

**UNIVERSITY OF COLORADO**  
**Department of Economics**

**Economics 7030-001**

**Microeconomic Theory 2**

**Spring 2010**

Professor Jennifer Lamping

Office: Economics 103

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Lectures: TR 3:30pm - 4:45pm, Economics 119

Office Hours: R 5:00pm - 6:30pm, Economics 103

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Course Website: CULearn

**Course Description**

This course is the second of three semester courses that develop the basic tools and results of modern microeconomic analysis. The second semester course covers choice under uncertainty, game theory, and topics in industrial organization.

The course is highly technical. Mathematical tools will be taught as needed, but it is assumed that you are comfortable with formal proofs.

**Course Structure**

The course will consist of lectures, readings, assignments, and exams. Readings will be primarily from the required textbooks, *Microeconomic Theory* by Mas-Colell, Whinston, and Green and *Game Theory* by Fudenberg and Tirole. Additional readings will be made available on the course website.

Assignments will take the form of problem sets. In general, assignments will be made available every Tuesday on the course website and due in lecture one week later. Solutions will be posted on the course website shortly thereafter. Assignments are to be completed in groups of three to four students. Groups will be assigned on the first day of class.

There will be two midterm exams and one final exam. Exams will be held in class and completed individually.

## **Grading**

The various components of the course will be weighted as follows to determine your final grade:

Assignments	10%
Midterm Exam	45%
Final Exam	45%

The midterm and final exams will each be graded on a 100 point scale with points allotted on the basis of the accuracy of your answers. In contrast, assignments will be graded on a scale from 0 to 2: 0 points for not handing it in, 1 point for a below average performance, and 2 points for an above average performance.

## **Missed Assignments & Exams**

Late assignments will not be accepted since solutions are posted online shortly after the assignment is due. You may not miss an exam. No makeup exams will be given.

## Textbooks

The required textbooks are

- *Game Theory* by Drew Fudenberg and Jean Tirole
- *Microeconomic Theory* by Andreu Mas-Colell, Michael D. Whinston, and Jerry R. Green

The following texts offer different presentations of the material in Fudenberg and Tirole. I urge you to obtain one or more of these texts to assist you in understanding the material.

- *Strategies and Games: Theory and Practice* by Prajit K. Dutta
- *Game Theory for Applied Economists* by Robert Gibbons
- *Game Theory: Analysis of Conflict* by Roger B. Myerson
- *A Course in Game Theory* by Martin J. Osborne and Ariel Rubinstein
- *Strategy: An Introduction to Game Theory* by Joel Watson

If you find that you are having trouble with the mathematics used in this course, I recommend obtaining one or more of the following texts as references:

- *Fixed Point Theorems with Applications to Economics and Game Theory* by Kim C. Border
- *Fundamental Methods of Mathematical Economics* by Alpha C. Chiang and Kevin Wainwright
- *Mathematics for Economics* by Michael Hoy, John Livernois, Chris McKenna, Ray Rees, and Thanasis Stengos
- *Real Analysis with Economic Applications* by Efe A. Ok
- *Mathematics for Economists* by Carl P. Simon and Lawrence E. Blume
- *A First Course in Optimization Theory* by Rangarajan K. Sundaram
- *Further Mathematics for Economic Analysis* by Knut Sydsaeter, Peter Hammond, Atle Seierstad, and Arne Strom
- *Mathematical Tools for Economics* by Darrell A. Turkington

## Other Readings

The following papers are required reading:

- Akerlof, G. (1970). The market for “lemons”: Quality uncertainty and the market mechanism. *Quarterly Journal of Economics* **89**: 488-500.
- Gul, F. (1997). A Nobel Prize for game theorists: The contributions of Harsanyi, Nash and Selten. *Journal of Economic Perspectives* **11**: 159-174.
- Rothschild, M. and J. Stiglitz (1976). Equilibrium in competitive insurance markets: An essay on the economics of imperfect information. *Quarterly Journal of Economics* **90**: 629-649.
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics* **87**: 355-374.

The following papers are recommended reading:

- Harsanyi, J. C. (1967). Games with incomplete information played by Bayesian players: Part I. *Management Science* **14**: 159-182.
- Harsanyi, J. C. (1968a). Games with incomplete information played by Bayesian players: Part II. *Management Science* **14**: 320-334.
- Harsanyi, J. C. (1968b). Games with incomplete information played by Bayesian players: Part III. *Management Science* **14**: 486-502.
- Kuhn, H. W. (1953). Extensive games and the problem of information. In *Contributions to the Theory of Games*. vol. 2, edited by H. W. Kuhn and A. W. Tucker. Princeton, NJ: Princeton University Press, 193-216.
- Myerson, R. B. (2004). Comments on “Games with incomplete information played by Bayesian players, I-III”: Harsanyi’s games with incomplete information. *Management Science* **50**: 1818-1824.
- Nash, J. F. (1950a). The Bargaining Problem. *Econometrica* **18**: 155-162.
- Nash, J. F. (1950b). Equilibrium points in n-person games. *Proceedings of the National Academy of Sciences of the United States of America* **36**: 48-49.
- Nash, J. F. (1953). Two-person cooperative games. *Econometrica* **21**: 128-140.
- Riley, J. G. (2001). Silver signals: Twenty-five years of screening and signaling. *Journal of Economic Literature* **39**: 432-478.
- Rubinstein, A. (1982). Perfect equilibrium in a bargaining model. *Econometrica* **50**: 97-109.
- Selten, R. (1975). Reexamination of the perfectness concept for equilibrium points in extensive games. *International Journal of Game Theory* **4**: 25-55.
- Wilson, C. (1977). A model of insurance markets with incomplete information. *Journal of Economic Theory* **16**: 167-207.

