

**Statistics: Measurement in Economics
Econ 310 (4 Credits), Fall 2021
University of Wisconsin-Madison**

Instructor

Christopher McKelvey, Lecturer, cmckelvey@wisc.edu

Teaching Assistants

Shilong Sun, PhD Student, ssun226@wisc.edu
Joohyun Lee, PhD Student, joohyun.lee7@wisc.edu

Instructional Mode

In-Person Classroom Instruction

Course Overview

This course provides an introduction to statistics. We will tackle three main topics. We begin with an overview of descriptive statistics and statistical terminology. Next we turn to probability, a branch of mathematics which provides us with the methods necessary to reason about uncertain environments. Finally, we turn to the bread and butter of statistics: estimation and inference. Particular attention will be paid to the application of these tools to the analysis of economic data.

Prerequisites

Prerequisites for this class include (a) an introductory economics course and (b) Math 211 or Math 221.

Class Meetings and Office Hours

Lecture is **Tuesdays and Thursdays** from **11:00am to 12:15pm** in **Russell Labs 184**.

My office hours are **Wednesdays** from **10:00 to 11:30am** in Social Science 7321. Your TA will announce his or her office hours at your first discussion section.

Required Course Materials

This course requires **MindTap**, through which you will access the eBook as well our Aplia problem sets. When you log into MindTap for the first time (via our course webpage on Canvas), you will be presented with purchase options, and you will also be granted free “trial access” through **September 21, 2021**.

Currently, the most cost effective way to access MindTap is to get a subscription to **Cengage Unlimited**, which for **\$120** gives you a semester of access to all Cengage textbooks and digital learning platforms. So if you’re taking multiple classes that use

Cengage resources this semester, this subscription will allow you to access Cengage materials for all of them.

If you prefer a physical textbook in addition to the eBook, you will have the option of renting a print textbook when you activate MindTap for \$8 with free shipping. If you decide to do this, the textbook you want to rent is:

Keller, Gerald (2018). Statistics for Management and Economics. Cengage Learning. Eleventh Edition. ISBN 9781337093453.

This course requires frequent use of a **computer** (Mac or Windows) with **Stata** installed. Because UW-Madison has a site-license, Stata can be downloaded for free from the Campus Software Library. While completing the problem sets and exams, you will also need a **calculator** with the following functions: x^y , $x!$, and e^x . Finally, we will follow the campus masking policy, which at present requires **masks** to be worn in all indoor spaces, regardless of one's vaccination status. I will update you as campus COVID-19 policies change.

Course Website

All course materials will be posted on our course website on Canvas:

<https://canvas.wisc.edu/courses/257050>

Evaluation

Your overall grade for the course will be based on the following components:

- Aplia Problem Sets: There will be weekly Aplia problem sets, which together are worth 25% of your overall grade – so completing them will be critical to your success. The problem sets will be due each Monday by 11pm in the North American Central Time Zone. **Late problem sets will not be accepted for any reason, but your lowest two Aplia problem set scores will be automatically dropped.**
- Stata Problem Set: There will be one Stata problem set, which is worth 5% of your overall grade for the course. **For full credit, the problem set must be submitted in Canvas before the submission deadline.** Late problem sets may be submitted after this deadline, but will receive a **20% per day deduction**. To receive full credit, **you must submit your Stata log.** You are encouraged to form a study group with your classmates, but you must **write up your answers independently** (meaning that you should not be looking at another student's answers as you write up your own). **Problem sets with identical answers will not be accepted (i.e., receive zero credit).**
- Midterm Exams: There will be two in-class midterms, each worth 20% of your overall grade for the course. They **must be taken in-person during our regularly scheduled lectures on October 14 and November 18.** These midterms **will not be rescheduled for any reason.** On a case by case basis, in the event of a truly

unavoidable circumstance, I may elect to shift the weight of a midterm to the final exam. In order to qualify, you must notify me of the circumstance in advance of the midterm, it must make completion of the midterm impossible, and it must be fully documented.

- Final Exam: The (cumulative) final for this class is worth 30% of your overall grade and **must be taken in-person during our official final exam block from 7:25pm - 9:25pm on December 18**. As with the midterm, in a class this size it is not possible to reschedule the final – even when students have multiple exams in a 24 hour period. However, if you have another exam at exactly the same time, then I am willing to reschedule so long as you provide evidence of enrollment in a class with a conflicting final and notify me at least two weeks in advance.

