

III. Statement of Course Need

- A. This course serves as a math requirement for various A.S. and A.A. programs. The course also serves as a prerequisite for MATH 111 Statistics II
- B. There is no lab component.
- C. This course generally transfers as a mathematics general education requirement and a mathematics program elective.

IV. Place of Course in College Curriculum

- A. Free Elective
- B. This course serves as a General Education course in Mathematics.
- C. This course meets a program requirement for various A.S. and A.A. degree programs.
- D. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

- A. The Nature of Statistics
- B. Organizing Data
 - 1. Sampling Techniques
 - 2. Grouping Data
 - 3. Histograms and other graphs
 - 4. Stem and Leaf Diagrams
- C. Descriptive Measures for Univariate Data
 - 1. Summation Notation
 - 2. Measures of Central Tendency
 - 3. Measure of Dispersion
 - 4. Interpretation of Standard Deviation
 - 5. Grouped Data Formulas
 - 6. Quartiles and Box-and-Whisker Diagrams
 - 7. Parameters and Statistics
- D. Probability
 - 1. Classical Probability
 - 2. Rules of Probability
 - 3. Mutually Exclusive Events
 - 4. Conditional Probability
 - 5. Independent Events

- E. Discrete Random Variables
 - 1. Probability Distributions
 - 2. The Mean and Standard Deviation of Discrete Random Variables
 - 3. Bernoulli Trials and Binomial Coefficients
 - 4. The Binomial Distribution

- F. The Normal Distribution
 - 1. Continuous Random Variables
 - 2. The Standard Normal Curve
 - 3. Areas Under the Normal Curve
 - 4. Normally Distributed Random Variables

- G. The Sampling Distribution of the Mean
 - 1. Random Sample and Sampling Error
 - 2. The Mean and Standard Deviation of the Sample Mean
 - 3. The Central Limit Theorem

- H. Estimation
 - 1. Point and Interval Estimation of a Parameter
 - 2. Confidence intervals for Population Means
 - 3. The t-Distribution
 - 4. Sample Size Considerations

- I. Hypothesis Testing
 - 1. The Logic of Significance Tests – classical and p-value methods
 - 2. Tests for Single Means

- J. Optional Topics:
 - 1. Tests for One Proportion

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes:

At the completion of the course, students will be able to:

- 1. Synthesize descriptive methods of statistics for the purpose of organizing and summarizing data. (GE-NJ 2)

2. Interpret the meaning of summary measures (mean, median, mode, standard deviation, variance, quartile, percentile, range, minimum, maximum, outlier, etc.) within the context of problem. (GE-NJ 2)
3. Calculate the probability of an event using both discrete and normal distribution methods. (GE-NJ 2)
4. Construct and interpret a confidence interval for a population mean. (GE-NJ 2)
5. Conduct a hypothesis test for a population mean using the p-value or critical-value approach (GE-NJ 2)
6. Interpret a p-value within the context of the problem. (GE-NJ 2)

B. Course Learning Outcomes:

See above.

C. Assessment Instruments

1. Embedded questions in the Final Exam

VII. Grade Determinants

- A. tests (required)
- B. quizzes
- C. homework
- D. projects/case studies/presentations
- E. cumulative final exam (required)

Given the goals and outcomes described above, LIST the primary formats, modes, and methods for teaching and learning that may be used in the course:

- A. lecture/discussion
- B. small-group work
- C. computer-assisted instruction
- D. student oral presentations
- E. student collaboration
- F. independent study

VIII. Texts and Materials

- A. Suggested textbook: Introductory Statistics, 10th edition, N. A. Weiss, Pearson-Addison Wesley, 2016
- B. Computer-based sources: Instructor is free to choose the type of technology. Choices include but are not limited to:
 1. Graphing calculator

2. StatCrunch
3. MINITAB
4. EXCEL
5. SAS

Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.

IX. Resources

Instructor access to internet for statistics software to be used during lecture.

X. Honors Option

Because there is an Honors section of Statistics, this course does not have an Honors Option.