

Contracts and Agency Theory
ECON 70102 (Spring 2023)
Department of Economics • University of Notre Dame

Instructor: Maciej H. Kotowski <mkotowsk@nd.edu>

Class Meetings: Tuesday & Thursday 09:30–10:45 [O’Shaughnessy Hall 200]

Office Hours: Thursday 16:30–18:00 [JNH 3016 or Zoom; scheduled online.]

Course Website: <<https://canvas.nd.edu/courses/57992>>

1. Overview

Selected topics in mechanism design, contract theory, and agency theory. This is a half-semester course starting on March 21, 2023, and concluding on May 3, 2023.

1.1. Audience

This course is suitable for advanced doctoral students in economics and related disciplines. Other students with adequate preparation in mathematics and economics may enroll with the instructor’s permission.

1.2. Prerequisites

The most important prerequisites for the course are a willingness for critical and creative thinking, imagination, and some grit.

Economics: Successful completion of a year-long PhD sequence in core microeconomic theory, e.g., ECON 60101/2. Students who do not satisfy the formal prerequisite but who otherwise have exceptional mathematical preparation may enroll in the course with the instructor’s permission. Familiarity with game theory and basic mechanism design is presumed.

Mathematics: Algebra, calculus, probability theory, and real analysis are used freely throughout the course. Skills in logical thinking and a willingness to follow proofs are essential.

2. Requirements and Grading

The course requirements include completion of a series of problem sets, a research proposal or a take-home final exam, and an in-class presentation. Your grades on these tasks will be weighted as follows to determine your course grade.

Problem Sets	30 %
Research Proposal	} 70 %
<i>or</i>	
Take-Home Exam	
<hr/> Total	100 %

Letter grades will be assigned based on your final weighted score.

2.1. Problem Sets

Unless noted otherwise, you may work in small groups (two or three students) on the problem sets. However, you must hand in independently written-up solutions. If you collaborate, identify other group members on your write-up. There is no need to type up your solutions, but sloppy work will not receive credit. Problem set due dates are the following:

Problem Set	Date Due
1	April 6
2	April 18
3	April 27

2.2. Research Proposal

You may elect to prepare a proposal for a research paper/project that is broadly related to this course's subject matter. Instructions for the research proposal are provided in the course handout "[1] Research Proposal Instructions." You must inform the instructor of your intention to prepare a research proposal by April 4, 2023.

The research proposal is due at 12:00 noon (EDT), May 3, 2023.

2.3. Take-Home Final Exam

You may elect to complete an open-book, take-home final exam. You must inform the instructor of your intention to complete the exam by April 4, 2023.

The exam will be distributed at 10:45am, May 2, 2023. You must submit your answers by 12:00 noon (EDT), May 3, 2023.

3. Readings and Textbooks

This course does not rely on any specific textbook. However, it is essential that you read something in preparation for class. Many of the books below are close substitutes.

- *Contract Theory* by Patrick Bolton and Mathias Dewatripont.
- *The Theory of Incentives: The Principal-Agent Model* by Jean-Jacques Laffont and David Martimort.
- *The Economics of Contracts: A Primer* by Bernard Salinié.
- *Lecture Notes for Economics* by Benjamin Hermalin.

Many general-purpose, graduate-level microeconomics textbooks provide useful background information on some course topics. Recommended textbooks include:

- *Microeconomic Theory* by Andreu Mas-Colell, Michael D. Whinston, and Jerry R. Green.
- *Advanced Microeconomic Theory* by Geoffrey A. Jehle and Philip J. Reny.

4. Audio/Video Recordings

I kindly ask you to not make personal audio or video recordings of the lectures.

5. Contingency Planning

I am committed to delivering the best possible learning experience. However, events beyond my control may affect the course. The following principles will guide this course's response and adaptation in such cases.

- Please follow the University's health and safety guidance when on campus.
- If in-person instruction is disrupted, be prepared to switch to dual-mode or remote instruction if mandated by the university. This will require you to have access to a computer with appropriate software and internet access.
- You are expected to submit all coursework in hardcopy. In case of an absence, please contact the instructor to arrange for electronic submission.

