

Applied Microeconomic Theory II

Res Econ 712-01 (48596)

Spring 2020

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Classroom: Flint Laboratory Room 103

Class Time: Tue/Thu 1:00PM-2:45PM

Course Objectives and Requirements:

This is a continuation of Applied Microeconomic Theory I (Res Econ 711). We will cover the following topics: *general equilibrium analysis, social choice and welfare economics, introduction to non-cooperative game theory and information economics*. Prerequisite for this course is familiarity with the content covered in Res Econ 711.

Regular attendance is expected and be prepared to discuss the assigned readings.

Course Website: Moodle (<https://moodle.umass.edu>). I will post class slides, problem sets, supplemental materials, grades, etc. in Moodle. It is important that you check the website frequently.

Textbook:

Jehle, Geoffrey A and Reny, Philip J. 2011. *Advanced Microeconomic Theory (3rd Edition)*.

Gibbons, Robert. *Game theory for applied economists*. Princeton University Press, 1992.

Supplemental materials will be posted on Moodle, mainly drawn from papers relevant to each topic and the following textbooks:

Varian, Hal R. "Microeconomic analysis." (1992).

Mas-Colell, Andreu, Michael Dennis Whinston, and Jerry R. Green. *Microeconomic theory*. Vol. 1. New York: Oxford university press, 1995.

Osborne, Martin J., and Ariel Rubinstein. *A course in game theory*. MIT press, 1994.

Evaluation: Grading will be based on problem sets (15%), Midterm exam 1 (25%), Midterm exam 2 (25%), Final exam (35%).

Course Policies: Please check the exam dates and keep in mind the deadlines, and please plan ahead to avoid any conflicts. No late assignments will be accepted. No make-up exams will be granted. Exceptions will only be made when the student has the university-approved reasons for not taking the exams as scheduled and provides all the written documents under such circumstances. A letter grade

of the following will be assigned on the basis of your cumulative score.

F	D	D+	C-	C	C+	B-	B	B+	A-	A
<60	60	63	67	70	73	77	80	83	87	90

-A note on classroom decorum: Please show respect towards me and your fellow students, and let's work together to have a classroom that is conducive to learning by following the following rules:

1. TURN OFF YOUR CELL PHONE! If you are on call for work, please let me know in advance and put your phone on silent. No texting during class – it is not as quiet as you think.
2. You are welcome to use computers to take notes. However, if you are caught doing other stuff during class time, then you will be asked to turn off your computer.
3. No negative language, please (no racist, sexist, homophobic remarks, or in other ways that are insensitive to your fellow classmates).
4. Show up on time, and don't leave early. Wait for the class to be formally dismissed before you start to pack up your things or get up to leave. It is distracting to me and your fellow classmates.
5. Avoid other unnecessary distractions: private conversations, reading newspapers, working on assignments for other classes, eating, sleeping, etc.
6. If you are having trouble with something, please email or come see me.
7. When in class, participate and have FUN! Economics is an awesome field, and we are going to be learning some very powerful tools this semester.

Disability Statement: The University of Massachusetts Amherst is committed to making reasonable, effective and appropriate accommodations to meet the needs of students with disabilities and help create a barrier-free campus. If you are in need of accommodation for a documented disability, register with Disability Services to have an accommodation letter sent to your faculty. It is your responsibility to initiate these services and to communicate with faculty ahead of time to manage accommodations in a timely manner. For more information, consult the Disability Services website at <http://www.umass.edu/disability/>.

Academic Honesty Policy Statement: Since the integrity of the academic enterprise of any institution of higher education requires honesty in scholarship and research, academic honesty is required of all students at the University of Massachusetts Amherst.

Academic dishonesty is prohibited in all programs of the University. Academic dishonesty includes but is not limited to: cheating, fabrication, plagiarism, and facilitating dishonesty. Appropriate sanctions may be imposed on any student who has committed an act of academic dishonesty. Instructors should take reasonable steps to address academic misconduct. Any person who has reason to believe that a student has committed academic dishonesty should bring such information to the attention of the appropriate course instructor as soon as possible. Instances of academic dishonesty not related to a specific course should be brought to the attention of the appropriate department Head or Chair. The procedures outlined below are intended to provide an efficient and orderly process by which action may be taken if it appears that academic dishonesty has occurred and by which students may appeal such actions.

Since students are expected to be familiar with this policy and the commonly accepted standards of academic integrity, ignorance of such standards is not normally sufficient evidence of lack of intent. For more information about what constitutes academic dishonesty, please see the Dean of Students' website: http://umass.edu/dean_students/codeofconduct/acadhonesty/.

