Capital Community College
Course Outline
Statistics with Technology

SECTION I

SUBJECT AREA & COURSE NUMBER: MAT* G167
COURSE TITLE: Statistics with Technology

COURSE CATALOG DESCRIPTION: This course addresses descriptive statistics, inferential statistics, and probability. The descriptive methods include the concept of population versus sample, frequency distributions, measures of central tendency, and measures of dispersion. The inferential methods involve hypothesis testing, point and interval estimation, correlation and regression, and analysis of variance. Topics from probability include sample spaces, laws of probability, as well as discrete and continuous probability distributions. This course requires use of a graphing calculator with statistics capability. The course may require use of a computer-based statistics package. (Fall and Spring)

LECTURE HOURS PER WEEK: 3   **CREDIT HOURS:** 3
PREREQUISITE(S): MAT* G137

SECTION II

A. SCOPE:
The particular objective of MAT* G167 is to enable the student to obtain information from data by applying certain statistical methods and processes. Methods involve summarizing data (frequency distributions, measures of location and variation) and making inferences about populations (estimation, hypothesis testing, ANOVA, regression, correlation). Probability is an integral part of the inference-making process.

B. REQUIRED WORK: Determined by the instructor as described in the course syllabus

C. ATTENDANCE AND PARTICIPATION: Students are expected to attend each class, arrive on time, take exams at the scheduled times, and participate in the in-class learning process. (Specific instructor policies are included in the course syllabus.)

D. METHODS OF INSTRUCTION: The methods of instruction are determined by each instructor and may include but are not limited to lecture, lecture/discussion, small group collaborative learning, experiment/exploration, distance learning, student presentations, use of technologies such as audio-visual materials, computer, language laboratory, and calculator.

7/18/04

E. OBJECTIVE, OUTCOMES, ASSESSMENT

The following objectives and outcomes represent the department's core requirements for student achievement.

LEARNING OBJECTIVES	LEARNING OUTCOMES	ASSESSMENT METHODS
To demonstrate an understanding of:	Student will:	As measured by:
Concept of Statistics	a) Distinguish between: population and sample, descriptive statistics and inferential statistics, parameter and statistic b) Identify types of data and levels of measurement c) Identify sampling methods	Written in- class quizzes, tests, and examinations; presentations to the class; out-of-class projects, written reports; portfolios; homework assignments
Methods for summarizing data – Numerical	a) Interpret and set up frequency and cumulative frequency distributions b) Evaluate measures of central tendency c) Evaluate measures of variation	
Methods for summarizing data – Graphical	Construct charts, box and whisker plots, stem and leaf displays, histograms, and scatterplots	
Basic probability concepts	a) Classify types of probability b) Determine sample space for a probability experiment c) Evaluate probabilities including conditional probabilities d) Apply Add. and Mult. Rules e) Identify relationships among events f) Use counting methods	
Probability distributions	a) Construct and use discrete probability distributions b) Identify the parameters of a probability distribution c) Apply the normal distribution e) Apply the concept of a sampling distribution and the Central Limit Theorem	
Estimating parameters - mean, proportion, variance	a) Make point and interval estimates of the mean, proportion, and difference between means b) Set up and test hypotheses about the mean, proportion, difference of means, and the variance	
Correlation and Regression	a) Construct a scatterplot of bivariate data b) Determine and graph linear regression lines c) Use linear regression lines to estimate values d) Evaluate and interpret the linear correlation coefficient	
One-way analysis of variance	a) Test hypotheses about the means of several populations using one-way ANOVA b) Use the F-distribution to compare variances	

Note 1: The foregoing table of learning outcomes should not be considered exhaustive; other learning outcomes may also support the objectives. The list is not intended to limit the learning outcomes that can be used to support the objectives.

Note 2: The order in which the learning outcomes are addressed and the relative emphasis given to each will vary from instructor to instructor.

Note 3: There is no expectation that an instructor will employ all the assessment methods or any particular subset of them. Also, the particular list of assessment methods is not exhaustive. Other methods that measure the learning outcomes may be used.

Note 4: It is important to recognize that courses are not delivered in a social vacuum. Any bona fide assessment of a course must take account of out-of-class life demands on students that adversely impact academic success.

F. TEXTS AND MATERIALS: A text selected by the Mathematics Section of the Science and Mathematics Department with content and presentation that support the Learning Objectives and Outcomes given in Part E above.

G. INFORMATION TECHNOLOGY: Graphing calculator