

## Economics 669(01) Empirical Industrial Organization

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Lecture Location: SS 423  
Lecture Days/Time: MW 11:00 – 12:15

Office: SS 446  
Office Hours: MW 13:45 – 14:30

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### Course Description

This is a graduate level topics class in empirical industrial organization. The material covered in this term relates largely to firm behavior in oligopolistic markets, as well as consumer and firm behavior in environments with asymmetric information. There will be an emphasis on empirical (data-related) work, although theoretical work will also be presented and discussed, with a view towards motivating (1) how theory can be tested; (2) how theoretical models can be adapted into empirical models, in order to estimate theoretically important parameters.

This course assumes that students have taken an undergraduate course in econometrics and are familiar with regression analysis, elementary statistics and matrix algebra.

### Course Objectives/Learning Outcomes

The aim of this course is to introduce students to a set of techniques used the structural modeling and estimation of models in behavioral economics. We will discuss specification of preferences and constraints, profit functions for firms and different ways to incorporating unobserved heterogeneity. We also look at the identification of model parameters using non-experimental data, as well as performing counterfactual experiments.

### Prerequisites/corequisites

Admission to the Master of Arts Economics program.

### Required Textbook(s)

Various topics will be covered with assigned papers. The papers to be covered are listed at the end of this outline and will also be uploaded on D2L. We will also use a (work in progress) book by Victor Aguirregabiria entitled “*Empirical Industrial Organization: Models, Methods and Applications*,” as class notes. A link to this book will be provided in class.

### Course Requirements/Assessments:

#### Software

Assessment in the form of 5 problem sets will mean that students will have a first hand experience working with data. As such students will have to learn and use a statistical software package. You are

free to use whatever package you wish (such as Matlab, Gauss or Stata.). Both Matlab and Stata are available in the Tri-Faculty Lab in the basement of the Social Science Building.

**Desire2Learn** This course will make use of the Desire2Learn (D2L) platform. Students who are registered in the course can log on at <http://d2l.ucalgary.ca> through their student centre. Please note that D2L features a class e-mail list that may be used to distribute course-related information. These e-mails go to your University of Calgary e-mail addresses only.

### Grade Determination and Final Examination Details

Department of Economics Criteria for Letter Grades. Economics professors use the following criteria when assigning letter grades:

Grade	Grade Point Value	Description		Grade	Grade Point Value	Description
A+	4.00	Outstanding		C+	2.30	All grades below "B-" are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements. Individual programs may require a higher passing grade.
A	4.00	Excellent-superior performance, showing-comprehensive understanding of subject matter		C	2.00	
A-	3.70	Very good performance		C-	1.70	
B+	3.30	Good performance		D+	1.00	
B	3.00	Satisfactory performance		D	1.00	
B-	2.70	Minimum pass for students in the Faculty of Graduate Studies		F	0	

### Evaluation:

There will be 5 problem sets, each worth 12% of the final grade and a final exam worth 40%. The course grade is calculated using the weights indicated above. As a guide to determining standing, these letter grade equivalences will generally apply:

A+	95 – 100	B	73 – 76	C-	60 – 62
A	85 – 94	B-	70 – 72	D+	56 – 59
A-	80 – 84	C+	67 – 69	D	50 – 55
B+	77 – 79	C	63 – 66	F	0 – 49

Final exam is marked on a numerical (percentage) basis, then converted to letter grades. The course grade is then calculated using the weights indicated above.

A passing grade on any particular component of the course is not required for a student to pass the course as a whole.

There will be a Registrar scheduled final examination, held in a classroom, lasting 2 hours. Non-programmable calculators WILL be allowed during the writing of tests or final examinations.

Tests and exams WILL NOT involve multiple choice questions.

