

Game Theory for Economics

Classes for this course begin Tuesday 20 October. Some additional class sessions may be scheduled, if necessary.

This course is an introduction to modern game theory as used in economics. The goal is to prepare students to read literature using game theory and to use the techniques in simple applications.

Note: This course is offered as a 1-credit or 2-credit course. Any student taking both this course and Game Theory for Economics (ECO 7404) should consult the Economics graduate secretary on how many credits to register for. Whether one takes this as a 1-credit or 2-credit course will not affect the internal GPA computation for Economics Ph.D. students (both courses will count as one-half of a full-semester course).

Requirements

1) Problem sets will be assigned periodically (about 5 over the course of the half-semester). These will be graded as an aid for your learning.

Otherwise, your performance on the problem sets will only affect your grade if you are on the border between letter grades (pluses and minuses included). You may work with other students in solving the problems, but each student must turn in his/her own homework. The goal is to learn the material, not simply to complete the assignments .

2) A final exam: **Tuesday 13 December, 3:30 pm MAT 105 or TBA**

Class Meetings Tuesdays and Thursdays 3rd – 4th periods (1:55 – 3:50 pm), MAT 105

Office Hours Wednesdays 10:00 am - 12:00 pm MAT 328
For other times, please call to make sure I am available. I am generally unavailable Friday mornings because of department seminars.

Contact Office: MAT 328
Phone: 392-2999 (2-2999 from on campus)
Email: hamilton@ufl.edu

Texts

Required

(H) Harrington, *Games, Strategies, and Decision Making*, Worth Publishers
(MWG) Mas-Colell, Green, and Whinston, *Microeconomic Theory*, Oxford University Press

Optional

(O) Osborne, *An Introduction to Game Theory*, Oxford University Press

Other Books

- (G) Gibbons, *Game Theory for Applied Economists* (Princeton University Press paperback)
A basic introduction that does not go into enough detail on many topics, but it is a useful starting point.
- (K) Kreps, *Game Theory and Economic Modeling* (Oxford University Press paperback)
A chatty discussion of the strengths and weaknesses of game theory. It is less formal than the material in Kreps's *A Course in Microeconomic Theory*.

Supplemental References

Binmore, *Fun and Games or Playing for Real*

Strong on zero-sum games and philosophy of game theory. The basic mathematics are presented here in some detail.

Fudenberg and Tirole, *Game Theory*

A complete presentation of most modern game theory as used in industrial organization that takes Nash equilibrium for granted.

Myerson, *Game Theory*

A great reference for advanced topics.

Osborne and Rubinstein, *A Course in Game Theory*

More formal than Gibbons and Osborne, it also covers some additional topics.

Additional Papers and Supplementary Readings

Geanakoplos, "Common Knowledge," *Journal of Economic Perspectives* 6 (Fall 1992): 53-82

Brandenburger, "Knowledge and Equilibrium in Games," *Journal of Economic Perspectives* 6 (Fall 1992): 83-101

Reny, "Rationality in Extensive-Form Games," *Journal of Economic Perspectives* 6 (Fall 1992): 103-118

Aumann, Hart, and Perry, "The Absent-Minded Driver," *Games and Economic Behavior* 20: 102-16 (July 1997)

Aumann, Hart, and Perry, "The Forgetful Passenger," *Games and Economic Behavior* 20: 117-120 (July 1997)

d'Aspremont, Gabszewicz, and Thisse, "On Hotelling's 'Stability in Competition,'" *Econometrica* 47: 1145-1150 (1979)

Friedman, *Game Theory with Applications to Economics* (2nd edition), Sections 3.1, 3.2, 3.4, 3.6

Varian, "A Model of Sales," *American Economic Review*

The articles are available either through www.jstor.org or the Smathers Library web site. PDF copies of some papers are available on the Sakai website for the class.

In addition to the readings, copies of lecture notes will be available on the Sakai website for the class. They are not intended as a substitute for class attendance nor are they necessarily complete.

Enrollment in this course constitutes acknowledgement of the following:

- 1) I understand that the University of Florida expects its students to be honest in all of their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action, up to and including expulsion from the University.
- 2) I will adhere to university copyright policies as found at <http://www.uflib.ufl.edu/admin/Copyright.htm>.
- 3) Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

Syllabus (approximate)

Session 1	Introduction to Game Theory	H 1, 2 O 1, 2.1-2.5, 5.1-5.2 MWG 7 K 1, 2, 3
Sessions 2-3	Dominant strategies, backward induction, Nash equilibria	H 3, 4, 8 O 2.6-2.10, 5.3-5.5 MWG 8.A-8.D, App. 8A
The following papers may help enlighten you on the concept of common knowledge: Brandenburger/ Geanakoplos/ Reny Aumann, Hart, and Perry		
Session 4	Expected Utility	MWG 6 (many other sources)
Session 5	Mixed strategies	H 7 O 4
Session 6	Existence of Equilibria Games with Continuous Strategy Spaces	Friedman H 6

Session 7	Basics of Refinements Multi-stage Games	K 5 MWG 8.F O 7 MWG 9.A-9.B K 4
Sessions 8-10	Incomplete information	H 9, 10, 11 O 9, 10 MWG 8.E, 9.C-9.D
Session 11	Repeated play	H 13, 14 O 14, 15 MWG App. 12A
Session 12-14	Examples Mixed Strategies with Continuous Strategy Spaces	d'Aspremont <i>et al.</i> Varian
Session 15	Review	
FINAL EXAM	Tuesday 13 December 5:30 pm (or TBA)	