefficient.

Date:

Thursday, August 31, 2017

Please refer to the course outline addendum on the Learning Management System for further information.