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**Salisbury University Department of Mathematical Sciences**
**MATH 150 : Data and Probability Connections testing kim  
Syllabus (Tentative)**

**Description:** Provides prospective teachers with a conceptual understanding of statistics and probability. Includes concepts for which elementary curricula lay a foundation, bivariate data analysis, conditional probability, formal inference, relevant educational software and guidelines for teaching statistics as set forth by the American Statistical Association and the National Council of Teachers of Mathematics. 3 Hours Credit: Meets three hours per week. Meets General Education IVB or IVC.

**Prerequisites:** C or better or concurrent enrollment in MATH 130.

**Credit:** Credit may only be received for one of MATH 150, MATH 155, MATH 213, and MATH 216

**Intended Audience:** Students in the Elementary Education Program

**Objective:** 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.

**Textbooks:** Reconceptualizing Mathematics, 4th edition by Judith Sowder, Larry Sowder, and Susan Nickerson

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

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

Topic	Weeks
Tests	1 – 1.5
<b>Total</b>	<b>14</b>

#### Evaluation

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

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- Free tutoring is available for this course in the Spring and Fall semesters.
  - Clear descriptions of thought processes, evidence of critical thinking, and effective communication must be demonstrated in written work.
  - **Writing Across the Curriculum:** Students will be expected to communicate mathematics and mathematical ideas effectively in speech and writing. At the University Writing Center, trained consultants are ready to help you at any stage of the writing process. In addition to the important writing instruction that occurs in the classroom and during professors' office hours, the Center offers another site for learning about writing. **All students are encouraged to make use of these important services.**
  - **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.