**Department Master Syllabus**

# Camden County College

**Blackwood, New Jersey**

**Course Title**: **Statistics II**

**Course Number**: **MTH-172**

**Department/Program Affiliation: Mathematics**

**Date of Review: New January 2011**

(This Department Master Syllabus has been examined by the program/department faculty members and it is decided that no revision is necessary at this time.)

**Date of Last Revision**:

(This Department Master Syllabus has been examined by the program/department faculty members and it is decided a change requiring a revision is necessary at this time.)

**N.B.** A change to the course materials alone (textbooks and/or supplementary materials) may not constitute a revision. Any other change to the items listed below on this form is considered a revision and requires approval by the program faculty at a Program/Department Meeting and by the division at a Chairs and Coordinator Meeting.

**Credits:** 3

**Contact Hours**: **Lecture** 3 **Lab** 0 **Other**

**Prerequisites:** MTH-171 (Statistics I)

**Corequisites**: None

**Course Description:**

This course is a continuation of Statistics I. Topics covered include confidence intervals and hypothesis testing on two populations; type I and type II errors, power of the test, inference for simple linear and multiple regression; chi-square tests for goodness-of-fit, independence, and homogeneity; *F* distributions and analysis of variance; and nonparametric tests. Use of a graphing calculator (TI-83/84 Plus) along with a statistical software package is required.

**Course Student Learning Outcomes:** (Cognitive, Psychomotor, Affective Domains)

Upon completion of this course students will be able to:

* analyze statistics through the use of the TI-83/84 Plus graphics calculator and software.
* analyze statistical claims and perform the proper hypothesis test when testing claims from samples of one population.
* analyze Type I and Type II errors by reading and developing operational curves.
* perform hypothesis tests for testing differences between means, proportions, and variances of two populations.
* demonstrate comprehension of inference for simple linear and multiple regression
* compare several groups of data using the methods of analysis of variance.
* perform and interpret chi-squared analyses
* perform and interpret nonparametric tests when the population distributions are non-normal or unknown

**General Education Student Learning Outcomes:**

## Students will apply appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

## Course Outline:

### **Unit I**

### Confidence Intervals for One Population Mean When Is Unknown (Review)

### Terms, Errors, and Hypotheses (Review)

### Hypothesis Tests for One Population Mean When Is Unknown (Review)

The Wilcoxon Signed-Rank Test

Which Procedure Should be Used?

**Unit II**

Type II Error Probabilities; Power

The Sampling Distribution of the Difference Between Two Sample Means for IndependentSamples

Inferences for Two Population Means, Using Independent Samples: Standard Deviations

Assumed Not Equal

The Mann-Whitney Test

Inferences for Two Population Means, Using Paired Samples

Inferences for Two Population Proportions

**Unit III**

. The Chi-Square Distribution

Chi-Square Goodness-of-Fit Test

Contingency Tables; Association

Chi-Square Independence Test

**Unit IV**

The Regression Model; Analysis of Residuals

Inferences for the Slope of the Population Regression Line

Estimation and Prediction

Inferences in Correlation

Testing for Normality (Ryan-Joiner or Shapiro-Wilk test)

**Unit V**

The Multiple Linear Regression Model

Estimation of the Regression Parameters

Inferences Concerning the Utility of the Regression Model

Inferences Concerning the Utility of Particular Predictor Variables

**Unit VI**

The *F*-Distribution

One-Way ANOVA: The Logic and Procedure

The Kruskal-Wallis Test

Two-Way ANOVA (may not be in textbook) (Optional)

**Course Activities:**

The classroom activities will include formal and informal lectures where new material and assigned problems will be explained. Students will have the opportunity to contribute to the discussion and to ask questions about the material. The calculator and statistical software will be integral parts of the class.

**Assessment of Student Learning Outcomes**: The student will be evaluated on the degree to which student learning outcomes are achieved. In addition to a minimum of two tests, a variety of methods may be used such as class participation, projects, homework assignments, etc. (there must be some evidence that the learning outcomes have been achieved.) Student progress will be evaluated on the following basis:

1. Unit Tests

2. Periodic Quizzes, if you deem they are necessary to motivate students to study and attend class on a regular basis

3. Electronic Homework assignments, if graded.

4. Software projects

5. Class attendance, if you have specified this at the beginning of the semester.

6. Comprehensive final examination (optional)

## Grading:

Grades will be based on the student’s performance in the above designated areas. Percentages will be assigned by each individual professor.

A 90 to 100

B 80 to 89

C 70 to 79

D 60 to 69

F Below 60

I Incomplete (only under extreme emergencies)

Must be completed within one semester.

NA Not Attending

XA Never Attended

W Withdraw (student must submit an official withdrawal form by the deadline)

**Course Materials:**

Textbook: *Introductory Statistics*, Weiss, Neil A, Addison Wesley, 8th ed.

Student Solution Manual

**Supplemental Materials:**

Textbook specific course management system.