STAT 210: INTRODUCTORY STATISTICS FOR THE SOCIAL SCIENCES

Spring 2021
MWF 4:00 PM – 4:50 PM, Online Class
Dr. Jeffrey T. Lewis (ECON)
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Office Hours: to be determined

Teaching Assistant	Section Times/Locations
TA	21: Tu, 8:00-8:50 AM
TA	22: Tu, 4:00-4:50 PM
TA	23: Th, 4:00-4:50 PM
TA	24: Th, 5:00-5:50 PM

TA Molly Liu (ChuyueLiu2021@u.northwestern.edu)
TA Gabriel Pereira Pinto (GabrielPereiraPinto2024@u.northwestern.edu)
TA Tim Ruel (TimothyRuel2024@u.northwestern.edu)

TA office hours 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. Print out the lecture notes. On Canvas, I'll also post an announcement with the link to my recorded lecture (recorded through Zoom). Finish filling out the lecture notes as you watch the recording of the Zoom lecture. The lectures are pre-recorded. We are not having live lectures on Zoom during our regularly scheduled class time.

COURSE MATERIALS
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. You can use any type of calculator.

SECTIONS
The TAs are just going to hold Zoom office hours during their scheduled section times. They can answer questions you might have about the course material. Each week, I'll post a video of me solving the section problems. You can use the solutions to the section problems as a guide to complete the problem sets.

PROBLEM SETS
Most weeks, I will post a problem set on Canvas. You will need to submit numerical answers or answer multiple choice questions on Canvas. Canvas will automatically grade your submissions. 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
We will hold Zoom office hours. You can't check over your problem set answers during office hours. You need to complete the problem sets on your own. You can ask us questions about the course material or the section problems during office hours.

QUIZZES
We will give four quizzes this term (through Quizzes link on Canvas). The quizzes are open-note. Here are the quiz dates:

Wednesday, April 14 starting at 4:00 PM central time
Wednesday, April 21 starting at 4:00 PM central time
Wednesday, May 12 starting at 4:00 PM central time
Wednesday, May 19 starting at 4:00 PM central time

EVALUATION
Here are the assessments that will be used to determine your final grade:

> Problem Sets/ Quizzes
> Exam #1
> Exam #2
> Final Exam

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:

[(your PS points + your quiz points)/(total PS points + total quiz points)]×100%

This percentage score will constitute 16% of your final grade.

Your final grade will be determined by whichever calculation is highest (method *a*, *b*, or *c*):

a) 16%×(Problem Sets/Quizzes) + 28%×(Exam #1) + 28%×(Exam #2) + 28%×(Final Exam)
b) 16%×(Problem Sets/Quizzes) + 0%×(Exam #1) + 28%×(Exam #2) + 56%×(Final Exam)
c) 16%×(Problem Sets/Quizzes) + 28%×(Exam #1) + 0%×(Exam #2) + 56%×(Final Exam)

EXAM DATES
Exam #1 will be given online on Friday, April 30 from 4:00 PM – 4:50 PM central time.

Exam #2 will be given online on Wednesday, May 26 from 4:00 PM – 4:50 PM central time.

The Final Exam will be given online on Monday, June 7 from 7:00 PM – 9:00 PM central time.

The exams are online (through Quizzes link on Canvas) and open-note. You must take the exams on the dates/times specified above.

Here is Northwestern's best practices recommendation for taking online exams and quizzes:

While students can connect via Wi-Fi, we highly recommend using a wired internet connection, as faster internet connections improve the online experience.

EXCUSED ABSENCES/ MAKEUP POLICIES/ INCOMPLETES

Problem Sets/Quizzes

There are no makeup Canvas problem sets. If you miss the deadline for submitting your answers (for any reason), you will not receive credit for that problem set. We will drop your lowest problem set score. There are no makeup quizzes. If you miss a quiz (for any reason), you will not receive credit for that quiz. We will drop your lowest quiz.

Exams

There are no makeup exams for Exam #1 or Exam #2.

If you miss Exam #1 (for any reason), but do take Exam #2 and the Final Exam, then your final grade will be determined by whichever calculation is highest: method a, b, or c.

If you miss Exam #2 (for any reason), but do take Exam #1 and the Final Exam, then your final grade will be determined by whichever calculation is highest: method a, b, or c.

If you miss both Exam #1 (for any reason) and Exam #2 (for any reason), but do take the Final Exam, then your final grade will be determined by whichever calculation is highest: method a, b, or c. (Please note that the withdrawal deadline is after the Exam #2 date.)

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.

2) You would have to have taken either Exam #1 or Exam #2. (If you miss both Exam #1 (for any reason) and Exam #2 (for any reason), then you would not qualify for an Incomplete.)

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). 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

NORTHWESTERN POLICIES

Academic Integrity
The Provost's Office maintains information on resources and university principles related to academic integrity; see http://www.northwestern.edu/provost/policies/academic-integrity/.

Disability Accommodations
Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU (accessiblenu@northwestern.edu; 847-467-5530) and provide professors with an accommodation notification from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential.

Policies Regarding Recordings

Recording by the Instructor: This class or portions of this class will be recorded by the instructor for educational purposes. These recordings will be shared only with students enrolled in the course in Canvas.

Recording by Students: Unauthorized student recording of classroom or other academic activities (including advising sessions or office hours) is prohibited. Unauthorized recording is unethical and may also be a violation of University policy and state law. Students requesting the use of assistive technology as an accommodation should contact ANU. Unauthorized use of classroom recordings – including distributing or posting them – is also prohibited. Under the University's Copyright Policy, faculty own the copyright to instructional materials – including those resources created specifically for the purposes of instruction, such as syllabi, lectures and lecture notes, and presentations. Students cannot copy, reproduce, display or distribute these materials. Students who engage in unauthorized recording, unauthorized use of a recording or unauthorized distribution of instructional materials will be referred to the appropriate University office for follow-up.

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

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 — sessions will be offered both in person and remotely —with about 5 to 8 other students and a peer facilitator, a 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. This is an excellent opportunity to connect with others in your class while we are physically separated.

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 (ex. CHEM 151-SG – CHEM 151-SG Peer-Guided Study Group: Quantitative Problem Solving in Chemistry). 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 — in person or via Zoom — to get support with a specific question or issue, or just talk through course materials with others. Covers many introductory courses in Biology, Chemistry, Economics, Engineering, Math, Physics and Stats. Tutoring takes place Sundays through Thursdays. Check Zoom links, specific times, courses and locations on the Drop-In Peer Tutoring website. Feel free to contact Krystal at *krystal.wilson@northwestern.edu* with any questions. This is an excellent opportunity to connect with others in your class while we are physically separated. Provided through Academic Support & Learning Advancement.

Wondering how to learn and stay engaged? ASLA's Learning During COVID-19 page has helpful tools and suggestions.