

UNIVERSITY OF CALGARY  
DEPARTMENT OF ECONOMICS  
ECONOMICS 615  
ADVANCED ECONOMETRICS I

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INSTRUCTOR:	Eugene Choo SS446, Ph: 210 9490, email: echoo@ucalgary.ca
OFFICE HOURS:	Mon and Wed, 3-4pm
CLASS WEBSITE:	Blackboard
INSTRUCTION:	SS423, Monday and Wednesday, 12.30 - 1.45pm Note that Midterms are on Fridays 12.30pm.

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- PREREQUISITES:

Mathematical statistics or econometrics at the undergraduate level, a course in linear algebra, and a course in multivariate calculus. Or instructors consent. Linear algebra and multivariate calculus will be used frequently. Knowledge of statistical distribution theory and inference is essential.

- COURSE DESCRIPTION :

This is an graduate econometrics course intended to provide a foundation of econometric theory relevant for carrying out empirical work in economics. The course will cover the linear regression model, nonlinear estimation techniques like generalised method of moments and maximum likelihood, simple panel data models, binary choice models and time series models.

- TEXT :

The textbook for this course is:

*Microeconometrics: Methods and Applications* A. Colin Cameron , Pravin K. Trivedi (Cambridge University Press) (2005)

Other references you may find useful include:

- *Mostly Harmless Econometrics* Angrist, J., and S. Pischke (Princeton University Press) (2008)
- Wooldridge, *Econometric Analysis of Cross Section and Panel Data*. - a modern graduate level text with good expositions on non-time series topics. Somewhat advanced for our purposes, but an excellent reference.

- Kennedy, *A Guide to Econometrics*. Non-technical discussion of many concepts. A good companion to any of the graduate level texts above.
- Greene, *Econometric Analysis* - a standard graduate level text which is quite comprehensive. It contains particularly good exposition on maximum likelihood and limited dependent variable models.

- **GRADE DETERMINATION AND FINAL EXAMINATION DETAILS:**

2 midterms (@ 15% each)	30%
≥ 5 problem sets	20%
Final	50 %

- Your grade will be based on two midterm exams (30% each), a final exam (50%) and assignments (20%). There will be problem sets every two weeks or so. These will involve both theoretical calculations and computer exercises in which you will be asked to analyze data sets. You can use any computer package you wish to use. Solutions will be handed out written in Matlab. Although each person must turn in their own assignment, you are encouraged to work together. I strongly recommend that you take the time to work through and understand the problem sets.
- Exams will be of a similar nature. Late work will not be accepted; there will be no make-up or deferred exams. Letter grades will follow the letter grades equivalences below. I reserve the right to modify these equivalences as necessary.
- Exams are marked on a numerical basis, then converted to letter grades. As a guide to determining standing, these letter grade equivalences will generally apply:

A+	97-100	A	93-96	A-	90-92	B+	87-89	B	83-86
B-	80-82	C+	77-79	C	73-76	C	70-72	D+	67-69
D	60-66	F	< 59						

A passing grade on any particular component of the course is not required for a student to pass the course as a whole. Non-programmable calculators will be allowed during the writing of tests or final examinations.

- There will be a scheduled final examination, lasting 3 hours. Tests and exams will not involve multiple choice questions. 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.

**Notes:**

- Students seeking reappraisal of a piece of graded term work (term paper, essay, 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 403-220-8237. 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: 403-220-5333

Emergency Assembly Point: Professional Faculties Food Court

## COURSE OUTLINE :

- Least Squares Methods (3)
  - C&T Chp 4.
- Bootstrap Methods (3)
  - Variance Estimation, and Clustering
  - C&T Chp 11.
- Likelihood Methods (5)
  - Basics, consistency, asymptotic normality and efficiency.
  - C&T Chp 5.
  - Practical considerations, computational issues.
  - C&T Chp 10.
- Classical Hypothesis Testing (3)
  - C&T Chp 7 and 8.
- Discrete Choice Models (4)
  - Binary, Multinomial, Ordered Choice Models, Nested Logit Models
  - C&T Chp 14 and 15.
  - Random coefficient Logit Models - Classical Estimation
  - Berry, S., J. Levinsohn, and A. Pakes, (1995), "Automobile Prices in Market Equilibrium, *Econometrica*, Vol. 63, 841-890.
- Generalized Method of Moments and Empirical Likelihood (4)
  - C&T Chp 6.
- Panel Data and Differences in Differences Methods (4) - Basic Ideas
  - C&T Chp 21 and 22.
- If time permits, we might also cover simulation based estimation, semiparametric methods, estimation of average treatment effects.