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ECNS 560.01: Advanced Econometrics

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ECNS 560: ADVANCED ECONOMETRICS
SPRING 2016 SYLLABUS

Logistics

- Time: Class – Tuesday/Thursday, 12.40-2pm; Lab – Tuesday, 3.40-4.40pm
- Classroom: Liberal Arts Building, Rm 401
- Instructor: Katrina Mullan
 - [Email](mailto:katrina.mullan@umontana.edu): katrina.mullan@umontana.edu
 - Phone: (406) 243-4655
 - Office hours: Tuesday, 2.30-3.30pm; Thursday, 9.30-10.30am; or by appointment
 - Liberal Arts Building, Rm 412
- Required textbook: Wooldridge, J. M. (2013) *Introductory Econometrics: A Modern Approach*, 5th Ed. Mason OH: South-Western.
- Course software: Stata 13 – available in the Economics computer lab (LA 401). Also available for purchase through Stata GradPlan.
- Course website: I will post data, homework assignments, readings and any additional information on the class Moodle page. Please check this regularly.
- Pre-requisites: ECNS 403 and the consent of the instructor. To enroll in 500-level classes, undergraduates must have senior standing and a GPA of 3.00 or better.

Course Description and Learning Outcomes

This advanced econometrics course will build on students' knowledge about OLS estimation of linear regression models. We will examine the assumptions made, and consider when and why these assumptions may not be valid, particularly in the context of estimating models with limited dependent variables, panel data, endogenous regressors, and sample selection. For these cases, we will study the principles and application of alternative models including probit and tobit models; fixed- and random-effect models; and instrumental variable models.

The course will emphasize the implementation of the models studied. Students will gain experience using Stata to estimate and test the models, and accurately interpreting results obtained. There will be a course project, which will involve defining a research question, identifying relevant data, analyzing the data, and presenting and writing up the results.

Students who successfully complete this course will understand:

- The assumptions required for OLS estimation, and the circumstances in which those assumptions may fail
- How to estimate, test and interpret models that go beyond OLS regression, including methods for instrumental variables, panel data, and limited dependent variables
- How to write do-files in Stata to manage data, estimate regression models, and export results
- How to select appropriate data and methods to answer a particular research question, and how to present and write about the results

Course Structure and Grading

Class time will be spent on:

- lectures covering the principles of econometric estimation and hypothesis testing
- lab exercises to practice implementing the methods covered in the lectures
- discussion of practical issues relating to empirical economics research (e.g. finding data, writing about results)
- discussion of published empirical papers
- one midterm and one final exam.

Success in this course will require active participation, both in class discussions and in putting the course material into practice.

Grading

<u>Assignment</u>	<u>Percent of Grade</u>
Homework	20%
Exams	30%
Empirical project and presentation	30%
Lab exercises	10%
Participation	10%

Homework will be assigned approximately every week. The assignments with due dates will be posted on Moodle. If you are unable to make it to class, you should email it or put it in my mailbox *before* the start of class on the due date. Homework assignments will include questions on the theoretical principles underlying the econometric models, interpretation of econometric results, computer exercises, and work with 'real' datasets. Answers should be typed, and graphs, tables and do-files should be included or appended as applicable. The lowest homework score during the semester will be dropped from the final grade.

The empirical project will be on the topic of your choice. It will involve the definition of a research question; selection of data and appropriate methods to allow you to answer the research question; and clear presentation and discussion of results. Draft elements of the project will be submitted throughout the semester, and will contribute to the overall grade. Before the submission of the final project, each student will make a short presentation of their work to the class.

Lab exercises will be guided Stata problems that we will work through during the Lab time. Exercises must be completed and shown to me for full credit. Class participation will include attendance in class and active contribution to class discussion, particularly discussion of reading assignments. The exams will consist of multiple choice and short-answer questions on the theory underlying the econometric models studied in class, and the interpretation of model results.

Academic Conduct

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University (for more details on [Student Conduct Code](http://life.umt.edu/VPSA/student_conduct.php), go to: http://life.umt.edu/VPSA/student_conduct.php). Students are expected to do their own work in their own words, without seeking inappropriate assistance in preparing for or completing exams or assignments. I require that you will work to uphold high standards of integrity.

Students with Disabilities

Whenever possible, and in accordance with civil rights laws, The University of Montana will attempt to provide reasonable modifications to students with disabilities who request and require them. Please feel free to setup a time with me to discuss any modifications that may be necessary for this course. For more information, visit the [Disability Services for Students website](http://www.umt.edu/disability) at <http://www.umt.edu/disability>.

Outline Schedule

<i>Week</i>	<i>Begins</i>	<i>Tentative topics (we may go faster or slower)</i>	<i>Textbook</i>	<i>Readings (prepare to discuss by Thursday of the assigned week)</i>	<i>Assignments (all assignments to be handed in at the start of class)</i>
1	Jan 25	What is Econometrics	Ch. 1	Ch 3 & 4, Stata User Guide	
2	Feb 1	Multiple regression review	Ch. 3	Almond (2011)	Homework 1 – Feb 2
3	Feb 8	Multiple regression: inference	Ch. 4	Wooldridge, Ch. 19	Homework 2 – Feb 9 <i>etc.</i>
4	Feb 15	Multiple regression: further issues	Ch. 6 & 7	Yakusheva and Fletcher (2015)	
5	Feb 22	Multiple regression: specification	Ch. 8 & 9	Hirschberg et al. (2005)	Project topic and data – Mar 1
6	Feb 29	Panel data: pooled OLS	Ch. 13	Fredricksson et al (2013)	
7	Mar 7	Panel data: fixed effects, random effects	Ch. 14	Anderson and Matsa (2011)	
8	Mar 14	Catch up and review	-	Angrist and Pishke (2010) (Tuesday)	Midterm Exam – Mar 17
9	Mar 21	Instrumental variables	Ch. 15	Greenstone and Hanna (2014)	Project proposal – Mar 24
10	Mar 28	Spring Break – no classes	-	[own IV examples]	
11	Apr 4	Limited dependent variables: probit	Ch. 17	-	
12	Apr 11	Limited dependent variables: tobit	Ch. 17	Angrist and Kugler (2008)	
13	Apr 18	Presentations	-	-	Project presentation – Apr 19/21
14	Apr 25	Program evaluation methods	-	Pfaff et al. (2009)	
15	May 2	Program evaluation and review	-	Duflo et al. (2012)	Final project – May 5
16	May 9	Exam week	-		Final Exam – Tuesday May 10, 1.10-3.10pm