ECNS 560.01: Advanced Econometrics

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ECNS 560: ADVANCED ECONOMETRICS  
SPRING 2014  SYLLABUS

LOGISTICS

Time:  Class: Tuesday and Thursday, 12.40-2.00pm  
       Lab: Tuesday, 3.40-5.00pm

Classroom:  Liberal Arts Building, Rm 401

Instructor:  Katrina Mullan  
            Email: katrina.mullan@umontana.edu  
            Phone: (406) 243-4655  
            Office hours: Tuesday 9-10am and Thursday 3-4pm  
            Liberal Arts Building, Rm 412


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 or 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 in the use of Stata to estimate and test the models, and the accurate interpretation of 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.

Learning Outcomes

Students who successfully complete this course should 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

Class time will be spent on 1) lectures covering the principles of econometric estimation and hypothesis testing; 2) lab exercises to practice implementing the methods covered in the lectures; 3) discussion of practical issues relating to empirical economics research (e.g. finding data, writing about results); 4) discussion of published empirical papers.

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

GRADING

Homework 35%
Empirical project 35%
Presentation 10%
Lab exercises 10%
Class participation 10%

Assignments
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 two lowest homework scores during the semester can be dropped from the final grade.

The empirical project will be on the topic of your choice. It will require the definition of a research question; selection of a dataset and appropriate methods that will allow you to answer the research question; and clear presentation and discussion of results. Draft elements of the overall 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.

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, 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 at http://www.umt.edu/disability.
<table>
<thead>
<tr>
<th>Week</th>
<th>Begins</th>
<th>Tentative topics (we may go faster or slower)</th>
<th>Textbook</th>
<th>Readings (prepare to discuss by Tuesday of the assigned week)</th>
<th>Assignments (all assignments to be handed in at the start of class)</th>
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<tr>
<td>1</td>
<td>Jan 27</td>
<td>What is Econometrics</td>
<td>Ch. 1</td>
<td>Ch. 3 &amp; 4, Stata User Guide</td>
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<td>2</td>
<td>Feb 3</td>
<td>Simple regression review</td>
<td>Ch. 2</td>
<td>Ch. 19 Wooldridge</td>
<td>Homework 1 – Feb 6</td>
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<td>3</td>
<td>Feb 10</td>
<td>Multiple regression review</td>
<td>Ch. 3</td>
<td>Anwar et al. (2012)</td>
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<td>4</td>
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<td>Multiple regression: inference</td>
<td>Ch. 4</td>
<td>Ch. 3 &amp; 4 of Booth et al. (2008)</td>
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<td>5</td>
<td>Feb 24</td>
<td>Multiple regression: further issues</td>
<td>Ch. 6 &amp; 7</td>
<td>Alesina et al. (2013)</td>
<td>Project topic and data – Feb 25</td>
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<td>6</td>
<td>Mar 3</td>
<td>Multiple regression: specification</td>
<td>Ch. 8 &amp; 9</td>
<td>Nikolov et al. (2013)</td>
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<td>7</td>
<td>Mar 10</td>
<td>Panel data: pooled OLS</td>
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<td>8</td>
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<td>Panel data: fixed effects, random effects</td>
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<td>Mar 24</td>
<td>Instrumental variables</td>
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<td>Bleakley (2010)</td>
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<td>Mar 31</td>
<td>Spring Break – no classes</td>
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<td>Apr 7</td>
<td>Limited dependent variables: probit</td>
<td>Ch. 17</td>
<td>Miller (2008)</td>
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<td>12</td>
<td>Apr 14</td>
<td>Limited dependent variables: tobit</td>
<td>Ch. 17</td>
<td>Angrist and Pischke (2010)</td>
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<td>13</td>
<td>Apr 21</td>
<td>Presentations</td>
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<td>Project presentation – Apr 22/24</td>
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<td>14</td>
<td>Apr 28</td>
<td>Program evaluation methods</td>
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<td>Pfaff et al (2009)</td>
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<td>Program evaluation and review</td>
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<td>Duflo et al. (2012)</td>
<td>Final project – May 6</td>
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<td>Exam week</td>
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