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Office hours: Whenever you can find me in my office. Monday and Wednesday afternoons are generally good times. You can e-mail me to check whether I’m in.

Course meeting times:
Tuesdays and Thursdays, 8:20 to 9:50 am, in Room R2220 of Ross. The course follows the business school graduate calendar, so meets in the period from Jan 10 to Feb 18 and again from Mar 7 to Apr 15. The first class is on Tuesday, Jan 11.

Overview
This is a Ph.D. course in information economics as applied to various fields. The goal of the course is to provide students with an understanding of the basic concepts of game and contract theory, and to expose them to some of the ways in which these concepts are used in their own fields. The tools of information economics and game theory have come to be applied to several disciplines over the last couple of decades. There are several fields across economics and business that routinely apply these tools.

On most topics, we will do a quick review of basic concepts and then switch to applications. The exact list of applications to be covered depends partly on enrolment and student interest. Suggestions are welcome. The supplementary reading list reflects my own idiosyncratic interest and awareness of the use of game and contract theory in various disciplines. I encourage you to help me fill in any holes.

Grading
There are three components to the grade. A final exam, a term paper (perhaps including presentation), and problem sets.

1. Problem sets: weekly. Many of the problem sets consist of a single long problem taken from an applied paper. Students are encouraged to get an early start on the problem set. After all, it takes a few days to figure out a paper. While I don’t ask you to read a paper for the problem set, it may take some time to figure out how to set up and solve the model.

2. Term paper: Short report that intelligently summarizes a theory paper from your field, and provides an idea for future work in that area. In addition to the report, students are required to make a class presentation (on the same paper). These will be due in the last three or four weeks of the semester.
Since the enrolment this year is higher than usual, we may have to do the paper and presentation in groups. I’ll wait until the end of January and decide on that. More details on the paper and presentation will be available in due course.

3. Final exam: comprehensive exam at the end of the course. In the past, the final exam has been a take-home four-hour exam. I expect it will be similar this year. I will aim to make it available starting on Monday, April 18, in which case I will likely ask for all exams to be back in to me by Friday, April 22.

4. Weightage: Final exam 50%, paper 20%, problem sets 30%.

**Topics and Required Readings**

Recommended book: Bolton and Dewatripont, “Contract Theory.” I don’t think I will be referring to the book directly in class, but it is a good book for you to consult and for your bookshelf.

Here is a tentative plan for the topics to be covered.

1. *Game theory concepts*. ≈ 2 weeks.
   - Correlated equilibrium.
   - Bayesian games and Bayesian Nash equilibrium.
   - Perfect Bayesian equilibrium.
   - Signalling games, Cho-Kreps Intuitive Criterion.

   (a) Mas-Colell, Whinston, Green, *Microeconomic Theory*: Ch. 9.
   (b) Fudenberg and Tirole, *Game Theory*: Ch. 5.1, 6.1–6.5, 8.1–8.2.
   (c) Osborne and Rubinstein, *A Course in Game Theory*: Ch. 3.3, 11.1, 12.1, 12.3–12.4.

   - Principal-agent model.
   - Revelation Principle.
   - Adverse selection.
   - Application: costly state verification.
   - Application: job market signalling.
   - Moral hazard.
3. *Incomplete Contracts*: 3 weeks.

   Renegotiation.
   Vertical and Horizontal Integration.
   Hold-up problem.
   Transfer of control.
   Formal and real authority.
   Endogenously incomplete contracts.

   (a) Bolton and Dewatripont, Ch. 11–12.
4. **Dynamic Contracts**: \(\approx 2\) weeks.
   Two-period problem.  
   Financing the firm.  
   Infinite horizon model.  
   Career concerns.
   
   (a) Bolton and Dewatripont, Ch. 10.  

5. **Other Random Topics**: 1 week.  
   Contracting in the nonprofit sector.
   

6. **Other applications**: 1–2 weeks. Flexible, depends partly on enrolment and student interest.
   
   (a) Market Microstructure.
      
   
   (b) Herd Behavior.
      

7. **Student presentations**: 2-3 weeks. Papers/topics depend on student interest and choice.
Supplementary Readings
These are papers from various areas, broken up by field for convenience. Most of these papers are not likely to be discussed in class, but the list may be useful as a pointer towards applications of asymmetric information in your field.

1. Classics:
   See also:

2. Auctions:
   • Surveys:
   • Other papers:
(d) Finance applications:

3. Economics:
   • Mechanism design:

   • More applications of the CSV model:

4. Accounting:
5. Finance:


6. Information Systems:


7. Marketing:


8. Operations Management:


