

## Salisbury University Department of Mathematical Sciences

MATH 155 : Modern Statistics with Computer Analysis  
Syllabus (Tentative)

**Description:** Descriptive and inferential analysis of raw data, emphasizing appropriate assumptions, computer use and interpretation. Consideration of parametric and nonparametric methods and comparison of their powers. Intended for students in the social and natural sciences. 3 Hours Credit: Meets three hours per week. Meets General Education IVB or IVC.

**Prerequisites:** High school Algebra II and plane geometry.

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

**Intended Audience:** Students in the social sciences and natural sciences and others who must make inferences from sample data.

**Objective:** To introduce descriptive statistics and both parametric and nonparametric inferential methods

**Textbooks:** *Elementary Statistics* by Navidi & Monk, 4th edition (print or e-text, contact your section instructor for details.)

**Technology:** MINITAB (free use for SU students). Some instructors require the purchase of ALEKS access or a specific calculator, contact your section instructor for details.

Topic	Weeks
<b>Chapter 1: Basic Ideas</b> Fundamental elements of a statistical study, types of data, the importance of random sampling, observational studies versus designed experiments.	0.5 – 1
<b>Chapters 2-3: Graphical &amp; Numerical Summaries of Data</b> Bar graphs, pie charts, histograms, and boxplots; measures of center, variation, and relative standing; Chebyshev's theorem and empirical rule.	2.5
<b>Chapter 4: Summarizing Bivariate Data</b> Scatterplots, interpreting sample linear correlation, regression lines and point predictions.	1
<b>Chapter 6-7: Probability Distributions</b> Discrete and continuous random variables, probability distributions, binomial distributions, normal distributions, sampling distribution of the mean and Central Limit Theorem, assessing normality.	3
<b>Chapters 8-9, 15: Confidence Intervals &amp; Hypothesis Testing</b> Confidence interval for a population mean, testing hypotheses about a population mean, P-values, Type I & Type II errors, sign test.	3.5 – 4
<b>Chapter 10-11, 15: Two-Sample Confidence Intervals &amp; Hypothesis Tests</b> Comparing two population means (independent and paired samples), Wilcoxon signed-ranks test, Mann Whitney (Wilcoxon rank-sum) test.	1 – 1.5
<b>Topics to be covered as time permits</b> Probability (Chapter 5), Inferences about population proportions.	
<b>Tests</b>	1.0 – 1.5
<b>Total</b>	<b>14</b>

#### Evaluation

Quizzes/homework/labs	15 – 25%
Written project(s)	5 – 10%
Tests (2 or more)	40 – 60%
Final Exam (comprehensive)	20 – 40%

- 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.