AEC 525: Applied Econometrics
Winter Term, 4 Credits

Location: Lectures –MW 10:00-11:20, TBD
Labs – F 10:00-10:50, Withycombe Hall 205

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Course Description:
General principles of applied econometric research are emphasized, including model building, data analysis, hypothesis testing, and evaluation and interpretation of results. A variety of estimators are applied to real data, including least squares, panel data, simultaneous equations, discrete choice, and limited dependent variable models.

Prerequisites: None

Objectives:
The Course objectives are:
• To increase the depth and breadth of students’ knowledge and understanding of applied econometric analysis;
• To cover the theory and practice of econometrics at a level appropriate for first year economics graduate students, with emphasis on applications and interpretation of results;
• To provide students with experience in analyzing different types of data;
• To enable students to conduct high quality applied econometric research;
• To enable students to critically evaluate econometric research of others; and
• To provide students with experience in effectively applying econometric models and tools using STATA software.

Learning Outcomes:
By the end of this course, students should be able to confidently solve a range of econometric modeling problems using techniques introduced through lectures and grounded in applications through class exercises and assignments. In particular, students will be able to:
• Define what constitutes good applied econometric practice;
• Identify appropriate econometric techniques for different data types and economic models;
• Critically evaluate applied econometric research;
• Solve problems that arise in applied research using real data; and
• Use STATA effectively for a range of econometric modeling problems.
Course Structure:
Lecture (90 minutes twice weekly) plus lab (50 minutes once weekly)

Evaluation of Student Performance:

Practice Sets: Approximately six practice sets will be assigned from computer exercises at the end of chapters in Wooldridge (2013). The practice sets provide you with opportunities to run a variety of regressions addressing numerous themes/questions. Answers to the practice sets are provided in the student manual that accompanies the textbook—we will not grade practice sets, but you must submit all of them to earn the full 20%. When submitting your practice sets, they should be formatted and include STATA or other statistical software code that you used. Unless stated otherwise, practice sets are due at the beginning of class on the Monday following the assignment. You may collaborate on the practice sets, but we encourage you to avoid free-rider issues.

Problem Sets: Four problem sets will be assigned throughout the term. The problem sets have you use STATA or other statistical software to manipulate data, estimate models, and test hypotheses. In your write-up, you are expected to present and interpret your results (answers) in a meaningful, concise, cogent and formatted manner. Each of you must submit an original and unique write-up (i.e., in your own words), even though we anticipate you will collaborate with others on these assignments.

Final Exam: The final exam will test your knowledge about the theory and application of econometric methods and practices including hypothesis testing based on the material covered in class, the textbook and other assigned readings. The exam may include essay, true-false, and multiple-choice questions, and data analysis.

Final exam scheduled:

Course Grading:

<table>
<thead>
<tr>
<th>Practice Sets (6 out of 6)</th>
<th>20%</th>
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<tbody>
<tr>
<td>Problem Sets (3)</td>
<td>60%</td>
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<tr>
<td>Final Exam (1)</td>
<td>20%</td>
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</tbody>
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Course Content (subject to change):

OLS (25%)
- Multiple regression
- Classical assumptions of linear regression and properties of OLS estimators
- Specification problems and solutions
- Tests, remedies and implications: serial correlation and heteroskedasticity
- Learning STATA program for regression analysis

Panel Data Models (15%)
- Pooling cross-sections across time
- Fixed and random effects estimation
- Panel data, fixed and random effects in STATA

Instrumental Variables, 2SLS and Simultaneous Equations Models (15%)
- Simultaneous equations and simultaneity bias
- Features of IV estimator
- 2SLS
- Testing for endogeneity/simultaneity and validity of IVs
- IV and 2SLS in STATA

Discrete Choice Models (20%)
- Linear probability model
- Probit and Logit
- Count data (Poisson and Negative Binomial)
- Logit and count data in STATA

Limited Dependent Variables Models (15%)
- Truncated and censored models
- Sample selection models
- Tobit and Heckman models in STATA

Special Topics (10%)
Textbook:


Optional:
Baum, Christopher F. 2006. An Introduction to Modern Econometrics Using Stata. Stata Press. ISBN 1597180130

Software:
STATA (available on the umbrella server through the virtual computer lab: http://oregonstate.edu/is/mediaservices/scf/virtual-lab), or other statistical software (possibly without support from us).

Statement Regarding Students with Disabilities
Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Student conduct policy
We will follow university guidelines for student conduct:
http://oregonstate.edu/admin/stucon/achon.htm