

Montana State University	
Department of Ag. Economics and Economics	
Course:	Professor:
ECNS 561 –Econometrics I Fall 2021	Wendy Stock Office: 110 Linfield Hall Phone: 994-7984 E-mail: wstock@montana.edu Web: www.montana.edu/stock WebEx: https://montana.webex.com/meet/b53z413
Hours & Location:	Office Hours:
T & TH 1:40-2:55 LINH 109	T & TH: 3:00-4:00, or by appointment

READ THIS SYLLABUS. IT REPRESENTS A CONTRACT BETWEEN YOU AND THE INSTRUCTOR OF THIS COURSE. YOUR CONTINUED ENROLLMENT IN THE COURSE WILL BE INTERPRETED AS YOUR ACCEPTANCE OF THIS CONTRACT.

The amount of learning you gain from class is directly related to the amount of effort you put into it.

Course Description: ECNS 561 provides students with a foundation in principles of econometrics, use of regression analysis in the estimation of economic relationships, with an emphasis on the development of least squares, properties of estimators, and hypothesis testing in the context of regression models.

Course Objectives: The objectives of this course are (1) to develop a foundational understanding of the tools commonly used in economics research (2) to understand the power and limits of econometric tools, and (3) to apply econometric tools in a variety of situations.

Course Learning Outcomes: After completing this course, students will be able to:

- Apply the scientific method to economic data
- Derive and apply estimators
- Describe and apply the Gauss-Markov assumptions
- Obtain, describe, and defend research data
- Evaluate research results
- Write a concise research paper
- Communicate research results to diverse audiences

Texts: Wooldridge, Introductory Econometrics (any edition); Baum, Introduction to Modern Econometrics Using Stata

Problem Sets: We will have several problem sets during the semester. The problem sets are designed to be primarily applied (as opposed to theoretical) in nature, in order to give hands on experience with the topics we discuss in class. We will discuss the problem sets in class and the exams will draw from them.

Quizzes: You will need to pass a short self-assessment quiz in D2L by noon on Thursday each week. You can take as many attempts as needed, but you must earn at least an 80% score before coming to class on Thursdays.

Lab Exercises: I have several sets of lab exercises designed to help you apply the econometric concepts learned in the lecture and readings to real world data. These assignments are short and designed to be completed in less than an hour, provided that you have prepared adequately. The lab assignments and related data are on the course D2L site.

Exams: We will have one midterm and one final exam. The exams may cover any material from the assigned readings, as well as any additional material that I cover in class. You are required to take exams at the scheduled time. No makeup exams will be given. If you miss an exam for any reason, the final exam grade will be applied to that midterm.

Course Project: The learning objectives of the project include developing a hypothesis, understanding of logical research sequencing, data gathering and organization, research organization and structure, improving written communication skills, and improving critical analysis skills. To meet these learning objectives, you will conduct an original econometric study. This involves developing a hypothesis to test using economic theory and the statistical techniques learned in the course, gathering data, identifying potential statistical problems, solving those problems where possible, writing an original research paper on the topic, giving feedback on your peers' research, and presenting the results of your research to the class.

Although your study can be a test of a new hypothesis or an extension of a published study, most students find it useful to use the project as a springboard to their master's thesis. Regardless of your stage in the program, **the project must be new and original work for you** (no recycling of existing work or papers, no work on an existing project for a professor, no partially completed theses) and should use **only** the estimation techniques we discuss in class (i.e., OLS or GLS).

The project assignments are on the D2L site and will be due every few weeks:

- *Responsible Conduct of Research*
- *Project Topic*
- *Project Data*
- *Project Methodology*
- *Project Working Paper*
- *Project Peer Review*
- *Project Presentation*
- *Final Paper*

Grading: The midterm exam, final exam, and final paper will each count for 100 points. The quizzes, labs, and problem sets will each count for 10 points. The project assignments (except the final paper) will each count for 20 points.

Academic Integrity: Please read and comply with the student conduct expectations contained in the *Student Responsibilities* section of MSU's "*Conduct Guidelines and Grievance Procedures for Students*," available online at http://www.montana.edu/policy/student_conduct/#studentrespon. Violations of academic integrity diminish the value of a degree earned at MSU (negative externalities!!) and cheating will result in failure on the assignment and/or the course and all other disciplinary sanctions possible.