6. Advice

1. Understand and follow the University's Academic Honor Code.
2. You will be better off in the long run if you elect to complete the research proposal instead of the take-home exam.
3. Exam questions will resemble problem set questions. Look beyond the assigned class material for more practice problems.
4. Scan or photocopy your problem set answers before submitting them.
5. Read the assigned readings twice—before *and* after lecture.
6. Please inform the instructor of typos and suspected mistakes in course materials.
7. Please ask questions in class. Illuminating digressions are exciting.
8. Please make use of office hours. Even if you have no specific questions about the course material, please feel welcome to visit, chat, ask questions, or simply say hello.

7. Credits and Acknowledgements

This course draws on material that I was fortunate to encounter as a student, teaching assistant, and faculty. I am particularly indebted to Ben Hermalin. Several lectures are based on my personal notes from his contract theory course at the University of California, Berkeley (2008). Online course syllabi and/or lecture notes by Simon Board, Jon Levin, Dilip Mookherjee, and Steve Tadelis also influenced this course's content and curriculum.

8. Course Calendar and Reading List

The calendar and reading list may be adjusted depending on our progress. You are expected to read essential readings. Recommended readings from textbooks are often close substitutes. Classic readings are optional for the lectures as textbooks synthesize most key points, but are essential if you incorporate these topics in your research.

Key

- *essential reading* — something you must read, period.
- *recommended reading* — something you should read to follow the lecture.
- *classic reading* — read if you're keen.
- *supplemental reading* — consult for more information.

[1] **March 21** / Introduction / Review of Mechanism Design and Screening.

- Bolton and Dewatripont, Chapters 1 and 2.
- Hermalin, Chapters 6–11.
- Laffont and Martimort, Chapter 2.
- Salanié, Chapter 2.
- Baron, D., and R. B. Myerson. 1982. Regulating a Monopolist with Unknown Costs. *Econometrica* 50(4):911–930.
- Maskin, E., and J. Riley. 1984. Monopoly with Incomplete Information. *RAND Journal of Economics* 15(2):171–196.
- Mussa, M., and S. Rosen. 1978. Monopoly and Product Quality. *Journal of Economic Theory* 18:301–317.
- Myerson, R. B. 1981. Optimal Auction Design. *Mathematics of Operations Research* 6(1):58–73.
- Milgrom, Paul, and Ilya Segal. 2002. Envelope Theorems for Arbitrary Choice Sets. *Econometrica* 70(2):583–601.
- Nichols, A. L., and R. J. Zeckhauser. 1982. Targeting Transfers through Restrictions on Recipients. *American Economic Review Papers and Proceedings* 72(2):372–377.
- Jehle and Reny, Chapter 9.

- Mas-Colell, Whinston, and Chapter 23.

[2] **March 23** / Review of Mechanism Design and Screening (con't).

[3] **March 28** / Review of Basic Models of Moral Hazard.

- Bolton and Dewatripont, Chapter 4.
- Hermalin, Chapters 12–16.
- Laffont and Martimort, Chapter 4.
- Salanié, Chapter 5.
- Grossman, S. J., and O. D. Hart. 1983. An Analysis of the Principal-Agent Problem. *Econometrica* 51(1):7–45.
- Holmstrom, B. 1979. Moral Hazard and Observability. *Bell Journal of Economics* 10(1):74–91.
- Mas-Colell, Whinston, and Green 14.B.
- Jehle and Reny, Chapter 8.2.

[4] **March 30** / Multiple Agents: Teams and Tournaments.

- Bolton and Dewatripont, Chapter 8.1.
- Holmstrom, B. 1982. Moral Hazard in Teams. *Bell Journal of Economics* 13(2):324–340.
- Lazear, E. P., and S. Rosen. 1981. Rank-Order Tournaments as Optimum Labor Contracts. *Journal of Political Economy* 89(5):841–864.
- Green, J., and N. Stokey. 1983. A Comparison of Tournaments and Contracts. *Journal of Political Economy* 91(3):349–364.
- Mookherjee, D. 1984. Optimal Incentive Schemes with Many Agents. *Review of Economic Studies* 51(3):433–446.

[5] **April 4** / Multiple Principals: Common Agency.

- Bernheim, B. D., and M. D. Whinston. 1986. Common Agency. *Econometrica* 54(4):923–942.
- Dixit, A., G. M. Grossman, and E. Helpman. 1997. Common Agency and Coordination: General Theory and Application to Government Policy Making. *Journal of Political Economy* 105(4):752–769.

