YSS1205 Introduction to Game Theory

Instructor: James Martin

Office Hours: To be set.

Textbook: Joel Watson, "Strategy: an introduction to game theory" Third edition.

References for further reading
Avinash Dixit, Susan Skeath, and David H Reilly, "Games of strategy"
Martin J Osborne, "A course in game theory"
Ken Binmore, "Fun and games"

Prerequisites: a willingness to engage in formal reasoning

Lectures: Monday 19:30-21:00 Pm and Thursday 19:30-21:00 Pm.

Course Outline (tentative and subject to change):

Week 1 ..... What is Game Theory? (ch 1)
..... What do game theoretic models look like? (ch 2)
Week 2 ..... What do players in a game want, and how do they achieve it? (ch 3)
..... What do we need to know to make our decisions? (ch 4)
Week 3 ..... What would rational people do? (ch 5,6)
PS1 due ..... If you know others are rational, how does that help you? (ch 7, 8)
Week 4 ..... What is possible if you *know* the other person? (ch 9)
..... How do we use the Nash equilibrium? (ch 10)
Week 5 ..... How do you avoid being out-played by your opponent? (ch 11)
..... no class
Week 6 ..... Mixed strategies in action
PS2 due ..... Midterm
Week 7 ..... How to reason backwards
..... (Subgame perfect) Equilibria in dynamic games
Week 8 ..... Applications: competition
..... Applications: other
Week 9 ..... Catch-up and review
PS3 due ..... Repeated games: concepts (ch 22)
Week 10 ..... Repeated games: applications (ch 23)
..... Incomplete information: concepts (ch 24, 25)
Week 11 ..... Bayesian games: theory (ch 26)
..... no class
Week 12 ..... Catch-up and review
PS4 due ..... Bayesian games: applications (ch 27)
Week 13 ..... Bargaining: theory (ch 18)
..... Bargaining: simple bargaining games (ch 19)

Course description: This course is an introduction to game theory and strategic thinking. Ideas such as dominance, Nash equilibrium, asymmetric information, backward induction, and repeated game are discussed and applied to examples drawn from economics and politics

Grade Policy: Your final grade will be determined as follows:
33%: Final examination
10%: Midterm
20%: Participation
5%: Attendance in the in-person classes
32%: Problem sets (4 at 8% each)

I will be setting ungraded homework that one of you will present at the start of the subsequent class. If you feel stuck, discussion with your classmates is encouraged, and participation in this way makes up a component of your grade.

Problem sets: There will be 4 graded problem sets over the course of the term. These are meant to be worked out individually and not in groups (so there will be a penalty if several submissions are identical). I expect the problem sets to be submitted on Canvas, as a .pdf file

- You can work by hand and take a picture, but you must convert it to pdf before you submit
- Each image must have your matriculation number at the top of it, and no additional identifying information
- Failure to meet these requirements will lead to grade penalties that can cumulate to 50% in the worst case

If there are typos in the assignment sheet, or if anything is unclear.

Please feel free to email me at James.martin@u.nus.edu if you have any questions.