

**SYLLABUS**  
**MATH 115 - INTRODUCTION TO STATISTICS**

(Traditional Format – see below for the activity format)  
REVISED JULY 2005

**CATALOG DESCRIPTION:** Description of data, binomial and normal distributions, estimation and testing hypotheses for means and proportions.

**Prerequisites:** Two years high school algebra, one year of geometry and a satisfactory placement exam score.

**GENERAL DESCRIPTION:** The main objective of MATH 115 is to give the non-mathematical student an elementary introduction to the practice of statistics. This course will give insight into how a statistician gathers, summarizes, and draws conclusions from data. We are surrounded everyday by numerical information and graphical material. At the end of the course, the student should be a critical consumer of this information.

**TEXT:** Moore, David S. The Basic Practice of Statistics, 3rd Edition

**CONTENT:**

**PART I: EXPLORING DATA**

Exploring Data: Variables and Distributions

- Chapter 1. Picturing Distributions with Graphs
- Chapter 2. Describing Distributions with Numbers
- Chapter 3. Normal Distributions
- Chapter 4. Scatterplots and Correlation
- Chapter 5. Regression
- Chapter 6. Two-Way Tables

**PART II: FROM EXPLORATION TO INFERENCE**

Producing data

- Chapter 7. Producing Data: Sampling
- Chapter 8. Producing Data: Experiments
- Chapter 9. Introducing Probability
- Chapter 10. Sampling Distributions

Introducing Inference

- Chapter 13. Confidence Intervals: The Basics
- Chapter 14. Tests of Significance: The Basics
- Chapter 15. Inference in Practice

**PART III: INFERENCE ABOUT VARIABLES (OPTIONAL)**

Quantitative Response Variable

- Chapter 16. Inference About Population Mean

Categorical Response Variable

- Chapter 18. Inference About Population Proportion

## SUGGESTED TIMETABLE (MOORE) FOR COVERAGE THROUGH CHAPTER 15

### WEEKS CHAPTERS

- 1 Ch 1 Picturing Distributions with Graphs
  - 2 Ch 2 Describing Distributions with Numbers
  - 3 Ch 3 The Normal Distribution
  - 4 Ch 4 Scatterplots and Correlation
  - 5 Ch 5 -- Regression
  - 6 Review and Test 1
  - 7 Ch 6 Two-Way Tables
  - 8 Ch 7 Producing Data: Sampling
  - 9 Ch 8 Producing Data: Experiments
  - 10 Ch 9 Introducing Probability
  - 11 Review and Test 2
  - 12 Ch 10 Sampling Distributions
  - 13 Ch 13 Confidence Intervals: The Basics
  - 14 Ch 14 Tests of Significance: The Basics
  - 15 Ch 15 Inference in Practice and Review
- Final Exams Week Test 3

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**TEXT:** Rossman, Allan J. and Chance, Beth L., Workshop Statistics, 2<sup>nd</sup> Edition

**CONTENT:**

**UNIT I EXPLORING DATA: DISTRIBUTIONS**

Topic 1: Data and Variables

Topic 2: Data, Variables, and Technology

Topic 3: Displaying and Describing Distributions

Topic 4: Measures of Center

Topic 5: Measures of Spread

**UNIT II EXPLORING DATA: COMPARISONS AND RELATIONSHIPS**

Topic 6: Comparing Distributions I: Quantitative Variables

Topic 7: Comparing Distributions II: Categorical Variables

Topic 8: Graphical Displays of Association

Topic 9: Correlation Coefficient

Topic 10: Least Squares Regression I

[Skip Topic 11]

**UNIT III COLLECTING DATA**

Topic 12: Sampling

Topic 13: Designing Studies

**UNIT IV RANDOMNESS IN DATA**

Topic 14: Probability

Topic 15: Normal Distributions

For the remainder of the course, we focus on sampling distributions and inference for proportions only.

Topic 16: Sampling Distributions I: Proportions

Topic 18: Central Limit Theorem

**UNIT V INFERENCE FROM DATA: PRINCIPLES**

Topic 19: Confidence Intervals I: Proportions

Topic 21: Tests of Significance I: Proportions (IF TIME ALLOWS)

**SUGGESTED TIMETABLE FOR COVERAGE (ROSSMAN AND CHANCE) THROUGH TOPIC**

WEEKS CHAPTERS

- 1 Topics 1 and 2 (Data and Variables)
  - 2 Topic 3 (Displaying and Describing Distributions)
  - 3 Topics 4, 5 (Measures of Center and Spread)
  - 4 Topic 6 (Comparing Distributions I: Quantitative Variables)
  - 5 Topic 7 (Comparing Distributions I: Categorical Variables)
  - 6 Review and Test 1
  - 7 Topic 8 (Graphical Displays of Association)
  - 8 Topic 9 ( Correlation Coefficient)
  - 9 Topic 10 (Least Squares Regression I)
  - 10 Topics 12, 13 (Collecting Data)
  - 11 Review and Test 2
  - 12 Topic 14 (Probability)
  - 13 Topic 15 (Normal Distributions)
  - 14 Topics 16, 17 (Sampling Distributions, CLT)
  - 15 Topic 19 (Confidence Intervals Proportions)
- Final Exams Week Test 3