ECONS 503 - MICROECONOMIC THEORY-II

SPRING 2026

https://felixmunozgarcia.com/econs-503/

Instructor: Felix Munoz-Garcia

Lectures: Mondays and Wednesdays, 8:45-10:00am. Hulbert 23 (ground floor)

TA: Krishna Pullarkattu Mukundan
k.pullarkattumukund@wsu.edu

Office hours: Tuesdays and Thursdays 1:30-2:30pm
Office number: Hulbert Hall 207A

Office: Hulbert Hall 103H
Phone: 509-335-8402
e-mail: fmunoz@wsu.edu

Office hours: Thursdays, 11:00–noon., and by appointment.

Course Rationale

This course introduces students to game theory, economics of information and contracts, general equilibrium theory and social choice theory. Several applications and empirical implications will be discussed.

Course Objectives and Learning Outcomes

The main objective of the course is to make students be able to apply the tools of advanced microeconomic theory to understand and model *strategic* decision making. In addition, the topics learned in this course should prepare the student for a better understanding of the concepts he/she will learn in second-year Ph.D. courses, such as Industrial Organization, Environmental Economics and Public Economics. Furthermore, the theoretical approach of the course (and many of the mathematical tools explained) will set stronger foundations for analyzing economic problems, not only from a microeconomic perspective but also in other fields in economics.

Prerequisites:

Intermediate Microeconomics and some college algebra and calculus are expected. Some books on mathematical methods in economics are suggested below, as a helpful support during the course, and are strongly recommended.

Required Textbooks:

- *Game Theory: An Introduction with Step-By-Step Examples*, with Ana Espinola-Arredondo, Palgrave MacMillan, December 2023.

Recommended reading (Game Theory):

Undergraduate-level game theory. Here is list of some of the most popular game theory textbooks used at the undergrad level. I only included those that are close in their rigor to a Master program:

- *An Introduction to Game Theory*. Martin Osborne. Oxford University Press. 2004. (Combines verbal explanations with some rigor).
- *Game Theory for Applied Economists.* Robert Gibbons. Princeton University Press. 1992. (Very short!)
- *Game Theory: An Introduction,* by Steven Tadelis. *Princeton University Press. 2013.*
- *Strategy and Game Theory: Practice Exercises with Answers.* Felix Munoz-Garcia and Daniel Toro-Gonzalez. Springer Verlag, 2nd edition, 2019.

Graduate-level game theory. If your game theory background is relatively strong, here are some textbooks that might be useful:

- *Game Theory*, Drew Fudenberg and Jean Tirole. MIT Press. 1991.
- *Game Theory.* Michael Maschler, Eilon Solan, and Shmuel Zamir, Cambridge University Press, 2013.
- *A Course on Game Theory.* Ariel Rubinstein and Martin Osborne. MIT Press. 1994.

Applications of Game Theory to Industrial Organization:

- *Industrial Organization. Markets and Strategies.* Paul Belleflamme and Martin Peitz. Cambridge University Press. 2015. Second edition.
- *Industrial Organization: Practice Exercises with Answer Keys.* Pak-Sing Choi, Eric Dunaway, and Felix Munoz-Garcia, Springer, 2023, Second edition.

Applications of Game Theory to Information Economics and Contract Theory:

- *Contract Theory*. Patrick Bolton and Mathias Dewatripont. MIT Press. 2004.
- *An Introduction to the Economics of Information: Incentives and Contracts.* Ines Macho-Stadler and David Perez Castrillo. Oxford University Press. 2001.
- *The Theory of Incentives: The Principal-Agent Model.* Jean-Jacques Laffont and David Martimort. Princeton University Press. 2002.
- *The Economics of Contracts: A Primer.* Bernard Salanie. MIT Press. 2nd Edition. 2005.

Applications of Game Theory to Mechanism Design:

- *An Introduction to the Theory of Mechanism Design*, by Tilman Borgers and Daniel Krahmer, Oxford University Press, 2015.
- *Game Theory and Mechanism Design*, by Y. Narahari, IISc Lecture Notes, 2014.
- *A Toolbox for Economic Design*, by D. Diamantaras et al., Palgrave Publishers, 2009.
- *Auction Theory: Introductory Exercises with Answer Keys.* Pak-Sing Choi and Felix Munoz-Garcia. Springer, 2021.

Applications of Game Theory to Political Science and Environmental Economics:

- *Special Interest Politics.* Gene M. Grossman and Elhanan Helpman. MIT Press. 2002.

- *Game Theory and the Environment.* Nick Hanley and Henk Folmer. Edward Elgar Publishers. 1999.

- *Environmental Policy and Market Structure.* C. Carraro, Y. Katsoulacos, and A. Xepapadeas. Springer. 1996.

- *Oligopoly, the Environment and Natural Resources.* Luca Lambertini. Routledge Publishers. 2013.

Recommended Reading (Mathematics):

Most comprehensive:

- Carl P. Simon and Lawrence E. Blume. *Mathematics for Economists.* W. W. Norton. 1994.

