



## STATISTICS

21:640:211 (3 credits)

### COURSE DESCRIPTION:

Principles, methods, and application of statistical methodology; includes frequency distributions, measures of central tendency and dispersion, simple probability, sampling, regression and correlation analysis, curve fitting, and tests of significance. Applications to natural and social sciences.

### PREREQUISITE:

Mathematics Proficiency. There are three ways to meet the University mathematics proficiency requirement:

Successful completion, with a grade of "C" or better, of 21:640:103 (Math for Liberal Arts), or 21:640:112 (College Algebra Intensive), or 21:640:113 (College Algebra) or any more advanced course in mathematics that is offered by the Rutgers Department of Mathematics and Computer Science.

Satisfactory performance on a Proficiency Examination administered by the Rutgers Department of Mathematics and Computer Science.

Successful completion (at another institution) with a grade of "C" or better of a college level, first-term Calculus course equivalent to 21:640:135 (Calculus I) OR Successful completion (at another institution) of a course equivalent to 21:640:114 (Precalculus), or 21:640:119 (Basic Calculus) with a grade of "B" or better.

### TEXTBOOK:

"Elementary Statistics: Picturing the World," (7<sup>th</sup> edition), by Larson, published by Pearson.

DEPARTMENT WEB SITE: <http://www.ncas.rutgers.edu/math>

### THIS COURSE COVERS THE FOLLOWING CHAPTERS AND SECTIONS:

#### Chapter 1:

- 1.1 An Overview of Statistics
- 1.2 Data Classification
- 1.3 Experimental Design

Chapter 2:

- 2.1 Frequency Distributions and Their Graphs
- 2.2 More Graphs and Displays
- 2.3 Measure of Central Tendency
- 2.4 Measure of Variation
- 2.5 Measure of Position

Chapter 3:

- 3.1 Basic Concepts of Probability
- 3.2 Conditional Probability and the Multiplication Rule
- 3.3 The Addition Rule
- 3.4 Counting Principal

Chapter 4:

- 4.1 Probability Distributions
- 4.2 Binomial Distributions
- 4.3 More Discrete Probability Distributions

Chapter 5:

- 5.1 Normal Distributions - The Standard Normal Distribution
- 5.2 Normal Distributions: Finding Probabilities
- 5.3 Normal Distributions: Finding Values
- 5.4 Sampling Distributions and the Central Limit Theorem
- 5.5 Normal Approximation to Binomial Distributions

Chapter 6:

- 6.1 Confidence Intervals for the Mean(Large Sample)
- 6.2 Confidence Intervals for the Mean(Small Sample)
- 6.3 Confidence Intervals for Population Proportions
- 6.4 Confidence Intervals for the Variance and Standard Deviation

Chapter 7:

- 7.1 Introduction to Hypothesis Testing
- 7.2 Hypothesis Testing for the Mean (Large Sample)
- 7.3 Hypothesis Testing for the Mean (Small Sample)
- 7.4 Hypothesis Testing for Proportions
- 7.5 Hypothesis Testing for Variance and Standard Deviation

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