ECONOMICS 427
INTRODUCTION TO ECONOMETRICS WITH CALCULUS
OREGON STATE UNIVERSITY
CORVALLIS
WINTER 2020

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Office Hours:
M/W: 12:30PM–1:30PM

Course Description: Application of statistical techniques, including sampling theory, hypothesis testing, and multiple regression analysis, to economic models. Economic modeling, analysis of economic data, and policy analysis are emphasized.

Learning Outcomes: By the end of the course, students should be able to:

- Explain the fundamental theory underlying regression analysis (that is, what it is and why we use it)
- Identify the major properties of the ordinary least squares regression estimator
- Estimate economic relationships by applying regression analysis to data
- Test economic hypotheses
- Interpret and analyze regression estimates
- Make predictions about economic phenomena using regression analysis

Prerequisites: The prerequisites for this course are ST 351 or ECON 423 and ECON 311, ECON 411 or ECON 507.

Canvas: All announcements, assignments, course materials, and grades will be will be posted on Canvas (canvas.oregonstate.edu). This is the official website for the course, and you will be responsible for any and all information that is posted there. Therefore if you have any difficulties accessing Canvas it is imperative that you resolve them as quickly as possible by contacting the Canvas support at canvas@oregonstate.edu.

Piazza: Questions regarding the course material or general questions about the course should be posted on Piazza, which can be accessed through Canvas. Piazza allows for both private and public posts, though I encourage most questions to be posted publicly so everyone in the course can

benefit from the answers. Questions can also be posted anonymously. Anyone can post questions or offer answers on this forum.

You will need to sign up for Piazza by clicking the link on the Canvas homepage.

Course Materials: There is no required textbook for this course. However, it is strongly recommended that you purchase a recent edition of some econometrics textbook for reference. Below is a partial list of recommended textbooks. Older and "international" editions are generally sufficient.

- Wooldridge: *Introductory Econometrics: A Modern Approach.* (The course will roughly follow this text).
- Stock and Watson: *Introduction to Econometrics.*
- Dougherty: *Introduction to Econometrics.*
- Hill, Griffiths, and Lim: *Principles of Econometrics.*

RStudio: We will make extensive use of the statistical software RStudio. This is a very commonly used language in social science, government, and private industry.

You can install RStudio free of charge on your own computer. Alternatively, you can access RStudio for free through the Oregon State University Citrix application:

`https://it.engineering.oregonstate.edu/citrix`

More detailed instructions on downloading and using RStudio will be made available on Canvas.

Homework: There will be weekly homework assignments to be completed on Canvas. Each problem set will consist of roughly 10 questions. Each assignment will be due on Sunday evening at midnight (Pacific time). You are encouraged to work together (via Piazza), though each student must complete and submit the problem sets on their own.

Exams: There are two exams during this class, a midterm and a cumulative final. The midterm will need to be completed during week 6, and the final during week 11.

Grades: Your grade will be calculated based on the following weights:

Homework:	50%
Midterm:	20%
Final:	30%

The *minimum* letter grade that you will receive based on your weighted total of points earned is given below:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-
93	90	87	83	80	77	73	70	67	63	60

Statement Regarding 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.

Student Conduct: You are expected to adhere to the university's Code of Student Conduct, which is available at the following website:

`http://studentlife.oregonstate.edu/sites/studentlife.oregonstate.edu/files/code_of_student_conduct.pdf`

At a minimum, any incidence of academic misconduct (as defined by the above code) will result in a grade of "F" for the course.

Course Outline: All chapters and sections refer to the 5th edition of the Wooldridge text.

Week	Subject
Week 1	Statistics review Appendix B-C
Week 2	Simple regression Chpt 2
Week 3	Multiple regression Chpt 3
Week 4	Multiple regression, inference Chpt 4
Week 5	Asymptotics Chpt 5
Week 6	Functional form (Midterm Exam) Chpt 6
Week 7	Categorical variables Chpt 7
Week 8	Heteroskedasticity Chpt 8
Week 9	Data and specification Chpt 9
Week 10	Applications