

Syllabus
Econ 4170: Economic Contract Theory
University of Pennsylvania
This Version: August 16, 2024

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 used to study 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, or about their inherent abilities. The ultimate contracts that are agreed upon are determined via bargaining as opposed to impersonal market exchanges. We shall study these ideas in the abstract and in applications, such as regulation, insurance, price discrimination, auctions, and hold-up.

Logistics

Professor: Steven Matthews <stevenma@econ.upenn.edu>, office PCPE 618

- **Communication Protocol:** Feel free to email me, but be sure to put the course number, 4170, in the subject heading
- **Office Hours.** Fridays 10:45-12pm in PCPE 618, or email me for an appt

Teaching Assistant: Mengjia Xia <xiax@wharton.upenn.edu>

- **Office Hours.** TBA

Class Time and Place. TR 10:15-11:45am, PCPE 200.

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).

Teaching Methodology. Lectures and problem solving. Notes/slides on Canvas.

Assessment. Homework and three in-class exams. Each exam will count 25%, and the problem sets (as a whole) will count 25% towards the course grade. If you are unable to take an exam for an excused reason,¹ the other two exams and the homework will each count for 33. $\bar{3}$ %. Class participation will count in borderline cases.

Homework Policy. Study groups for doing the problems sets are encouraged, but they should be written up individually. There will be six problem sets. Each one will be graded coarsely on a 0-5 scale. Late homework will not be graded. However, one of your problem sets with the lowest score will not be counted when calculating your homework score. Upload to Canvas, as one pdf file, your problem set solutions by 11:45pm of the Friday due dates (see below).

Textbooks

Required: (MP) Macho-Stadler, Inés and David Pérez-Castrillo, *An Introduction to the Economics of Information: Incentives and Contracts*. 1st or 2nd Edition. Oxford University Press.

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

The MP text is more detailed than the BS text, and the lectures will follow it more often than BS. (Either edition of MP is fine, as they are virtually identical.)

Supplementary: (BD) Bolton, Patrick and Mathias Dewatripont, *Contract Theory*, MIT Press. This is an advanced Ph.D. level textbook, beyond the scope of this course. Only for those who want a taste of a graduate treatment.

Important Dates

<i>Date</i>	<i>Event</i>
8/27	First Class
9/6 (F 11:45pm)	PS 1 due
9/13 (F 11:45pm)	PS 2 due
9/19	Midterm 1
10/3-6	Fall Break
9/27 (F 11:45pm)	PS 3 due
10/18 (F 11:45pm)	PS 4 due
10/24	Midterm 2
11/8 (F 11:45pm)	PS 5 due
11/22 (F 11:45pm)	PS 6 due
12/5	Midterm 3

¹The 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>.

Outline of Topics

1. Contracts in Symmetric Information Settings

2. Moral Hazard

Edgeworth Box Example

The More General Case

Multi-Tasks

Applications

Ownership

Insurance

Wage Determination

3. Adverse Selection

Mechanism Design Overview

Two-Type Price Discrimination

Continuous-Type Price Discrimination

Applications

Regulating a Firm

Monopoly Insurance

Auction Design