

## **Introductory Statistics for General, Business, and Social Sciences TCSU STAT 110**

*This descriptor describes the course topics and student-learning outcomes the CSU expects to be incorporated in an introductory statistics course for Math, Sociology, and Business. Any course meeting the standards for articulation with Introduction to Statistics for General, Business, and Social Sciences – Psychology descriptor (TCSU STAT 120) will also meet the articulation standards for this descriptor.*

### **A. 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 and power; linear correlation and regression; chi-square and t-tests. Application of statistical software to data, including the interpretation of the relevance of the statistical findings.

### **B. Recommended Preparation**

Computer Literacy

### **C. Prerequisites**

Intermediate Algebra

### **D. Minimum Unit Requirement**

3 semester units

### **E. Course Topics**

Must include but are not limited to:

1. Summarizing data graphically and numerically
2. Scales of Measurement
3. Descriptive statistics
4. Introduction to probability and sampling distributions
5. Discrete Distribution – Binomial
6. Continuous Distributions – Normal
7. Estimation and Sampling
8. Expected value
9. The central limit theorem
10. Hypothesis Testing and inference
11. t-tests
12. Chi-square
13. Linear correlation and regression
14. Exposure to doing statistical analysis using a software program.

### **F. Student Learning Outcomes**

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

1. Distinguish among different scales of measurement and their implications
2. Interpret data displayed in tables and graphically.
3. Correctly apply the following concepts from sets and probability to solve simple problems: Venn diagrams, sample spaces, tree diagrams, samples spaces, probability distributions, complementary events, mutually exclusive events, and the addition rule.
4. Determine measures of central tendency and variation for a given data set.
5. Discuss the standard methods of obtaining data and enunciate the advantages and disadvantages of each.
6. Calculate the mean and variance of a discrete distribution.
7. Calculate probabilities using normal and Student's t distributions.
8. Explain the difference between sample and population distributions and the role played by the central limit theorem.
9. Construct and interpret confidence intervals.
10. Interpret levels of statistical significance including p-values.
11. Interpret the output of a computer-based statistical analysis.
12. Explain the basic concept of hypothesis testing including Type I and II errors.
13. Formulate a hypothesis test (i.e., choose the forms of null and alternative hypotheses) involving samples from two populations.
14. Select the appropriate technique for testing a hypothesis and interpret the result
15. Use simple regression analysis for estimation, inference, and interpret the associated statistics.

**G. CAN Equivalent**

CAN STAT 2 (Equivalency ends Spring 2011)