

STAT 210: INTRODUCTION TO PROBABILITY AND STATISTICS

Winter 2026

MWF 1:00 – 1:50 PM, Technological Institute AUD

Dr. Jeffrey T. Lewis (ECON)

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Office Hours: Tuesday 2:20-3:20, Wednesday 4:20-5:20, Thursday 2:20-3:20, Friday 4:20-5:00/
(or by appointment)

Teaching Assistant

Section Times/Locations

TA Shuhan Liu	21: Tu, 5:00-5:50, Lunt Hall 105
TA Zixuan Wei	22: Th, 4:00-4:50, Lunt Hall 107
TA Yuqing Yang	23: Tu, 5:00-5:50, Harris Hall 107
TA Shuhan Liu	24: Th, 4:00-4:50, Lunt Hall 105
TA Zixuan Wei	25: Tu, 5:00-5:50, Lunt Hall 107
TA Yuqing Yang	26: Th, 4:00-4:50, Locy Hall 111

TA Shuhan Liu (shuhanliu2028@u.northwestern.edu)

TA Zixuan Wei (ZixuanWei2024@u.northwestern.edu)

TA Yuqing Yang (YuqingYang2029@u.northwestern.edu)

TA office hours and locations will be posted on Canvas.

LEARNING OUTCOMES

In this class, students will: Increase their knowledge of both descriptive and inferential statistics. Understand and apply probability theory. Construct confidence intervals and conduct hypothesis tests.

COURSE WEBSITE

This course has a website on Canvas. Everyone should automatically be enrolled in the Canvas website upon official enrollment in the class. I will post my lecture notes on the website by 5:00 pm the day before class. You should print out the handouts and bring them to class (or download the handouts to your tablet and take notes on your tablet). Problem sets, problem set solutions, and other materials will also be posted on the website. I will post announcements on the website stating what you should print out for class and when assignments are due.

TEXTBOOK AND CALCULATOR

The textbook for the course (which is optional) is *Statistics for Business and Economics* (Eighth Edition) by Paul Newbold, William L. Carlson, and Betty M. Thorne. We are using *Statistics for Business and Economics: Second Custom Edition for Northwestern University*, which includes just the first 11 chapters from the eighth edition. The ISBN-13 is 978-1-256-86179-9. You will also need a calculator for this class. Bring your calculator to every class.

SECTIONS

Each week, I will post section problems on Canvas. You will print out the section problems and bring them with you to section. You don't have to solve the problems ahead of time. The TAs will work through the solutions. The section problems will be similar to problems that you will encounter on the problem sets and exams.

CANVAS PROBLEM SETS

Almost every week, I will post at least one problem set on Canvas. You will need to submit numerical answers or answer multiple choice questions on Canvas. Canvas will automatically grade the problem sets. If you miss the deadline for submitting your answers, you will not receive credit for that problem set. For questions about how to complete the Canvas problem sets, read the policy_canvas_psets handout on Canvas (under Policies folder).

OFFICE HOURS

During office hours, you can't check over all of your final answers on the problem sets. You can, however, ask us a question if you are stuck on something on the problem set. You can ask us anything about the course material or the section problems (or sample problems that we post).

QUIZZES

We will give quizzes during lecture this term (not during section). The default is that the quizzes will be unannounced. The quizzes are closed-note quizzes (can't use any of your notes or devices). Bring your calculator to every class. Make sure you keep up with the course material.

EVALUATION

Grades are based on the following distribution:

Problem Sets and Quizzes together	10%
Exam #1	25%
Exam #2	25%
Final Exam (cumulative)	40%

We will drop your lowest problem set score. We will drop your lowest quiz score. At the end of the term, we will do this calculation:

$$[(\text{your PS points} + \text{your quiz points}) / (\text{total PS points} + \text{total quiz points})] \times 100\%$$

This percentage score will constitute 10% of your final grade.

None of your exam scores will be dropped. You cannot use a formula sheet on any of the exams.

EXAM DATES

Exam #1 will be given in class on Friday, February 6.

Exam #2 will be given in class on Friday, March 6.

The Final Exam will be given on Friday, March 20 from 9:00-11:00 am.

You must take the Final Exam in our classroom on the date and time specified above.

EXCUSED ABSENCES

If you miss an exam (or quiz) for an excused reason, such as illness, a family emergency, or travel with a University sports team, then you need to fill out the excused absence form on Canvas, staple your documentation to the back of the excused absence form, and hand everything in to me during the next lecture after the exam. If you are feeling unwell, you should report in person to the Student Health Service or CAPS prior to the time of the exam. In the absence of documentation, an absence will be considered unexcused. If you miss an exam or quiz for an unexcused reason, you will receive a 0 on that assessment. Missing class for a job interview, a job-related activity, an internship interview, an internship-related activity, any activity related to another class, or a family event would not constitute an excused absence. See this NW link regarding documentation:

<https://www.northwestern.edu/healthservice-evanston/medical-services/academic-work-missed-for-medical-reasons/>

If you take an exam, or start to take an exam, can you receive an excused absence for that exam?

No. If you take an exam, or start to take an exam, you cannot receive an excused absence for that assessment. Your exam score will count, and it will be used to determine your final grade in the class. If you feel that you are too unwell to take the exam, do not take the exam. Instead, you should report in person to the Student Health Service or CAPS prior to the time of the exam.

MAKEUP POLICIES

Canvas Problem Sets

Since you do not have to be physically present in the classroom to submit your answers to the Canvas problem sets, there are no makeup Canvas problem sets. If you miss the deadline for submitting your answers, you will not receive credit for that problem set.

