

August 2015

## Course Outline for MATH 2200 – Elementary Statistics

Text: [Diez, Barr, and Cetinkaya-Rundel, OpenIntro Statistics, 3rd Edition](#)  
(PDF only, chapters and sections used listed below)

### I. Intro to Data Descriptive

- A. Data Basics
- B. Overview of data collection principles
- C. Observational studies and sampling strategies (optional)
- D. Experiments (optional)
- E. Examining Numerical Data
- F. Considering categorical data

### II. Probability

- A. Defining Probability
- B. Conditional probability
- C. Sampling from a small population (optional)
- D. Random Variables (optional)
- E. Continuous Distributions

### III. Distributions of random variables

- A. Normal distribution
- B. Evaluating the normal distribution
- C. Binomial Distributions (optional)

### IV. Foundations for Inference

- A. Variability in estimates
- B. Confidence intervals
- C. Hypothesis Testing
- D. Examining the Central Limit Theorem
- E. Inference for other estimators

### V. Inference for numerical data

- A. One sample mean with t distribution
- B. Paired data
- C. Difference of two means

### VI. Inference for categorical data

- A. Inference for a single proportion
- B. Difference of two proportions
- C. Testing for goodness of fit using chi-square
- D. Testing for independence in two-way tables

### VII. Introduction to linear regression

- A. Line fitting, residuals, and correlation
- B. Fitting a line by least squares regression

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Non-optional material	35 hours
Optional material, review, and testing	8 hours

Each chapter should take 2-3 50 min. class meetings or 1-2 75 min. class meetings.

#### Software

Students in this course should be exposed to statistical software on graphing calculators or in software packages such as Minitab, Excel, or SPSS.

This course should include at least four one-hour exams (two of which should be returned before midterm), and a comprehensive final exam. If an instructor is unable to complete the course outline or administer the minimum of exams he or she should notify the department head.