

## Economics 421 (M001): Game Theory and Economic Strategy

Fall 2023

Professor Buzard

This course examines situations in which each agent's behavior affects the well-being of the other agents. Game theory is a technical framework for rigorously analyzing decision-making in such settings. We will focus on human interaction and assume that people behave in a rational, deliberate manner. In addition to exploring theory in the abstract, we will consider a variety of applications from economics, business, political science, sports and everyday life.

**Schedule:** MW 12:45 – 2:05 p.m. in Hall of Languages, Room 205

**Class Website:** All materials and announcements will be posted on **Blackboard**, <https://blackboard.syr.edu>. Announcements will also be pushed to SU email accounts. It is each student's responsibility to check daily for announcements.

### Required Materials:

- Book (on reserve at Bird Library): Watson, J., *Strategy: An Introduction to Game Theory* (Norton) 3rd Edition, 2013.
- A PointSolutions account and subscription is necessary to receive credit for in-class participation. See "Book and PointSolutions information" under *Course Overview* tab on Blackboard.

### Office Hours and Contact Information:

- Professor Buzard (315-443-4079): Mondays 2:30-3:30pm (except Sep. 18, Sep. 25, and Nov. 13) and Wednesdays 3:45-4:45pm in Eggers 131; or by appointment at kbuzard@syr.edu.
- Teaching Assistant: Orlando Garcia, oagarcia@syr.edu: Tuesdays 3:00 – 5:00 pm, Eggers 124

**Prerequisites:** The prerequisites for this course are Intermediate Microeconomics (ECN 301 or 311) and Calculus (MAT 284, 285, 295 or 296). Watson's Appendix A on sets and probability is a good gauge of the math you will need. You must keep re-taking a version of the math quiz until you earn a score of at least 80% in order to stay in good standing to earn participation points.

**Course Objectives:** This course centers learning around students. Working most often in small teams, we will emphasize reflection and discussion of course material and how it relates to applications to help each other understand issues in which you are interested. While one goal is to learn important tools of strategic analysis, most important is learning how to *think* about situations you might encounter in the future. By the end of the semester, members of the ECN 421 learning community will be able to:

1. Distinguish a strategic situation from an individual's decision problem;
2. Describe a given strategic situation and mathematically represent it so that it can be analyzed;
3. Identify, precisely state, justify and apply the appropriate solution concept (i.e. solve the game) for a given strategic situation, including well-known games;
4. Recognize and explain the problems that arise from strategic interactions (i.e. strategic tensions)
5. Use Game Theory to understand and explain strategic interactions and the outcomes to which they lead, both within and beyond the classroom.

I believe that the best use of class time is to work together on the most challenging questions with the guidance of your instructors, so students are asked to read AND WATCH the basic materials ahead of class and are **quizzed before each class** to ensure everyone is prepared. These quizzes will be on Blackboard. We will use the **PointSolutions app** for individual and team responses to discussion questions posed throughout each class period (these responses are graded for participation only and not correctness so that there is no anxiety about grades as we wrestle with new ideas). Short periods of lecture will be interspersed with individual reflection and team discussion to move the conversation forward and

introduce key new concepts and challenges. In this way, it is my hope that we do the “heavy lifting” of learning in class at a relatively even pace, with little need for cramming. The learning community that we will create together will become the defining feature of the course.

In addition to the textbook, I will periodically introduce articles, videos, games and other outside materials from various sources. I’ll make clear which materials are required for exam purposes.

**Chapter Evaluations** (50% of grade): 7-9 individual, in-person evaluations (longer than a quiz; shorter than an exam) will take place during the class and **the final exam period** during finals week. Each evaluation will cover one to three chapters. The lowest score will be dropped in order to accommodate absences.

**Problem Sets:** Problem sets will be provided for practice but will not be graded. You may submit work either in written form or verbally during office hours to get feedback.

**Course Objectives Mastery** (25% of grade): To show that you have mastered the five course objectives listed on the previous page, you will complete four short evaluations that take place during class and the final exam period. The default will be to complete the evaluation with your in-class group, but you may also opt to complete these closed-book evaluations individually.

**Reading Quizzes** (10% of grade) and **Class Participation** (15% of grade): The score for class participation and reading quizzes (both take place for each class day of the semester) is calculated from 85% of the total points in each category. That is, you only need to get 85% of the quiz questions correct to get the full 10% of the grade and answer 85% of the discussion questions to get the 15% for class participation. This is to allow for family emergencies, illness, job interviews, technology problems and similar circumstances since there is no way to make up these portions of the course. No other allowances will be made; this policy substitutes for ‘excused’ absences.

To receive a team assignment and be eligible to earn **participation points**, you must:

1. submit a 400-word synopsis (Blackboard/Turnitin) of Aug. 28’s class material pertaining to the course design and commitments to the learning community by Sep. 1 at 11:59pm;
2. complete the Syllabus Quiz (Blackboard) by Sep. 1 at 11:59pm;
  - If you have not been added to Blackboard by 11:50pm on Aug. 31, the deadlines for items 1 and 2 are extended to 11:59pm the day after Blackboard access is granted.
3. complete the math pre-test by Wednesday, Sep. 6;
4. submit the First Class Survey (Google Form) by Thursday, Sep. 7 at 11:59pm;
5. create a PointSolutions account and register a subscription (Blackboard/PointSolutions) by Thursday, Sep. 7 at 11:59 pm.
  - Because poor attendance causes difficulties for small team dynamics, I reserve the right to withdraw a team assignment from any student whose attendance falls below 70% of class sessions. If this action must be taken, that student **forfeits** all future class participation points. In addition, no class participation points can be earned as long as a student’s attendance is below the 70% threshold, regardless of team assignment status.

