Course Description:

From construction to physics, the concepts in this course are used in a variety of real-world situations. In this course, students will learn how to make probability decisions, and how to use basic statistics and sampling processes to understand data sets and answer questions about samples and populations.

As students work through this course, they will complete 28 lessons that have a similar structure. Each lesson pair starts with a refresher of previous concepts, where they work through a few problems. After that, they move on to activities in which the lesson is taught by watching videos and working through an interactive text activity. They will then answer the Workbook questions. After that, students interact with peers in the discussion board to talk about what they are learning in the lesson. Then they complete a Checkpoint quiz or Unit Exam. Lesson 29 is a review of the concepts from each unit and students take the Final Exam.

Course Objectives:

- Understand and evaluate random processes underlying statistical experiments.
- Use probability to evaluate outcomes of decisions.
- Apply probability concepts in new contexts.
- Define the basic vocabulary of statistics.
- Differentiate between types of statistical studies.
- Identify and analyze methods of random sampling and determine appropriate sample sizes.
- Identify sources of bias in statistical studies.
- Analyze the results of statistical studies using the margin of error.
- Understand and evaluate random processes underlying statistical experiments.
- Make inferences and justify conclusions from sample surveys, experiments, and observational studies.
- Summarize, represent, and interpret data on a single count or measurement variable.
- Use probability to evaluate outcomes of decisions.

Required Materials:

In course.

Schedule of Work:

Unit 1: Probability Concepts, Part 1
- Math Muscle Exercise (Lessons 1, 3, and 5)
- Direct Instruction
  - Key Terms
  - Text and Videos: Modeling Data From Simulations, Part 1; Modeling Data From Simulations, Part 2; Basic Probability Review, Part 1; Basic Probability Review, Part 2; Complementary Events, Part 1; Complementary Events, Part 2
  - Workbook assessments
- Discussion (Lessons 2, 4, and 6)
- Checkpoint assessments (Lessons 2 and 4)
- Unit 1 Exam (Lesson 6)

Unit 2: Probability Concepts, Part 2
- Math Muscle Exercise (Lessons 7 and 9)
- Direct Instruction
    - Key Terms
    - Text and Videos: Compound Events, Part 1; Compound Events, Part 2; Expected Value, Part 1; Expected Value, Part 2
    - Workbook assessments
- Discussion (Lessons 8 and 10)
- Checkpoint assessments (Lesson 8)
- Unit 2 Exam (Lesson 10)

Unit 3: Statistics, Part 1
- Math Muscle Exercise (Lessons 11, 13, and 15)
- Direct Instruction
    - Key Terms
    - Text and Videos: Making Decisions Based on Probability, Part 1; Making Decisions Based on Probability, Part 2; Introductory Statistics, Part 1; Introductory Statistics, Part 2; Sampling a Population, Part 1; Sampling a Population, Part 2
    - Workbook assessments
- Discussion (Lessons 12, 14, and 16)
- Checkpoint assessments (Lessons 12 and 14)
- Unit 3 Exam (Lesson 16)

Unit 4: Statistics, Part 2
- Math Muscle Exercise (Lessons 17 and 19)
- Direct Instruction
    - Key Terms
    - Text and Videos: Designing and Analyzing Surveys, Part 1; Designing and Analyzing Surveys, Part 2; Margin of Error, Part 1; Margin of Error, Part 2
    - Workbook assessments
- Discussion (Lessons 18 and 20)
- Checkpoint assessments (Lesson 18)
- Unit 4 Exam (Lesson 20)

Unit 5: The Center and Spread of Data, Part 1
- Math Muscle Exercises (Lessons 21 and 23)
- Direct Instruction
    - Key Terms
    - Text and Videos: The Center and Spread of Data, Part 1; The Center and Spread of Data, Part 2; The Shape of Data, Part 1; The Shape of Data, Part 2
- Discussion (Lessons 22 and 24)
- Checkpoint assessments (Lesson 22)
- Unit 5 Exam (Lesson 24)

Unit 6: The Center and Spread of Data, Part 2
- Math Muscle Exercises (Lessons 25 and 27)

- Direct Instruction
  - Key Terms
  - Text and Videos: Normal Distributions, Part 1; Normal Distributions, Part 2; What Are z-Scores?, Part 1; What Are z-Scores?, Part 2; Review
  - Workbook assessments
- Units 1–6 Review (Lesson 29)
- Discussion (Lessons 26 and 28)
- Checkpoint assessments (Lesson 26)
- Unit 6 Exam (Lesson 28)
- Course Final Exam (Lesson 29)