

ECONOMICS 410.01 -- GAME THEORY
SPRING 2025, TTh 11:00 - 12:20 PM
PROFESSOR LISA ANDERSON
MEETING ROOM: BOSWELL HALL, ROOM 39

Course Description

Game theory is a set of mathematical models used to study how individuals make decisions when their actions affect each other. The emphasis of the course material is a mix of formal theory and applications, including bargaining, public choice and information. While economists turn to game theory to model many situations, the field is firmly rooted in mathematics. Thus, you will struggle in the course if you are not very comfortable with college-level algebra and basic calculus. In addition to mathematical modeling, this course will make extensive use of economics experiments to identify situations where game theory predicts actual behavior and to learn more about why game theory fails to predict behavior in some settings.

Common Complaints

The most common complaint I receive about this course is that the exams are much harder than the sample problems. Of course **the exams are much harder than the sample problems**. When working on sample problems, you do not have time limits. You can use your text and notes to solve these problems. The sample problems cover material from only one chapter of the text, while an exam combines material from many chapters. To earn a high grade in this course, you must be able to take material from your text and class notes and apply it to new problems. The second most common complaint I receive is that **I do not collect and grade homework problems**. I suggest sample problems from each chapter for test practice, and I provide answer keys. I will meet with you to review problems from the text that are difficult for you. But this is a 400-level course, and to earn a high grade, you must be self-motivated to do all of the problems in the text as we finish each chapter. Some people struggle with these two aspects of the course, and the average grade in any given semester is about one and a half letter grades lower than the average GPA reported on course evaluations.

Useful Information

Office: Chancellors (formerly Tyler) Hall, Room 265
E-mail: lisa.anderson@wm.edu
Office Hours: by appointment

Important Dates

Last day to add/drop: January 31.
Spring Break: March 8-16.
Midterm Exam: Tuesday, March 18. This exam will cover chapters 1 – 6.
Last Day to Withdraw: March 24
Group Projects (with mandatory attendance) begin on April 15.

Please plan your travel with this mandatory attendance period in mind. Travel delays do not exempt you from the attendance requirement. Your class participation grade will be adversely affected if you miss classes during this period. Further, your group project grade will be adversely affected if are not in class for your group experiment or presentation.

Last Day of Class: May 1.

Cumulative Final Exam: Monday, May 12, 2 to 5 pm. Consult the final exam schedule later in the semester to verify this date and time: <https://www.wm.edu/offices/registrar/calendarsandexams/examschedules/spring25exam/>

Any request to reschedule a final exam must be processed through the Dean of Students office. If a request is granted, you must schedule a time to take the exam in the Watson Lab. It is very difficult to schedule a time in the Watson Lab late in the semester. I do not proctor final exams outside of the scheduled exam block.

Required Reading

The text for this course is *Games of Strategy*, 5th Edition, by Dixit, Skeath and McAdams. Other readings and class information will be available through the blackboard system.

Grades and Policies

Your grade for this course will come from class participation and a group project (20%), an optional midterm exam (35%), and a **cumulative** final exam (45% or 80%). While the midterm exam is optional, be advised that most people score higher on the midterm exam than on the final exam. The midterm exam is an excellent indicator of whether or not you are processing information and studying effectively for this course. It is rare for someone to fail the midterm exam and earn an A or B in this course.

Class participation includes attending lectures and participating in class experiments. While I do not take attendance on a regular basis (until group projects begin), it is hard to earn a good grade in this class if you regularly skip class. Of course, you should not attend class if you are ill. All class notes will be posted on Blackboard. Details about the group project also will be posted on Blackboard.

It is your responsibility to back up all files. I do not grant extensions on assignments because of computer viruses, dead hard drives, stolen laptops, etc. There will be no makeup exams, with the one exception that you will be out of town on official William & Mary business and you notify me of this at least one week in advance. In the event that you do not take the midterm exam, your final exam will count for 80% of your course grade. **I cannot change the time or date of the final exam, so plan your travel accordingly.**

Please do not tell me what grade you need in this class, how many classes you need to graduate or what GPA you must maintain for your scholarship. If you have a goal to earn a certain grade in this class, you should choose behaviors (attending class, working problems, studying for exams, etc.) to help you achieve that goal.

Accommodations

William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels they may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services staff at 757-221-2512 or at sas@wm.edu to determine if accommodations are warranted and to obtain an official letter of accommodation. If you have special accommodations for exams, you must notify me at least a week before the exam. In addition, you must schedule an appointment with the Watson Testing Center to take your exam on the assigned date. These appointments are scarce around fall break and during finals, so schedule your midterm and final exam now to avoid issues later. For more information, please see www.wm.edu/sas.

Honor Code

William & Mary has had an honor code since at least 1779. Academic integrity is at the heart of the university, and we all are responsible for upholding the ideals of honor and integrity. The student-led honor system is responsible for resolving any suspected violations of the Honor Code, and I will report all suspected instances of academic dishonesty to the honor system. The *Student Handbook* (www.wm.edu/studenthandbook) includes your responsibilities as a student. Your full participation and observance of the Honor Code is expected. To read the Honor Code, see www.wm.edu/honor.

Course Outline and Readings

- I. Rules of the Game
 - A. Introduction to Game Theory, Chapters 1-2
 - B. Sequential Games, Chapter 3
 - C. Simultaneous Games with Pure Strategies, Chapters 4 - 5
 - D. Games with Simultaneous and Sequential Moves, Chapter 6
 - E. Simultaneous Games with Mixed Strategies, Chapters 7
- II. Applications
 - A. More on the Prisoners' Dilemma, Chapter 10
 - B. Collective Action Games, Chapter 11
 - C. Bargaining, Chapter 17
 - D. Auctions, Chapter 15
 - E. Uncertainty and Information, Chapter 9