UNIVERSITY of HOUSTON

Empirical Industrial Organization

Spring Semester 2021
Tuesday-Thursday: 11:30 AM - 1:00 PM
Online Zoom classes
(link will be emailed to registered students)

Contact information

Instructor:
Prof. Andrea Szabo
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Office hours: You can schedule an appointment at:
http://www.uh.edu/~aszabo2/appointments.htm

Course Description

This course is being offered in the Synchronous Online format. Synchronous online class meetings will take place according to the class schedule. There is no face-to-face component to this course.

This course provides a graduate-level introduction to empirical industrial organization, both in terms of techniques and applications. We will discuss leading papers in the field of empirical IO covering the estimation of several models and their applications. This class differs somewhat from the courses offered under the same class number in previous years.

1. Models of product differentiation.
We estimate demand systems for differentiated products, which gives us a framework to estimate own and cross price elasticities, estimate markups, measure market power, evaluate mergers, quantify the benefits of a new product, evaluate the effect of discontinuing a product, examine how information asymmetry (advertising) affects demand estimation and the resulting substitution patterns.
The last part of this segment introduces recent advances in dynamic durable goods models and models of storable goods to study consumers' inventory behavior and intertemporal substitution.

2. Single agent dynamic models, Dynamic games of imperfect competition.
We provide a framework to estimate discrete choice dynamic models. We start with the estimation of single agent dynamic models, such as the optimal investment model. Next, we study the estimation of multiplayer dynamic games. Our main focus is on models of firm entry and exit in oligopoly markets. We analyze industry pricing, industry performance, and optimal industry policy, and measure the welfare cost of government regulations.

3. Public utilities.
This segment provides an introduction to recent research on public utilities. We look at pricing of electricity and water in both developed and developing countries. Next, we discuss how non-payment for public utilities can hinder service provision, and possible solutions. We also see how pricing and additional regulations can motivate conservation.

Prerequisites
Students are expected to have taken PhD level Microeconomic Theory and Econometrics classes. Students also need to have basic knowledge of dynamic optimization. Programming in STATA and MATLAB will be required to complete homework assignments.

Textbook and software
There is no specific textbook for this class. We will be using a combination of lecture notes and journal articles. The required articles are listed below in each section. The additional reading list provides background reading on the topics and serves as a reference to your lecture notes.
You will be required to use STATA and MATLAB software packages. STATA is available for purchase at a discounted price and MATLAB is available for free for UH students.

Students should familiarize themselves with the software packages in order to program the homework exercises. Although we will briefly discuss how to implement specific estimation methods in MATLAB, the class does not provide an introduction to basic computer programming.

Course Requirements
The class schedule below contains the main papers we are going to discuss during each class. Students are expected to complete the assigned readings before attending class. For each topic, I will provide an overview of the literature, and we will discuss the assigned paper in detail. Depending on the class, we may spend more time on the overview and less on the details. Students are required to fully understand the assigned papers regardless of how much time we spend on them in class. All of these papers will be part of the exams.

The course has some difficult econometrics, and it is expected that students have a basic comfort level with estimation. It is also expected that students will do requisite background readings in econometric theory where necessary. This class will be rather demanding.

There will be 3 homework assignments and two exams. See below.

Assignments and Grading
The final grade is based on three homework exercises and on two exams.
Please be prepared to work on these homeworks for several weeks. The due dates for homework assignments are listed in the class schedule.

The exams are worth 50% (25% each) and the homework assignments are worth 50% of your final grade. To receive any grade other than "F" or "Incomplete", a student is required to submit all assignments. There is no exception.

Class Website

All assignments and handouts will be posted on the class website in Blackboard. Go to http://www.uh.edu/blackboard and click the white "Blackboard Learn" button. Log in with your CougarNet ID and password. Please do not email me homework files, upload everything on Blackboard.

Students with Disabilities

The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students with a disability. In accordance with Section 504 and ADA guidelines, the University of Houston strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. Students seeking accommodation in this course should contact the instructor after obtaining the appropriate documentation through the UH Center for Students with Disabilities.

