Spring 2-1-2022

ECNS 560.00: Advanced Econometrics

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Syllabus

Advanced Econometrics
Economics 560
LA 401

Instructor: Amanda Dawsey
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Office: LA 403, 243-2926
Office hours: MF 3 – 4:30 PM

Course Description:
The purpose of this course is to provide students with the tools required for the analysis of economic data. This course begins with the underlying assumptions of the OLS model, and we will analyze the conditions that determine whether the OLS model does or does not perform well. We will cover alternative statistical techniques for testing economic theories when using panels, data with limited dependent variables, endogeneity issues, or is subject to sample selection. These alternatives include probit and tobit models, fixed- and random-effect models, and instrumental variable models.

Learning Objectives:
Students who successfully complete this course will understand

- When and when not to use an OLS model, and why
- How to use OLS and methods for instrumental variables, panel data, and limited dependent variables to estimate causal effects and make predictions
- How to use Stata to estimate economic models and to create comprehensible output
- What makes a good research question, what economic data is available, and how to write and talk about economic analysis

Materials:

- **Recommended Textbook**: *Introductory Econometrics* by Jeffrey Wooldridge, 7th edition (ISBN 1337558869, earlier editions are fine). I will post links to additional resources, including open source resources, on the course Moodle page.
- **Required Software**: Stata, which is available in LA 129. A USB flash drive can be helpful for transferring work, but UM Box or other online storage solutions can be just as convenient.
- **Course Website**: You will need to check Moodle (http://umonline.umt.edu/) regularly
- **Prerequisites:** ECNS 403 or the consent of the instructor. Undergraduates must have a GPA of 3.00 or better.

Grading:

Homework	10%
Lab work	10%
Participation	10%
Exams (March 9, May 12)	40%
Empirical project and presentation	30%

Classroom policies:
As we continue to face a changing risk environment, we may have to adjust the logistics of this class over the course of the semester. Please monitor the course Moodle site and your UM email account regularly!

- Mask use is required indoors on campus, and please take extra care when we're together in the classroom and laboratory. Consider double masking, always wear your mask over both your nose and mouth, and make sure that your mask fits well. The CDC page on masks is very helpful.
- This class is not well-suited to a hybrid delivery model, and I am not planning to livestream or record the class regularly. However, please be aware that I may need to record the class from time to time, and that we may need to move online temporarily.
- If you feel sick and/or are exhibiting COVID symptoms, please don't come to class and contact the Curry Health Center at (406) 243-4330. Get in touch with me as soon as you are able.
- If you are required to isolate or quarantine, please get in touch with me as soon as you can.
- Please get the COVID vaccine and booster, if you haven't already. Take whatever additional steps you can to avoid contracting and spreading COVID.
- Please do not eat or drink in class.
- I will work with you to adjust assignment deadlines if you cannot be present on campus. Consider purchasing Stata for home use, if possible.

Homework:
Problem sets will be distributed at least one week before they are due, and they will not be accepted after the assigned date. There will be questions on theory, some mathematical exercises, and some practice using Stata and data work. All assignments should be typed, and graphs and tables appended when necessary. I will drop your lowest score.

Labs:
During our weekly lab meetings, you will work through exercises using Stata, with help and guidance from me and your fellow students. You must complete the day's exercise and send me the results in order to get full credit for that day's lab meeting.

Participation:
Your participation grade is based on your class attendance and your participation in class discussions. Some of these discussions will focus on reading assignments, which will be posted on Moodle.

Exams:
Make sure you have no conflicts with the exam dates. Exceptions to this policy will only be granted for serious circumstances that are **beyond your control**. Arrangements for an exception must be made as soon as possible and in advance if at all possible.

Accessibility:
The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or experience barriers based on disability, please contact the ODE at: (406) 243-2243, ode@umontana.edu, or visit www.umt.edu/disability for more information. Retroactive accommodation requests will not be honored, so please, do not delay.

Academic Integrity:
I expect you to know and abide by the Honor Code in all matters pertaining to this course. Violations of this code will be pursued in accordance with the code.

Course Schedule: A tentative outline of when we will cover which subjects.

	Date	Assignment	Topic	Textbook
Week 1				
	Jan 19		Introduction, Notation	Chapter 1
	Jan 21		Simple regression review	Chapter 2
Week 2	Jan 24			
	Jan 26	Homework 1 Due	Multiple Regression	Chapter 3
	Jan 28	Almond (2011)		
Week 3	Jan 31			
	Feb 2	Homework 2 Due		
	Feb 4	Wooldridge, Ch. 19		
Week 4	Feb 7		Inference	Chapter 4
	Feb 9	Homework 3 Due		
	Feb 11	Article 2		
Week 5	Feb 14		Further issues	Chapters 6 & 7
	Feb 16	Homework 4 Due		
	Feb 18	Article 3, **Topic & data**		
Week 6	Feb 21	Presidents' Day	**No Class**	
	Feb 23	Homework 5 Due	Specification	Chapter 8 & 9
	Feb 25	Article 4		
Week 7	Feb 28			
	Mar 2	Homework 6 Due		
	Mar 4	Article 5		
Week 8	Mar 7		Catch up and review	
	Mar 9	**Midterm**		
	Mar 11	Article 6		
Week 9	Mar 14		Panels: Pooled OLS	Chapter 13
	Mar 16	Homework 7 Due		
	Mar 18	Article 7		
		Spring Break	**No Class**	
Week 10	Mar 28		Panels: Fixed & Random Effects	Chapter 14
	Mar 30	Homework 8 Due		
	Apr 1	Article 8, **Project Proposal**		
Week 11	Apr 4		Instrumental Variables	Chapter 15
	Apr 6	Homework 9 Due		
	Apr 8	Article 9		
Week 12	Apr 11		Limited Dependent Variables	Chapter 17
	Apr 13	Homework 10 Due		
	Apr 15	Article 10	Program Evaluation	
Week 13	Apr 18		Catch up and review	
	Apr 20			
	Apr 22			
Week 14	Apr 25	**Presentations**		
	Apr 27	**Presentations**		
	Apr 29	**Presentations**		
Week 15	May 2			
	May 4	**Final Project Due**		
	May 6			
	Thursday, May 12 **Final Exam** 3:20 – 5:20 PM			