Course Number and Name: STAT 2450 ~ Introduction to Statistical Analysis

CREDITS: 4  CLASS HOURS PER WEEK: (3 lecture and 2 lab)

PREREQUISITE: A grade of “C” or higher in MATH 1151

DESCRIPTION OF COURSE:
This course is designed as a calculus-based introduction to data analysis, experimental design, sampling, probability, and inference. STAT 2450 is intended primarily for students needing an integral calculus-based statistics course for majors in the social and behavioral sciences and other fields.

LEARNING OUTCOMES:
1. Master the major concepts and methods of analysis in probability and statistics
2. Apply concepts and methods to applications in the social and behavioral sciences, and related areas
3. Develop competence in problem recognition, calculator computation, and interpretation of results
4. Use Minitab and the TI calculator as statistical tools

GENERAL EDUCATION GOALS:
This course addresses the following Columbus State general education goals:
• Critical Thinking
• Quantitative Skills

COURSE MATERIALS REQUIRED, CALCULATOR, AND OTHER RESOURCES:


• A graphing calculator is REQUIRED. The Texas Instruments' TI-84 (regular, Plus, Silver) graphing calculator is strongly recommended, fully supported, and approved for use during proctored assessments.

• Calculator Alternatives: Some students may prefer to use a CASIO-FX-9750GII, TI-Nspire (non CAS version), or a TI-83. These are less expensive options that are similar to the TI-84 and that are approved for use during proctored assessments. However, note that your instructor will primarily use the TI-84 when teaching meaning that you will need to learn how to perform any necessary operations using these other calculators without your instructor’s help. Other graphing calculators may be permitted. If you own a different calculator, please check with your current instructor to see if your calculator will be allowed during their proctored assessments.
The TI-89, TI-92, TI-Nspire CAS, or other Computer Algebra System (CAS) calculators, are never allowed during proctored assessments.

Your instructor may require that your graphing calculator’s memory be reset (all RAM cleared) prior to each proctored assessment.

The Columbus State Bookstore sells both the TI-84 and CASIO-FX-9750GII for your convenience. Additional resources supporting the use of the TI-84 may be available at: http://www.cscc.edu/academics/departments/math/graphing-calculator.shtml.

- **Minitab Statistical Software (REQUIRED)** This software is available in DH 104, DH 107, and off-campus computer labs.

- **Tutoring is available in the Learning Resource Center**. For location and posted hours please go to https://www.cscc.edu/academics/departments/math/tutoring.shtml.

**UNITS OF INSTRUCTION:**

- An Introduction to Statistics and Statistical Inference (1.1-1.3)
- Tables and Graphs for Summarizing Data (2.1-2.4)
- Numerical Summary Measures (3.1-3.4)
- Probability (4.1-4.5)
- Random Variables and Discrete Probability Distributions (5.1-5.4)
- Continuous Probability Distributions (6.1-6.4)
- Sampling Distributions (7.1-7.3)
- Confidence Intervals Based on a Single Sample (8.1-8.4)
- Hypothesis Testing Based on a Single Sample (9.1-9.6)
- Confidence Intervals and Hypothesis Tests Based on Two Samples or Treatments (10.1-10.4)
- The Analysis of Variance (11.1-11.2)
- Correlation and Linear Regression (12.1-12.4)
- Categorical Data and Frequency Tables (13.1-13.2)

**GENERAL INSTRUCTIONAL METHODS:**

Instructional methods may include face-to-face, video lectures or demonstration; face-to-face or virtual discussion; individual or group activities including the use of visual aids, graphing calculators, computers and/or other technologies. Students may be expected to participate in these activities during and/or outside of class. Instructors may require class participation, collaborative learning, and peer review.

**METHODS OF EVALUATION:**

- Letter grades for the course will be awarded using a 90%-80%-70%-60% scale.
- A comprehensive Final Exam will account for between 25% and 35% of the course grade.
- Minitab labs will account for 10% of the total course grade.