Topics and Reading Assignments:

- Game Theory and Information Economics: [Gibbons] [JR] Chapters 7 and 8
 - Static games of complete information
 - [Gibbons] Chapter 1, [JR] Chapters 7
 - Nash Equilibrium
 - Mixed Strategies
 - Dynamic games of complete information
 - [Gibbons] Chapter 2, [JR] Chapters 8
 - Subgame Perfect Nash Equilibrium
 - Repeated Games
 - Static games of incomplete information
 - [Gibbons] Chapter 3, [JR] Chapters 7
 - Bayesian Nash Equilibrium
 - The Revelation Principle
 - Dynamic games of incomplete information
 - [Gibbons] Chapter 4, [JR] Chapters 7
 - Perfect Bayesian Equilibrium
 - Signaling and screening games
- General Equilibrium Analysis: [JR] Chapter 5
 - Exchange economy
 - Walras: competitive equilibrium
 - Edgeworth: core
 - Efficiency and welfare theorems
 - [Optional] Uniqueness and stability of competitive equilibrium
 - [Optional] Time and uncertainty
- Social Choice and Welfare: [JR] Chapter 6
 - Social preference and Arrow's Impossibility Theorem
 - Cardinal social welfare functions

The course schedule on next page provides a tentative timeline subject to changes that will be made throughout the semester.

In addition, the course schedule prescribes reading assignments for each week's classes under the "Chapter" column.

Date	Chapter	Topics	Details	Assignments
Tue 01/21	[JR]7.1,7.2.1 [Gibbons] Ch.1	Intro to Game Theory Strategic form games 1	Types of non-cooperative game games; Strategic dominance; Pure Strategy Nash equilibrium	
Thu 01/23	[JR]7.2.2 [Gibbons] Ch.1	Strategic form games 2	Nash equilibrium in mixed strategy spaces; Applications - Cournot Duopoly, Bertrand Duopoly	
Tue 01/28	[JR]7.2.2 [Gibbons] Ch.1	Strategic form games 3	Applications - Tragedy of Commons; Discussion	
Thu 01/30	[JR]7.3.1-7.3.5 [Gibbons] Ch.2	Extensive form games 1	Elements of extensive form games; Strategies in extensive form games	
Tue 02/04	[JR]7.3.1-7.3.5 [Gibbons] Ch.2	Extensive form games 2	Subgame Perfect Nash Equilibrium; Applications - Strackelberg Duopoly	PS1 Due (Strategic form games)
Thu 02/06	[JR]7.3.1-7.3.5 [Gibbons] Ch.2	Extensive form games 3	Finitely repeated games	
Tue 02/11	[JR]7.3.1-7.3.5 [Gibbons] Ch.2	Extensive form games 4	Infinitely repeated games; the folk theorem	
Thu 02/13	Catch up / Exercise session			PS2 Due (Extensive form games 1 and 2)
Thu 02/20		Midterm 1	[JR]7.1, 7.2 (excluding 7.2.3), 7.3 (excluding 7.3.6) [Gibbons] Ch.1, Ch.2 (exclduing 2.3)	
Tue 02/25	[JR]7.2.3 [Gibbons] 3.1	Incomplete Information 1	Static games of incomplete information; Bayesian Nash Equilibrium	
Thu 02/27	[JR]7.2.3 [Gibbons] 3.2	Incomplete Information 1	Applications- Cournot duopoly with asymmetric information; first price sealed bid auction	PS3 Due (Extensive form games 3 and 4)
Tue 03/03	[JR]7.3.6 [Gibbons] 4.1	Incomplete Information 2	Dynamic games of incomplete information; Perfect Bayesian Equilibrium	
Thu 03/05	[JR]7.3.6 [Gibbons] 4.2.A	Incomplete Information 2	Perfect Bayesian Equilibrium in signaling games	
Tue 03/10	[JR]7.3.6 [Gibbons] 4.2.B	Incomplete Information 2	Education signaling games	
Thu 03/12	Catch up / Exercise session			PS4 Due (Incomplete Information)
Tue 03/24		Midterm 2	[JR] 7.2.3, 7.3.6 [Gibbons] Ch. 2.3, Ch.3, Ch.4	
Thu 03/26	[JR]5.1 [F]2	The Barter Exchange Economy	Intro to General Equilibrium; Equilibrium and Efficiency in Edgeworth Box	
Tue 03/31	[JR]5.1	The Barter Exchange Economy	General Exchange Economy: Pareto Efficiency, Coalitions and the Core	
Thu 04/02	[JR]5.2	Competitive Markets without Production	Assumptions; Demand; Definition of Walrasian Equilibrium; How to solve for WE	
Tue 04/07	[JR]5.2	Competitive Markets without Production	Walra's Law; WE in Edgeworth Box	PS5 Due (Exchange Economy; Solving for WE)
Thu 04/09	[JR]5.2 [V]17.5	Competitive Markets without Production	Existence of WE	
Tue 04/14	[JR]5.2	Competitive Markets without Production	Welfare Theorems	
Thu 04/16	[JR]6.1, 6.2	Social Choice and Welfare	Arrow's Impossibility Theorem	PS6 Due (Existence of WE and Welfare Theorems)
Tue 04/21	[JR]6.3	Social Choice and Welfare	Social Welfare Function	
Thu 04/23	[V]17.9, 22.2	Social Choice and Welfare	Applying SWF	
Tue 04/28	Catch up, Exercise session			PS7 Due (Social Choice and Welfare)
Thu 05/07		Final Exam	[JR] 5.1, 5.2, 5.3, 5.4, 6.1, 6.2, 6.3 [V] 17.5, 17.9, 22.2	