Quizzes

We are going to drop your lowest quiz score. If you only miss one quiz and you miss that quiz because of an excused reason, that score will just be dropped. If you only miss two quizzes and you miss both quizzes for excused reasons, your first missing score will be dropped and your second missing score will be replaced with your Final Exam score. If you only miss two quizzes, and you miss one quiz for an excused reason and one quiz for an unexcused reason, your score from your excused absence will be dropped and your score of 0 from your unexcused absence will be counted.

Exams

If you miss Exam #1 or Exam #2 for an excused reason, you will not take a makeup. All of the weight from the missed exam will be added to the Final Exam.

If you miss both Exam #1 and Exam #2 for excused reasons, then your final grade will be determined by whichever calculation is lower (method *a* or *b*):

- a) $100\% \times (\text{Problem Sets and Quizzes together})$
- b) $100\% \times \text{Final Exam}$

Incompletes

If you take the Final Exam, or start to take the Final Exam, then you cannot receive an excused absence for that assessment. Your exam score will be recorded. You wouldn't qualify for an Incomplete.

If you miss the Final Exam for an excused reason (such as an illness or family emergency), then you would need to email me and then petition for an Incomplete through the Dean's Office.

To qualify for an Incomplete if you do not take the Final Exam:

- 1) The Dean's Office would have to approve your Incomplete petition. See this NW link:

<https://weinberg.northwestern.edu/undergraduate/courses-registration-grades/grades/incompletes.html>

- 2) You would have to have taken both Exam #1 and Exam #2.
- 3) It has to be possible for you to receive a final course grade of at least 63% if you take the makeup Final Exam.

If you receive an Incomplete, then you would take the makeup Final Exam during finals week of the next term.

GRADING POLICIES

For questions on how to deal with rounding on problem sets and exams, read the policy_rounding handout on Canvas (under Policies folder). If a grading mistake was made on your exam, you need to give me your exam during the lecture following the lecture in which the exams were initially returned. Final grades will be decided on the following scale:

A	93.0-100		C+	77.0-79.99
A-	90.0-92.99		C	73.0-76.99
B+	87.0-89.99		C-	70.0-72.99
B	83.0-86.99		D	63-69.99
B-	80.0-82.99		F	Below 63

CLASSROOM POLICIES

- Do not have your phone out during class.
- Do not have your computer open during class. Shut down your computer before we start class. If, through ANU, you are permitted to use a computer and plan to use a computer (as opposed to a tablet), you would need to contact me. You would then need to sit in the front row.
- You can use your tablet to take notes in class. If you do so, have your tablet flat on the desk.
- Do not put your head down on the desk during class. If you are feeling unwell, you should report in person to the Student Health Service or CAPS.

OPTIONAL MENTORING

Quarter-Long Study Group Opportunity – Registration Required:

If you would like to study with other students in this class, consider joining a Peer-Guided Study Group. Participants will meet weekly with about 5 to 8 other students and a peer facilitator, a trained student who has already taken and done well in the course. During sessions, students review concepts, work through practice problems, bring their questions, and work together to develop answers.

Students register for the full quarter on CAESAR, and attendance is expected weekly. Study Group sessions are listed on CAESAR below course lecture and discussion sections (when searching for study groups, enter “SG” in the Course Number field in CAESAR to get a complete list of sections). Feel free to contact Borislava at borislava.miltcheva@northwestern.edu with any questions. Provided through Academic Support & Learning Advancement.

Drop-In Peer Tutoring – No Appointment Needed:

Students are welcome to stop by Drop-In Peer Tutoring to get support with a specific question or issue, or just talk through course materials with others. Tutoring is offered for this course and many introductory courses in Biology, Chemistry, Economics, Engineering, Math, Physics and Statistics. Tutoring takes place Sundays through Thursdays. Check specific times, courses, and locations on the Drop-In Peer Tutoring website. Feel free to contact Valerie at valerie.wolf@northwestern.edu with any questions. Provided through Academic Support & Learning Advancement.

NORTHWESTERN UNIVERSITY SYLLABUS STANDARDS

This course follows the Northwestern University Syllabus Standards. Students are responsible for familiarizing themselves with this information:

<https://www.registrar.northwestern.edu/registration-graduation/northwestern-university-syllabus-standards.html>

TOPICS COVERED

Chapter 1- Describing Data: Graphical

bar graphs, histograms, and scatter plots

Chapter 2- Describing Data: Numerical

mean, median, percentiles, quartiles, IQR, outliers, variance, standard deviation, covariance, correlation

Chapter 3- Probability

probability rules, conditional probability, independence, Bayes' Theorem

Chapter 4- Discrete Random Variables and Probability Distributions

expected value and mean of discrete random variable, linear functions of discrete random variables, binomial distribution, covariance and correlation

Chapter 5- Continuous Random Variables and Probability Distributions

uniform distribution, normal distribution, normal approximation for binomial distribution

Chapter 6- Sampling and Sampling Distributions

central limit theorem, sample mean, sample proportion

Chapter 7- Estimation: Single Population

t distribution, confidence interval for population mean (population variance known and unknown), confidence interval for population proportion

Chapter 8- Estimation: Additional Topics

confidence interval for difference between two population means (population variances known and unknown), confidence interval for difference between two population proportions

Chapter 9- Hypothesis Testing: Single Population

significance test for population mean (population variance known and unknown), significance test for population proportion

Chapter 10- Hypothesis Testing: Additional Topics

significance test for difference between two population means (population variances known and unknown), significance test for difference between two population proportions

Regression

OLS coefficient estimators, R^2 , total sum of squares (TSS), explained sum of squares (ESS), sum of squared residuals (SSR)

Randomized Trial

RAND Health Insurance Experiment