### **Reappraisal of Grades**

**For reappraisal of graded term work, see Calendar I.2**

<http://www.ucalgary.ca/pubs/calendar/current/i-2.html>

**For reappraisal of final grade, see Calendar I.3**

<http://www.ucalgary.ca/pubs/calendar/current/i-3.html>

A student who feels that a piece of graded term work (e.g., term paper, essay, test) has been unfairly graded, may have the work re-graded as follows. The student shall discuss the work with the instructor within 15 days of being notified about the mark or of the item's return to the class; no reappraisal of term work is permitted after the 15 days. If not satisfied, the student shall immediately take the matter to the Head of the department offering the course, who will arrange for a reassessment of the work within the next 15 days. The reappraisal of term work may cause the grade to be raised, lowered, or to remain the same. If the student is not satisfied with the decision and wishes to appeal, the student shall address a letter of appeal to the Dean of the faculty offering the course within 15 days of the unfavourable decision. In the letter, the student must clearly and fully state the decision being appealed, the grounds for appeal, and the remedies being sought, along with any special circumstances that warrant an appeal of the reappraisal. The student should include as much written documentation as possible.

### **Plagiarism and Other Academic Misconduct**

Intellectual honesty is the cornerstone of the development and acquisition of knowledge and requires that the contribution of others be acknowledged. Consequently, plagiarism or cheating on any assignment is regarded as an extremely serious academic offense. Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Students should examine sections of the University Calendar that present a Statement of Intellectual Honesty and definitions and penalties associated with Plagiarism/Cheating/Other Academic Misconduct,

<http://www.ucalgayr.ca/pubs/calendar/current/k.html>

### **Academic Accommodation**

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit [www.ucalgary.ca/access/](http://www.ucalgary.ca/access/).

Students who require an accommodation in relation to their coursework based on a protected ground

other than disability should communicate this need in writing to their Instructor. The full policy on Student Accommodations is available at [www.ucalgary.ca/policies/files/policies/student-accommodation-policy\\_0.pdf](http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy_0.pdf)

**Absence from Final Exam**

If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred exam [www.ucalgary.ca/registrar/exams/deferred\\_final](http://www.ucalgary.ca/registrar/exams/deferred_final) Under no circumstance will this be accommodated by the department.

**Important Dates**

Please check: <http://www.ucalgary.ca/pubs/calendar/current/academic-schedule.html>

Faculty of Grad Studies website: <http://grad.ucalgary.ca/home>

Graduate Students Association: <http://gsa.ucalgary.ca/>

Professional Development for Grad Students

Workshops and resources can be found at <http://www.ucalgary.ca/mygradskills/>

Economics Graduate Association: <http://econ.ucalgary.ca/ega/>

**Evacuation Assembly Point**

In case of an emergency evacuation during class, students must gather at the designated assembly point nearest to the classroom. The list of assembly points is found at [www.ucalgary.ca/emergencyplan/assemblypoints](http://www.ucalgary.ca/emergencyplan/assemblypoints)

Please check this website and note the nearest assembly point for this course

**Safewalk**

The safewalk program provides volunteers to walk students safely to their destination anywhere on campus. This service is free and available 24 hrs/day, 365 days a year.

**Call 403-220-5333**

**Course Syllabus**

(\* papers are required readings)

**1. Static Demand and Supply - Oligopolistic Differentiated Markets (2-3 weeks)**

- \*VA Notes: Chapter 1 and 3
- \*Bresnahan, T., (1987): "Competition and Collusion in the American Automobile Oligopoly: The 1955 Price War", *Journal of Industrial Economics*, pp. 457-482.
- \*Berry, S. (1994); "Estimating Discrete Choice Models of Product Differentiation", *RAND*, pp. 242-262.
- \*Berry, S., J. Levinsohn, A. Pakes (1995): "Automobile Prices in Market Equilibrium", *Econometrica*, Vol. 63, No. 4, pp. 841-90.
- Rosen, S., (1974): "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition", *Journal of Political Economy*, pp. 34-55.
- \*Petrin, A., (2002): "Quantifying the Benefits of New Products: The case of Minivan" *Journal of Political Economy*, 110(4) pp. 705-29
- \*Hausman, J., G. Leonard, and J. D. Zona, Competitive Analysis with Differentiated Products, *Annales d'Economie et de Statistique* 34, 1994, 159-180
- M. Trajtenberg, (1999) The Welfare Analysis of Product Innovations, with an Application to Computed Tomography Scanners", *Journal of Political Economy*, 444-79.
- Hausman, J. (1997): "The Valuation of New Goods Under Perfect and Imperfect Information" in T. Bresnahan and R. Gordon (editors) *The Economics of New Products*, 1999, University of Chicago Press.