Health-Related Absences: Please evaluate your own health status regularly and refrain from attending class and other on-campus events if you are ill. MSU students who miss class due to illness will be given opportunities to access course materials online. You are encouraged to seek appropriate medical attention for treatment of illness. In the event of contagious illness, please do not come to class or to campus to turn in work. Instead notify me by email about your absence as soon as practical, so that accommodations can be made.

Online Transition: If the class needs to transition to online only, all announcements, assignments, etc. will be in D2L.

Diversity Statement: It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexual orientation, disability, age, socioeconomic status, ethnicity, race, religion, culture, perspective, and other background characteristics. Your suggestions about how to improve the value of diversity in this course are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, in scheduling exams, I have attempted to avoid conflicts with major religious holidays. If, however, I have inadvertently scheduled an exam or major deadline that creates a conflict with your religious observances, please let me know as soon as possible so that we can make other arrangements.

Inclusivity Statement: I support an inclusive learning environment where diversity and individual differences are understood, respected, appreciated, and recognized as a source of strength. We expect that students, faculty, administrators and staff at MSU will respect differences and demonstrate diligence in understanding how other peoples' perspectives, behaviors, and worldviews may be different from their own.

Disability Statement: If you are a student with a disability and wish to use your approved accommodations for this course, please contact me during my office hours to discuss. Please have your Accommodation Notification or Blue Card available for verification of accommodations. Accommodations are approved through the Office of Disability Services located in SUB 174. [Please see Disability Services for more information by clicking here.](#)

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(WEEK) DATES	TOPIC	WOOLDRIDGE READINGS	Lab Due TU	Assignments Due TH
(1) 8/26	Introduction & Overview Overview of course, causal inference, data types, research ethics, course project description	1, 19		
(2) 8/31-9/2	Math, Probability, and Statistics Review Random variables, density functions, summary statistics (expected value, variance, st. dev., covariance) Intro to Least Squares: univariate regression, estimate population mean, estimator properties,	Appendix A Appendix B Appendix C	Lab 1	Responsible Conduct of Research Quiz 1
(3) 9/7-9/9	Intro to Least Squares: estimate population variance, estimator properties, st. error Interval Estimation and Hypothesis Testing	Appendix C	Lab 2	Project Topic PS 1 Quiz 2
(4) 9/14-9/16	Bivariate Regression Model: Definition & Estimation Linear Regression in Matrix Form Hypothesis testing and interval estimation GM assumptions & violations	2 Appendix D, E	Lab 3	Quiz 3
(5) 9/21-9/23	Simple Regression Model: Assumptions, Properties, Functional Form, Binary Variables	2	Lab 4	PS 2 Quiz 4
(6) 9/28-9/30	Midterm Review & Midterm		Lab 5	PS 3 Quiz 5
(7) 10/5-10/7	Multiple Regression Model: Estimation Multiple Regression Model: Properties	3		Project Data

(WEEK) DATES	TOPIC	WOOLDRIDGE READINGS	Lab Due TU	Assignments Due TH
(8) 10/12-10/14	Multiple Regression Model: Specification Issues and Omitted Variables Bias	3, 4	Lab 6	Quiz 6
(9) 10/19-10/21	Multiple Regression Model: Dummy Variables Multiple Regression Model: Inference & Hypothesis Testing	4, 5	Lab 7	Project Methodology PS 4 Quiz 7
(10) 10/26-10/28	Multiple Regression Model: Restricted Estimation Multiple Regression Model: Prediction	5, 6	Lab 8	PS 5 Quiz 8
(11) 11/2-11/4	Multicollinearity & Measurement Error Difference in Differences	6, 7	Lab 9	PS 6 Quiz 9
(12) 11/9-11/11	Difference in Differences No Classes 11/11 – Veterans Day	7, 9	Working Paper	PS 7
(13) 11/16-11/18	Difference in Differences Heteroskedasticity	7, 9	Lab 10	Peer Review Quiz 10
(14) 11/23-11/25	No Classes 11/22-11/26 - Fall Recess & Thanksgiving			
(15) 11/30-12/2	Heteroskedasticity	8	Lab 11	Final Paper PS 8
(16) 12/7-12/9	Presentations			PS 9
12/14	Final Exam 2:00-3:50 LINH 109			