

Game Theory (EBA)

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Lecture Time and Place: Wednesday, 13.00 - 14.15 + 30 mins break + 14.45 - 16.00 ¹

Office Hours: After lectures. Or by appointment.

Methods of Study

In the lecture, I will show you basic ideas and principles. I usually do write everything I talk on the board. The best way to learn is to *listen* what I talk, *think* and *ask* questions when you don't understand, then take notes using your understanding. It is your responsibility to ask questions for things you don't understand. Remember that there are *no* stupid questions. You may get some bonus points by asking an interesting question. You will apply the idea more exhaustively when doing homework. Expect to do a lot of homework and hard thinking. In my view, game theory is simply about thinking rationally. I will provide most *but not all* of homework solutions in class.

Homework Grading

On average, I will give homework once every week. I will grade homework very generously. The main point of homework is to try as hard as you can. It is not very important to get the perfect or even correct answers.

Course Outline

- Introduction, Puzzle Solving, Rational Thinking
- Games with Perfect Information
- Nash Equilibrium
- Mixed Strategy Equilibrium
- Extensive Games with Perfect Information
- Games with Imperfect Information
- Bayesian Games Extensive Games with Imperfect Information
- Bargaining
- Mechanism Design and Other Advanced Topics

Grading (tentative)

- Homework 10% ²
- Midterm (2 hrs) 45%
- Final (2 hrs) 45%
- bonus points 1-10%
- negative points 1-30%

¹Please be on time. I have already given you 30 mins break.

²Two students can work as a group and submit a single homework.

Bonus Points and Minus Points

- Bonus points: I usually ask simple questions in class. The student who first answered it correct will get some points.
- Negative points: There is no credit for class participation. If you don't want to attend the class, please don't attend. You will get negative points every time for the following behavior that disturb my teaching.
 - Using cell phones (-1%)
 - Chatting (-1%)
 - Sit behind the third row in case when the first 3 rows are still vacant (-1%)
 - Noisy class (-1%) for the whole class
 - No student shows up 15 minutes after the class starts (-1% for the whole class)
 - Walking around during the lectures without good reason (-1% for the whole class)

Textbooks and Notes (Recommended)

There are two textbooks used in the class

- - Main Text *An Introduction to Game Theory* by Martin J. Osborne
- - More Advanced Text *A Course in Game Theory* by Martin J. Osborne and Ariel Rubinstein

Class Website

Syllabus, some homework assignment, midterm and final grades will be posted here:
<http://pioneer.netserv.chula.ac.th/~ptanapo1/game/> .

Homework ³

1. A king, two wise men and his kingdom: Once upon a time, there was a king and two wise men. The king wanted to test which man was smarter. The king invited them to have lunch at noon with him on the top on a mountain in his kingdom. Each wise man sat opposite to each other and saw the different part of the kingdom. The king then asked the two men the following question: *from what you see, can you tell me whether there are totally 10 or 13 villages in my kingdom?*. The one who answered correctly first would be awarded knightship. The one who gave a wrong answer would be killed. Initially, the two men were silent. Then, the king went to do his administrative job and visited them every hour and repeat the question. (The men were not allowed to move, until one of them gave an answer.) At 3 pm, a man spoke and give an answer. What is his answer?
2. A Bertrand game with increasing average cost functions: Consider the following Bertrand game with two firms: 1 and 2. The total market demand is $Q = 10 - P$. The total cost function of each firm is $C(q_1) = q_1^2$ and $C(q_2) = q_2^2$. Find *all* Nash Equilibriums of the game in which $P_1 = P_2$.

³Each homework will be due 15 minutes after the next week lecture starts. Late homework will *not* be graded for sure.