Math 11-52016 Elementary Statistics

Semester/Year: Spring 2024	**Instructor**: Kelly Winter
Units: 4	**Office Location:** MAS 135
Location: FRN 3	**Phone number:** (559) 638-0300 ext 3471
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	Zoom Office Hr: MWF 9-10am
Length: 18 weeks (Jan 8-May 17)	**Prerequisite:** Math 103 or Equivalent
Schedule	**Advisories:** Eligibility for English 1A or 1AH
This class meets Tuesday and Thursday 11-12:50.	**Final Exam:** Due by Tuesday, May 14.

Welcome to Elementary Statistics: It is my desire to help each one of my students succeed and gain confidence in their math and statistics skills. I believe that all students can succeed if they stay organized, set aside consistent work time, complete all assigned work, ask questions and prepare for exams. I am here to guide you through the course, answer questions and encourage you to work hard. I am looking forward to this semester.

There are many excellent resources available to you in person and virtually through Reedley College. This class is asynchronous, which means that you do not have required online sessions and can work on your own time schedule. All of your coursework is completed online through CANVAS. You will need to utilize **modules** in order to access the learning material (textbooks, videos, etc.) and the assignments (practice exercises, quizzes, video assignments and exams). Other students in class are a good resource and I would encourage you to form small groups to study and do homework together virtually. If you have an unanswered question, please utilize my office hours, the math center for FREE help, and the ZOOM sessions where I will be available to answer questions from Homework and notes, and prepare for exams.

Other available resources are:

The Math Center is functioning IN PERSON and ONLINE this year. You can meet one-on-one with a tutor. We have great tutors available for Calculus. Please utilize this incredible resource. More information will be available on Canvas. Use the link RC Tutoring Services in Canvas to self-enroll in the RC Math Center canvas page to access all of the information and links to tutors and their schedules, as well as the math center hours.

Course Description: Math 11 is an introduction to statistical methods and techniques with applications in the fields of business, behavioral and social science, as well as in science, technology, engineering, and mathematics. 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, just-in-time-support learning and study skills.

Textbook: Open Stax Introductory Statistics by Barbara Illowsky and Susan Dean. This is a free textbook available online throughout the course in modules.

Student Learning Outcomes

MATH-11 SLO1: Calculate and interpret measures of central tendency and dispersion
MATH-11 SLO2: Calculate basic probabilities
MATH-11 SLO3: Calculate, interpret, and analyze probability distributions and confidence intervals.
MATH-11 SLO4: Calculate, interpret, and analyze hypothesis testing
MATH-11 SLO5: Calculate, interpret, and analyze correlation, regression, and analysis of variance

MyOpenMath: Our class will rely heavily on the use of online materials. To access our course materials and homework assignments, you will need to log in to MyOpenMath via Canvas. This is a FREE program that allows you to do your homework and assessments online with support. You will need to register the first time you click on an assignment.

Scanning App: You must also be able to scan your work from exams. There are many free scanning options on most smart phones. I know iphones have a scanning option from the Notes app. I have also used the free app Genius Scan and Adobe Scan. Please make sure whatever scanning app you use that you can scan multiple pages into ONE document. It is very difficult to grade exams when I have to download multiple files for one assignment.

Screenpal: This is a FREE video website that allows you to create a video of your computer screen. We will have a couple of assessments that require you to create a screen cast of your work. There are other websites that can do the same thing so if you are familiar with another video maker program you are welcome to use another.

Calculator: A graphing calculator is recommended but not required for this course. Our library at Reedley College will let you borrow a graphing calculator for the semester but they run out, so go see them ASAP. Otherwise a recommended purchase is a Texas Instrument 84 or 83 (TI84 or TI83). You can also use an app on iphones GrafNCalc83 that functions exactly like a TI83 and is close to FREE. We will also be using the excel program on computers and a free version can be downloaded to your computer. Excel is also available on all school computers.

Communication Policy: I will be available in the math center on Monday, Wednesday, Friday at RC and on Zoom Tuesday and Thursday for questions. Please see canvas for dates/times/zoom links. If you have questions outside of these times you can send me an email through Canvas inbox or set-up another time for a Zoom meeting. I will respond within 24 hours, and if I have not responded in this time, please re-send your email to make sure that I did receive it.

Attendance Policy: Your attendance is tracked by your participation and completion of materials online. By Friday, January 12 you must register for MyOpenMath through Canvas and complete the first assignment or you may be dropped from the course. Please email me if you are having trouble and need additional time. My intention is to find out which students are not active in the course and give those spots to the students on my waitlist.

Late Assignments: Due dates are designed to keep you on track for completing the material on time. However, it is important that all assignments be completed even if late. Therefore, late work can be turned in without penalty. It's in your best interest to complete

all module work before the exam, but it can still be completed late. ALL LATE WORK MUST BE COMPLETED BY THE LAST DAY OF THE SEMESTER, which is Friday, May 17th.