All of these papers are available on the course website.

## Tentative Course Schedule

<b>Date</b>	<b>Topic</b>	<b>Required Readings</b>	<b>Assignments</b>
	<b>Choice under Uncertainty</b>		
Jan 12	Introduction	MWG 6.A	
Jan 14	Expected Utility Theory	MWG 6.B	
		Recommended Readings: Border 3	
Jan 19	Money Lotteries and Risk Aversion	MWG 6.C	PSet 1 Due
Jan 21	Comparison of Payoff Distributions	MWG 6.D	
	<b>Static Games of Complete Information</b>		
Jan 26	Strategic Form Games	Gul (1997); FT 1.1	PSet 2 Due
Jan 28	Nash Equilibria	FT 1.2	
Feb 02	Nash Equilibria: Existence and Properties	Sundaram 9.4; FT 1.3	PSet 3 Due
		Recommended Readings: Border 6 & 15; Nash (1950b); Nash (1953)	
Feb 04	Iterated Strict Dominance and Rationalizability	FT 2.1	
	<b>Dynamic Games of Complete Information</b>		
Feb 09	Extensive Form Games	FT 3.1 - 3.4	PSet 4 Due
		Recommended Readings: Kuhn (1953)	
Feb 11	Backward Induction and Subgame Perfection	FT 3.5 - 3.6 & 4.2	
		Recommended Readings: Selten (1975)	
<b>Feb 16</b>	<b>Midterm Exam 1</b>	<b>3:30pm - 4:45pm</b> <b>Economics 119</b>	
Feb 18	Bargaining: Nash	Osborne & Rubinstein 15	
		Recommended Readings: Nash (1950a)	
Feb 23	Bargaining: Rubinstein-Stahl	FT 4.4	PSet 5 Due
		Recommended Readings: Rubinstein (1982)	
Feb 25	Infinitely Repeated Games	FT 4.3 & 5.1	

Mar 02	Folk Theorem	FT 5.1	PSet 6 Due
Mar 04	Finitely Repeated Games	FT 5.2	
	<b>Static Games of Incomplete Information</b>		
Mar 09	Bayesian Equilibria	FT 6.1 - 6.4	PSet 7 Due
		Recommended Readings: Myerson (2004); Harsanyi (1967), (1968a), & (1968b)	
Mar 11	Bayesian Equilibria: Examples	FT 6.5	
Mar 16	Purification of Mixed Strategy Equilibria	FT 6.7	PSet 8 Due
	<b>Dynamic Games of Incomplete Information</b>		
Mar 18	Perfect Bayesian Equilibria	FT 8.1 - 8.2	
		Recommended Readings: Selten (1975)	
<b>Mar 23</b>	<b>No Classes (Spring Break)</b>		
<b>Mar 25</b>	<b>No Classes (Spring Break)</b>		
Mar 30	Sequential Equilibria	FT 8.3	PSet 9 Due
Apr 01	Trembling-Hand Perfect Equilibria	FT 8.4	
<b>Apr 06</b>	<b>Midterm Exam 2</b>	<b>3:30pm - 4:45pm</b> <b>Economics 119</b>	
Apr 08	Proper Equilibria	FT 8.4	
	<b>Adverse Selection, Signaling, and Screening</b>		
Apr 13	Adverse Selection	MWG 13.A - 13.B; Akerlof (1970)	PSet 10 Due
Apr 15	Signaling	MWG 13.C; Spence (1973)	
Apr 20	Screening	MWG 13.D; Rothschild & Stiglitz (1976)	PSet 11 Due
		Recommended Readings: Wilson (1977); Riley (2001)	
Apr 22	Refinements	MWG 13 Appendix A	
Apr 27	Office Hours		PSet 12 Due
Apr 29	Office Hours		
<b>May 05</b>	<b>Final Exam (Cumulative)</b>	<b>7:30pm - 10:00pm</b> <b>Economics 119</b>	

## University Policies

### Students with Disabilities

If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services **by January 28<sup>th</sup>** so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities. University policies regarding disabilities are available at [www.colorado.edu/disabilityservices](http://www.colorado.edu/disabilityservices). Disability Services can be contacted by telephone at (303) 492 8671 or in person at Willard 322.

### Religious Observances

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments, or required attendance. If you have a conflict due to a religious obligation, please see me **at least one full week in advance** so that alternate arrangements can be made. Policies regarding religious observances are available at [www.colorado.edu/policies/fac\\_relig.html](http://www.colorado.edu/policies/fac_relig.html).

### Classroom Behavior

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. Policies regarding classroom behavior are available at <http://www.colorado.edu/policies/classbehavior.html> and at [http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student\\_code](http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code).

### Discrimination and Harassment

The University of Colorado at Boulder policy on Discrimination and Harassment, the University of Colorado policy on Sexual Harassment, and the University of Colorado policy on Amorous Relationships apply to all students, staff, and faculty. Any student, staff or faculty member who believes s/he has been the subject of sexual harassment or discrimination or harassment based upon race, color, national origin, sex, age, disability, creed, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at (303) 492 2127 or the Office of Judicial Affairs at (303) 492 5550. Information about the ODH, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at <http://www.colorado.edu/odh>.

## **Academic Misconduct**

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council ([honor@colorado.edu](mailto:honor@colorado.edu), (303) 735 2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at [www.colorado.edu/policies/honor.html](http://www.colorado.edu/policies/honor.html) and at [www.colorado.edu/academics/honorcode](http://www.colorado.edu/academics/honorcode).