[6] **April 6** / Dynamics and Moral Hazard.

- Bolton and Dewatripont, Chapter 10.
- Salanié, Chapter 6.
- Rogerson, W. P. 1985. Repeated Moral Hazard. *Econometrica* 53(1):69–76.
- Holmström, B. 1999 [1982]. Managerial Incentive Problems: A Dynamic Perspective. *Review of Economic Studies* 66(1):169–182.
- Holmstrom, B., and P. Milgrom. 1987. Aggregation and Linearity in the Provision of Intertemporal Incentives. *Econometrica* 55(2):303–328.
- Dewatripont, M., I. Jewitt, and J. Tirole. 1999. The Economics of Career Concerns, Part I: Comparing Information Structures. *Review of Economic Studies* 66(1):183–198.

[7] **April 11** / Dynamics and Moral Hazard (con't).

[8] **April 13** / Dynamics and Screening.

- Baron, D. P., and D. Besanko. 1984. Regulation and Information in a Continuing Relationship. *Information Economics and Policy* 1(3):267–302.
- Courty, P., and H. Li. 2000. Sequential Screening. *Review of Economic Studies* 67:697–717.
- Pavan, A., I. Segal, and J. Toikka. 2014. Dynamic Mechanism Design: A Myersonian Approach. *Econometrica* 82(2):601–653.
- Athey, S., and I. Segal. 2007. An Efficient Dynamic Mechanism. *Econometrica* 81(6):2463–2485.
- Bergemann, D., and J. Välimäki. 2010. The Dynamic Pivot Mechanism. *Econometrica* 78(2):771–789.

[9] **April 18** / Incomplete Contracts.

- Bolton and Dewatripont, Chapters 11 and 12.
- Salanié, Chapter 7.
- Grossman, S. J., and O. D. Hart. 1986. The Costs and Benefits of Ownership: A Theory of Vertical Integration. *Journal of Political Economy* 94(4):691–719.
- Hart, O. D., and J. Moore. 1988. Incomplete Contracts and Renegotiation. *Econometrica* 56(4):755–785.
- Hart, O. D., and J. Moore. 1990. Property Rights and the Nature of the Firm. *Journal of Political Economy* 98(6):1119–1158.
- Maskin, E. S., and J. Tirole. 1999. Unforeseen Contingencies and Incomplete Contracts. *Review of Economic Studies* 66:83–114.
- Hart, O. 1995. *Firms, Contracts, and Financial Structure*. Oxford: Oxford University Press.

[10] **April 20** / Incomplete Contracts (con't).

[11] **April 25** / Relational Contracts.

- Bolton and Dewatripont, Chapter 10.4.
- Levin, J. 2003. Relational Incentive Contracts. *American Economic Review* 93(3):835–857.
- MacLeod, W. B., and J. M. Malcomson. 1989. Implicit Contracts, Incentive Compatibility, and Involuntary Unemployment. *Econometrica* 57(2):447–480.
- MacLeod, W. B. 2003. Optimal Contracting with Subjective Evaluation. *American Economic Review* 93(1):216–240.
- Halac, M. 2012. Relational Contracts and the Value of Relationships. *American Economic Review* 102(2):750–779.
- Board, S., and M. Meyer-ter-Vehn. 2015. Relational Contracts in Competitive Labour Markets. *Review of Economic Studies* 82(2):490–534.

[12] **April 27** / Bayesian Persuasion and Information Design.

- Kamenica, E., and M. Gentzkow. 2011. Bayesian Persuasion. *American Economic Review* 101(6):2590–2615.
- Kamenica, E. Bayesian Persuasion and Information Design. 2019. *Annual Review of Economics* 11:249–272.
- Bergemann, D., and S. Morris. 2019. Information Design: A Unified Perspective. *Journal of Economic Literature* 57(1):44–95.
- Dworzak, P., and Giorgio Martini. 2019. The Simple Economics of Optimal Persuasion. *Journal of Political Economy* 127(5):1993–2048.

[13] **May 2** / Bayesian Persuasion and Information Design (con't) / Course Wrap-up.

- Take-home final exam distributed at the end of lecture.

May 3 / Final Exam or Research Proposal due at 12:00 noon (EDT).