Montana State University	
Department of Ag. Economics and Economics	
Course:	**Professor:**
ECNS 561 –Econometrics I Fall 2023	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 406	T & TH: 11:00-12:30, 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 using regression analysis to estimate economic relationships. Emphasis is placed on the underpinnings of least squares, properties of estimators under varying assumptions, hypothesis testing.

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)

Problem Sets: Problem sets for each topic area are on D2L. We will discuss the problem sets in class on Thursdays. You can work them in groups or on your own.

Discussions: We will discuss one empirical paper during our Thursday class each week. By midnight on Wednesdays in D2L, you should write and attempt a brief answer to two discussion questions about the paper. I'll randomly call on people to lead the in-class discussion and elicit participation from classmates. Half of your discussions grade will be based on your participation during class, the other half on the quality of your questions/answers on D2L.

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 will cover material from the lectures, discussions, assigned readings, problem sets, and project assignments.

Course Project: You will conduct an original econometric study that involves developing a hypothesis, gathering data, testing they hypothesis using economic theory and the statistical techniques learned in the course, identifying potential statistical problems, writing an original research paper on the topic, giving feedback on your peers' research, and presenting the results of your research to the class. More details on the project are on the D2L site.

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 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.

Copyright Statement: This syllabus, course lectures and presentations, and any course materials provided throughout this term are protected by U.S. copyright laws. Students enrolled in the course may use them for their own research and educational purposes. However, reproducing, selling or otherwise distributing these materials without written permission of the copyright owner is expressly prohibited, including providing materials to commercial platforms such as Chegg or CourseHero. Doing so may constitute a violation of U.S. copyright law as well as MSU's Code of Student Conduct.

Grading Policy: Grades will be assigned based on the practice problem sets, discussions, exams, and course project assignments.

Assignment	Points Possible
Discussions: 13 @ 20 points each = 260 points	
Drop lowest score = -20 points	240
Problem Sets: 9 @ 20 points each = 180 points	
Drop lowest score = -20 points	160
Labs: 11 @ 20 points each = 220 points	
Drop lowest = -20 points	200
Course Project	
Responsible Conduct of Research	10
Project Topic	25
Project Data	40
Project Methodology	15
Working Paper	25
Peer Review 2@25 each	50
Final Paper	150
Midterm	100
Final	150
Total	1165

(WEEK) DATES	TOPIC	WOOLDRIDGE READINGS	DISCUSSION READINGS	ASSIGNMENTS Lab due TU D due W PS due TH Project Assign. due TH
(1) 8/24	Introduction & Overview Overview of course, causal inference, data types, research ethics, course project description	1, 19		
(2) 8/29-8/31	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	Amberg, et al. (2022) Five Facts about the Distributional Income Effects of Monetary Policy Shocks *AER: Insights* 4(3):289-304	Responsible Conduct of Research Lab 1 D1
(3) 9/5-9/7	Intro to Least Squares: estimate population variance, estimator properties, st. error Interval Estimation and Hypothesis Testing	Appendix C	Anwar, et al. (2022) Unequal Jury Representation and its Consequences *AER: Insights* 4(2):159-174	Project Topic PS 1 D2 Lab 2
(4) 9/12-9/14	Bivariate Regression Model: Definition & Estimation Linear Regression in Matrix Form Hypothesis testing and interval estimation GM assumptions & violations	2 Appendix D, E	Chaflin, et al. (2022) Police Force Size and Civilian Race *AER: Insights* 4(2):139-158	D3 Lab 3
(5) 9/19-9/21	Simple Regression Model: Assumptions, Properties, Functional Form, Binary Variables	2	Dahl, et al (2022) Partisan Fertility and Presidential Elections *AER: Insights* 4(3):473-749	PS 2 D4 Lab 4
(6) 9/26-9/28	Midterm Review & Midterm			PS 3 Lab 5
(7) 10/3-10/5	Multiple Regression Model: Estimation Multiple Regression Model: Properties	3	Jack, et al. (2023) Pandemic Schooling Mode and Student Test Scores: Evidence from US School Districts *AER: Insights* 5(2)173-190/	D5 Project Data
(8) 10/10-10/12	Multiple Regression Model: Specification Issues and Omitted Variables Bias	3, 4	Banerjee, et al (2021) Long-Term Effects of the Targeting the Ultra Poor Program *AER: Insights* 3(4):471-486	D6 Lab 6
(9) 10/17-10/19	Multiple Regression Model: Dummy Variables	4, 5	Hansen and Wingender (2023)	Project Methodology

(WEEK) DATES	TOPIC	WOOLDRIDGE READINGS	DISCUSSION READINGS	ASSIGNMENTS Lab due TU D due W PS due TH Project Assign. due TH
	Multiple Regression Model: Inference & Hypothesis Testing		National and Global Impacts of Genetically Modified Crops *AER: Insights* 5(2): 224-240	D7 PS 4 Lab 7
(10) 10/24-10/26	Multiple Regression Model: Asymptotics Multiple Regression Model: Restricted Estimation	5, 6	Gross, et al. (2022) The Liquidity Sensitivity of Healthcare Consumption: Evidence from Social Security Payments *AER: Insights* 4(2):175-190	D8 PS 5 Lab 8
(11) 10/31-11/2	Multicollinearity & Measurement Error Difference in Differences	6, 7	Barker, et al. (2022) Cognitive Behavioral Therapy among Ghana's Rural Poor is Effective Regardless of Baseline Mental Distress *AER: Insights* 4(4):527-545	D9 PS 6 Lab 9
(12) 11/7-11/9	Difference in Differences	7, 9		D10 Working Paper PS 7
(13) 11/14-11/16	Difference in Differences Heteroskedasticity	7, 9	Roth (2022) Pretest with Caution: Event-Study Estimates after Testing for Parallel Trends *AER: Insights* 4(3): 305-322	D11 Peer Review Lab 10
(14) 11/21-11/23	**No Classes - Fall Break**			
(15) 11/28-11/30	Heteroskedasticity & Autocorrelation	8, 12	Schwabish, J. (2014) "An Economist's Guide to Visualizing Data" *Journal of Economic Perspectives* 28(1):209-234	D12 Final Paper PS 8 Lab 11
(16) 12/5-12/7	Heteroskedasticity & Autocorrelation	8, 12	Bandiera, et al. (2021) Do Women Respond	D13 PS 9

(WEEK) DATES	TOPIC	WOOLDRIDGE READINGS	DISCUSSION READINGS	ASSIGNMENTS Lab due TU D due W PS due TH Project Assign. due TH
			Less to Performance Pay? Building Evidence from Multiple Experiments *AER: Insights* 3(4):435-454	
(17) 12/12-12/14	**Final Exam** 12/12/2023 2:00-3:50 LINH 406			