

UNIVERSITY OF CALGARY
DEPARTMENT OF ECONOMICS

ECONOMICS 715
ADVANCED ECONOMETRICS III:
TOPICS IN APPLIED MICROECONOMETRICS

1 COURSE INFORMATION.

Instructor.	Chris Auld auld@ucalgary.ca 403.220.4098 Social Science tower room 436
Homepage.	http://jerry.ss.ucalgary.ca/e715.html
Course Hours.	3 lecture hours per week, plus occasional tutorials
Course location:	SS403, Tuesdays and Thursdays 4:00–5:30.
Office hours:	SS436, Tuesdays and Thursdays, 2:00–3:30.

2 COURSE DESCRIPTION.

This course surveys selected topics in modern applied microeconometrics. Some of the lectures will draw on material from the required textbook. The text material will be heavily supplemented with journal articles. Topics will include recent developments in instrumental variables methods, heterogeneous causal effects, methods for panel data, and resampling methods. We will frequently demonstrate methods using Stata 10 in the lecture room and discuss journal articles, so bringing a laptop computer to class will often be helpful.

3 REQUIREMENTS.

The student is expected to be sufficiently comfortable with mathematical, economic, and econometric concepts to do well in a course such as Economics 615 (introductory graduate econometrics). Familiarity with *Stata* is expected and knowledge of other programming languages may be useful.

4 TEXTBOOKS.

Wooldridge's *Econometric analysis of cross section and panel data* is required. Recommended supplementary texts include,

- Davidson and MacKinnon (1993) *Estimation and inference in econometrics*.
- Davidson and MacKinnon (2004) *Econometric theory and methods*.
- Greene, *Econometric Analysis*.
- Stock and Watson, *Introduction to Econometrics*

5 EVALUATION.

Course evaluation is as follows.

midterm examination	25
final examination	50
assignments	25

You must pass the final examination to receive a passing grade in the course. The research project is due on the last day of Fall session classes, Friday, December 8. The instructor reserves the right to change the date of the midterm.

The research project, midterm and final exams are marked on a numerical basis. The course grade is then calculated using the weights indicated above. As a guide to determining standing, these letter grade equivalences will generally apply:

A+	95-100	A	87-94	A-	80-86	B+	75-79	B	65-74
B-	55-64	C+	50-54	C	45-49	D	40-44	F	< 40

If, for some reason, the distribution of grades determined using the aforementioned conversion chart appears to be abnormal the instructor reserves the right to change the grade conversion chart if the instructor, at the instructor's discretion, feels it is necessary to more fairly represent student achievement.

Non-programmable calculators will NOT be allowed during the writing of tests or final examinations.

There will be a Department scheduled final examination, lasting 3 hours.

6 ASSIGNMENTS.

At least three assignments will be given during the course. These assignments will focus on simulation of econometric models and on estimation using real-world data. If you are auditing the course, I ask that you nonetheless complete the assignments.

7 REQUIRED AND RECOMMENDED MATERIALS.

7.1 SOFTWARE.

We will make extensive use of the statistical software Stata. Version 8 or later should be adequate for our purposes. You may wish to purchase Stata. To order Stata, follow this link:

<http://www.stata.com/order/new/edu/gradplans/gp2-order.html>.

Do not purchase “small” Stata as its limitations render it inadequate for our purposes. Purchase Stata SE or better.

8 OUTLINE.

1. . (Mostly) Review: the linear model.

- conditional moments
- estimation: by moments, by least squares, by maximum likelihood
- small sample properties
- large sample properties, including review of LLN and CLT
- GLS, robust covariance estimators, heteroskedasticity, serial correlation, clustering
- classical hypothesis testing and related controversy

- *Text: chapters 1, 2, 3, 4.*

2. Instrumental variables: classical results

- Notions of causality in econometrics and other disciplines.
- Statistical implications of endogeneity.
- The IV estimator, indirect least squares and GMM derivations.
- Small and large sample properties.

- Identification.
- Weak instruments.
- Testing overidentifying restrictions.
- Comparison with control function approaches
- Comparison with methods based on the propensity score
- *Text: chapters 5 and 8.*

3. **Methods for limited dependent variables.**

- Estimation by maximum likelihood.
- Computational issues in numerical optimization.
- Linear probability, probit, and semiparametric binary response models.
- Models for censored data.
- Models for ordered data.
- Models for multinomial data.
- Identification in simultaneous nonlinear models.
- *Text: chapters 15 and 16.*

4. **Treatment and selection.**

- Dummy endogenous variables and selected samples.
- Control function and IV approaches.
- Propensity score matching.
- *Text: chapter 17.*

5. **The Neyman-Rubin Causal model.**

- Implications of parameter instability for OLS.
- Interpretation of IV estimates in presence of parameter instability.
- Local instrumental variables.
- The Roy model and its generalization.
- Estimation.
- *Text: chapter 18.*

6. **Methods for panel data.**

- OLS and panel data.
- Random effects and fixed effects, Mundlack's method.
- First and long differencing.
- Measurement error and panel methods.
- IV panel methods.

- *Text: chapter 10.*

7. **Semiparametric and nonparametric models.**

- Kernel density estimation.
- Nonparametric regression.
- Semiparametric estimation of selection and treatment effect models.

8. **Miscellaneous topics (time permitting).**

- Quantile regression.
- The bootstrap and other resampling methods.
- Regression discontinuity designs.

9 NOTES.

Students seeking reappraisal of a piece of graded term work (term paper, etc.) should discuss their work with the Instructor within fifteen days of the work being returned to the class.

It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.

Safewalk / Campus Security: 220-5333
