Business 33911: Economics of Information
Professor Milton Harris, Instructor
SYLLABUS, AUTUMN, 2016

Course Description and Goals
This course teaches some of the “tools of the trade” for theoretical research in the economics of information and its applications. In particular, I plan to introduce students to a range of economic tools used to study models explicitly involving strategic behavior, information transmission, and contracting in economics, finance, accounting and other business disciplines. My goal for the course is that students learn to build and analyze models involving asymmetric information and to use these models to explain a variety of economic phenomena not well understood using full information models.

Course Objectives
Students will become thoroughly conversant with the standard agency model and several variations of that model and with the standard competitive signaling model and a major application of that model. Students will also understand equilibrium concepts for sequential (extensive-form) games and be able to apply these to simple games. Finally, students will become familiar with the concept of mechanism design and the “Revelation Principle” and be able to apply these concepts.

Honor Code
Students in this course are required to adhere to the standards of conduct in the Honor Code and Standards of Scholarship. Each student shall sign the following pledge on each exam: “I pledge my honor that I have not violated the Honor Code during this examination.”

While students are encouraged to work in groups on homework assignments, I consider it a violation of the honor code to sign one’s name to an assignment if the assignment was completed substantially by others. I also consider it a violation of the honor code to use materials from previous years’ classes on homework assignments or exams that are not posted on the current year’s course web site. Finally, I consider it a violation of the honor code to use any materials on an exam not explicitly allowed by the rules of the exam.

Course Web Site
All materials for this class are available through the course web site on the University’s Blackboard system (https://chalk.uchicago.edu). Please check the Calendar and Announcements on the course web site regularly. I will also send you email messages from the web site from time to time. Since the Blackboard system uses your University of Chicago email account (of the form CNetID@uchicago.edu), please make sure that this account is set to forward email to your Chicago Booth email account (or to whatever account you check regularly). If you need help doing this, contact the Booth IT or University IT help desk.

1 This site requires your University of Chicago CNetID and password and that you be registered for this course.
Course Materials

There is no required textbook for the course, only articles available on JSTOR and from Library Course Reserves through Chalk (see below for a list). A textbook that is especially useful, both for background material not covered in class and for a treatment of much of the material we will cover, is

Microeconomic Theory, by Andreu Mas-Colell, Michael D. Whinston, and Jerry Green (Oxford University Press, 1995).

Another textbook that covers much of the material we will cover is


These books are recommended but not required. They are referred to below as MWG and BD, respectively. These books are available from the bookstore and through Library Course Reserves on Chalk. All articles listed at the end of this syllabus are required reading. An approximate course schedule follows. Students are expected to read the assigned material before class.

Grading

Homework: To practice concepts covered in the course, homework will be required from time to time (see the Class Schedule, below). The homework will be graded using a three-grade scale, “check-plus,” “check,” and “check-minus.” The homework will account for 35% of the course grade. Seven assignments are planned (these are available on the course web site). Although I will not discuss the homework in class, answers will be posted on the course web site two days before the homework is due. I expect students to try to complete each homework assignment before looking at the posted answers. After seeing the posted answers, you are free to revise your answers. If, after working through the posted answer, you are still unsure of the solution to a problem, please contact me or the teaching assistant, BongGeun Choi.

Final Exam: The remainder of the grade depends entirely on the student’s performance on a final examination. The exam will require students to formulate, “solve” and draw implications from a model similar to those discussed in class. The score on this exam will reflect the extent to which the model “captures” the given phenomenon, is tractable and the student is able to draw interesting implications from it. An answer for the exam will be posted on the course web site after the graded exam is returned. A previous exam and answer is also available on the course web site.

Office Hours

If you would like to discuss anything related to the course with me, please give me a call, or, preferably, send me an email (contact information is below).

