

TABLE OF CONTENTS

MAT1140 Introduction to Statistics

Licensing

1: Sampling and Data

- 1.1: Introduction
 - 1.1.1: Definitions of Statistics, Probability, and Key Terms
- 1.2: Data, Sampling, and Variation in Data and Sampling
 - 1.2.1: Sampling Experiment (Worksheet)
- 1.3: Experimental Design and Ethics

2: Descriptive Statistics

- 2.1: Prelude to Descriptive Statistics
- 2.2: Frequency, Frequency Tables, and Levels of Measurement
 - 2.2.1: Data Collection Experiment (Worksheet)
 - 2.2.E: Sampling and Data (Exercises)
- 2.3: Stem-and-Leaf Graphs (Stemplots), Line Graphs, and Bar Graphs
- 2.4: Histograms, Frequency Polygons, and Time Series Graphs
- 2.5: Measures of the Location of the Data
 - 2.5E: Measures of the Location of the Data (Exercises)
- 2.6: Box Plots
- 2.7: Measures of the Center of the Data
- 2.8: Skewness and the Mean, Median, and Mode
- 2.9: Measures of the Spread of the Data
- 2.10: Descriptive Statistics (Worksheet)
- 2.E: Descriptive Statistics (Exercises)

3: Discrete Random Variables

- 3.1: Prelude to Discrete Random Variables
- 3.2: Probability Distribution Function (PDF) for a Discrete Random Variable
- 3.3: Mean or Expected Value and Standard Deviation
- 3.4: Binomial Distribution
- 3.5: Geometric Distribution
- 3.6: Discrete Distribution (Playing Card Experiment)
- 3.7: Discrete Distribution (Lucky Dice Experiment)
- 3.E: Discrete Random Variables (Exercises)

4: The Normal Distribution

- 4.1: Prelude to The Normal Distribution
- 4.2: The Standard Normal Distribution
 - 4.2E: The Standard Normal Distribution (Exercises)
- 4.3: Using the Normal Distribution
- 4.4: Normal Distribution - Lap Times (Worksheet)
- 4.5: Normal Distribution - Pinkie Length (Worksheet)

- 4.E: The Normal Distribution (Exercises)

5: The Central Limit Theorem

- 5.1: Prelude to the Central Limit Theorem
- 5.2: The Central Limit Theorem for Sample Means (Averages)
 - 5.2E: The Central Limit Theorem for Sample Means (Exercises)
- 5.3: The Central Limit Theorem for Sums
- 5.4: Using the Central Limit Theorem
 - 5.4E: Using the Central Limit Theorem (Exercises)
- 5.5: Central Limit Theorem - Pocket Change (Worksheet)
- 5.6: Central Limit Theorem - Cookie Recipes (Worksheet)
- 5.E: The Central Limit Theorem (Exercises)

6: Confidence Intervals

- 6.1: Prelude to Confidence Intervals
- 6.2: A Single Population Mean using the Normal Distribution
 - 6.2E: A Single Population Mean using the Normal Distribution (Exercises)
- 6.3: A Single Population Mean using the Student t-Distribution
- 6.4: A Population Proportion
- 6.5: Confidence Interval - Home Costs (Worksheet)
- 6.6: Confidence Interval -Place of Birth (Worksheet)
- 6.7: Confidence Interval -Women's Heights (Worksheet)
- 6.E: Confidence Intervals (Exercises)
- 6.S: Confidence Intervals (Summary)

7: Hypothesis Testing with One Sample

- 7.1: Prelude to Hypothesis Testing
- 7.2: Null and Alternative Hypotheses
 - 7.2E: Null and Alternative Hypotheses (Exercises)
- 7.3: Outcomes and the Type I and Type II Errors
 - 7.3E: Outcomes and the Type I and Type II Errors (Exercises)
- 7.4: Distribution Needed for Hypothesis Testing
 - 7.4E: Distribution Needed for Hypothesis Testing (Exercises)
- 7.5: Rare Events, the Sample, Decision and Conclusion
 - 7.5E: Rare Events, the Sample, Decision and Conclusion (Exercises)
- 7.6: Additional Information and Full Hypothesis Test Examples
- 7.7: Hypothesis Testing of a Single Mean and Single Proportion (Worksheet)
- 7.8: Test of a Single Variance
 - 7.8.1: Facts About the Chi-Square Distribution
- 7.E: Hypothesis Testing with One Sample (Exercises)

8: Hypothesis Testing with Two Samples

- 8.1: Prelude to Hypothesis Testing with Two Samples
- 8.2: Two Population Means with Unknown Standard Deviations
- 8.3: Two Population Means with Known Standard Deviations
- 8.4: Comparing Two Independent Population Proportions
- 8.5: Matched or Paired Samples

- [8.6: Hypothesis Testing for Two Means and Two Proportions \(Worksheet\)](#)
- [8.E: Hypothesis Testing with Two Samples \(Exercises\)](#)

9: Linear Regression and Correlation

- [9.1: Prelude to Linear Regression and Correlation](#)
- [9.2: Linear Equations](#)
 - [9.2E: Linear Equations \(Exercises\)](#)
- [9.3: Scatter Plots](#)
 - [9.3E: Scatter Plots \(Exercises\)](#)
- [9.4: The Regression Equation](#)
 - [9.4E: The Regression Equation \(Exercise\)](#)
- [9.5: Testing the Significance of the Correlation Coefficient](#)
 - [9.5E: Testing the Significance of the Correlation Coefficient \(Exercises\)](#)
- [9.6: Prediction](#)
 - [9.6E: Prediction \(Exercises\)](#)
- [9.7: Outliers](#)
 - [9.7E: Outliers \(Exercises\)](#)
- [9.8: Regression - Distance from School \(Worksheet\)](#)
- [9.9: Regression - Textbook Cost \(Worksheet\)](#)
- [9.10: Regression - Fuel Efficiency \(Worksheet\)](#)
- [9.E: Linear Regression and Correlation \(Exercises\)](#)

[Index](#)

[Glossary](#)

[Index](#)

[Glossary](#)

[Detailed Licensing](#)