Fall 9-1-2020

ECNS 403.R01: Introduction to Econometrics

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UNIVERSITY OF MONTANA
ECNS 403: Introduction to Econometrics

Course Information:
Semester: Fall 2020
Section: Section R01
Meeting time: MWF 12:00-12:50, W 2:00-2:50
Classroom: This course is remote delivery due to COVID-19
Credits: 4 credits
CRN: 70042

Instructor Information:
Instructor: Douglas Dalenberg
Office: LA 413
Email: doug.dalenberg@mso.umt.edu
Phone: 406-243-4406 (message only – email will get a faster response).
Office hours: Via Zoom MWF 1:00-2:00 or by appointment.

Course Description:
This course is designed to develop undergraduate-level competency in econometric analysis with emphasis on interpretation and testing. Statistical software will be used to assist the student in handling of complex empirical problems and to demonstrate the use of statistical software in business and research environments. The ultimate objective of the course is to familiarize the student with the regression technique used in economics but also found in business, forestry, and other social sciences. I aim to help students develop a strong foundation for more advanced applications of econometrics in the future. This is an applied rather than theoretical econometrics course.

Prerequisites:
The prerequisite is an introductory statistics course.

Text:
Wooldridge, Jeffrey M., 2020, *Introductory Econometrics: A Modern Approach,* 7th edition, Cengage. I will discuss the different options you have for getting the textbook on the first day of class.

Software:
R and RStudio. These are free, open source software. I will show you how to download it. If you do not have a computer on which to install this, you will have to use a University computer lab such as FA 210. You are required to wear a mask in University labs.

Course Moodle Page:
The course Moodle page will contain the handouts, homework, and data sets we use.

Learning Outcomes:
Students who successfully complete this course will be able to:

1. interpret regression results; this includes interpreting coefficient estimates and the related measures of fit.

2. explain the standard ordinary least squares assumptions and the consequences, detection, and potential corrections for violations of the standard assumptions.
3. perform and interpret the relevant hypothesis tests associated with the regression coefficients, model, fit, and violations of the ordinary least squares assumptions.
4. explain how to distinguish between practical and statistical significance.
5. demonstrate proficiency with a statistical software program.
6. identify situations in which methods such as logit or two-stage least squares are called for.

Assessment:

Assignment	Percent	Date
Individual Appointments	10%	8/24-8/28, 9/14-9/18
11 Homework - due by 5 PM	40%	9/2, 9/9, 9/16, 9/23, 9/30, 10/7, 10/14, 10/21, 10/28, 11/4, 11/13.
11 Lab Assignments – due by 3 PM	30%	8/28, 9/4, 9/11, 9/18, 9/25, 10/2, 10/9, 10/16, 10/23, 10/30, 11/6.
Comprehensive Take-Home Final Exam	20%	Due Monday, November 23 by 5 PM.

I will use plus/minus grading with 100-92=A, 91-90=A-, 89-88=B+, 87-82=B, 81-80=B-, 79-78=C+, 77-72=C, 71-70=C- 69-68=D+, 67-62=D, 61-60=D-, 59 and below=F.

Graduate Increment:

Students taking this course for graduate credit are required to complete a graduate increment. I will pass out a separate graduate increment assignment. The graduate increment does not change your grade but must be completed in order to earn a grade in this class.

Policies:

1. Late homework is penalized with a deduction of points reflecting the cost it imposes on me to grade it. Homework is considered late if I receive it after we have finished grading those assignments handed in on time. I waive the late penalty for excused absences, but you are still responsible for doing the homework. The take-home final will be penalized if turned in after the assignment deadline.
2. If my office hours conflict with your schedule, contact me for a Zoom appointment.
3. Although I do not take attendance, attending class regularly is important. If you miss class, parts of the class are recorded and will be made available to you. You may also e-mail me for a scan of the camera document notes.
4. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154. I will work with you and Disability Services to provide an appropriate modification. For more information, visit the Disability Services for Students website (https://www.umt.edu/disability-services/).
5. 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 (http://www.umt.edu/student-affairs/community-standards/). Academic dishonesty will result in a score of zero for the work in question and possible university sanctions.

