SU DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE
SYLLABUS *(Tentative)*
MATH 150 Data and Probability Connections

Objectives: To provide prospective teachers an in-depth conceptual understanding of statistics and probability content taught in elementary school and develop students' capacity to implement research-based pedagogical methods for elementary teaching. Treatment is also given to concepts for which elementary curricula lay a foundation, including bivariate data analysis, conditional probability, and formal inference. The approach of the course will provide a model of how the concepts should be taught in the elementary grades based on guidelines for teaching statistics set forth by the American Statistical Association and the National Council of Teachers of Mathematics. **This course does satisfy General Education Requirements IV-B or IV-C.**

Intended for: Students in the Elementary Education Program

Credit may not be received for both MATH 150 and MATH 155.

Prerequisite: High School Algebra II and Geometry (Recommended)

Text: No Text.

Technology: Mathematical software accessible via SU computer network, use of a graphing calculator or additional mathematical software may also be required.

	Weeks
Elements of Statistics	1
Introduction to the basics of statistics and types of data.	
Organizing and Displaying Data	1.5
Displaying categorical and quantitative data, misleading graphs.	
Describing Data with Numbers	1.5
Measures of center, measures of spread, measures of position, box-and-whisker plots.	
Data with Two Variables	1
Scatter plots and correlation, Pearson's Correlation Coefficient, slopes and equations of fitted lines.	
Probability and Counting Techniques	1.5 - 2
Elements of probability, basic probability rules, conditional probability and independence, multiplication rules, the fundamental counting principle, permutations, combinations, mixed counting problems.	
Random Variables and Probability Distributions	1.5
Random variables, the mean of a random variable, variance and standard deviation, binomial random variables, the normal curve, Chebyshev's Rule.	
Distributions from Random Samples	1
Random Sampling, the distribution of sample means.	
Estimating with Confidence	1.5
Confidence intervals for means and estimation of sample size.	
Testing Hypotheses	2
Hypothesis tests, the p-value for a test.	
Tests	1-1.5

EVALUATION
Quizzes/homework/lab work/ class work 20 – 45 %
Tests (2 or 3) 30 – 50 %
Final examination 20 – 40 %

NOTE: ONCE A STUDENT HAS RECEIVED CREDIT, INCLUDING TRANSFER CREDIT, FOR A COURSE, CREDIT MAY NOT BE RECEIVED FOR ANY COURSE WITH MATERIAL THAT IS EQUIVALENT TO IT OR IS A PREREQUISITE FOR IT.