

**MA 327/ECO 327**  
**Introduction to Game Theory**  
**Fall 2018**  
**MWF 1:00–1:50 pm — BE299**

**Instructor:** Carl Lee.

**Office:** 967 Patterson Office Tower.

**Mailbox:** 715 Patterson Office Tower.

**Email:** lee@uky.edu (preferred method for reaching me).

**Phone:** 257-1405 (or 257-3336 to leave a message).

**Office Hours:** WF 2:00 – 3:00 pm, and by appointment, since I realize that this time may not be convenient for everyone.

**Course Web Page:** I will use the UK Canvas course site and also post materials here: <http://www.ms.uky.edu/~lee/ma327fa18/ma327fa18.html>.

**Course Description:** The course is an introduction to strategic decision making and game theory. Ideas such as Nash equilibrium, dominant strategies, evolutionary stability, and asymmetric information are applied to a variety of strategic decision making problems taken from economics, computer science, politics, and biology.

Topics will be drawn from:

- Combinatorial games
- Normal-play games
- Impartial games
- Partizan games
- Zero-sum matrix games

- Von Neumann's minimax theorem
- General games
- The Nash equilibrium
- Cooperation
- $n$ -player games
- Preferences and society

**Prerequisites:** Prereq: A grade of B or better in MA 113 or MA 132 or MA 137 or consent of department. Students should have a strong background in first semester calculus.

**Student Learning Outcomes:** Students will be able to classify games into various types and determine and describe solution strategies.

**Required Materials:** *Game Theory: A Playful Introduction*, Matt Devos and Deborah A. Kent, paperback, American Mathematical Society, 2016. ISBN-10: 1470422107, ISBN-13: 978-1470422103.

**Attendance and Participation:** Attendance is expected. For *each* unexcused absence beyond the first three, your final grade will be reduced by 2 percentage points.

This class is designed for active involvement of the students. You will be actively supporting each other as you gain experience and understanding. Multiple ideas and points of view are important. You will benefit from hearing others' approaches to analysis and problem solving, and they will benefit from you. So attendance and active participation are expected. I expect activities in class to be related to the course. In particular, cellphones should be silenced, and use of laptops and other electronic devices should be devoted to the course activities.

If you miss a class for any reason, please let me know the reason immediately—an email message will suffice. I will give you an opportunity to make up graded work missed due to an excused absence.

For more information on absences, see <https://www.uky.edu/ombud/excused-absences>.

**Homework:** There will be frequent homework assignments, usually assigned weekly, with specified due dates. The homework problems will have varying length and complexity. Some homework might actually be classwork collected in class. It is fine to discuss the homework together, but you must write up your own solutions in your own words.

**Exams:** I am planning to have two or three in-class exams during the semester. It is possible that some of these might be taken-home exams or have take-home components.

**Final Exam:** Thursday, December 13, 3:30–5:30 pm, in our regular classroom, though part or all of this exam might be take-home.

**Grading:** Your course score will be based on on the following percentages:

50% Homework  
50% Exams

Your letter grade will be determined according to the common 10% scale, rounded to the nearest percent:

90–100% A  
80–89% B  
70–79% C  
60–69% D  
0–59% E

*In addition, for each unexcused absence beyond the first three, your final grade will be reduced by 2 percentage points.*

**Academic Integrity:** Per university policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the university may be imposed. For more information, see <http://www.uky.edu/ombud/academic-offense-information-students>.

**Accommodations Due to Disability:** If you have a documented disability that requires academic accommodations, please see me as soon as possible. In order to receive accom-

modations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center. See <https://www.uky.edu/DisabilityResourceCenter>.

**Suggestions and Other Course Issues:** Suggestions for improvement are welcome at any time. Any concern about the course should be brought first to my attention. Further recourse is available through the Mathematics Director of Undergraduate Studies and the Department Chair, both accessible from the Main Office in 715 Patterson Office Tower.

**Important Dates:**

August 22 — Wednesday — First day of classes

September 3 — Monday — Labor Day — Academic Holiday

October 15 — Monday — Midpoint of 2018 Fall Semester

November 21–24 — Wednesday through Saturday — Thanksgiving — Academic Holidays

December 7 — Friday — Last day of classes

December 13 — Thursday — Final exam, 3:30–5:30 pm, in our regular room