**2. Production and Technological Change (2 weeks)**

- \*VA Notes: Chapter 2
- \*Olley, S., A. Pakes (1996): "The Dynamics of Productivity in the Telecommunications Equipment Industry", *Econometrica*, 1263-1297.
- \*Akerberg, D., Caves, K., and Frazer, G. "Identification Properties of Recent Production Function Estimators", *Econometrica*, 2015, Vol 83, No 6, November 2015, pp 2411-2451
- Benkard, L. (2001): "Learning and Forgetting: The Dynamics of Commercial Aircraft Production", *AER*, 90(4), 1034-54.
- Bresnahan, T. F., M. Trajtenberg (1995): "General Purpose Technologies: Engines of Growth?" *Journal of Econometrics* 65, 83-108.
- Bresnahan, T. F., S. Stern, and M. Trajtenberg (1997): "Market Segmentation and the Sources of Rents from Innovation: Personal Computers in the Late 1980s," *RAND*, 28(0), 17-44.

**3. Discrete Games: Static Models of Entry and Exit (2 weeks)**

- \*VA Notes: Chapter 5
- \*Bresnahan, T., P. Reiss, (1991): "Entry and Competition in Concentrated Markets", *Journal of Political Economy*,
- \*Mazzeo, M., (2002): "Product Choice and Oligopoly Market Structure" *RAND Journal of Economics*, 33(2), 221-242.
- \*Berry, S., (1992): "Estimation of a model of Entry in the Airline Industry", *Econometrica*, 60(4), 889-917.
- \*Seim, Katja (2006). "An Empirical Model of Firm Entry with Endogenous Product-Type Choices," *RAND Journal of Economics* 37(3), 2006.

**4. Single Agent Dynamic Behavior (2 weeks)**

- \*VA Notes: Chapter 6 and 7
- Stokey, Lucas and Prescott, Chapter 5.
- \*Pakes, A., (1986): "Patents as Options: Some Estimates of the Value of Holding European Patent Stocks", *Econometrica*, 54(4), 755-84.
- \*Rust, J., (1987): "Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher", *Econometrica*, 55(5), 999-1033.
- \*Hotz, J. and R. Miller (1993). "Conditional choice Probabilities and the estimation of Dynamic Models," *Review of Economic Studies* 60, 497-529.
- Aguirregabiria, V., (1999): "The Dynamics of Markups and Inventories in Retail Firms", *Review of Economic Studies*, 66(2), 275-308.

**5. Empirical Models of Matching (2 week)**

- \*Morten Sorensen, "How Smart is Smart Money: An Empirical Two-Sided Matching Model of Venture Capital" *The Journal of Finance* Volume 62, Issue 6, pages 2725-2762, December 2007
- \*Choo, E. and Siow, A. "Who Marries Whom and Why," *Journal of Political Economy* 2006.
- Matthew Shum, Federico Echenique, SangMok Lee, and M. Bumin Yenmez, "The Revealed Preference Theory of Stable and Extremal Stable Matchings" *Econometrica*, Vol. 81, pp. 153-171 (January 2013).
- \*Konrad Menzel(2015), Large Matching Markets as Two-Sided Demand Systems, *Econometrica* 83(3) (2015), 897-941
- Yu-Wei Hsieh, "Understanding Mate Preferences from Two-Sided Matching Markets: Identification, Estimation and Policy Analysis" UCSD mimeo
- \_ Jeremy T. Fox, "Estimating Matching Games With Endogenous Prices," mimeo University of Chicago, available at [http://home.uchicago.edu/\\_fox/fox\\_matching.pdf](http://home.uchicago.edu/_fox/fox_matching.pdf).
- Hitsch, Guenter, and Ali Hortacsu and Dan Ariely) "Matching and Sorting in Online Dating," *American Economic Review* , 100(1), March 2010.