

**ECON 0200**  
**Game Theoretic Principles**  
Summer 2017

Instructor: Felipe Augusto de Araujo  
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Office: 4513 Posvar Hall  
Class times: Tuesday and Thursday 6:00-9:15pm (4900 WW Posvar Hall)  
Office Hours: Room 4524 on Tuesday 1:00 – 3:00 (or by appointment)

**Prerequisites:** This course uses algebra at the level of MATH 0031.

**Course Description:** This course introduces the basic concepts of game theory. The emphasis is on the unifying perspective that game theory offers to questions in economics, in other disciplines, and to everyday life. It will enable students to view interactions as strategic games and to use game theoretic concepts to predict and to explain behavior in these interactions.

**Course Objectives:** By the end of this course students will be able to:

- Recognize strategic situations in everyday economic and social interactions;
- Describe such situations using the language and methods of game theory;
- Use game theory to analyze the outcomes of some of these situations;

**Textbook:** Harrington, Joseph E., *Games Strategies, and Decision Making*, 2<sup>nd</sup> edition, Worth Publishers (2015). ISBN: 1-4292-3996-4. The textbook is available at the bookstore and from on-line booksellers. The textbook covers most of the same material as the lectures, using different explanations and different examples. Some homework problems will be assigned from the textbook. If you cannot afford to buy the textbook, please arrange with your classmates to share a copy.

**Courseweb:** This course will use the University's Courseweb system: <http://courseweb.pitt.edu>. Students who are registered for the course can access their grades on-line. Any communication regarding changes in the schedule or revisions to the syllabus will sent via Courseweb's email list to your University email account.

**Homework Assignments:** The assignments allow you to synthesize the concepts you have studied so far and apply them to a variety of real and hypothetical situations. These assignments are more complex than the problems covered in lecture. The assignments will be posted each week on Courseweb and are to be submitted in class. Late assignments will not be accepted.

**Exams:** There will be a midterm and a final exam. Both the midterm and final exam will be during scheduled lecture time. I will not allow students to take either exam early. The final is cumulative to the extent that the material is cumulative.

**Life Happens:** A number of unexpected events may occur that prevent you from completing your work on time. For this reason, I will count only 4 of your 5 homework assignments. Makeup exams, however, will only be given if you provide verification of illness from a healthcare provider.

**In-class exercises:** Occasionally, we will work on cooperative group assignments during the class period. These exercises will be handed in for bonus points, which will be added to your homework grade. If you are not in class, you cannot earn points for in-class exercises.

**Grading:** Your learning will be assessed through assignments, tests, and the in-class exercises, weighted as follows:

|             |     |
|-------------|-----|
| Assignments | 30% |
| Midterm     | 30% |
| Final       | 40% |

**Letter Grades:** Assignment of letter grades are as follows:

|    |           |
|----|-----------|
| A+ | 100 – 97  |
| A  | 96.9 – 93 |
| A- | 92.9 – 90 |
| B+ | 89.9 – 87 |
| B  | 86.9 – 83 |
| B- | 82.9 – 80 |
| C+ | 79.9 – 77 |
| C  | 76.9 – 73 |
| C- | 72.9 – 70 |
| D+ | 69.9 – 67 |
| D  | 66.9 – 63 |
| D- | 62.9 – 60 |
| F  | Below 60  |

**Academic Integrity:** All students are expected to adhere to the standards of academic honesty. Any student engaged in cheating, plagiarism, or other acts of academic dishonesty would be subject to disciplinary action. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to the confiscation of the examination of any individual suspected of violating the University Policy.

**Accommodations for Students with Disabilities:** If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 140 William Pitt Union, 412-648-7890/412-624-3346 (Fax), as early as possible in the term. Disability Resources and Services will verify your disability and determine reasonable accommodations for this course. For more information, visit [www.studentaffairs.pitt.edu/drsabout](http://www.studentaffairs.pitt.edu/drsabout).

**Classroom Recording:** To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use.

### Schedule

| Date   | Topic   | Assignments | Reading  |
|--------|---|-------------|--|
| May 16 | Lecture #1: What is a game?<br>Lecture #2: Modeling games I                                       |             | Chapter 1<br>Chapter 2 (2.1 - 2.3)             |
| May 18 | Lecture #3: Modeling games II<br>Lecture #4: Solution concept: Dominance I                        |             | Chapter 2 (2.4 - 2.9)<br>Chapter 3 (3.1 - 3.3) |
| May 23 | Lecture #5: Solution concept: Dominance II<br>Lecture #6: Solution concept: Nash Equilibrium I    | PS #1 Due   | Chapter 3 (3.4 - 3.5)<br>Chapter 4 (4.1 - 4.3) |
| May 25 | Lecture #7: Solution concept: Nash Equilibrium II<br>Lecture #8: n-player Games I                 |             | Chapter 4 (4.4 - 4.6)<br>Chapter 5             |
| May 30 | Lecture #9: n-player Games II<br>Lecture #10: Solution concept: Mixed N. E. I                     | PS #2 Due   | Chapter 5<br>Chapter 7 (7.1 - 7.2)             |
| Jun 1  | Lecture #11: Solution concept: Mixed N. E. II<br>Lecture #12: Solution concept: Mixed N. E. III   |             | Chapter 7                                      |
| Jun 6  | Lecture #13: Review<br><b>MIDTERM EXAM</b>  | PS #3 Due   |  |
| Jun 8  | Lecture #14: Solution concept: Backward induction<br>Lecture #15: Solution concept: SPNE          |             | Chapter 8                                      |
| Jun 13 | Lecture #16: Imperfect information I<br>Lecture #17: Imperfect information II                     | PS #4 Due   | Chapter 9                                      |
| Jun 15 | Lecture #18: Solution concept: Bayesian N.E. I<br>Lecture #19: Solution concept: Bayesian N.E. II |             | Chapter 10                                     |
| Jun 20 | Lecture #20: Repeated Games I<br>Lecture #21: Repeated Games II                                   | PS #5 Due   | Chapter 13                                     |
| Jun 22 | <b>FINAL EXAM</b>   |             |  |