Exams and Final Exam: There will be online tests in MyOpenMath, however, you must complete the test on paper with pencil, and work must uploaded to the appropriate Canvas assignment using scanning apps such as Genius Scan or Camscanner. I will use your work to assign partial credit for the exams. You may request a make-up if you are unsatisfied with your grade. Test corrections can be done for partial credit as allowed by instructor. When you upload your work for the exam you may add a note for the questions that you missed and re-do them for partial credit. The final exam can be used to replace a test score.

Assignment Point Values

Assignment	*Value*
Homework & Quizzes	25%
Chapter Exams	75%

Letter Grade	*%*
A	89.5 -100
B	79.5 – 89.4
C	69.5 - 79.4
D	59.5 - 69.4
F	0-59.4

Final Grades
Grading Policies/Rubrics
Please monitor your grade on Canvas. It is your responsibility to make sure that your grade is accurate. If there is a discrepancy, please email me ASAP.

ACADEMIC DISHONESTY
Students at Reedley College are entitled to the best education that the college can make available to them, and they, their instructors, and their fellow students share the responsibility to ensure that this education is honestly attained. Because cheating, plagiarism, and collusion in dishonest activities erode the integrity of the college, each student is expected to exert an entirely honest effort in all academic endeavors. Academic dishonesty in any form is a very serious offense and will incur serious consequences.

Cheating is the act or attempted act of taking an examination or performing an assigned, evaluated task in a fraudulent or deceptive manner, such as having improper access to answers, in an attempt to gain an unearned academic advantage. Cheating may include, but is not limited to, copying from another's work, supplying one's work to another, giving or receiving copies of examinations without an instructor's permission, using or displaying notes or devices inappropriate to the conditions of the examination, allowing someone other than the officially enrolled student to represent the student, or failing to disclose research results completely.

Plagiarism is a specific form of cheating: the use of another's words or ideas without identifying them as such or giving credit to the source. Plagiarism may include, but is not limited to, failing to provide complete citations and references for all work that draws on the ideas, words, or work of others, failing to identify the contributors to work done in collaboration, submitting duplicate work to be evaluated in different courses without the knowledge and consent of the instructors involved, or failing to observe computer security systems and software copyrights. Incidents of cheating and plagiarism may result in any of a variety of sanctions and penalties, which may range from a failing grade on the particular

examination, paper, project, or assignment in question to a failing grade in the course, at the discretion of the instructor and depending on the severity and frequency of the incidents.

NOTE: 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 or section 504 of the Rehabilitation act please contact me as soon as possible.

Please refer to SCCCD polies for guidance on all matters relating to this course.

Objectives

In the process of completing the course, the student will:

1. Distinguish among different scales of measurement and their implications;
2. Identify the standard methods of obtaining data and identify advantages and disadvantages of each;
3. Interpret data displayed in tables and graphically;
4. Calculate measures of central tendency and variation for a given data set;
5. Apply concepts of sample space and probability;
6. Calculate the mean and variance of a discrete distribution;
7. Calculate probabilities using normal and t-distributions;
8. Distinguish the difference between sample and population distributions and analyze the role played by the Central Limit Theorem;
9. Construct and interpret confidence intervals;
10. Determine and interpret levels of statistical significance including p-values;
11. Interpret the output of a technology-based statistical analysis;
12. Identify the basic concept of hypothesis testing including Type I and II errors;
13. Formulate hypothesis tests involving samples from one and two populations;
14. Select the appropriate technique for testing a hypothesis and interpret the result;
15. Use linear regression and ANOVA analysis for estimation and inference, and interpret the associated statistics;
16. Use appropriate statistical techniques to analyze and interpret applications based on data from disciplines including business, social sciences, psychology, life science, health science, and education;
17. Use just-in-time support to accomplish the objectives of the course; and
18. Identify and use appropriate study skills to show competence in basic statistics.

Course Outline

A. Introduction to Statistics
    1. Summarizing data graphically and numerically
        a. Frequency distributions
        b. Graphs
    2. Descriptive statistics:
        a. measures of central tendency: mean, median, mode
        b. measures of variation: variance, standard deviation, quartiles, range
        c. relative position
        d. levels/scales of measurement

B. Probability
    1. Sample spaces and probability
    2. Random variables and expected value
    3. Sampling and sampling distributions

4. Discrete distributions – Binomial
5. Continuous distributions – Normal

C. Sampling Theory
   1. Simple random sample
   2. Central Limit Theorem

D. Estimating Population Parameters
   1. Estimation and confidence intervals from a small or large sample.
   2. Sample size.

E. Hypothesis Testing (Parametric/Nonparametric)
   1. One population, one and two sided tests.
      a. z-test for means and proportions.
      b. t-test for means (independent and dependent samples)
   2. Two populations, sampling distributions
   3. Chi-square (Goodness of Fit and Contingency Tables)

F. Correlation and Simple Linear Regression
   1. Correlation coefficient
   2. Regression coefficient
   3. Test of hypothesis about the value of correlation/regression coefficient.
   4. Analysis of variance (ANOVA)

G. Applications/Technology
   1. Applications using data from disciplines including business, social sciences, psychology, life science, health science, and education
   2. Statistical analysis using technology such as SPSS, EXCEL, Minitab, or graphing calculators