C-ID Descriptor
Introduction to Statistics

Descriptor Details

- **Descriptor Title**: Introduction to Statistics
- **C-ID Number**: 110
- **Units**: 3.0
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General Description

The use of probability techniques, hypothesis testing, and predictive techniques to facilitate decision-making. Topics include descriptive statistics; probability and sampling distributions; statistical inference; correlation and linear regression; analysis of variance, chi-square and t-tests; and application of technology for statistical analysis including the interpretation of the relevance of the statistical findings. Applications using data from a broad range of disciplines.

Prerequisites

Intermediate Algebra or any CSU accepted* statistics pathway curriculum prerequisite

*At present there are two mechanisms to become accepted:

- the proposed statistics course has been accepted to meet CSU General Education Breadth Area B4
- the pathway has been accepted by the CSU Chancellor's Office process per its October 20, 2015 memo (Statistics Pathways in CSU Quantitative Reasoning)

Corequisites

No information provided

Advisories

No information provided

Content

1. Summarizing data graphically and numerically;
2. Descriptive statistics: measurement, measures of central tendency, and variation;
3. Sample spaces and probability;
4. Random variables and expected value;
5. Sampling and sampling distributions;
6. Discrete distributions – Binomial;
7. Continuous distributions – Normal;
8. The Central Limit Theorem;
9. Estimation and confidence intervals;
10. Hypothesis Testing and inference, including t-tests for one and two populations, and Chi-square test;
11. Correlation, regression lines, and analysis of variance (ANOVA);
12. Applications using data from at least four of the following disciplines: business, economics, social science, psychology, political science, administration of justice, life science, physical science, health science, information technology, and education; and
13. Technology based statistical analysis.

Lab Activities

No information provided

Objectives

Upon successful completion of the course, students will be able to:

1. Interpret data displayed in tables and graphically;
2. Apply concepts of sample space and probability;
3. Calculate measures of central tendency and variation for a given data set;
4. Identify the standard methods of obtaining data and identify advantages and disadvantages of each;

5. Calculate the mean and variance of a discrete distribution;
6. Calculate probabilities using normal and t-distributions;
7. Distinguish the difference between sample and population distributions and analyze the role played by the Central Limit Theorem;
8. Construct and interpret confidence intervals;
9. Determine and interpret levels of statistical significance including p-values;
10. Interpret the output of a technology-based statistical analysis;
11. Identify the basic concept of hypothesis testing including Type I and II errors;
12. Formulate hypothesis tests involving samples from one and two populations;
13. Select the appropriate technique for testing a hypothesis and interpret the result;
14. Use regression lines and ANOVA for estimation and inference, and interpret the associated statistics; and
15. Use appropriate statistical techniques to analyze and interpret applications based on data from at least four of the following disciplines: business, economics, social science, psychology, political science, administration of justice, life science, physical science, health science, information technology, and education.

Evaluation Methods

Tests, examinations, homework or projects where students demonstrate their mastery of the learning objectives and their ability to devise, organize and present complete solutions to problems.

Textbooks

A college level text supporting the learning objectives of this course.