

ECO2030: Microeconomic Theory II

Winter 2016

[OVERVIEW](#) [SCHEDULE](#) [EVALUATION](#) [HELP](#) [FORUM](#) [EMAIL](#) [SURVEYS](#) [LOGOUT](#)

Overview

Overview

Instructor: [Martin J. Osborne](#)

This module of PhD micro is designed (a) to equip students who do not intend to pursue research in economic theory with the main game-theoretic tools used in contemporary economics, and (b) to provide students who plan to pursue research in economic theory a solid grounding in game theory.

The text is

Martin J. Osborne and Ariel Rubinstein, [A course in game theory](#) (MIT Press, 1994)

(The website for the book has a list of typos and other information you may find useful.)

If you have no background in game theory, you may also find useful my lower-level book [An introduction to game theory](#) (Oxford University Press, New York, 2004).

The course covers the following topics.

- Nash equilibrium (Ch. 2 through 2.5)
- Mixed strategy equilibrium (Ch. 3 through 3.3)
- Bayesian games (2.6)
- Extensive games with perfect information (Ch. 6)
- Bargaining games (Chs. 7 and 15)
- Repeated games (Ch. 8)

Problem Sets

The only way to learn analytical material is to do problems! I will assign a Problem Set after each class. Each Problem Set will be due at the start of the next Monday class. (Thus two Problem Sets will be due every Monday, one from the previous Monday and the other from the previous Wednesday.) Your solutions to each Problem Set will be assigned a grade of 0, 1 or 2. It is essential that you keep up with the Problem Sets, so late submissions will not be accepted. I will make solutions to each Problem Set available after the class in which it is due.

Tutorials

The tutorials are an integral part of the course. In each tutorial, the TA will help you to solve a small number of problems. He will *not* tell you the solutions, but will lead you to construct solutions yourselves. You should be ready to participate actively. I will post a file of the questions for each tutorial by noon of the previous day; please take a copy (either paper or electronic) to the tutorial. After each tutorial, I will post solutions.

Past exams

Note that the material covered in the course varies a bit from year to year.

- Winter 2014: [without solutions](#), [with solutions](#)
- Winter 2013: [without solutions](#), [with solutions](#)
- Winter 2012: [without solutions](#), [with solutions](#)
- Winter 2011: [without solutions](#), [with solutions](#)
- Winter 2010: [without solutions](#), [with solutions](#)
- Winter 2009: [without solutions](#), [with solutions](#)
- Winter 2007: [without solutions](#), [with solutions](#)
- Winter 2006: [without solutions](#), [with solutions](#)
- [Winter 2005 \[Solutions\]](#)
- [Winter 2004 \[Solutions\]](#)
- [Winter 2003 \[Solutions\]](#)
- [Winter 2002 \[Solutions\]](#)

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Schedule

Schedule

The class meets MW9-11 in WW119 (M), WW121 (W). The tutorial session meets R6-8 in BA1200 during the first six weeks of the semester.

I will post slides for each class at latest the day before the class. The *compact* versions are best for printing, the *complete* ones best for viewing on a screen.

