

Course Syllabus: MATH 11 – Elementary Statistics

MATH 11-59908

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: CCI 201

Meeting Days: MTWTh

Meeting Time: 9:00 am – 9:50 am

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:

OpenIntro Statistics, 3rd 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 9-10am during which I will be available by email and through *Canvas* to answer any questions you may have.

Attendance: As a student, you are expected to attend all classes for the entire period. Please be on time and ready to start when class is scheduled to begin. I ask this out of respect for your classmates and me. **Eight (8) absences** 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 **grade of F**.

Classroom Behavior: Please take care of any personal responsibilities and needs before entering the classroom. Please **TURN OFF your phones** when entering the class. They should be **off for the duration** of the class period. If you use your phone in class, you may be asked to leave class. While you are in class, I expect you to participate and pay attention. You may not work on the homework in class or prepare for a different class. Please notify me in advance if you plan on bringing a guest to class. You are allowed to use a **graphing calculator** for this class. However, you may not use your phone as a calculator.

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 **class activities** that will be completed in 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 Activities	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.