Course Description:
The goal of this course is to introduce students to applied econometrics: the use of statistical techniques to estimate and test economic relationships. Topics include multiple regression model, multicollinearity, and simultaneous equations. The applications and labs will focus on econometric analysis of real world problems pertaining to issues in environmental, food, and resource economics and policy.

Learning Objectives: Upon completion of this course you should understand:

1. The application and intuition behind multiple regression analysis applied to economic problems.
2. How to use Excel and/or the statistics software Stata for original research.
3. The challenges associated with testing causal hypotheses from observational data.
4. How econometric technique are used to inform food, agricultural, environmental and resource issues and policy.

Additional Learning Objectives for Graduate level credit:
1. How to design an econometric analysis including specification of framework and data needs
2. How applied econometric analysis contributes to design of public policies

Prerequisites:

AEC 311 and ST 351

Required readings:


Course Website:

The course website on Canvas will house documents such as the syllabus, homework assignments, and solutions, outside readings, review materials, solutions to exams, and any power point slides used in class. Check the website regularly.

Evaluation of Student Performance:

Performance is based on one mid-term exam, a final exam, a series of homework assignments, and class participation. The midterm and final exams each count for 25 percent of the grade. The homework assignments count, in total, for 40 percent of the grade, and class participation counts for 10 percent of the grade. Class participation means taking part in active learning, including class attendance, answering and asking questions in class, and working with your fellow students.

AEC 446

For students registered for AEC 446, evaluation of student learning has three components: in-class participation, completion of assignments, and a final examination. The material you are responsible for is contained largely in the readings, including the textbook and the assigned readings. The lecture notes contain a broad outline of most of the material in the texts and assigned readings, as well as providing some additional discussion of empirical work. You are also responsible for the information provided by in-class visitors and the field trip.

Assignments: On Canvas, the instructor/TA will post assignments with a due date and time. The assignments relate to class material and students should work cooperatively in developing answers. However, each student to deliver an individual answer. Late assignments will receive a maximum of 75 percent of the assignment value.

Exams: There will be a mid term and a final examination. The examinations will be a mixture of choice/response, short essay, and analytical questions. I take questions from the textbooks, assignments, readings, and the lectures. Following OSU’s Academic Regulations, the final examination will be given at the time assigned for this class, as listed in the Schedule of Classes. Students must take the final examination and the result must be part of the final grade determination.

Class participation: I expect and require in-class participation, including participation in active learning activities, class discussions, and attendance. At random times during the term I will take attendance and your presence will be part of your in-class participation evaluation. I also ask that you submit a self-evaluation of your participation and engagement with the class material. The self-evaluation form will be available on Canvass. Due dates for self-evaluations are TBD.

AEC 546

For students registered for AEC 546, evaluation of student learning has the four components listed for AEC 446 plus an additional required report. The report will be a review of an existing econometric study that pertains to an Oregon environmental food, or resource issue. The report will cover the following:
o A critique of the econometric approach and results;
o Discussion of data and ways to improve the analysis; and
o Interview(s) with policy makers and/or stakeholders about the usefulness of this
econometric analysis.

Grades will be assigned on the following basis.

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<tr>
<th>Percentage Range</th>
<th>Grade</th>
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<tr>
<td>100-95%</td>
<td>A</td>
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<td>94-90%</td>
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<td>89-85%</td>
<td>B+</td>
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<td>84-80%</td>
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<td>79-75%</td>
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<td>59-50%</td>
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<td>below 50%</td>
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Graded materials will have the following weights on your final grade:

- Midterm examination: 25%
- Final examination: 25%
- Assignments: 40%
- In-class participation: 10%

**Students with Disabilities:**

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

**Academic Honesty:**

If you violate academic honesty in my course, you will receive an F on the work in question and/or in the class. “Academic or Scholarly Dishonesty is defined as an act of deception in which a Student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another.” Violations include: Cheating, Fabrication, Assisting, Tampering, and Plagiarism. The full OSU Statement of Expectations for Student Conduct is available at: http://oregonstate.edu/studentconduct/offenses-0

**Expectations:**

All students are expected to attend every class having done all required reading in advance and prepared to participate in class. In return, students can expect the instructor to be prepared and organized, open to class discussions and innovative ideas, and fair in evaluating performance.
Feedback:

The instructor welcomes your feedback on the course at any time during the term. Feel free to send email or drop by office hours, etc. Your input is essential to make necessary adjustments in the current course and to improve the course in the future.

Tentative Class Schedule

Week 1: Introduction to empirical economic analysis and review of basic statistics

- Monday January 4: Introduction – types of economic data, causality (Ch. 1)
- Wednesday January 6: Basic probability and statistics review (Appendices A,B, & C)
- Wednesday January 6: First reading of I and T.
- Friday January 8: Computer lab session: Intro to Stata and basic statistics. Work on Assignment 1.

Week 2: The simple regression model

- Monday January 11: Simple (one-variable) regression (Ch. 2)
- Wednesday January 13: Simple (one-variable) regression (Ch. 2)
- Friday January 15: Computer lab session – Simple regression analysis

Week 3: Multiple regression estimation and inference

- Monday January 18: Martin Luther King Day—No class.
- Wednesday January 20: Multiple regression (Ch. 3)
- Friday January 23: Computer lab session—Multiple regression.

Week 4: Multiple Regression

- Monday January 25: Multiple Regression (Ch. 3)
- Wednesday January 27: Multiple Regression (Ch. 3)
- Wednesday January 27: First reading of L and B.
- Friday January 29: Computer lab session—multiple regression.

Week 5: Review and midterm

- Monday February 1: Review session
- Wednesday February 3: Midterm examination
- Friday February 5: Computer lab session—catchup and explore Ihlandfeldt and Taylor data set
Week 6: Multiple regression, inference, and reporting results

- Monday February 8: Multiple Regression Analysis: Inference (Ch. 4)
- Wednesday February 10: Multiple Regression Analysis: Inference and Reporting Results (Ch. 4)
- Friday February 12: Computer lab session: Inference and initial estimates of Ihlandfeldt and Taylor regressions.

Week 7: Further issues in multiple regression analysis

- Monday February 15: Multiple regression analysis: further issues (Ch. 6)
- Wednesday February 17: Multiple regression analysis: further issues (Ch. 6)
- Friday February 19: Computer lab session: further issues

End of Week 7: is the last day to withdraw from class with W transcript record.

Week 8: Heteroskedasticity

- Monday February 22: Heteroskedasticity (Ch. 8).
- Wednesday February 24: Heteroskedasticity (Ch. 8)
- Wednesday February 24: Second reading of Leggett and Bockstael
- Friday February 26: Computer lab session: Heteroskedasticity and follow-up Ihlandfeldt and Taylor regressions.

Week 9: More on Specification and Data Issues

- Monday February 29: Specification and data issues (Ch. 9)
- Wednesday March 2: Specification and data issues (Ch. 9)
- Friday March 4: Computer lab session: specification and data issues

Week 10: Wrap-up and review

- Monday March 7: Third reading of Leggett and Bockstael and comparison to Ihlandfeldt and Taylor
- Wednesday March 9: Final review
- Friday March 11: Computer lab session: final estimates of completed estimates of Ihlandfeldt and Taylor regressions.

Week 11: Final examination TBD. This date is determined by OSU’s Registrar and cannot be altered.