

Econ 378: Statistics for Economists

Winter 2023, 001 (T/Th 8:00-9:15am) and 002 (T/Th 12:30-1:45pm)

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Office Hours Tues 2-2:50, Thurs 9:30-10:30, or by appointment
You don't need an appointment to come to regular Tues/Thurs times!

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Course Description

The discipline of Economics relies heavily on data analysis, for (1) measuring economic outcomes, (2) finding evidence to support or contradict economic theories, and (3) calibrating public policies. Probability theory is also frequently used in economic modeling, to describe the uncertainty that decision-makers face. Economics 378 introduces students to the notion of probability distributions, providing them with basic analytical tools for summarizing and analyzing statistical data. Topics include joint and conditional distributions, common parametric distribution families, estimators and estimation methods, hypothesis tests, and simple regressions, as well as an introduction to coding in Stata. This course is the first of a three-course empirical sequence, preparing students for Econometrics (388), which is followed by Applied Econometrics (398).

Prerequisites

Students must have completed Calculus (Math 112/119) Principles of Economics (Econ 110) before beginning Econ 378. We will use differentiation, integration, and algebra regularly.

Required text

You can **either buy the textbook** (Wackerly, D.D., W. Mendenhall III, and R.L. Scheaffer, *Mathematical Statistics with Applications*, 7th Edition. New York: Duxbury Press, 2008) **or a packet** produced by the BYU Bookstore with selected pages from the text. These pages include some of the homework questions. Please note that **you should refer to the**

problem set PDF on Learning Suite for each assignment. Not all problems in the packet are assigned, and not all assigned problems are in the packet. There are no assigned readings from the text.

Grading

A comprehensive gradebook will be kept on Learning Suite with scores from assignments in each of the following four categories:

Course engagement	5%
Homework	25%
Data project	10%
Exams	60%

At the end of the semester, I will calculate your grade using two different weighting schemes. One way puts a weight of 30% on each exam. The other puts a weight of 20% on Exam 1 and 40% on the Exam 2. I will use whichever is most favorable for you in determining your final grade.

Course Engagement

I expect each student to engage in the course in the following ways:

1. By filling out the midcourse evaluation (1% of final grade)
2. By filling out the course evaluation at the end of the semester (1% of final grade)
3. By visiting me in my office hours or by appointment (in person or on Zoom) at least once during the semester (1% of final grade)
4. By attending and participating in class (2% of final grade)

I will use a deck of notecards with your names on them to call on people during class. As you will soon see, it is completely normal for students to give wrong answers or to be stuck on a problem when I call on them. Getting answers wrong in class has no bearing on how I view you or on your grade. I call on people at random to get a better sense of how well people understand the material, to encourage participation by a broader set of students than would otherwise speak up, and to help motivate you to engage with the material as we go. If you would like to be excluded from the deck, you may email me and I will remove your card.

I expect all my students to help create a class culture that is welcoming to every member of the class. As the FHSS Diversity and Inclusion Statement says (with quotes from President Russell M. Nelson), "It is essential to create an educational environment that ensures 'the gift of personal dignity for every child of God'. This includes embracing one another compassionately and 'eliminat[ing] any prejudice, including racism, sexism, and nationalism' 'regardless of age, personal circumstances, gender, sexual orientation, or other unique challenges.'"

Homework

There will be problem sets due (almost) every class. **Refer to the problem set PDF on Learning Suite for each assignment.** Some (but not) problems come from the textbook/packet. You are **strongly** encouraged to work in small groups (3-4 people), and to turn in a single version of the problem set for the group. **You will receive a bonus point on each assignment that you turn in as part of a group.** To facilitate group formation, you will each fill out a survey in which you will do one of the following:

1. List the names of chosen group members and a weekly time slot when you are all available to work together.
2. Indicate which weekly time slots you are available to work with a group.
3. Opt out of group work.

If you have not formed your own group or opted out, I will assign you to a homework group on the third day of class. You are free to change/split/dissolve your homework group at any time without telling me about.