- Michael Hoy, John Livernois, Chris McKenna, Ray Rees and Anthanassios Stengos. *Mathematics for Economics.* MIT Press, 2022. Now in its fourth edition, but any edition should work.

Also recommended (refreshing undergrad mathematics):

- Alpha Chiang. *Fundamental Methods of Mathematical Economics.* (Any edition). McGraw-Hill.

- Knut Sydsaeter and Peter I. Hammond. *Mathematics for Economic Analysis.* (Any edition) Prentice Hall.

- Michael Klein. *Mathematical Methods for Economics.* (Any edition) Addison-Wesley.

Also recommended (although not so comprehensive):

- Russel A. Gordon. *Real Analysis, A first course.* Second edition. Addison Wesley. [A gentle introduction to real analysis].

- Robert G. Bartle and Donald R. Sherbert. *Introduction to real analysis.* 3rd edition. Wiley. [Another gentle introduction to real analysis.]

- William Trench. *An Introduction to Real Analysis.* Free downloadable textbook at: http://ramanujan.math.trinity.edu/wtrench/misc/index.shtml. [Recommended if you never had courses on real analysis before.]

- Rangarajan K. Sundaram. *A first course in optimization theory.* Cambridge University Press. [Very good introduction to real analysis, and its connection with maximization problems.]

Lectures:

Lectures will be held at Hulbert Hall 23 (ground floor), Mondays and Wednesdays, 8:45–10:00a.m. Attendance is very important to your success in this class.

Class materials:

All class materials (handouts, additional readings, homework assignments, answer keys, etc.) will be posted on the website: https://felixmunozgarcia.com/econs-503/.

Grading:

Your grade for the course will be based on:

- Problem sets (35%),

- Two midterms (20% each), and
- Final exam (25%).

Exam dates:

Midterm #1: Wednesday, February 25th.

Midterm #2: Wednesday, April 1st.

Final exam: Thursday, May 7th, 10:30am-12:30pm

Make-up exams will only be given if you have a note from a doctor indicating that you were unable to take the exam at the scheduled time.

Attendance and Participation:

Students are expected to attend all scheduled class times, as attendance and participation contribute significantly to learning in this course. If you feel miss a class, it is your responsibility to find out from an informed student what occurred in class, what assignments may have been given, etc. Assignments are due at the beginning of class (as described below). Late work is subject to significant grade reduction, depending upon the assignment.

Students with Disabilities:

Reasonable accommodations are available for students with a documented disability. If you have a disability and may need accommodations to fully participate in this class, please visit the Disability Resource Center at http://www.drc.wsu.edu/, stop by their office at the Admin Annex Building, Room 205; or call 509-335-3417. All accommodations must be approved through the Disability Resource Center.

Academic Integrity:

Academic integrity will be strongly enforced in this course. Any student caught cheating on any assignment will be given an F grade for the course and will be reported to the Office Student Standards and Accountability. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these definitions: http://conduct.wsu.edu/default.asp?PageID=338.

WSU Safety:

WSU is committed to maintaining a safe environment for its faculty, staff, and students. Safety is the responsibility of every member of the campus community and individuals should know the appropriate actions to take when an emergency arises. In support of our commitment to the safety of the campus community the University has developed a Campus Safety Plan, http://safetyplan.wsu.edu. It is highly recommended that you visit this web site as well as the University emergency management web site at http://oem.wsu.edu/emergencies to become familiar with the information provided.

Lauren's Promise:
I will listen and believe you if someone is threatening you.
Lauren McCluskey, a 21-year-old honors student athlete, was murdered on Oct. 22, 2018, by a man she briefly dated on the University of Utah campus. We must all take actions to ensure that this never happens again.
- If you are in immediate danger, call 911.
- If you are experiencing sexual assault, domestic violence, and stalking, please report it to me and I will connect you to resources or call Alternatives to Violence of the Palouse at 877-334-2887 (24-hour crisis hotline).

Any form of sexual harassment or violence will not be excused or tolerated at Washington State University. WSU has instituted procedures to respond to violations of these laws and standards, programs aimed at the prevention of such conduct, and intervention on behalf of the victims.

WSU Police officers will treat victims of sexual assault, domestic violence, and stalking with respect and dignity. Confidentiality is of the utmost importance and WSU Police will assist by providing resources to victims. In addition to its law enforcement efforts regarding sexual assault, domestic violence and stalking, WSU Police refer victims to the appropriate university and/or local community counseling and other resources devoted to assisting victims.

Advocates help survivors determine their own needs in regards to their physical and emotional health, reporting options, and academic concerns. They connect survivors to campus and community services, and provide accompaniment to important appointments (court, hospital, and police) and support throughout the process. WSUPD can also connect you with advocacy services, if desired. The local advocacy group is Alternatives to Violence of the Palouse, whose services are free, immediate, and confidential.