6. The University sets deadlines for adding classes, dropping classes, changing grade options, and changing to or from audit status. These policies can be found at the Registrar's web page (https://www.umt.edu/registrar/Registration/default.php) while the actual dates for this term can be found on the Registrar's calendar (https://www.umt.edu/registrar/calendar/autumn-2020.php).
7. UM has a Cultural and Ceremonial Leave Policy which states: "Cultural or ceremonial leave allows excused absences for cultural, religious, and ceremonial purposes to meet the student's customs and traditions or to participate in related activities. To receive an authorized absence for a cultural, religious or ceremonial event the student or their advisor (proxy) must submit a formal written request to the instructor. This must include a brief description (with inclusive dates) of the cultural event or ceremony and the importance of the student's attendance or participation. Authorization for the absence is subject to approval by the instructor. Appeals may be made to the Chair, Dean or Provost. The excused absence or leave may not exceed five academic calendar days (not including weekends or holidays). Students remain responsible for completion or make-up of assignments as defined in the syllabus, at the discretion of the instructor."
8. University policy states "For undergraduates, a CR grade (credit) will be equivalent to a D- or better and an NCR grade (no credit) will be equivalent to an F." University rules require you to earn a grade of C- or better in order for the course to satisfy the requirements of a major.
9. As a courtesy to your classmates, please mute your microphones for the remote classes unless you are asking a question or contributing to discussion.
10. A classroom is a community, so I trust you will act as a mature and responsible citizen and treat each other with respect and courtesy. Please do not interfere with the learning of your classmates. I will remove you from the remote class if your behavior is disruptive or rude or is interfering with the learning of others in the class.
11. I will be recording the parts of classes and will make those recordings available to you via UM Box.
12. I will use a document camera to write out notes. Please e-mail me if you need a copy of the notes and I will scan them for you and e-mail them to you.

Calendar:

This schedule of topics is subject to modification. All changes will be announced in class.

Wk	Date	Topic	Labs	Assignments	Reading
1	8/17 8/19 8/21	*No class on 8/17* Overview R and RStudio			Wooldridge ch 1
2	8/24 8/26 8/28	R and RStudio Stat Review: Measures Stat Review : Properties	 Lab 1 due	Individual Zoom Individual Zoom Individual Zoom	
3	8/31 9/2 9/4	Regression: Notation Regression: Line Fitting Regression: Interpretation	 Lab 2 due	 Hmk 1 due	Wooldridge ch 2 Wooldridge ch 3
4	9/7 9/9 9/11	*Holiday* Regression: Assumptions Regression: Std errors	 Lab 3 due	 Hmk 2 due	
5	9/14 9/16 9/18	Regression: Multicollinearity Inference: F test Inference: Partial F test	 Lab 4 due	Individual Zoom Hmk 3 due Individual Zoom	Wooldridge ch 4
6	9/21 9/23 9/25	Inference: t test Inference: Linear combinations Further Issues: Slope and Elas.	 Lab 5 due	 Hmk 4 due	Wooldridge ch 6
7	9/28 9/30 10/2	Further Issues: Log models Further Issues: Quadratics Further Issues: Stdized betas	 Lab 6 due	 Hmk 5 due	
8	10/5 10/7 10/9	Qualitative Information: Basics Qualitative Information: Log Qualitative Information: Ext.	 Lab 7 due	 Hmk 6 due	Wooldridge 7.1-7.4
9	10/12 10/14 10/16	Heteroskedasticity: Detection Heteroskedasticity: Correction Specification: Misspecification	 Lab 8 due	 Hmk 7 due	Wooldridge 8.1-8.3 Woold 9.1, 9.2, 9.4 9.5
10	10/19 10/21 10/23	Specification: Proxy Data Issues: Outliers Time Series Issues: Models	 Lab 9 due	 Hmk 8 due	 Woold. 10.1-10.2, 10.5
11	10/26 10/28 10/30	Serial Correlation: Detection Serial Correlation: Correction Introduction to Logit	 Lab 10 due	 Hmk 9 due	Wooldridge 12.1-12.3 Wooldridge 17.1
12	11/2 11/4 11/6	Introduction to Logit Introduction to Logit Panel Methods: Intro	 Lab 11 due	 Hmk 10 due	 Wooldridge 13.1
13	11/9 11/11 11/13	Panel Methods: Fixed effects *Holiday* Endogeneity	 	 Hmk 11 due	Wooldridge 14.1 Wooldridge 15.1-15.3
14	11/16 11/18	IV Methods IV Methods			
15	11/23 (Mon)	Take-home Final Exam		Take-home Final Exam due Monday By 5 PM	