

# Economics 510: Advanced Microeconomic Theory

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COURSE                **Meetings**  
                         Tuesday/Thursday, 9:30am–10:45am  
                         Gardner 106

**Office hours**  
                         Tuesday/Thursday, 3:15pm–4:15pm (and by appointment)  
                         Gardner 305A

GOALS                 In this course we will cover the role of *incentives* in decisionmaking, using the principles of game theory. We will use the first part of the semester to build the set of tools employed by game theorists, and we will discuss how these principles map onto real-world situations.

The content of the second part of the semester will be determined by class interest; this *will not* be an unconstrained choice. We will choose one of:

- ⊞ *Market design* covers the principles of how we can create well-functioning markets where none exist. Examples of such situations are auctions, the assignment of medical residents to hospitals, kidney transplants, and the allocation of public school seats. We will motivate this course of study by discussing some counterintuitive market implications of standard economic analysis.
- ⊞ *Game theory* leads to a number of counterintuitive predictions, commonly referred to as “paradoxes,” where economics suggests behavior that does not match what we see in the real world. In this course of study we will discuss some ways in which theory can be reconciled with reality.

At this time I am sure that these topics sound vague and quite dry, so I will assess your preferences once we have covered the basic tools which will be used in either case, when we will have the ability to discuss which thread we will follow.

POLICIES              **Grading**

- ⊞ Problem sets. There will be biweekly problem sets. These are optional but highly suggested.
- ⊞ Midterm. There will be one midterm (likely in Week 6), covering the introductory tools of game theory we will discuss early in the course.
- ⊞ Final. There will be a final exam, covering the applications of these concepts that we will discuss during the second part of the semester.

- ⊞ Term paper. There will be a 10–12 page term paper, as well as checkpoint assignments to be sure you are on track to successfully complete your term paper. Topics will be discussed after the midterm.
- ⊞ Participation. This will be measured semi-objectively; see below.

Problem sets will make up 0% of your grade, the midterm will make up 25% of your grade, the final will make up another 25% of your grade, and the term paper (along with the checkpoint assignments) will make up 40% of your grade. The remaining 10% of your grade will be determined by class participation.

## Participation

Throughout the semester I will be using in-class examples to illustrate the concepts we are covering. We will be playing games, where the points you earn are for keeps.<sup>1</sup> Here are the rules for participation:

- ⊞ Everyone starts with 50 points.
- ⊞ By participating in class examples, you will have the opportunity to gain points. Later in the semester, you will also have the ability to lose points. *None of this will be done purely at my discretion, and will be subject to well-specified rules and consequences. Some of these consequences may be random.*
- ⊞ At the end of the semester, your number of points will be adjusted: if it is less than zero, it will be set to zero; if it is more than 100, it will be set to 100.
- ⊞ Your participation score is your adjusted number of points, divided by the larger of 75 and the maximum adjusted number of points obtained by your peers, times 100.

By the end of the first week of the course you should have a basic understanding of why this system is engineered this way. If you do not participate at all, you are guaranteed at least a 50% participation score. If no one participates at all, everyone gets a 67% participation score. You are welcome to verify these calculations.

## Attendance

You are expected to attend all class sessions. With exception to the first week (see below) I will not be taking attendance, so your attending lecture is on a good-faith basis.

Because the 500 courses are frequently oversubscribed, I will be taking attendance during the first week of class, prior to the add/drop deadline. **If there is an active waitlist, any enrolled student who fails to show up for these class sessions will be un-enrolled from the course so that waitlisted students have an opportunity to enroll.** There is no priority list for waitlisted students who attend both of the class sessions during the first week: any student enrolled from this list will be selected at random.

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<sup>1</sup>The games we will play are not *Chutes and Ladders*, but are a concept central to the topics we will cover this semester.

## **Communication**

I will make class notes available on Sakai during the same week as lecture.

I will respond to workday emails within 24 hours, and to weekend/holiday emails within 48 hours. As a matter of policy, all emails must contain a salutation, e.g., "Hi [X]." I reserve the right to ignore emails that are not politely begun.

## SCHEDULE

**Week 1:** rational behavior, strategies, efficiency

**Week 2:** Nash equilibrium, randomness, mixed strategies

**Week 3:** repeated games, extensive form

**Week 4:** information

**Week 5:** learning, signaling

**Week 6:** recap, midterm

**Week 7+:** *subject to class discussion*