Contact Information

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<tr>
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<th>Phone</th>
<th>Fax</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Me</td>
<td>773-396-4004</td>
<td>773-834-8172</td>
<td><a href="mailto:milt@chicagobooth.edu">milt@chicagobooth.edu</a></td>
</tr>
<tr>
<td>TA</td>
<td></td>
<td></td>
<td><a href="mailto:choi.bonggeun@gmail.com">choi.bonggeun@gmail.com</a></td>
</tr>
</tbody>
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Students with Disabilities

If you require any accommodations for this course, as soon as possible please provide your instructor with a copy of your Accommodation Determination Letter (provided to you by the Student Disability Services office) so that you may discuss with him/her how your accommodations may be implemented in this course. The University of Chicago is committed to ensuring the full participation of all students in its programs. If you have a documented disability (or think you may have a disability) and, as a result, need a
reasonable accommodation to participate in class, complete course requirements, or benefit from the University's programs or services, you are encouraged to contact Student Disability Services as soon as possible. To receive reasonable accommodation, you must be appropriately registered with Student Disability Services. Please contact the office at 773-702-6000/TTY 773-795-1186 or disabilities@uchicago.edu, or visit the website at disabilities.uchicago.edu. Student Disability Services is located at 5501 S. Ellis Avenue.
**Prerequisites**

Following is a list of concepts with which you should be familiar. I will not cover the topics in *this typeface*, even superficially, so it is essential to have a thorough understanding of those at the outset. The other topics may be covered *briefly* in class.

<table>
<thead>
<tr>
<th>Area (Course)</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Economics</td>
<td>Marginal cost, marginal product, marginal utility, indifference curves, marginal rate of substitution, competitive equilibrium</td>
</tr>
<tr>
<td>Calculus and properties of functions</td>
<td>Limits, continuity, concavity (convexity), inverses, derivatives, derivative of an inverse, integrals, Fundamental Theorem of Calculus</td>
</tr>
<tr>
<td>Probability and statistics</td>
<td>Definition of probability and basic properties, conditional probability and Bayes’ Theorem, pdfs, cdfs, Normal and exponential distributions, expectation, variance, covariance, conditional expectation</td>
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<tr>
<td></td>
<td>First and second order stochastic dominance</td>
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<td>Optimization</td>
<td><strong>Kuhn-Tucker Theorem</strong></td>
</tr>
<tr>
<td>Decision Theory</td>
<td>Expected utility and risk aversion, certainty equivalent, coefficient of absolute risk aversion</td>
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<tr>
<td>Game Theory</td>
<td>Nash Equilibrium</td>
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### Approximate Class Schedule

<table>
<thead>
<tr>
<th>Week Date</th>
<th>Topic</th>
<th>Assignment</th>
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</table>
| 1 9/28    | Static Agency Theory, Part 1 | Holmström (1979)  
*MWG (Ch. 14), *BD (Ch. 4) |
| 2 10/5    | Static Agency Theory, Part 2 | Homework #1 |
| 3 TBD     | Multi-task Agency Theory | Holmström and Milgrom (1991)  
Homework #2 |
| 4 10/19   | Multi-task Agency Theory, cont’d. (1h 40m)  
Dynamic Agency Theory (1h) | DeMarzo and Fishman (2007)  
*BD (Ch. 10) |
| 5 10/26   | Dynamic Agency Theory, cont’d. | *MWG (Ch. 13), *BD (Ch. 3) |
| 6 11/2    | Dynamic Agency Theory, cont’d. (1h 40m)  
Signaling (1h) | Riley (1979)  
Homework #3 |
| 7 11/9    | Signaling, cont’d. (1h 50m)  
Application of Signaling (50m) | Rothschild and Stiglitz (1976)  
Homework #4 |
| 8 11/16   | Application of Signaling, cont’d. (40m)  
Sequential Equilibrium (1h 50m) | Harris (1987, Ch. 5)  
*MWG (Chs. 7, 8, 9, 23), *BD (Ch. 7)  
Homework #5 |
| 9 11/23   | The Revelation Principle (2h 10m)  
“Noisy Information Transmission” (30m) | Crawford and Sobel (1982)  
Homework #6 |
| 10 11/30  | “Noisy Information Transmission”, cont’d. (50m)  
Refinements of Sequential Equilibrium (1h 50m) | Cho and Kreps (1987)  
*BD (Ch. 3)  
Homework #7 |

*Reading is optional.
Documents Available on the Web

University of Chicago Blackboard (Chalk) web site, https://chalk.uchicago.edu/

This Syllabus
Homework Assignments and Solutions
Final exam from a previous year
PowerPoint Slide Shows
Class Notes

Articles on JSTOR (click on the title; links are also on Chalk through Library Course Reserves)

Agency Theory


Static Signaling and Adverse Selection


Games of Incomplete Information and Sequential Equilibrium