**Grading:** Grades are assigned according to the following percentages: A: 93-100%, B: 85-92%, C: 75-84%, D: 65-74%, F: below 65% (plus/minus awarded within those ranges) unless the curve that awards the following percentages of letter grades (plus/minus again awarded) would increase your grade:

Grade	Percent of Students Receiving that Grade (Approximate)
A	20-30
B	25-35

C	25-35
D & F	5-10

**Course Policies:**

1. [SU's Religious Observances Policy](#) recognizes the diversity of faiths represented in the campus community and protects the rights of students, faculty, and staff to observe religious holy days according to their traditions. Under the policy, students are given an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance, provided they notify their instructors no later than the academic drop deadline. For observances occurring before the drop deadline, notification is required at least two academic days in advance. Students may enter their observances in MySlice under Student Services/Enrollment/My Religious Observances/Add a Notification.
2. If you would like to discuss disability accommodations or register with CDR, please visit [Center for Disability Resources](#). Please call (315) 443-4498 or email [disabilityresources@syr.edu](mailto:disabilityresources@syr.edu) for more detailed information. CDR is responsible for coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact CDR as soon as possible.
3. Syracuse University's [Academic Integrity Policy](#) reflects the high value that we, as a university community, place on honesty in academic work. The policy holds students accountable for the integrity of all work they submit and for upholding course-specific, as well as university-wide, academic integrity expectations. The policy governs citation and use of sources, the integrity of work submitted in exams and assignments, and truthfulness in all academic matters, including course attendance and participation. The policy states that any work a student submits for a course must be solely their own unless the instructor explicitly allows collaboration or editing. The policy also requires students to acknowledge their use of other peoples' language, images or other original creative or scholarly work through appropriate citation. These expectations extend to the new, fast-growing realm of artificial intelligence (AI) as well as to the use of websites that charge fees or require uploading of course materials to obtain exam solutions or assignments. Students are required to ask their instructor whether use of these tools is permitted – and if so, to what extent – before using them to complete any assignment or exam. Students are also required to seek advance permission from instructors if they wish to submit the same work in more than one course. Upholding Academic Integrity includes abiding by instructors' individual course expectations. For ECN 421, this includes no collaboration allowed on individual evaluations or Blackboard quizzes and a prohibition against submitting answers using another student's PointSolutions account or a student's own account when not participating in group activities. Students should not upload, distribute, or otherwise share instructors' course materials without permission. Students found in violation of the policy are subject to grade sanctions up to and including course failure and non-grade sanctions determined by the School or College where the course is offered, as outlined in the Violation and Sanction Classification Rubric.
4. Some work in this class will be submitted via the plagiarism detection and prevention system Turnitin. Turnitin compares submitted documents against documents on the Internet and against student papers submitted to Turnitin at SU and at other colleges and universities. I will take your knowledge of the subject matter of this course and your writing level and style into account in interpreting the originality report. Keep in mind that all papers you submit for this class will become part of the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers.
5. As stated in the University's Academic Rules and Regulations, student work prepared for this course in any media may be used for educational purposes. You grant permission to have your work used in this manner by registering for, and by continuing to be enrolled in, this course. After you have completed this course, any further use of your work will either be rendered anonymous by removing all your personal identification or your written permission will be secured. If you object in any way, please send me an email no later than the second week of class at [kbuzard@syr.edu](mailto:kbuzard@syr.edu).

6. Students have one week from the day on which an evaluation is graded to request a re-grade. This request must be made by email. If a student submits his/her work for re-grading, the student's entire submission will be re-graded by the professor (with no guarantee of a higher total score).
7. If you arrive late to an evaluation, you will be allowed to take it in the time that remains *as long as no one has submitted his/her evaluation*.
8. The use of electronic devices is permitted only to access PointSolutions, the textbook, and note-taking applications for ECN 421 course material. Other use of electronic devices is not allowed and will be enforced by the deduction of participation points and/or confiscation of the device. The wearing of headphones during class is strictly prohibited. No devices of any kind are allowed during in-class evaluations or quizzes.
9. English is the language of instruction and interaction in class at all times. As it is the sole language that is shared by all students in the learning community, participation points will be deducted for using a language other than English during class time.
10. You may not post any course materials, including quizzes, exams, problem sets and/or their answers on the internet or any other media. You may not share any of these materials in any way without my express written consent except for the explicit and time-limited purpose of studying with your classmates this semester.

### **Course Outline**

<u>Topic</u>	<u>Chapters in the textbook</u>
<b>A. Representing Games</b>	
Extensive form, strategies, normal form	1 – 3
Beliefs/mixed strategies, assumptions	4 – 5
<b>II. Analysis of Static Settings</b>	
Best response, rationalizability, applications	6 – 8
Equilibrium, applications	9 – 10
Mixed strategy equilibrium	11
<b>III. Analysis of Dynamic Settings</b>	
Extensive form, backward induction, SPE	14 – 15
Examples and applications	16
<b>IV. Information</b>	
Random events and incomplete information	24
Bayesian equilibrium, applications	26 – 27
PBE, applications	28 – 29