

Bryn Mawr College  
Econ 311: Game Theory and Applications  
Spring Semester 2023

**Contact Information:**

Prithvijit Mukherjee

Email: [pmukherjee@brynmawr.edu](mailto:pmukherjee@brynmawr.edu)

Office: 202 Dalton

Office hours: Tuesday & Thursday: 3 – 4:15 pm

**This syllabus provides a general plan for the course; deviations may be necessary.**

**Course Objective:**

Game theory studies interactions between people, corporations, institutions, or countries in which each player recognizes their strategic interdependence with the others in the game. Many economic decisions in the real world have such strategic interdependence. The course uses theoretical models and techniques from game theory to examine economic incentives in various strategic scenarios. Applications may include oligopoly, zero and nonzero-sum games, cooperative and non-cooperative games, asymmetric information, adverse selection, signaling, and bargaining models.

Prereq. ECON 200 - Intermediate Microeconomics.

**Textbooks**

- *Games, Strategies and Decision Making* by Joseph Harrington Jr. Worth Publishers. (Second edition)
- *Game Theory and Behavior* by Jeffrey Carpenter and Andrea Robbett (MIT Press).
- *Strategy and Game Theory: Practice Exercises with Answers* by Felix Munoz-Garcia Daniel Toro-Gonzalez (There is an electronic copy available in the library) - [Link](#)
- *Introduction to Game Theory* by Martin J. Osborne

## Course Requirements:

The course requirements include homework assignments and three exams. Homework will be submitted on Moodle or in-class and must be clearly presented for full credit. Exams 1 and 2 will be in in class.

Assessment	Date	Share of final grade
Class participation		10%
Exam 1	February 21, 2023	25%
Exam 2	April 13, 2023	25%
Homework		15%
Proposal presentation		5%
Project		15%
Final presentation		5%

A letter grade of the following: A, A-, B+, B, B-, C+, C, C-, D and F, will be assigned to you on the basis of your cumulative score. See the converting table below.

A: 95%-100% A-: 90%-94% B+: 87%-89% B: 83%-86% B-: 80%-82% C+: 77%-79% C: 73%-76% C-: 70%-72% D: 60%-69% F: 0%-59%

## Homework

Homework will be due no less than one week after they are assigned. You must turn in your own work, but group effort is permitted and encouraged. Homework turned in late after the due date will be docked 15 percentage points every 24 hours.

## Disability Support Services: Reasonable Accommodations

Bryn Mawr College is committed to providing equal access to students with a documented disability. Students needing academic accommodations for a disability must first register with Access Services. Students can call 610-526-7516 to make an appointment with the Director of Access Services, Deb Alder, or email her at [dalder@brynmawr.edu](mailto:dalder@brynmawr.edu) to begin this confidential process. Once registered, students should schedule an appointment with the professor as early in the semester as possible to share the verification form and make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement. More information can be obtained at the Access Services website. (<http://www.brynmawr.edu/access-services/>)

Any student who has a disability-related need to record this class first must speak with the Director of Access Services and to me, the instructor. Class members need to be aware that this class may be recorded.

## Academic Honesty

Students are responsible for knowing and adhering to the Bryn Mawr Honor Code. If you have any questions about expectations, please ask.

## **Title IX:**

Bryn Mawr/Haverford College is committed to fostering a safe and inclusive living and learning environment where all can feel secure and free from harassment. All forms of sexual misconduct, including sexual assault, sexual harassment, stalking, domestic violence, and dating violence are violations of Bryn Mawr/Haverford's policies, whether they occur on or off campus. Bryn Mawr/Haverford faculty are committed to helping to create a safe learning environment for all students and for the College community as a whole. If you have experienced any form of gender or sex-based discrimination, harassment, or violence, know that help and support are available. Staff members are trained to support students in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, and more.

The College strongly encourages all students to report any incidents of sexual misconduct. Please be aware that all Bryn Mawr/Haverford employees (other than those designated as confidential resources such as counselors, clergy, and healthcare providers) are required to report information about such discrimination and harassment to the [Bi-College Title IX Coordinator](#).

Information about the College's Sexual Misconduct policy, reporting options, and a list of campus and local resources can be found on the College's website:

[Bryn Mawr Sexual Misconduct Policy](#)  
[Haverford Sexual Misconduct Policy](#)

## Tentative course Outline:

Date	Topic
Tuesday, January 17, 2023	Introduction and Review
Thursday, January 19, 2023	Introduction and Review
Tuesday, January 24, 2023	Dominance solvable games
Thursday, January 26, 2023	Pure strategy Nash equilibrium
Tuesday, January 31, 2023	Pure strategy Nash equilibrium
Thursday, February 2, 2023	Mixed strategy Nash equilibrium
Tuesday, February 7, 2023	Mixed strategy Nash equilibrium
Thursday, February 9, 2023	Extensive form games and subgame perfect equilibrium.
Tuesday, February 14, 2023	Extensive form games and subgame perfect equilibrium.
Thursday, February 16, 2023	Exam Review
Tuesday, February 21, 2023	<b>Exam 1</b>
Thursday, February 23, 2023	Finitely and Infinitely Repeated Games
Tuesday, February 28, 2023	Simultaneous Games of Incomplete Information
Thursday, March 2, 2023	Proposal Presentation
Tuesday, March 7, 2023	Spring Break
Thursday, March 9, 2023	Spring Break
Tuesday, March 14, 2023	Sequential Games of Incomplete Information
Thursday, March 16, 2023	Sequential Games of Incomplete Information
Tuesday, March 21, 2023	Auctions
Thursday, March 23, 2023	Communication in Games
Tuesday, March 28, 2023	Communication in Games
Thursday, March 30, 2023	Games in networks
Tuesday, April 4, 2023	Behavioral Game Theory
Thursday, April 6, 2023	Behavioral Game Theory
Tuesday, April 11, 2023	Exam Review
Thursday, April 13, 2023	<b>Exam 2</b>
Tuesday, April 18, 2023	Evolutionary Game Theory
Thursday, April 20, 2023	Global Games
Tuesday, April 25, 2023	Presentation
Thursday, April 27, 2023	Presentation