SUSSEX COUNTY COMMUNITY COLLEGE

**Master College Syllabus**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| MATH108 |  | STATISTICS |  |  |
| COURSE # |  | COURSE TITLE |  | CLASSIFICATION |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3 |  | 3 |  | 0 |
| CREDITS |  | CLASS HOURS |  | LAB HOURS |

**RECOMMENDED COURSE MATERIALS:**

Title: Elementary Statistics

Author: Triola

Publisher: Pearson

Edition: 14th

Copyright: 2/19/2021

ISBN: 9780136803201

**OR**

Title: MYLAB Statistics with Pearson e-text for Elementary Statistics (18 Week)

ISBN: 9780136803102

**Required:** TI-83 or TI-84 Graphing Calculator

**CATALOG DESCRIPTION:** This course includes the following topics: organization of data, measures of central tendency and dispersion, probability, the normal and binomial distributions, confidence intervals, hypothesis testing, analysis of variance, and correlation.

**RECOMMENDATION:** SCCC has embraced a practice of directed self-choice whereby students are encouraged, through guided conversations with an advisor, to best determine their readiness for this course. Students should be aware that developmental courses exist and are available to help strengthen skills and encourage success.  Pursuing testing and/or developmental courses are entirely up to the student.  Further, testing, though providing a valuable reference point for reflection, does not create for the student an obligation to follow Accuplacer recommendations.

#### TOPICS TO BE INCLUDED:

#### Introduction to Statistics

Types of Data

Critical Thinking

Design of Experiments

Summarizing and Graphing Data

Frequency Distributions

Histograms

Statistical Graphics

Statistics for Describing, Exploring, and Comparing Data

Measures of Center

Measures of Variation

Measures of Relative Standing

Exploratory Data Analysis (EDA)

Probability

Fundamentals of Probability

Counting and Factorial Rules, Combinations, and Permutations

Probability Distributions

Random Variables

Binomial Probability Distributions

Mean, Variance, and Standard Deviation for the Binomial Distribution

Normal Probability Distributions

The Standard Normal Distribution

Applications of Normal Distributions

Sampling Distributions and Estimators

The Central Limit Theorem

Estimates and Sample Sizes

Estimating a Population Proportion

Estimating a Population Mean: σ Known

Estimating a Population Mean: σ Not Known

Hypothesis Testing

Basics of Hypothesis Testing

Testing a Claim about a Proportion

Testing a Claim about a Mean: σ Known

Testing a Claim about a Mean: σ Not Known

Correlation and Regression

Basic Concepts of Correlation

The Linear Correlation Coefficient

Linear Regression

Analysis of Variance

The Basics of One-Way Analysis of Variance (ANOVA)

**COURSE COMPETENCIES/LEARNING OUTCOMES:**

In a manner deemed appropriate by the instructor and approved by the department, students will be able to:

1. Categorize, organize, summarize and graphically present data. (GE1, GE2)

2. Interpret tables and graphs. (GE1, GE2)

3. Compute and interpret the meaning of measures of central tendency, variation, and

relative standing: the mean, median, mode, variance, standard deviation, z-scores,

5 number summary, and the presence of outliers. (GE2)

4. Define and identify the following key sampling techniques: random, stratified, systematic, cluster,

and convenience. (GE1, GE2)

5. Calculate the probability of an event using both discrete and normal distribution methods. (GE2)

6. Calculate permutations and combinations. (GE2)

7. Construct and/or identify a binomial probability distribution; find the mean, standard deviation,

and compute associated probabilities. (GE2)

8. Solve and interpret solutions of problems using standard and nonstandard normal

distributions. (GE1, GE2)

9. Recognize key aspects of the Empirical Rule and the Central Limit Theorem and use

them in problem solving. (GE1, GE2)

10. Construct and interpret confidence intervals. (GE1, GE2)

11. Conduct and interpret hypothesis tests using both the traditional and p-value method. (GE1, GE2)

12. Find the value of the linear correlation coefficient and determine whether a significant linear

correlation exists. (GE2)

13. Use technology to conduct a one-way analysis of variance (ANOVA) and then interpret the

results. (GE1, GE2)

The ability of students to demonstrate the course competencies is assessed by a cumulative departmental final exam designed to test the knowledge and skills specified by the learning outcomes. All students are required to take the departmental final exam in a proctored setting. The final exam must count for at least 25% of each student’s final grade.

Summary statistics describing student performance on the departmental final exam are compiled twice a year. A comprehensive item analysis of the departmental final exam performance is conducted every two years. Assessment results are used to improve the teaching and learning of Statistics.

**GRADES COUNTED IN THE GRADE POINT AVERAGE (GPA)**

|  |  |  |
| --- | --- | --- |
| Letter Grade | Grade Points | Percent Range |
| A | 4.0 | 93-100% |
| A- | 3.67 | 90-92 |
| B+ | 3.5 | 88-89 |
| B | 3.0 | 83-87 |
| B- | 2.67 | 80-82 |
| C+ | 2.5 | 78-79 |
| C | 2.0 | 70-77 |
| D | 1.0 | 65-69 |
| F | 0.0 | 0-64 |
| FN | Fail no-show |  |

MATH108

Rev. 8/2022 (lac)