

AAE 636 APPLIED ECONOMETRIC ANALYSIS I (FALL 2017)
LECTURE – TUES/THURS 1-2:15PM: BABCOCK HALL 121
DISCUSSION – FRI 9AM – 10AM: ENGINEERING HALL 2309

INSTRUCTOR

Prof. Daniel J. Phaneuf (pronounced *fa-neff*)

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Office Hours: Tuesday 11am – noon, Thursday 2:30pm – 3:30pm, and by appointment.

Ms. Zhidong Chen (TA)

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Office Hours: Monday 3pm – 5pm, and by appointment.

CAPSULE STATEMENT

This course will introduce the basic econometric methods associated with linear models. Students will become familiar with the technical aspects of linear regression and statistical inference, and will learn how these methods are used for contemporary applied research. The course will function both as a stand-alone introduction to linear models and a point of departure for studying more advanced techniques.

LEARNING OBJECTIVES

Our examination of the linear model will focus on the conceptual properties of estimators, the use of software packages such as Stata and R to estimate linear models, and understanding how linear models can help us distinguish between associative and causal relationships between variables. Students will obtain working knowledge of ordinary least squares, instrumental variables, and some panel models; they will also learn how to gauge the appropriateness of different model assumptions for different types of applied problems. More generally, students will learn how to both recover and critically evaluate estimates from linear models

PREREQUISITES

Students should have completed undergraduate courses in derivative calculus and intermediate microeconomics, and an upper level statistics course. Computer programming skills are not necessary, but students should be comfortable with basic computer usage as well as the manipulation of data in Excel. We will be learning and making use of the analysis software packages Stata and/or R, and so students should arrange access to these programs on their personal machines or in university computer labs.

TEXTBOOKS AND SOFTWARE

I will assign readings out of the following books:

Wooldridge, Jeffrey, 2013. *Introductory Economics: A Modern Approach*, 5th edition, South-Western (W).

Angrist, J. and J. Pischke, 2009. *Mostly Harmless Econometrics*, Princeton University Press (AP).

For reference, I also find the following book useful:

Cameron and Trivedi, 2010. *Microeconometrics Using Stata*, revised edition, Stata Press.

The course will include several applied homework assignments. I will provide instruction and assistance in Stata, and Zhidong will be responsible for doing so in R.

COURSE REQUIREMENTS

Your course grade will be based on your performance on two midterms and one final exam, as well as several homework assignments. The percentages are as follows:

Midterm Exams	40 percent (20 percent each)
Cumulative Final Exam	30 percent
Homework Assignments	30 percent

The following are *tentative* dates for the midterm exams, and a *firm* date for the final exam:

Exam 1 – Tuesday 10 October
Exam 2 – Tuesday 14 November
Final Exam – Monday 18 December 2:45pm

Homework assignment will include a mixture of analytical and applied exercises; I expect there will be ~7-8 assignments.

GRADING

I will determine your grades based on the following percentages, which will arise from the numerical scores I assign to each of the components:

$\geq 93\%$	A
$< 93\% \ \& \ \geq 88\%$	AB
$< 88\% \ \& \ \geq 83\%$	B
$< 83\% \ \& \ \geq 78\%$	BC
$< 78\% \ \& \ \geq 70\%$	C
$< 70\% \ \& \ \geq 60\%$	D
$< 59\%$	F

CLASS FORMAT

Most of the class time will be lecture-based, but I want to encourage your active participation. Please ask questions and respond to my queries! I will also design classroom exercises to get you actively engaged in discussing the material. Please plan to participate.

I will use a combination of handouts and board presentations. Any needed handouts will be posted by 8am the day of the lecture, so please plan to check the Learn@UW site for material. In general I will use the Desire2Learn site for posting materials and emailing information, so you should plan to interact with the site regularly. I will also use the Piazza Q&A platform for correspondence and online interactions.

Friday AM labs will be scheduled most (but not all) weeks. Zhidong will usually lead these; activities might include going over homework assignments, discussions on using R or Stata, and reviewing. Details on these will be forthcoming. *On some occasions I will use the labs for makeup lectures – I travel somewhat frequently and may need to cancel a handful of scheduled classes.*

OUTLINE OF TOPICS, READINGS, AND APPROXIMATE TIMING

<u>Topic</u>	<u>Reading</u>	<u>Week</u>
Introduction	W 1; AP 1, 2	1
Random variables	W appendix B	1, 2
Mathematical statistics	W appendix C	2, 3
Simple linear regression model	W 2; AP 3.1.1, 3.1.2	3, 4, 5
Multiple linear regression:		
Estimation	W 3; AP 3.2	5, 6
Inference	W 4, 5; AP 3.1.3	7, 8
Binary variables	W 7; AP 3.1.4, 3.4.2	9, 10
Robust and cluster robust standard errors	W 8, AP 8.2.1, TBA	11, 12
Miscellaneous topics	W 9.4; TBA	12, 13
Panel data models		
Basic panel models	W 13; AP pp. 221-233	12, 13
Advanced panel models	W 14	14
Instrumental variables	W 15; AP pp. 113-127	15, 16