Counseling and Psychological Services

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by calling 713-743-5454 during and after business hours for routine appointments or if you or somebody you know is in crisis. No appointment is necessary for the "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus. http://www.uh.edu/caps/outreach/lets_talk.html

Excused Absence Policy

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston Undergraduate Excused Absence Policy and Graduate Excused Absence Policy for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended absences. Additional policies address absences related to military service, religious holy days, pregnancy and related conditions, and disability.

Recording of Class

Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the Center for Students with Disabilities. If you have an

accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. The Instructor will not record this class. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

Syllabus Changes

Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible through (specify how students will be notified of changes).

Resources for Online Learning

The University of Houston is committed to student success, and provides information to optimize the online learning experience through our Power-On website. Please visit this website for a comprehensive set of resources, tools, and tips including: obtaining access to the internet, AccessUH, and Blackboard; requesting a laptop through the Laptop Loaner Program; using your smartphone as a webcam; and downloading Microsoft Office 365 at no cost. For questions or assistance contact UHOnline@uh.edu.

UH Email

Email communications related to this course will be sent to your Exchange email account which each University of Houston student receives. The Exchange mail server can be accessed via Outlook, which provides a single location for organizing and managing day-to-day information, from email and calendars to contacts and task lists. Exchange email accounts can be accessed by logging into Office 365 with your Cougarnet credentials or through Access UH. Additional assistance can be found at the Get Help page.

Webcams

Access to a webcam is required for students participating remotely in this course. Webcams must be turned on during lectures to promote student participation.

Other Course Policies

Don’t fall behind and make sure to ask me for help when you don’t understand a concept. I am here to help!

Make sure you are familiar with Zoom and its features. Join using both your camera and microphone.

I suggest you set up at your desk – make sure you have a quiet place. Online classes are similar to regular classes. You will take notes, ask questions etc. Keep in mind that everyone will hear and see you (just like in class), dress like you would in class, etc.

Participate in class as you normally would. Have a notebook and pen with you to take notes. Check posted materials before class in Blackboard. You will need to print out all

the handouts for yourself or use a second screen to follow along. If you have a question to ask, please use Zoom's "raise your hand" feature.

Please be on time. I will use the "Waiting room" feature, which allows you to test out your camera and microphone before the class starts without actually joining the class. I will start the class on time. I will not answer emails or chats during class.

Answers to both homework and exam questions will be graded not only on the correctness of the answer, but also on the clarity of the explanation. Answers with a correct answer alone will not receive full credit. Complete and logically consistent answers are needed to receive full credit.

I don't negotiate about grades - ever.

Come prepared - do the readings before class.

Adhere to the university's academic honesty policy (it is described in the Student Handbook at *University of Houston Undergraduate Academic Honesty Policy*). Academic honesty is taken very seriously and, in the case of violations, penalties may include suspension or expulsion from the University of Houston.

If you have special learning needs, please contact me in the first two weeks of classes.

If you need to contact me, I prefer (online) office hours to emails.

Helpful Information

COVID-19 Updates: https://uh.edu/covid-19/

Coogs Care: https://www.uh.edu/dsaes/coogscare/

Laptop Checkout Requests: https://www.uh.edu/infotech/about/planning/off-campus/index.php#do-you-need-a-laptop

Health FAQs: https://uh.edu/covid-19/faq/health-wellness-prevention-faqs/

Student Health Center: https://uh.edu/class/english/lcc/current-students/student-health-center/index.php

Tentative Course Schedule:

