Columbus State Community College
Mathematics Department
Public Syllabus

Course Number and Name: STAT 2450 – Introduction to Statistical Analysis
Credit Hours: 4 semester credits (3 lecture and 2 lab hours per week)
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.

COURSE GOALS

- To master the major concepts and methods of analysis in probability and statistics.
- To apply concepts and methods to applications in the social and behavioral sciences, and related areas.
- To develop competence in problem recognition, calculator computation, and interpretation of results.
- To use R and the TI calculator as statistical tools.

INSTITUTIONAL LEARNING GOALS

This course addresses the following Columbus State general education goals:
- Critical Thinking
- Quantitative Skills

OPTIONAL TEXTBOOK, CALCULATOR AND OTHER RESOURCES

- **Introductory Statistics: A Problem-Solving Approach (Required)**, 3rd Edition, Stephen Kokoska, W.H. Freeman and Company, 2015. **ISBN 978-1-4292-3976-9.**
- **A graphing calculator is REQUIRED.** The Texas Instruments' TI-84 (regular, Plus, Silver, etc.) 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 and CASIO-FX-9750GII may be available at:
http://www.cscc.edu/academics/departments/math/graphing-calculator.shtml.

- **R Statistical Software (REQUIRED)** This software is free to download onto your computer.
- Tutoring is available in the Learning Resource Center. See http://www2.cscc.edu/academics/departments/math/tutoring.shtml for location and posted hours.

INSTRUCTIONAL METHODS
Instructional methods may include face-to-face or 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 class and/or outside of class. Instructors may require class participation, collaborative learning, and peer review.

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

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.
- R labs will account for 10% of the total course grade.