- Class 1
Nash equilibrium (Sections 2.1–2.3 of "A Course in Game Theory").
Slides: [complete](#) (352KB, 2016-01-08 14:37:34) | [compact](#) (90KB, 2016-01-08 14:37:43)
[Problem Set 1](#) (44KB, 2016-01-07 20:42:12) • [Solutions to Problem Set 1](#) (55KB, 2016-01-19 16:02:14)
- Class 2
Nash equilibrium continued (Section 2.4); introduction to mixed strategy Nash equilibrium (Section 3.1). [Section 2.5 will be omitted; I will return to the material in Section 2.6.]
Slides: [complete](#) (298KB, 2016-01-11 13:54:51) | [compact](#) (130KB, 2016-01-11 13:55:09)
[Questions for Tutorial 1](#) (40KB, 2016-01-11 14:10:55) • [Solutions for Tutorial 1](#) (49KB, 2016-01-17 16:14:30)
[Problem Set 2](#) (39KB, 2016-01-11 13:55:35) • [Solutions to Problem Set 2](#) (53KB, 2016-01-19 16:02:37)
- Class 3
Mixed strategy Nash equilibrium continued. [Read Section 3.2. Sections 3.3 and 3.4 will be omitted.] Rationalizability and iterated elimination of strictly dominated actions (Section 4.2). Introduction to Bayesian games (Section 2.6).
Slides: [complete](#) (488KB, 2016-01-19 21:16:17) | [compact](#) (127KB, 2016-01-19 21:16:30)
[Problem Set 3](#) (44KB, 2016-01-14 21:40:11) • [Solutions to Problem Set 3](#) (52KB, 2016-01-29 15:49:21)
- Class 4
Bayesian games continued (Section 2.6); electronic mail game (Section 5.5); purification of mixed strategy equilibria (Sections 3.2.3 and 3.2.4)
Slides: [complete](#) (415KB, 2016-01-20 16:48:51) | [compact](#) (96KB, 2016-01-20 16:49:06)
[Questions for Tutorial 2](#) (41KB, 2016-01-19 15:59:30) • [Solutions for Tutorial 2](#) (49KB, 2016-01-25 16:46:22)
[Problem Set 4](#) (42KB, 2016-01-19 15:59:03) • [Solutions to Problem Set 4](#) (60KB, 2016-01-27 17:48:12)
- Class 5
Auctions; juries
Slides: [complete](#) (1MB, 2016-01-22 10:04:45) | [compact](#) (199KB, 2016-01-22 10:05:02)
[Problem Set 5](#) (36KB, 2016-02-07 23:08:39) • [Solutions to Problem Set 5](#) (66KB, 2016-02-07 23:08:58)
- Class 6
Extensive games with perfect information: strategies, Nash equilibrium, subgame perfect equilibrium, the one deviation property (Sections 6.1, 6.2).
Slides: [complete](#) (343KB, 2016-01-25 16:54:49) | [compact](#) (95KB, 2016-01-25 16:55:13)
[Questions for Tutorial 3](#) (37KB, 2016-01-25 16:56:34) • [Solutions for Tutorial 3](#) (53KB, 2016-02-01 14:47:03)
- Class 7
Extensive games with perfect information: backward induction; Stackelberg games; ultimatum game; holdup game; adding chance moves and simultaneous moves (Section 6.3); Chain-Store game (Section 6.5.1).
Slides: [complete](#) (414KB, 2016-01-29 11:22:47) | [compact](#) (149KB, 2016-01-29 11:23:02)
[Problem Set 6](#) (39KB, 2016-01-27 17:46:52) • [Solutions to Problem Set 6](#) (62KB, 2016-02-08 16:25:29)
- Class 8
Bargaining theory: bargaining game of alternating offers (Chapter 7, omitting the proof of uniqueness in Proposition 12.1 and Section 7.4.3).
Slides: [complete](#) (359KB, 2016-02-02 23:47:34) | [compact](#) (87KB, 2016-02-02 23:47:54)
[Questions for Tutorial 4](#) (48KB, 2016-02-01 14:43:17) • [Solutions for Tutorial 4](#) (68KB, 2016-02-12 11:34:26)
[Problem Set 7](#) (39KB, 2016-02-01 14:42:38) • [Solutions to Problem Set 7](#) (56KB, 2016-02-08 16:26:28)
- Class 9
Nash bargaining solution (Sections 15.1, 15.2 (using the approach on pp. 308–309), 15.3). Relation between Nash solution and subgame perfect equilibrium of bargaining game of alternating offers (Section 15.4). Outside options in the bargaining game of alternating offers (Section 7.4.3).
Slides: [complete](#) (886KB, 2016-02-03 15:45:05) | [compact](#) (698KB, 2016-02-03 15:45:28)
[Problem Set 8](#) (35KB, 2016-02-03 15:45:58) • [Solutions for Problem Set 8](#) (41KB, 2016-02-22 15:50:27)
- Class 10
Repeated games (Sections 8.1–8.5 (preferences with discounting only)).
Slides: [complete](#) (916KB, 2016-02-08 12:23:50) | [compact](#) (692KB, 2016-02-08 12:24:09)
[Questions for Tutorial 5](#) (37KB, 2016-02-08 16:28:13) • [Solutions for Tutorial 5](#) (45KB, 2016-02-28 10:19:31)
[Problem Set 9](#) (36KB, 2016-02-08 16:27:35) • [Solutions for Problem Set 9](#) (44KB, 2016-02-22 15:46:55)
- Class 11
Repeated games: Subgame perfect equilibrium (Section 8.8), finitely repeated games (Section 8.10).

Slides: [complete](#) (334KB, 2016-02-19 11:47:22) | [compact](#) (103KB, 2016-02-19 11:47:45)

[Problem Set 10](#) (37KB, 2016-02-19 11:48:08) • [Solutions for Problem Set 10](#) (39KB, 2016-02-26 23:32:26)

Class 12

Extensive games with imperfect information: Introduction (Sections 11.1, 11.4, 11.5, 12.1–12.3).

Slides: [complete](#) (525KB, 2016-02-24 16:27:42) | [compact](#) (144KB, 2016-02-24 16:28:02)

[Questions for Tutorial 6](#) (34KB, 2016-02-22 15:43:38) • [Solutions for Tutorial 6](#) (49KB, 2016-02-26 23:33:52)

[Problem Set 11](#) (40KB, 2016-02-22 15:43:04) • [Solutions for Problem Set 11](#) (48KB, 2016-02-26 23:33:07)

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[OVERVIEW](#) [SCHEDULE](#) [EVALUATION](#) [HELP](#) [FORUM](#) [EMAIL](#) [SURVEYS](#) [LOGOUT](#)

Evaluation

Evaluation

The final exam for this module was held on Monday, February 29 from 9:10am to 11am, in **BA 2155**.

Your mark for the module is 90% of your percentage mark on the final exam plus 10% of your percentage mark on the problem sets.

Your grade in ECO2030 will be determined by the average of your marks in this module and the second module.

To see your mark in this module, [CLICK HERE](#).

If I were to award letter grades on the basis of the marks in this module, the ranges would be approximately as follows: 90-100 = A+, 80-90 = A, 70-80 = A-, 60-70 = B+, 55-60 = B, 50-55 = B-, 0-50 = F.

[Final exam](#) • [Final exam with solutions](#)

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