Your two lowest homework scores will be dropped. Homework must be turned in through Learning Suite as a PDF or Word doc (only one person per group needs to upload an assignment, making sure all group members names are clearly listed at the top). Late work is penalized by 10% for every day it is late (starting immediately after it is due) for the first five days after it is due. Work that is more than five days late will be penalized by 50% (exceptions may be made *in advance*).

Data Analysis Project

You will use tools learned in the course to analyze data that you (hopefully) find interesting. The final product will be a written report of your findings. The project can be completed in a group (2-4 students). The project consists of two parts, with due dates indicated on the course schedule. The penalty for late submissions is the same as for homework.

The project will provide hands-on experience using the tools from the class to summarize and analyze data. The first part of the project requires you to find a dataset, create a description of it meeting criteria listed in the assignment, and list questions that you hope to explore. A data librarian will provide data literacy workshops to help you learn some data basics and identify datasets that will work for your project. You can receive extra credit on the project if you attend one of these workshops.

* I am open to discussing accommodations for extenuating circumstances. Extenuating circumstances do not include travel for leisure or work commitments.

The second part of the project requires you to produce a write-up (about 3 pages long) of cohesive analysis around a topic of your choosing. You can receive some extra credit for this part by visiting a writing lab to improve the quality of your writing (a skill that will help you in any job!).

Exams

Exams will include problems similar to the homework, but designed to combine multiple topics from the course, and also to stretch students to apply familiar concepts in unfamiliar settings. The material builds on itself throughout the semester, so concepts from the entire semester up to each exam are fair game. To help you prepare for each test, you will find practice problems with solutions on Learning Suite. We will also spend the class before each test opens on exam review.

The Testing Center dates are on the Learning Suite schedule. You are responsible to know the Testing Center hours and to find a time when you can take the test while it is open. Class will be canceled for one day during each testing period.

You may use your own calculator on exams.

How I Would Study for this Class

- Come to class.
- Take notes by hand.
- Do all the homework. When possible, attempt problems alone first, then with group. Use lab and office hours to answer questions. You can also email me questions (24 hours ahead).
- Follow up early with the TAs/professor on missed homework problems.
- For exams:
 - Review notes, write out important definitions, formulas, principles, etc.
 - Attempt practice problems without referencing solutions. Check work and follow up on questions (with group and with instructors).
 - Attempt previous exams provided on Learning Suite early enough to check answers at review session, or in lab or office hours.
 - If time and as needed, rework homework problems and/or in-class examples (in weak areas) without referencing solutions.

Resources

- [University Accessibility Center](#) (2170 WSC)
 - Please work with the UAC sooner rather than later if you believe you may qualify for accommodations. The UAC helps students with a variety of conditions and challenges (e.g. ADHD, anxiety, impaired vision, hand

injuries,...). If you qualify for accommodations, they will write a letter describing them that you can choose to have sent to your professors. The letter would not contain any information on specific diagnoses or other private health information.

- [Counseling and Psychological Services \(CAPS\) \(1500 WSC\)](#)
 - Provides free counseling (individual, group, and couples) to eligible students.
- *Career and Academic Advisors*
 - Amanda Peterson (career advisement): amanda.peterson@byu.edu
 - Lindsey Blau (academic advisement): lindsey.blau@byu.edu
 - If you're trying to figure out what you want to do after graduation, or you know what you want to do but would like advice on how to get there, Amanda and Lindsey are great resources. They both spend regular time every week in offices in our department and are happy to make appointments with students.
- [Multicultural Student Services \(1320 WSC\)](#)
 - Employs a team of specialists to support multicultural students.
- [Office of Belonging \(2400 WSC, \[officeofbelonging@byu.edu\]\(mailto:officeofbelonging@byu.edu\)\)](#)
 - Employs a team of “belonging advisors” to support students from marginalized groups (including LGBTQ+ students).
- [Title IX Office \(1085 WSC\)](#)
 - Provides confidential resources to help victims of sexual misconduct.
- [Sexual Assault Survival Advocacy Services](#)
 - Provides support considering reporting options, seeking accommodations in classes, safety planning, and accessing on- and off-campus resources.
 - Contact through the website or by going to the CAPS office and telling the secretary you would like to schedule a meeting with one of the sexual assault survival advocates.

Honor Code

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. It is the university's expectation, and every instructor's expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.