

Stat 243Z, Elementary Statistics, Spring 2025

Class Time: MTuWTh 13:00-13:50 in 246 Gerlinger Hall
Instructor: Dr. Marcin Bownik
E-Mail: mownik@uoregon.edu
Office: 323 Fenton
Office Hours: M 2–3pm, Tu 11–12, and F 12–1pm, or by appointment
Textbook: *The Basic Practice of Statistics, 9th Ed.* by Moore, Notz, Fligner

1. **Learning Outcomes.** The primary goal of this course is to have students be able to use and understand the basics of confidence intervals and hypothesis testing. In particular, they should be able to recognize the appropriate hypothesis test for a given situation, carry out such a test, and compute the corresponding confidence intervals. They should also be able to interpret such results for real-world applications. Finally, they should learn about how samples are collected and know some basic sources of systematic error in sampling and polling.
 - Critically read, interpret, report, and communicate the results of a statistical study along with evaluating assumptions, potential for bias, scope, and limitations of statistical inference. Classify study designs and variable types and identify methods of summary and analysis.
 - Produce and interpret summaries of numerical and categorical data as well as appropriate graphical and/or tabular representations. (a) Identify patterns and striking deviations from patterns in data. (b) Identify associations between variables for bivariate data. (c) Apply technology to calculate statistical summaries and produce graphical representations.
 - Use the distribution of sample statistics to quantify uncertainty and apply the basic concepts of probability into statistical arguments. Interpret point and interval estimates.
 - Identify, conduct, and interpret appropriate parametric hypothesis tests. (a) Identify the appropriate test based on variable type. (b) Identify situations where a one or two tailed test would be appropriate. (c) Conduct tests of one mean. (d) Conduct tests of one proportion. (e) Explain the distinction between statistical and practical significance and the potential for error in hypothesis test conclusions. (f) Apply technology to perform hypothesis tests calculations.
 - Assess relationships in quantitative bivariate data. (a) Address questions relating correlation as a linear association between variables. (b) Distinguish between correlation and causation within data. (c) Apply technology to explore bivariate data.
2. **Textbook.** We will be covering the following chapters from the textbook:
 - Chapter 1: Picturing Distributions with Graphs
 - Chapter 2: Describing Distributions with Numbers
 - Chapter 3: The Normal Distributions
 - Chapter 4: Scatterplots and Correlation
 - Chapter 8: Producing Data: Sampling
 - Chapter 9: Producing Data: Experiments
 - Chapter 12: Introducing Probability

- Chapter 13: General rules of probability [optional]
- Chapter 14: Binomial Distributions
- Chapter 15: Sampling Distributions
- Chapter 16: Confidence Intervals: The Basics
- Chapter 17: Tests of Significance: The Basics
- Chapter 18: Inference in Practice
- Chapter 20: Inference About a Population Mean
- Chapter 21: Comparing Two Means [optional]
- Chapter 22: Inference About a Population Proportion

The 7th and 8th editions of the textbook are very similar if you want to find a used copy. I encourage you to find the cheapest book you can.

3. **Technology.** You will need a scientific calculator that can compute basic arithmetic calculations and square roots. The TI-30X IIS is a good option. Note that no specific technology will be required for in-class assessments beyond a scientific calculator. For more complex statistical calculations, many students prefer TI-83 or TI-84 calculators which can do all necessary calculations in the course. I will be completing most calculations using Excel during lectures.
4. **Coursework.** The assignments in the course for which you will be responsible are the following: online WeBWork homework, discussion worksheets, Canvas quizzes, two midterm exams, and a final exam.
5. **Class participation.** The attendance is mandatory for your success in this course. Attendance will be recorded on iClicker. To get a full credit for course engagement you need to attend at least 80% of classes **or** show an activate participation in the class by asking and/or answering questions during lectures and worksheet sessions. By attending regularly **and** participating actively, you can earn more more than 100% in this category. There are no make-ups for course engagement credit.
6. **Worksheets.** You will work on a discussion worksheet during each discussion session on Wednesday except exam weeks. Your worksheet will not be graded on the correctness of your work, but evidence of serious effort is necessary to receive credit for this portion of your grade. This is a good opportunity to engage with material in the course and practice problems with help from your discussion leader. You cannot make up these points and your lowest two worksheet grades will be dropped.
7. **Canvas quizzes.** Each week you will need to take a quiz on Canvas, due by 11:59pm on Sundays. Quiz questions will be based on problems from lectures and from the discussion worksheet from that week. There will be no quizzes during midterm exam weeks. Canvas quizzes cannot be made up. Your lowest two quizzes will be dropped.
8. **WeBWork.** Homework will be collected through WeBWorK typically two times per week: Wednesday and Friday. Late WeBWorK homework assignments can be completed for up to 60% credit. Each “reduced scoring period” will last until the next exam window. We will add 15 points to everyone’s webwork score at the end of the quarter to counteract the effect of having a small number of missed or late assignments.
9. **Exams.** The two midterm exams will cover several sections of material and will be administered on Wednesday in weeks 4 and 8. The final exam will cover all sections and will be given in person, similar to the format of the midterms. It will occur from 2:45pm-4:45pm on Monday, June 9.

10. **Grading.** The grading distribution will be as follows:

Class participation	5%
Canvas quizzes	5%
Worksheets	10%
Webwork	20%
Midterm Exam 1	15%
Midterm Exam 2	20%
Final Exam	25%

I have included below a tentative schedule we will be following this quarter. The exam dates are fixed, but the speed at which we move through a particular chapter or portion of a chapter may vary from the schedule.

<u>Week</u>	<u>Chapters covered</u>	<u>Discussion Session on Wednesday</u>
1	1, 2	Worksheet 1
2	3	Worksheet 2
3	3, 8, 9	Worksheet 3
4	12, Review	Midterm Exam 1
5	15, 16	Worksheet 4
6	17, 18	Worksheet 5
7	20, 4	Worksheet 6
8	Review	Midterm Exam 2
9	14, 22	Worksheet 7
10	Catch-up	Review for Final Exam
11	Final Exam	on Monday, June 9, 2:45–4:45 p.m.