

Mathematics 11, Elementary Statistics – Spring 2022 Section # 51783

Instructor: Scott Endler

Class Times: 6:00pm - 7:50pm, **Room:** CCI 206

E-mail: scott.endler@reedleycollege.edu

Required Text: Elementary Statistics, Picturing the World
7th Edition, Larson, Faber

Catalog Description: This course is an introduction to statistical methods and techniques for business, behavioral, and social science majors. Topics include descriptive measures of central tendency and variability, probability, binomial and normal distributions, random variables, sampling, estimating, hypothesis testing (parametric and nonparametric), correlation and regression.

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| Grading: | 60% | Chapter Tests | Grading Scale: | 90-100% | A |
| | 15 % | Final Exam | | 80-89.9% | B |
| | 15% | Classwork/Homework | | 70-79.9% | C |
| | 10% | Quizzes | | 60-69.9% | D |
| | | | | <60% | F |

Chapter Tests: Nine tests will be given during the term. These will mostly include material from the most recent chapter but may also include some previous material as well. Tests must be completed within time allowed during class. **There are no make-ups for missed quizzes or tests.**

Final Exam: The material in this course is used in many courses that follow in both math and science. Because of this, it is not acceptable to just forget everything once you take a chapter test. So, a comprehensive final exam will be given during final exam week.

Classwork/Homework: “Practice makes perfect” is particularly true in mathematics. Generally, assignments will be collected during class or at the beginning of the next class. Each assignment will be checked for completeness, neatness, and effort. Certain specific problems will be marked in depth. **Problems should be written out, all work must be shown, and answers boxed or underlined.** All assignments should have your name, the date, the assignment (chapter, section, and page number), and be in order.

Late Work and Make-up Assignments: Homework should be submitted on time. Being absent does not extend the due date for an assignment. Late homework will not be given full credit. Occasionally, optional make-up assignments may be given for extra credit homework points.

Required materials: Textbook, binder, 8.5” x 11” college ruled binder paper, pencils, scientific calculator, ruler, and graph paper.

Attendance and participation: It is important that you come to class every day and *participate actively*. Arrive on time and stay until the end of class. Late students not only miss important material but also distract the rest of the class. **Two tardies will be counted as an absence.** If you leave early, it may be counted as an absence. Learning mathematics is not a passive activity. As we progress through topics, students will be given problems in class to practice new skills. During this time, all students are expected to have paper out and to be actively working on these math problems with the rest of the class.

A student may be dropped due to excessive absences (4 or more). (However, if you decide to drop the course, it is **your** responsibility to make the drop official in the Administrations and Records Office or else possibly receive a grade of F.)

Cheating and/or plagiarism: Cheating and/or plagiarism will not be tolerated. A student will receive no credit for the assignment, quiz, or test if in the opinion of the instructor the individual has cheated.

Accommodations for Students with Disabilities:

If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.

Expected behavior: Please turn off cell phones before the start of every class period. **Do not use cell phones as calculators.** No one appreciates the distractions! Anyone that is disrespectful or disruptive to other students or the instructor may be removed from class for the day, and it will be considered an absence, or may be dropped from the class if the behavior is extreme enough.

Important Dates:

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|--------------------|---------------------|---|
| Drop Date: | Friday, January 28 | Last day to drop this course to avoid a "W" in person |
| | Sunday, January 30 | Last day to drop this course to avoid a "W" on WebAdvisor |
| | Friday, February 11 | Last day to opt for Pass/No Pass |
| | Friday, March 11 | Last day to drop this course (letter grades assigned after this date) |
| Holiday: | Monday, January 17 | Martin Luther King Jr. Day Observed (no classes, campus closed) |
| | Friday, February 18 | Lincoln Day Observance (no classes, campus closed) |
| | Monday, February 21 | Washington Day Observance (no classes, campus closed) |
| | Th/Fri, April 11-14 | Spring Break (no classes, campus open) |
| | Friday, April 15 | Good Friday Observance (no classes, campus closed) |
| Final Exam: | Tuesday, May 17 | 6:00-7:50 pm |

Course Outline:

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| Unit A: | Introduction to Statistics | Chapter 1 | (Tentative) Weeks 1-2 |
| Unit B: | Descriptive Statistics | Chapter 2 | Weeks 2-4 |
| Unit C: | Probability | Chapter 3 | Weeks 3-5 |
| Unit D: | Discrete Probability Distributions | Chapter 4 | Weeks 4-6 |
| Unit E: | Normal Probability Distributions | Chapter 5 | Weeks 5-7 |
| Unit F: | Confidence Intervals | Chapter 6 | Weeks 7-9 |
| Unit G: | Hypothesis Testing with One Sample | Chapter 7 | Weeks 10-13 |
| Unit H: | Hypothesis Testing with Two Samples | Chapter 8 | Weeks 12-15 |
| Unit I: | Correlation and Regression | Chapter 9 | Weeks 14-16 |
| Unit J: | Chi-Square Tests and the F-Distribution | Chapter 10 | Weeks 15-16 |
| | Final Review/Final | All Chapters | Weeks 17-18 |

Course Outcomes:

Upon completion of this course, students will be able to:

- construct frequency distributions, histograms, Pareto charts, pie charts, and boxplots.
- calculate or determine the mean, median, mode, standard deviation, variance, z-scores, and percentiles.
- calculate and interpret individual probabilities, add or multiply probabilities for determining the probability of multiple, complementary, and conditional events including binomial probability distributions.
- calculate the probabilities and z-scores associated with normal distributions and the mean and standard deviation of the sample means for a population with any distribution.
- calculate and interpret critical z-values, confidence intervals, margin of error, and the estimated mean of a population when either the standard deviation is known or unknown.
- conduct hypothesis testing to test single population claims including Type 1 and Type 2 Errors, hypothesis testing using the P-value method, hypothesis testing using a t-test, and hypothesis testing between two populations.

Course Objectives:

In the process of completing this course, students will:

- summarize and describe given data sets.
- apply the methods of descriptive statistics to determine the measures of central tendency and variability to a variety of problems.
- apply basic principles of probability to determine probabilities of a variety of events.
- analyze discrete and continuous probability distributions.
- explore the basics of sampling theory.
- estimate population parameters through studying confidence intervals.
- examine hypothesis testing for small and large samples and multiple populations.
- determine if a relationship exists between quantitative variables.