Econ 4180 Fall 2026 Syllabus

1 Overview

- Course:
  - title: Game Theory I
  - code: Econ 4180 (section MR1).
- Instructor:
  - name: Max Rosenthal
  - email: rosenthal@gatech.edu
  - office: Old Civil Engineering room 219.
- Teaching assistant:
  - name: TBD
  - email: TBD.
- Meetings:
  - location: Skiles 270
  - time: Monday and Wednesday 11:00 AM to 12:15 PM
  - dates: August 24, 2026 to December 17, 2026.

2 Email and office hours

The teaching assistant is the first point of contact for emails pertaining both to course material and also grading and other administrative concerns. We will adhere strictly to the policies outlined in this syllabus, especially with regards to grades, missed homework assignments, and missed exams. Questions about grades and excused work should be directed to the instructor only if there is a dispute with the teaching assistant. Both the teaching assistant and the instructor will be available for office hours throughout the semester.

Email policy

We will answer e-mails within 24 business hours during the week. There is no commitment from either the teaching assistant or the instructor to answer e-mails outside of normal working hours (Monday through Friday between 9:00 AM and 5:00 PM). Involved content questions should be raised in office hours rather than via e-mail.

Teaching assistant office hours

During the first week of the term, our teaching assistant will solicit input from students regarding office hours. The schedule and format for these hours is TBD.

Instructor office hours

Office hours are Monday and Wednesday by appointment, either in person in my office or remote by appointment. Please e-mail me 24 business hours or more in advance to request a meeting.

3 The class

Description

This is an upper division economics elective course in game theory. *Game theory* might be viewed as a set of tools for formally modeling and analyzing strategic interaction between rational agents. Critically, game theory is distinguished from microeconomics more broadly by its focus on interactions between multiple decision makers. While it is in principle straightforward to model the behavior of an individual rational decision maker — e.g., he maximizes a preference, a utility function, or a profit function, as in the consumer or producer theory of intermediate microeconomics — modeling interactions between multiple self-interested decision makers requires some additional care.

Game theory has many applications. It is ubiquitous not only in economics, business, and political science, but also in neighboring subjects such as industrial engineering and not-so-neighboring subjects like biology. In fact, game theory is such an important part of computer science that the discipline has developed its own methodologies for doing game theory that have diverged somewhat from the field's roots in economics. My expectation is that many students in this course will go on to use game theory in areas of study not only within economics, but in some of these other areas as well.

Learning outcomes

The primary goal of this course is to familiarize students with the theoretical foundations of game theory. Time permitting, a secondary goal is to develop select applications. In particular, upon completion of the course, students should

- understand the basic tenets of game theory: strategies, best responses, and equilibrium;
- be able to analyze and solve various types of games; and
- understand the assumptions and modeling framework that underlie game theory and be able to think critically about the relationship theory and practice.

Prerequisites

This course has no formal prerequisites or co-requisites. I presume comfort with differential calculus and basic probability. While the course is fully self-contained, some students will find a background in introductory and intermediate microeconomics to be helpful.

References

There are two references for this course.

- Required text: *Strategy: An Introduction to Game Theory (Third Edition)* by Joel Watson (ISBN 978-0-393-91838-0).
- Supplemental text: I periodically post my own lecture notes to Canvas. This material is preliminary and incomplete, likely to contain errors, and is not to be distributed for any reason. These notes are provided "as is".

Topics

This course is primarily based on the following chapters from Watson's text:

- foundations: chapters 1-5
- static games: chapters 6, 9, 11
- dynamic games: chapters 14, 15, 19, 22

- games of incomplete information: chapters 24, 26, 27.

The first midterm will cover the first two bullets, the second midterm will cover the second two bullets, and the final is comprehensive.

4 Assessment

Grades

Grades will be based on between six and eight homework assignments and three exams. Homework is worth 25% of your grade and exams are worth 75% of your grade. We will drop your lowest homework score (missed or otherwise) and weight the remaining assignments equally. Similarly, we will drop your lowest exam score (missed or otherwise) and weight each of the remaining two exams as 37.5% of your grade. Letter grades will be assigned in a manner that is no less generous than the following scale:

- A: $[90, 100]$
- B: $[80, 90)$
- C: $[70, 80)$
- D: $[60, 70)$
- F: $[0, 60)$.

Similarly, pass/fail grades will be assigned in a manner that is no less generous than the following scale:

- Pass: $[60, 100]$
- Fail: $[0, 60)$.

I reserve the right to use a more (but not less) generous grading scale. However, my commitment to you is that letter grades will be assigned "monotonically": if student 'A' has a higher objective average than student 'B', then student 'A' will earn a letter grade that is at least as high as the letter grade awarded to student 'B'.

Homework

Students may work homework assignments in groups, but assignments are to be submitted by each individual student. Your submission is to be your own work. Homework should be submitted electronically to Canvas by 11:00 AM on the day that it is due. Homework will be graded by our teaching assistant. Students should directly contact our teaching assistant for disputes, questions, or concerns about homework. Contact the instructor about homework only if there is a dispute with the teaching assistant that can not be resolved.

Exams

All three exams are in class, closed-book, closed-note, traditional paper exams. You will have exactly one hour and fifteen minutes to complete each midterm and two hours and fifty minutes to complete the final.

- The first midterm examination is TBD.
- The second midterm examination is TBD.
- The final exam is TBD and will be determined by the Institute's Final Exam Matrix.

Exams will be graded by the teaching assistant. Contact the instructor in the event of grade disputes.

Missed work

I do not excuse missed exams or homework assignments except for appropriately documented Institute-approved absences. If you fail to sit for two or more of our examinations for any reason, you will earn a failing grade for the course unless I receive communication from the Office of the Dean of Students advising me that your absences ought to be excused.

5 Policy

Attendance

You are responsible for material that you miss on days you are not present in class unless you have an Institute-approved excuse. Do not e-mail me with questions about what was covered on days you missed unless your absence is excused.

Classroom behavior

I expect students to (i) participate in lecture and (ii) refrain from using electronic devices in a way that is rude or distracting to me or to other students. Do not make audio or video recordings of the instructor without his permission.

Disability accommodation

This course obeys all University policies with regards to disability accommodations. If you require disability accommodation, please refer to Office of Disability Services website at https://disabilityservices.gatech.edu/ and communicate with me during the first week of class.

Academic integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit http://policylibrary.gatech.edu/student-affairs/academic-honor-code. Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Student-Faculty Expectations

Please see https://catalog.gatech.edu/rules/22 for the Institute's official policy on Student-Faculty Expectations.

Core IMPACTS

This is a Core IMPACTS course that is part of the Social Sciences area. Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help master course content, and support students' broad academic and career goals. This course should direct students toward a broad Orienting Question:

- How do I understand human experiences and connections?

Completion of this course should enable students to meet the following Learning Outcome:

- Students will effectively analyze the complexity of human behavior, and how historical, economic, political, social or geographic relationships develop, persist or change.

Course content, activities and exercises in this course should help students develop the following Career-Ready Competencies:

- Intercultural Competence
- Perspective-Taking
- Persuasion.

Additional course criteria

There are no additional criteria for successful completion of the course.