SCHENECTADY COUNTY COMMUNITY COLLEGE
Course Outline

ACADEMIC DIVISION/SCHOOL: Mathematics, Science, Technology and Health

PREPARED BY: Ray Ross, Laurie Lacey, Maggi Spring

COURSE CODE: MAT 147 **COURSE TITLE:** Statistics

LECTURE HOURS/WEEK: 3 **LAB HOURS/WEEK:** _Q_ **CREDIT HOURS:** 3

PREREQUISITE/S: Eligible to enroll in a 100 level math course
PREREQUISITE or CONCURRENT COURSE: None
COREQUISITES: None

FINAL EXAM REQUIRED: YES X NO _____

COURSE DESCRIPTION:
This course focuses on the following topics: descriptive statistics, an introduction to probability, random variables and probability distributions, the binomial and normal probability distributions, sampling, estimation, hypothesis testing, chi-square distributions, linear correlation and regression.

SCCC Core Principle Course **yes**
SUNY General Education Course **yes**

STUDENT LEARNING OUTCOMES:
Students who have successfully completed this course will:

- Analyze frequency distributions, histograms, and scatterplots;
- Find measures of central tendency and measures of dispersion;
- Determine the probability of different outcomes or events of a binomial experiment and apply the correct formula to find the expected value of a binomial experiment;
- Relate the area under a normal distribution curve to probability by using the empirical rule or the standard normal distribution table after standardizing;
- Determine the linear correlation coefficient for a set of bivariate data and, if indicated, find the line of best fit and use the model to predict values of the response variable;
- State hypotheses and draw conclusions about parameters in hypothesis testing; and
- Construct and interpret confidence intervals for population parameters, and compute and interpret the margin of errors of point estimates;

REPRESENTATIVE TEXT/S:

Brase, C.H., & Brase, C.P. (Current edition). *Understandable Statistics: Concepts and Methods,* Boston, MA: Cengage.

SUPPLEMENTARY MATERIALS/REFRENCES:
Either a TI83 or TI84 graphing calculator is recommended.

EVALUATION METHODS:
Evaluation methods may include, but are not limited to, exams, graded homework, written projects, computer projects, calculator projects, and quizzes.

NOTE: Grading and assessment criteria may appropriately differ. Grades focus on what individual students have learned while assessments focus on entire cohorts of students. Each instructor will determine his/her grading criteria for the course and state on the course syllabus.

REQUIRED ASSESSMENT METHODS:
Assessment results from these methods will be used for course-level assessment and, where applicable, for SCCC core principles and SUNY General Education Knowledge and Sldlls areas. This information will be incorporated in program reviews.

Student Learning Outcome	Method(s)
Analyze frequency distributions, histograms, and scatterplots	Exam
Find measures of central tendency and measures of dispersion	Exam
Determine the probability of different outcomes or events of a binomial experiment and apply the correct formula to find the expected value of a binomial experiment	Exam
Relate the area under a normal distribution curve to probability by using the empirical rule or the standard normal distribution table after standardizing	Exam
Determine the linear correlation coefficient for a set of bivariate data and, if indicated, find the line of best fit and use the model to predict values of the response variable	Exam
State hypotheses and draw conclusions about parameters in hypothesis testing	Exam
Construct and interpret confidence intervals for population parameters, and compute and interpret the margin of errors of point estimates	Exam

NOTE: College policy requires a final exam or final week activity.

COURSE CONTENT OUTLINE:

WEEK	TOPIC
1 – 3	Descriptive Statistics: organizing and graphing data, numerical measures of central tendency and dispersion: histograms; frequency distributions
4	Probability and Discrete Random Variables: discrete probability distributions; binomial distribution
5-6	Continuous Random Variables: continuous probability distributions; normal distribution; normal approximation to the binomial distribution
7 – 9	Sampling Distributions: sampling distributions of $\bar{x}$ and $\hat{p}$; Central Limit Theorem; standard error
10-11	Estimation of the Mean and Hypothesis Tests: large and small samples; type I and II errors; inferences about two population means
12	Chi Square Tests; goodness of fit; contingency tables
13 -14	Linear Correlation and Regression; scatterplots; correlation coefficient; linear regression
15	Analysis of Variance: F Distribution
16	Final Examination