Murrieta Valley Unified School District
High School Course Outline
April 2004

Department: Mathematics

Course Title: Probability and Statistics

Course Number: 2415

Grade Level: 10-12

Length of Course: Year

Prerequisite: Algebra II

UC/CSU (A-G) Requirement: G

I. Goals

The students will:

A. Know the definitions of the mean, median, and mode of a distribution of data and can compute each in particular situations

B. Determine the mean and standard deviation of a normally distributed random variable

C. Compute the variance and the standard deviation of a distribution of data

D. Organize and describe distributions of data by using a number of different methods, including frequency tables, histograms, standard line and bar graphs, stem-and-leaf displays, scatterplots, and box-and-whisker plots

E. Know the definition of the notion of independent events and can use the rules for addition, multiplication, and complementation to solve for probabilities of particular events in finite sample spaces

F. Demonstrate an understanding of the notion of discrete random variables by using them to solve for the probabilities of outcomes, such as the probability of the occurrence of five heads in 14 coin tosses

G. Understand the concept of standard deviation (normal, binomial, and exponential) and can use them to solve for events in problems in which the distribution belongs to those families

II. Outline of Content for Major Areas of Study

Semester I

A. Examining Distributions
   1. Displaying Distributions with Graphs
   2. Describing Distributions with Numbers
   3. Normal Distributions

B. Examining Relationships
   1. Scatterplots
   2. Correlation
   3. Least-Squares Regression
   4. Interpreting Correlation and Regression
   5. Relations in Categorical Data

C. Producing Data
   1. Designing Samples
   2. Designing Experiment

D. Sampling Distributions and Probability
   1. Sampling Distributions
   2. Probability Distributions
   3. Sample Proportions
   4. Binomial Distributions
   5. Sample Means
   6. Control charts

E. Introduction to Inference

   1. Estimating with Confidence
   2. Tests of Significance
   3. Using Significance Tests
   4. Inference as a Decision

Semester II

A. Inference for Distributions
   1. Inference for the Mean of a Population
   2. Comparing Two Means
   3. Inference For Population Spread

B. Inference for Proportions
   1. Inference for a Population Proportion
   2. Comparing Two Proportions

C. Inference for Two-Way Tables

1. Two-Way Tables
2. The Chi-Square Test

D. One-Way Analysis of Variance: Comparing Several Means
1. Analysis of Variance F Test
2. Introduction to ANOVA

E. Inference for Regression
1. Inference about the Model
2. Inference about Prediction
3. Checking the Regression Assumptions

III. Accountability Determinants

A. Teacher and textbook generated tests and quizzes

B. Individual portfolios and projects

C. Comprehensive final exam

IV. Required Text(s)

Moore, David S., *The Basic Practice of Statistics, 3rd Edition*. New York, New York: W. H.
Freeman and Co., 2004.

V. Supplemental Materials

Optional – TI –83 Graphing Calculators