Other confidential resources include WSU Counseling and Psychological Services. If you would like to speak with a counselor after business hours, WSUPD can contact the on-call counselor and have them call you directly or a crisis telephone number is provided. Information shared with the counselor will not be provided to WSUPD without expressed permission from you.

WSU Counseling and Psychological Services 509-335-2159 (crisis services line).

DESCRIPTION OF COURSE REQUIREMENTS

Homework:
Homework assignments will be posted on the course website (almost) every Monday, and they must be submitted the next Monday at the beginning of the class. Make sure you give yourself enough time to complete the problem sets. You are encouraged to work in groups, although an individual homework assignment must be submitted per student. Working in groups has proven to be a very successful learning technique for previous students of this course. Additional practice problems will be provided if required.

Grading scale:

A	88-100	C	55-59
A-	80-87	C-	50-54
B+	74-79	D+	45-49
B	70-75	D	40-44
B-	65-69	F	0-39
C+	60-64		

Note: Grades will not be curved.

Course Schedule:
The course schedule is tentative. Legend for the textbooks: Ana Espinola and Munoz-Garcia (AM), Osborne (O) and Gibbons (G), Tadelis (T), Fudenberg and Tirole (FT), Maschler et al. (M), and Munoz-Garcia and Toro-Gonzalez (MT).

1. **Week 1**:
   a. Introduction and Dominance solvable games.
   b. *Recommended readings:* AM: 1-2, T: 3-4, G: 1.1.A-1.1.B, MT: 1.
   c. *Optional readings:* FT: 1.1 and 2, M: 3 and 4.1-4.7.
2. **Week 2**:
   a. Monday, January 15th is Martin Luther King Jr. Day (Holiday, no class).
   b. Pure strategy Nash equilibrium and applications.
   c. *Recommended readings:* AM: 3-4, T: 5, G: 1.1.C, and 1.2, MT: 2.
   d. *Optional readings:* FT: 1.2, and M: 4.8-4.15.
3. **Week 3**:
   a. Mixed strategy Nash equilibrium and applications. Zero sum games.
   b. *Recommended readings:* AM: 5, T: 6, and G: 1.3-1.4.

    c. *Optional readings:* FT: 1.3.1, M: 5.
4. **Week 4**:
    a. Extensive form games and subgame perfect equilibrium.
    b. *Recommended readings:* AM: 6, T: 7-8, and G: 2.1.A-2.1.B.
    c. *Optional readings:* FT: 3, and M: 7.1-7.2.
5. **Week 5**:
    a. Applications of extensive form games.
    b. *Recommended readings:* AM: 6, G: 2.1.C-2.1.D, and MT: 5.
    c. *Optional readings:* M: 7.3-7.4.
6. **Week 6**:
    a. Repeated games and its applications-I.
    b. *Recommended readings:* AM: 7, T: 10, G: 2.3.A-2.3.B, and MT: 6.
    c. *Optional readings:* FT: 4 M: 13.
7. **Week 7**:
    a. Monday, February 16th is Presidents Day (Holiday, no class).
    b. Repeated games and its applications-II.
    c. *Recommended readings:* AM: 7, O: 14-15, and G: 2.3.C-2.3.D.
    a. *Optional readings:* FT: 5.
8. **Week 8**:
    a. Simultaneous games under incomplete information and its applications.
    b. *Recommended readings:* AM: 8-9, T: 12-14, G: 3.1-3.4, and MT: 7 and 8.
    a. *Optional readings:* FT: 6 and 7, and M: 9.1-9.7.
9. **Week 9**:
    a. Signaling games and Equilibrium refinements.
    b. *Recommended readings:* AM: 10-12, T: 16-17, G: 4.1-4.2.D, and MT: 9.
    c. *Optional readings:* FT: 8 and 11.2.
10. **Week 10**:
    a. Cheap talk games.
    b. *Recommended readings:* AM: 13, T: 18, G: 4.3.A., Grossman and Helpman, Ch 4, and MT: 10.
    c. *Optional readings:* FT 8.
11. **Week 11**:
    a. Adverse Selection and Screening.
    b. *Recommended readings:* Munoz-Garcia, 10.4-10.6, MWG 13, and Bolton and Dewatripont, Ch 2.
12. **Week 12**:
    a. Moral hazard.
    b. *Recommended readings:* Munoz-Garcia, 10.1-10.3, MWG 14, and Bolton and Dewatripont, Ch 4.
    c. General equilibrium.
    d. *Recommended readings:* Munoz-Garcia 6.4-end of Chapter 6 (including appendices), and JR 5.
13. **Week 13**:
    a. Mechanism design.
    b. *Recommended readings:* T: 14, MWG 23, and JR 9.3-9.5.
14. **Week 14**:
    a. Social choice theory.
    b. *Recommended readings:* JR 6.
15. **Week 15**:
    a. Social choice theory.
    b. *Recommended readings:* JR 6.
16. **Week 16**:
    a. Final Exam, TBA.