

## Course Syllabus: MATH 11 – Elementary Statistics

**MATH 11-55385**

**Instructor:** Mr. Steven Zook

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**Reedley College**

**Spring 2019**

**Office Hours:** TTh 10:00 am – 11:50 am

F (Virtual) 9:00 am – 9:50 am

**Meeting Room:** 100% Online

**Meeting Days:** n/a

**Meeting Time:** n/a

**Course Description:** This course 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.

**Course Prerequisites:** MATH 103

**Course Advisories:** Eligibility for English 1A

### **Student Learning Outcomes:**

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

1. Organize, analyze, and utilize appropriate methods to draw conclusions based on sample data by using tables, graphs, measures of central tendency, and measures of dispersion.
2. Apply concepts and terminology of statistics.
3. Implement the rules of probability.
4. Collect data, interpret and communicate the results using statistical analyses such as confidence intervals, hypothesis tests, and regression analysis.

### **Objectives:**

*In the process of completing this course, students 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; and
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.

**Required Text: David M Diez et al, OpenIntro Statistics, 3<sup>rd</sup> Edition, 2015.**

This text is required for reading; however, you do not have to purchase a hard copy of the text since it is available online as a pdf file here:

<https://www.openintro.org/stat/textbook.php>

**Required Course Material:**

All required course material is available in *Canvas* and/or at the following textbook website: <https://www.openintro.org/stat/index.php>

**Office Hours:** I will be holding regular office hours. I want to be available to you if you need assistance outside of class. Please visit me during the scheduled times for drop-in questions. You may come unannounced during those times. If the scheduled office hours do not suit your schedule, you may arrange a time to meet me in my office by seeing me after class or sending an email. Please don't hesitate to take advantage of these since I want you to succeed – it's what I am here for. Additionally, I will be holding a *virtual office hour* every Friday morning from 9-9:50 am during which I will be available by email and through Canvas to answer any questions you may have.

**Attendance:** In a traditional face-to-face class you would be expected to attend every class meeting. In an online course, things work differently but the principle is the same. Each week you will be expected to respond to a set of questions in a discussion forum. This will act as a chance to demonstrate class participation and interact with the other students in the class. **Six (6) missed assignments (discussion, homework, exams, etc.)** may result in a drop from the course. If you decide to drop, it is your responsibility to drop the class officially through the Administration and Records office. In failing to do so, you run the risk of receiving a failing grade.

**Drop Deadline:** Friday, March 15

**Assignments & Exams:**

All **online homework** assignments will be completed online at MyOpenMath, **accessed through Canvas**. Homework assignments will be due on the due date by **11:59pm** and will cover topics discussed during the previous week(s). You are allowed **three (3) late passes** for the semester that give you an additional 48 hours to complete the assignment.

There is a **10% penalty for each** late assignment. Once you have used all late passes no late homework will be accepted. I will do my best to maintain the pace as laid out in the schedule below. That being said, depending on how quickly or slowly we progress through the material, I reserve the right to adjust homework due dates as needed. Any changes to due dates always will be announced in class.

There will be regular small group **class activity discussions** that will be completed in Canvas. In these small groups you will work through and discuss problems. These are in place of classroom activities in a traditional face-to-face class.

There will be **five exams plus a comprehensive final exam** during the course and the dates they will be held are in the course calendar and they will cover the specified content. **There will be no make-up exams allowed although it will be possible to schedule a time to take an exam early if it is prearranged.**

The **comprehensive final exam** will be held during finals week on **Monday, May 20, 9:00 am – 10:50 am**. If it is to your benefit, the cumulative final exam score will replace your lowest exam score.

#### **Assignment Categories and Weighting**

<i>Assignment</i>	<i>Weighting</i>
Online Homework	15%
Class Activity Discussions (10 @ 2% each)	20%
Exams (5 @ 10% each)	50%
Final Exam (cumulative)	15%

#### **Final Grades**

<i>Letter Grade</i>	<i>Percent</i>
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

**SPECIAL NEEDS REQUESTS:** 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.

**Please refer to the RC Catalog for the Policies on Academic Dishonesty, Cheating, and Plagiarism, pp. 48-49.**

## Course Outline and Schedule

- Week 1: Begin Chapter 1: Introduction to Data (Sections 1.1-1.3)
- Week 2: Monday Jan. 21: no class  
Continue Chapter 1 (Sections 1.6-1.7)  
**Homework 1** due Sunday, Jan. 27
- Week 3: Continue Chapter 1 (Sections 1.8-1.9)  
**Homework 2** due Sunday, Feb. 3
- Week 4: **Exam 1 (Chapter 1) Monday, Feb. 4**  
Begin Chapter 2: Probability (Sections 2.1-2.2)
- Week 5: Continue Chapter 2 (Sections 2.3-2.4)
- Week 6: Monday Feb. 18: no class  
Continue Chapter 2 (Sections 2.5)  
**Homework 3** due Sunday, Feb. 24
- Week 7: **Exam 2 (Chapter 2) Monday, Feb. 25**  
Begin Chapter 3: Distributions of Random Variables (Sections 3.1-3.2)
- Week 8: Continue Chapter 3 (Section 3.4)  
**Homework 4** due Sunday, Mar. 10
- Week 9: **Exam 3 (Chapter 3) Monday, Mar. 11**  
Begin Chapter 4: Foundations for Inference (Sections 4.1-4.2)
- Week 10: Continue Chapter 4 (Sections 4.3-4.4)  
**Homework 5** due Sunday, Mar. 24
- Week 11: Continue Chapter 4 (Section 4.5)  
**Homework 6** due Sunday, Mar. 31
- Week 12: **Exam 4 (Chapter 4) Monday, Apr. 1**  
Begin Chapter 5: Inference for Numerical Data (Sections 5.1-5.2)
- Week 13: Continue Chapter 5 (Section 5.3)  
**Homework 7** due Sunday, Apr. 21
- Spring Break -----
- Week 14: Continue Chapter 5 (Section 5.5)  
**Homework 8** due Sunday, Apr. 28

- Week 15: **Exam 5 (Chapter 5) Monday, Apr. 29**  
Chapter 6: Inference for Categorical Data (Sections 6.1-6.3)
- Week 16: Begin Chapter 7: Introduction to Linear Regression (Sections 7.1-7.2)  
**Homework 9** due Sunday, May 12
- Week 17: Continue Chapter 7 (Sections 7.3-7.4)  
**Homework 10** due Sunday, May 19
- Week 18: **FINAL EXAM on Monday, May 20 9:00 am – 10:50 am**

I will do my best to follow the schedule content-wise depending on how quickly we can cover the topics. However, the events in bold will take place on their specified dates.

If any changes are made, I will announce them in class and post them on Canvas.