RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

MATH 111 STATISTICS II

I. Basic Course Information

A. Course Number and Title: MATH 111 Statistics II

B. New or Modified Course: Modified

C. Date of Proposal: January 2014

D. Sponsoring Department: Mathematics

E. Semester Credit Hours: 3

F. Weekly Contact Hours: 3   Lecture: 3
                                                    Laboratory:0

G. Prerequisites: A grade of "C" or better in MATH 110 Statistics I

H. Laboratory Fees: None

I. Department Chair at time of proposal: Rosemarie Gorini, rgorini@raritanval.edu

II. Catalog Description

Prerequisite: A grade of "C" or better in MATH 110 Statistics I. This course is a continuation of Statistics I. Topics include description and analysis of bivariate data, regression and correlation, inferences in regression, chi-square procedures, inferences in two means and proportions, simple experimental design, analysis of variance, and optional non-parametric tests.

III. Statement of Course Need

This course serves as a continuation of Statistics I and offers those students who are interested in the subject more exposure to statistical inference. This course will generally transfer as a mathematics course.

IV. Place of Course in College Curriculum

A. This course serves is 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; for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

 A. Statistical Inference
  1. Nature and Design of Hypothesis Tests – classical and modern
  2. Interpretation of Results
  3. Type I and Type II Errors
  4. Power analysis
  5. p-values

 B. Inferences About Two Population Means
  1. Independent and dependent Samples
  2. Tests for differences between Two Means
  3. Tests for differences between Two Proportions
  4. Tests for standard deviations
  5. Chi-square procedures

 C. Inferences About More Than Two Population Means
  1. The F-Distribution
  2. The Logic behind Analysis of Variance
  3. One-Way ANOVA
  4. Two-Way ANOVA

 D. Descriptive Measures for Bivariate Data
  1. Scatter plots
  2. Linear Equations with One Independent Variable
  3. The Regression Equation
  4. The Correlation Coefficient
  5. The Coefficient of Determination

 E. Inferences for Regression and Correlation
  1. Standard Error of the Estimate
  2. Inferences for Regression and Correlation Coefficients
  3. The model for Multiple Regression

 F. Non-Parametric Tests (optional)

VI. Educational Goals and Learning Outcomes

A.   General Education Learning Outcomes

Students will be able to:

1. Conduct an appropriate hypothesis test using both classical and modern (p-value) procedures. (GE-NJ 2)
2. Interpret results from inferential statistics to interpret data for the purposes of decision-making for comparing two population means.-(GE-NJ 2)
3. Interpret results from inferential statistics to interpret data for the purposes of decision-making for comparing one or two population proportions. (GE-NJ 2)
4. Interpret results from inferential statistics to interpret data for the purposes of decision-making in Chi-Square tests for independence or goodness-of fit. (GE-NJ 2)
5. Interpret results from inferential statistics to interpret data for the purposes of decision-making for a one-way ANOVA analysis. (GE-NJ 2)
6. Use linear regression techniques for purposes of analysis and prediction for slope or correlation. (GE-NJ 2)

B.   Course Learning Outcomes

See above.

VII. Modes of Teaching and Learning

       A. lecture/discussion
       B. small-group work
       C. computer-assisted instruction
       D. guest speakers
       E. laboratory
       F. student oral presentations
       G. student collaboration
       H. independent study
       I. homework

VIII. Papers, Examinations, and other Assessment Instruments

       A. teacher written tests
       B. computer/calculator lab projects
       C. semester projects
       D. final examination
       E. in-class quizzes

IX. Grade Determinants

    A. tests
    B. quizzes
    C. homework
    D. projects
    E. labs
    F. cumulative final exam

X. Texts and Materials

    A. Suggested textbook: *Introductory Statistics, Alternate Windows Version, (latest edition).* Neil A. Weiss. Pearson Addison-Wesley.
    B. Supplementary textbook (optional): *Interpreting Basic Statistics,* 3rd ed. Zealure C. Holcomb. Pyrczak Publishing, 2002.
    B. Computer-based sources: The instructor is free to choose the type of technology. Choices include but are not limited to:
        1. MINITAB
        2. TI-84 graphing calculator
        3. EXCEL
        4. ~~SAS~~
        5. ~~IBM SPSS~~

    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.

XI. Resources

    Because of the technology used in the course, classes should be held in a CATT room where the instructor can access both MINITAB and the web. MINITAB software needs to be available in S020, the open lab, and any other computer lab where students may be working.