

Preliminary and Incomplete Syllabus
Econ 4170: Economic Contract Theory
September 23, 2023

Description

This course is designed to introduce economics students to the theory of contracts. The origin of economic contract theory was in the 1970s, and has continued at high speed on both the theoretical and the applied economics fronts. It is motivated by real-world settings in which the standard price taking, symmetric information, and complete markets assumptions of general equilibrium theory are violated, thus making GE models inadequate. Non-market institutions determine production and allocation decisions in such settings, and a key ingredient of them is generally a “contract.” Most simply, a contract is a set of promises made by two or more agents to each other to perform certain activities e.g., how much of a good to produce, the quality of that good, and how much of it to buy. In most interesting settings there is asymmetric information; some agents know more than others about the state of the world, or what effort choices they made in the past, or about their inherent abilities. The ultimate contracts that are agreed upon are determined via bargaining as opposed to impersonal market exchanges. How a contract is enforced, either explicitly via a third party (Court) or implicitly through the future interactions of the parties, determine in part the nature of adopted contracts. In dynamic contexts, central questions concern how adopted contracts change (are renegotiated) over time.

These are the ideas we shall study. Applications will also be examined, such as regulation, insurance markets, price discrimination, auctions, and hold-up.

Logistics

Professor: Steven Matthews <stevenma@econ.upenn.edu>

Teaching Assistant. TBD

Prerequisites. Intermediate microeconomic theory (Econ 2100, formerly 101). Multivariable calculus (through Math 1080 or 1410), basic probability theory (including continuous random variables, Bayes rule), optimization (first- and second-order conditions). A knowledge of basic game theory will be useful, but the textbook has an Appendix containing all we shall need.

Teaching Methodology. Lectures. Slides/notes will be posted on Canvas to be read before being discussed in class. There will be frequent problem sets to practice using the material.

Class Time and Place. MW 3:30-5pm, Room TBD.

Office Hours.

- Professor: TBD and by appointment. Put “Econ 4170” in email Subject fields.
- TA: TBD and by appointment. Put “Econ 4170” in email Subject fields.

Assessment. About six problem sets,¹ and three in-class midterms. All three exams are closed book, notes, and electronics. The three exams and the problem sets (as a whole) will count 25% each towards the course grade. If you are unable to take a midterm for an excused reason,² each of the other three instruments will be scaled up to 33.3%. Class participation, which will include discussion chains on Canvas, will count in borderline cases.

Upload Policy. Upload to Canvas your solutions to the problem sets, as a pdf file. Your work can be handwritten, but scanned to create a *single* pdf file.

Required Textbook.

(BS) Salanié, Bernard. *The Economics of Contracts*, 2nd edition, 2005.

Supplementary and Optional Texts.

Mostly TBD. A place to start is with the books below. MWG and JR are advanced microeconomic theory textbooks that have some chapters on contract theory. BD is entirely on contract theory. All three books are used primarily in graduate level courses.

(MWG) Mas-Colell, Whinston, and Green, *Microeconomic Theory*. Chapter 14.

(JR) Jehle and Reny, *Advanced Microeconomic Theory*, 3rd edition. Chapters 8-9.

(BD) Bolton and Dewatripont, *Contract Theory*.

Important Dates

First Classes	Thursday, January 18
PS 1 due	TBD
PS 2 due	TBD
Midterm 1	TBD
Drop Day	Tuesday, February 27
PS 3 due	TBD
Spring Break	March 4-8
PS 4 due	TBD
Midterm 2	TBD
PS 5 due	TBD
PS 6 due	TBD
Midterm 3	TBD

¹One of your problem sets that has your worst score will be dropped.

²The definition of an excused absence, departmental regrade policies, and so on can be found at <https://economics.sas.upenn.edu/undergraduate/course-information/course-policies>.

Tentative Outline of Topics

1. Adverse Selection

Mechanism Design Overview

Two-Type Price Discrimination

Continuous-Type Price Discrimination

2. Adverse Selection Applications

Regulating a Firm

Monopoly Insurance

Auction Design

3. Moral Hazard

Edgeworth Box Example

The More General Case

Multi-Tasks

4. Moral Hazard Applications

Ownership

Insurance

Wage Determination

5. Dynamics of Contracts

Adverse Selection Settings

Moral Hazard Settings

Relational Contracts

6. Incomplete Contracts

a) Hold-up and Ownership

b) Renegotiation