Class #	Date/Day			Topic	Problem Sets
1	Jan	19	T	Welcome to Applied Econometrics! Syllabus, introduction	
2		21	Th	Berry, S., J. Levinsohn, and A. Pakes (1995): "Automobile Prices in Market Equilibrium," *Econometrica*, 63(4), 841-890.	
3-4		26-28	T/Th	Nevo, A. (2001): "Measuring Market Power in the Ready-to-Eat Cereal Industry," *Econometrica,* 69, 307-342. Nevo, A. (1998): "A Practitioner's Guide to Estimation of Random-Coefficients Logit Models of Demand," *Journal of Economics and Management Strategy,* 9(4), 513-548.	
5	Feb	2	T	Petrin A. (2002): "Quantifying the Benefits of New Products: The Case of the Minivan", *Journal of Political Economy*, 110, 705-729.	
6		4	Th	Goeree M. (2009): "Limited Information and Advertising in the U.S. Personal Computer Industry," *Econometrica*, 76(5), 1017–1074.	
7		9	T	*Cath-up, more on BLP and HW 1.*	
8		11	Th	Overview of dynamic programming. Value function. Markov Perfect Equilibrium Concept. Rust, J. (1987): "Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher," *Econometrica* 55(5), 999-1033.	
9		16	T	**No class:UH Closed**	
10		18	Th	**No class:UH Closed**	
11		23	T	Rust, J. (1987): "Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher," *Econometrica* 55(5), 999-1033. Hotz, V. J. and R. A. Miller (1993): "Conditional Choice Probabilities and the Estimation of Dynamic Models," *Review of Economic Studies* 60(3), 497-529.	
12		25	Th	Hotz, V. J. and R. A. Miller (1993):	PS 1 Due

				"Conditional Choice Probabilities and the Estimation of Dynamic Models," *Review of Economic Studies* 60(3), 497-529.	
13	March	2	T	Erdem, T., S. Imai and M. P. Keane (2003): "Brand Quantity Choice Dynamics Under Price Uncertainty," *Quantitative Marketing and Economics*, 1, 5-64. Pesendorfer, M. (2002): "Retail Sales: A Study of Pricing Behavior in Supermarkets," *The Journal of Business,* 75, 33-66.	
14		4	Th	Hendel, I. and A. Nevo (2013): "Intertemporal Price Discrimination in Storable Goods Market," *American Economic Review*, 103(7), 2722-2751.	
15		9	T	Continue with Hendel and Nevo (2013)	
16		11	Th	Gowrisankaran, G. and M. Rysman (2012): "Dynamics of Consumer Demand for New Durable Goods, forthcoming: *Journal of Political Economy*, 120, 1173-1219.	
17		16	T	**No class: Spring break**	
18		18	Th	**No class: Spring break**	
19		23	T	Bajari, P., L. Benkard and J. Levin (2007): "Estimating Dynamic Models of Imperfect Competition," *Econometrica* 75(5), 1331-70	
20		25	Th	Benkard, L. (2004): "Dynamic Analysis of the Market for Wide-Bodied Commercial Aircraft," *Review of Economic Studies,* 71, 581-611.	
21		30	T	S. P. Ryan (2012): "The Costs of Environmental Regulation in a Concentrated Industry," *Econometrica*, 80(3), 1019–1061.	PS 2
22	April	1	Th	**Midterm I**	
23		6	T	S. Borenstein (2012): "The Redistributional Impact of Nonlinear Electricity Pricing," *American Economic Journal: Economic Policy*, 4(3): 56–90	
24		8	Th	Mansur, E. T. and S. M. Olmstead (2012): "The Value of Scarce Water: Measuring the Inefficiency of Municipal Regulations," *Journal of Urban Economics*, 71(3), 332-346.	
25		13	Th	Szabo, A. (2015): "The Value of Free Water: Analyzing South Africa's Free Basic Water Policy, *Econometrica*, 83(5), 1913–1961.	

26		15	T	Ferraro, P. J. and M. K. Price (2013): "Using Nonpecuniary Strategies to Influence Behavior: Evidence from a Large-Scale Field Experiment", *The Review of Economics and Statistics*, March 2013, 95(1), 64–73.	
27		20	Th	A. Szabo and G. Ujhelyi (2015): "Reducing Nonpayment for Public Utilities: Experimental Evidence from South Africa", *Journal of Development Economics*, 117, 20–31.	
28		22	Th	Koichiro Ito: Do Consumers Respond to Marginal or Average Price? Evidence from Nonlinear Electricity Pricing *American Economic Review*, 104 (2): 537-63, 2014.	
29		27	T	Jack, B.K. and G. Smith (2020): "Charging ahead: Prepaid electricity metering in South Africa" *American Economic Journal: Applied Economics*, 12(2): 134-168.	PS 3 Due
30		29	Th	**Midterm II**	