

University of Montana  
**ECONOMICS 560: ADVANCED ECONOMETRICS**  
Section 1

**Contact Information:**

Douglas Dalenberg	Spring 2012
Office: LA 413 phone: 243-4406	TR 12:10-2:00
Office hours: TR 11:10-12:00, R 2:10-3:10	Classroom: LA 401
or by appointment or discovery	4 Credits
Email: <a href="mailto:doug.dalenberg@mso.umt.edu">doug.dalenberg@mso.umt.edu</a>	CRN: 30718

**Prerequisite:** ECNS 403 or consent of the instructor. Undergraduate students may only enroll in 500-level classes if they fulfill two requirements: they must have senior standing and they must have a GPA of 3.00 or better. (Graduate School Policy A7.000).

**Text:** Wooldridge, Jeffrey, *Introductory Econometrics: A Modern Approach*, Mason, OH: South-Western Cengage Learning, 4<sup>th</sup> edition, 2009.

**Course Supplement:** The additional readings and the data sets we use will be available on Moodle.

**Stata:** We will use Stata version 10, 11 or 12 for statistical software. Stata is available in the LA labs and a few other labs on campus. I will also provide you with the details on how to purchase Stata using their course discount in a handout.

**Description and Objectives:** This course is designed to expose students to econometric techniques that move beyond standard ordinary least squares regression analysis. This applied course will use examples to help students understand the various techniques, when to apply them, why we use them, how to test and interpret the results, and how to present the results. The course uses the statistical software Stata and students will become proficient at getting data into Stata, cleaning up the data, examining the data with graphs and tables, and estimating models using the appropriate technique. In addition students will be exposed to some programming tricks to help with data management and presentation of results.

**Learning Outcomes:** Upon completion of the course, students will be able to:

1. demonstrate a solid understanding of the basic tools of econometrics.
2. apply the standard cross section and panel data techniques used by economists that move beyond standard OLS regression analysis including instrumental variable estimation and maximum likelihood estimation.
3. use and interpret limited dependent variable models.
4. manage data, estimate econometric models and clearly present estimation results.

**Class plan:** Class time will be spent with lectures, computer demonstrations, discussion of the readings, discussion of homework, discussion of Stata programming problems and discussion of the empirical paper. The vast majority of the computer work will be done outside of class as homework.

**Assessment:**

Assignment	Percent of Grade	Due date
Homework Assignments	45%	Weekly
Empirical Research Paper	45%	Various
Attendance and Participation	10%	Every class

I will use plus/minus grading with 100-92=A, 91.9-90=A-, 89.9-88=B+, 87.9-82=B, 81.9-80=B-, 79.9-78=C+, 77.9-72=C, 71.9-70=C- 69-68=D+, 67.9-62=D, 61.9-60=D-, 59.9 and below=F.

**Policies:**

1. We will meet Friday, May 11 from 8:00-10:00 even though there is no final exam. There will be a homework assignment due that day.
2. Academic dishonesty will result in a score of zero for the assignment in question. University policy states: "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. All students need to be familiar with the Student Conduct Code. The Code is available for review online at <http://life.umt.edu/vpsa/documents/StudentConductCode1.pdf>."
3. The last day to add or drop classes or change the grade option on Cyberbear is February 10. From February 13 to March 26 classes may be added or dropped or grade options changed (expect Audit) with an approved Add/Drop form. From March 27 through May 4 students must petition to add, drop or change grade options. No petitions are allowed after May 4. To petition to drop a course you will need your Dean's signature in addition to your advisor's and instructor's signature. My understanding is that the Dean of the College of Arts and Sciences accepts only four reasons for a drop (medical, change in work, emergency, no evaluation) and requires written verification. The last day to change to audit status is February 10.
4. University policy now states "A CR is given for work deserving credit (A through D-) and an NCR for work of failing quality (F). CR and NCR grades do not affect grade point average."
5. Please set your cell phones on silent please leave the classroom to talk on a phone. Please limit your texting in class.
6. Late work is penalized according to the cost it imposes on me. Work is considered late if I receive it after I have finished grading those assignments handed in on time.

**Advice:**

1. If my office hours conflict with your schedule, see me for an appointment.
2. This class is really a lot of fun but you have to be active. As in most higher level courses, what you put into the course will determine what you get out of the course. Unfortunately it is difficult to learn econometrics by just listening and taking notes; one must do econometrics in order to learn econometrics. What you do out of class with the homework and reading is probably more important than what we do in class.

**Course Schedule** (Subject to Change):

Instructions for finding the readings and the homework data sets will be posted on Moodle.

Week 1: Ordinary Least Squares Review

Wooldridge, chapters 1 and 19.  
Cohen and Einav, *RESTAT*, 2003.

Week 2: Matrix Representation of Least Squares

Wooldridge, Appendices A, D and E.  
Miller, ch 1 and Appendix A in *Chicago Guide to Writing about Multivariate Analysis*, 2008.  
Ziliak and McCloskey, *Journal of Socio-Economics*, 2004.  
*Homework 1 due.*

Week 3: Testing in Matrix

Wooldridge, chapters 2, 3 and Appendix B.  
Mitchell, *Strategically using General Purpose Statistics Packages*, 2005.  
Burns, *R relative to Statistics Packages*, 2006.  
Gould, Stata listserve entry.  
*Homework 2 due and Paper Assignment 1 due.*

Week 4: Gauss Markov

Wooldridge, chapters 4, 5 and Appendix C.  
Ransom, *AER*, 1993.  
Stavins and Jaffe, *AER*, 1990.  
*Homework 3 due.*

Week 5: Maximum Likelihood Estimation and Testing

Wooldridge, chapters 6 and 7.  
Hirschberg et al., *Australian Economic Review*, 2005.  
*Homework 4 due.*

Week 6: Heteroscedasticity, GLS, SUR

Wooldridge, chapters 8 and 9.  
Stata documentation on robust standard errors.  
*Homework 5 due and Paper Assignment 2 due.*

Week 7: Panel Data

Wooldridge, chapter 13.  
Barrett, et al., *NTJ*, 1997.  
*Homework 6 due.*

Week 8: Panel Data

Wooldridge, chapter 14.

Montalvo, *RESTAT*, 2011.

*Homework 7 due and Paper Assignment 3 due.*

Week 9: Instrumental Variables

Wooldridge, chapter 15.

Murray, *JEP*, 2006.

*Homework 8 due and Paper Assignment 4 due.*

Week 10: Spring Break

Gelman, unpublished manuscript, 2010.

Week 11: Simultaneous Equations / Identification

Wooldridge, chapter 16.

Nunn, *QJE*, 2008.

*Homework 9 due.*

Week 12: Probit, Logit, Sample Selectivity

Wooldridge, chapter 17.

Goldin and Rouse, *AER*, 2000.

Becker and Greene, *Module Four: Sample Selection in Economic Ed. Research*, 2010.

*Homework 10 due.*

Week 13: Multinomial Models

Gujarati, Excerpt from *Econometrics by Example*, 2011 (text from last term).

*Homework 11 due and Paper Assignment 5 due.*

Week 14: Ordered and Count Models

Daykin and Moffatt, *Understanding Statistics*, 2002.

*Stata Blog Entry.*

*Homework 12 due.*

Week 15: Time Series

Wooldridge, chapters 10 and 11.

Kennedy, *Journal of Economic Education*, 2005.

*Homework 13 due and Paper Assignment 6 due.*

Week 16: Advanced Time Series

Wooldridge, chapters 12 and 18.

*Homework 14 due.*