Your overall grade for this class will be curved. This curve can help your grade, but cannot hurt it. I achieve this by computing your grade using two different methods. First, I assign grades according to a percentage scale, where A = [92,100], AB = [88,92), B = [82,88), BC = [78,82), C = [70,78), D = [60,70), F = [0,60). (In other words, if you receive a grade in the class of 92% or better, then you'll receive an A.) Second, I assign grades according to a percentile scale, where A = [83,100], AB = [65,83), B = [45,65), BC = [25,45), C = [6,25), D = [3,6), F = [0,3). (In other words, if you perform better than 83% of the class, then you'll receive an A). Your overall grade in the class is the higher of these two grades.

I strive to make all of the grading transparent and fair. If you are unhappy with the way a problem has been graded, I encourage you to discuss it with me, but you must bring the concern to me within two weeks of when you were first able to view the graded problem set or exam.

Learning Outcomes

Following the completion of this course, students will be able to:

- Interpret tables, graphs, and statistics used to summarize data (QRB-3)
- Apply probability theory to model the likelihood of uncertain events (QRB-1)
- Estimate the true value of unknown parameters using point and interval estimators (QRB-2)
- Critically evaluate interpretations of statistical estimates and resulting inferences (QRB-2 & QRB-3)
- Test theories by determining an appropriate test statistic, implementing a formal hypothesis test, and interpreting the outcome (QRB-2)
- Use software to apply statistical techniques to the analysis of economic data (QRB-1)

Credits

This class meets for two 75-minute class periods plus a single discussion session each week over the semester and carries the expectation that students will work on course learning activities (reading, writing, problem sets, studying, etc) for about 3 hours out of the classroom for every class period. This syllabus includes more information about meeting times and expectations for student work.

Students with Disabilities

If you have approval from the McBurney Center for disability-related accommodations, please contact me to discuss how these accommodations will be implemented for this course. This should be done as soon as possible, and no later than two weeks before the first exam.

Religious Observances

If an exam or problem set conflicts with a religious observance, let me know and we'll work together to make an accommodation. This should be done as soon as possible, and no later than two weeks before the conflict.

Grievance Procedure

The Department of Economics has developed a grievance procedure through which you may register comments or complaints about a course, an instructor, or a teaching assistant. The Department continues to provide a course evaluation each semester in every class. If you wish to make anonymous complaints to an instructor or teaching assistant, the appropriate vehicle is the course evaluation. If you have a disagreement with an instructor or a teaching assistant, we strongly encourage you to try to resolve the dispute with him or her directly. The grievance procedure is designed for situations where neither of these channels is appropriate.

If you wish to file a grievance, you should go to room 7238 Social Science and request a Course Comment Sheet. When completing the comment sheet, you will need to provide a detailed statement that describes what aspects of the course you find unsatisfactory. You will need to sign the sheet and provide your student identification number, your address, and a phone where you can be reached. The Department plans to investigate comments fully and will respond in writing to complaints.

Your name, address, phone number, and student ID number will not be revealed to the instructor or teaching assistant involved and will be treated as confidential. The Department needs this information, because it may become necessary for a commenting student to have a meeting with the department chair or a nominee to gather additional information. A name and address are necessary for providing a written response.

Misconduct Statement

Academic integrity is critical to maintaining fair and knowledge based learning at UW-Madison. Academic dishonesty is a serious violation: it undermines the bonds of trust and honesty between members of our academic community, degrades the value of your degree, and defrauds those who may eventually depend upon your knowledge and integrity.

Examples of academic misconduct include, but are not limited to: cheating on an examination (copying from another student's paper, referring to materials on the exam other than those explicitly permitted, continuing to work on an exam after the time has expired, turning in an exam for regrading after making changes to the exam), copying the homework of someone else, submitting for credit work done by someone else, stealing examinations or course materials, tampering with the grade records or with another student's work, or knowingly and intentionally assisting another student in any of the above. Students are reminded that online sources, including anonymous or unattributed ones like Wikipedia, still need to be cited like any other source; and copying from any source without attribution is considered plagiarism.

The Dept. of Economics will deal with these offenses harshly following UWS14 procedures (<http://students.wisc.edu/saja/misconduct/UWS14.html>):

1. The penalty for misconduct in most cases will be removal from the course and a failing grade,
2. The department will inform the Dean of Students as required and additional sanctions may be applied.
3. The department will keep an internal record of misconduct incidents. This information will be made available to teaching faculty writing recommendation letters and to admission offices of the School of Business and Engineering.

If you think you see incidents of misconduct, you should tell your instructor about them, in which case they will take appropriate action and protect your identity. You could also choose to contact our administrator (Tammy Herbst-Koel: therbst@wisc.edu) and your identity will be kept confidential.