

SOUTHEAST COMMUNITY COLLEGE
DIVISION OF ARTS AND SCIENCES
Mathematics
Revision Date: 07-01-23

I. CATALOG DESCRIPTION

Course Number: MATH2170 or BSAD2170
Course Title: Applied Statistics
Prerequisite(s): Intermediate Algebra or equivalent test score
Catalog Description: The course is an introduction to basic probability and statistical methods that are used in a wide variety of disciplines. Topics include descriptive statistics, probability foundations, probability distributions, sampling distributions, methods of statistical inference, and bivariate relationships.
Credit Hours: 3.0
Class Hours: 45
Lab Hours: 0
Contact Hours: 45

II. COURSE OBJECTIVES: *Course will:*

- A. Develop student awareness of various sampling methods.
- B. Examine methods of gathering, organizing, and summarizing data.
- C. Investigate and illustrate measures of central tendency, dispersion, and position.
- D. Demonstrate the application of probability and probability distributions.
- E. Introduce and analyze sampling distributions and their application.
- F. Examine inferential statistics through confidence intervals and hypothesis testing.
- G. Develop analysis and presentation of bivariate data.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES

- A. Student Learning Outcomes: *Student will be able to:*
- 1. Use technology to perform statistical calculations and create pictorial displays of data.
 - 2. Differentiate between appropriate and inappropriate sampling methods.
 - 3. Distinguish between sample statistics and population parameters.
 - 4. Classify data as quantitative or categorical/qualitative.
 - 5. Construct and interpret frequency distributions, histograms, and other methods of organizing data.
 - 6. Calculate and interpret measures of central tendency.
 - 7. Calculate and interpret measures of dispersion.
 - 8. Calculate and interpret measures of position.
 - 9. Utilize appropriate probability procedures.
 - 10. Apply various probability distributions to find probabilities and identify unusual outcomes.
 - 11. Apply the concepts of the Central Limit Theorem.
 - 12. Distinguish between the distribution of a data set and a sampling distribution.
 - 13. Use sample data to estimate parameters by calculating and interpreting confidence intervals.
 - 14. Use sample data to test statistical hypotheses about parameters.
 - 15. Interpret the relationship between two variables using linear correlation coefficients.
 - 16. Draw inferences and make predictions from linear regression equations when appropriate.

- B. General Education Learning Outcomes**
- 1. GELO #5: Analytical, Quantitative, and Scientific Reasoning**

Outcome: Apply mathematical and scientific methods to solve problems from an array of contexts and everyday situations.

Outcome: Understand and create logical arguments supported by quantitative and scientific evidence and communicate those arguments in a variety of formats.

Outcome: Effectively develop strategies, algorithms, or experiments (or performing experiments) to better describe the systems or to solve the problems.

Outcome: Manipulate formulas, data sets, graphs, tables, etc. in a way to produce a meaningful outcome.

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

- A.** Sampling methods.
- B.** Gather, organize, and summarize data.
- C.** Measures of central tendency, dispersion, and position.
- D.** Probability and probability distributions.
- E.** Sampling distributions.
- F.** Confidence intervals and hypothesis testing.
- G.** Bivariate data.

V. INSTRUCTIONAL MATERIALS

- A.** Required Text(s):
 - 1.** Triola, M., *Essentials of Statistics*, 7th Edition, Pearson, 2022.

VI. METHODS OF PRESENTATION/INSTRUCTION

- A.** Methods of presentation typically include a combination of the following:
 - 1.** Lecture
 - 2.** Discovery learning
 - 3.** Small group exploration and discussion
 - 4.** Technology applications
 - 5.** In-class activities
 - 6.** Collaborative projects

VII. METHODS OF EVALUATION

- A.** Methods of evaluation typically include a combination of the following:
 - 1.** Course grades, at the determination of the instructor, will be based on class and group participation, daily work, exams, presentations, projects, papers, and/or a portfolio.
 - 2.** Instructor will distribute and discuss the evaluation process and grading policies with students at the beginning of the term.
- B. SCC GRADING SCALE**

A+	95-100	C+	75-79	F	59 or less
A	90-94	C	70-74		
B+	85-89	D+	65-69		
B	80-84	D	60-64		

VIII. SPECIFIC COURSE REQUIREMENTS

- A.** Scientific or graphing calculator required.