

# Games and Contracts

**Fall 2015**

**Course Number:** 020204D04 (in English)

**Credits:** 2

*Tuesday 10:10-12am at Business School Anzhong Building Room 307*

**Instructor:**

Yu (Larry) Chen 陈煜, Assistant Professor

PhD (economics) MA (mathematics) Indiana University USA

Research areas: Micro Theory, Contracts and Incentives, Industrial Organization, Game Theory, Corporate Finance

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Office Hours: Tuesday 3:30-5:30pm at *Anzhong Building Room 2410* or by *appointment*.

**Course Website:**

<http://yularrychen.weebly.com/teaching.html>

Syllabus, Lecture notes and other materials will be posted on the teaching page of my website.

I may also consider using group email after two weeks.

**Course Description:**

This course is an advanced course in Modern Microeconomic Theory. It requires basic mathematics knowledge, including Calculus (Real Analysis), Probability, Linear Algebra, etc. Good preparation in microeconomics is advantageous but not mandatory. I will focus on both theory and applications.

This course will be more centered on *economics of contracts*. It can be viewed as an important modern tool to analyze considerable economic problems, including auction, nonlinear pricing, executive compensation, public good provision, supply chain, political economy, R&D, Regulation, international relations, etc.

The purpose of including Game Theory as a part of this course is that game theory has served as a crucial methodology of economics of contracts and modern micro theory. Most contracting problems are essentially games

between principal(s) and agent(s). So it is very valuable to master relevant knowledge of game theory in this course in the beginning.

My goal is to help students understand basic relevant models and thoughts (intuitions) behind the models, and use relevant analytical skills in applications.

### References:

I will basically use my notes in the form of slides. I will also refer to some books, notes and surveys below, which are also quite helpful.

- Drew Fudenberg, Jean Tirole (1990), *Game Theory*.
- Ariel Rubinstein Martin J. Osborne, (1994), *A Course in Game theory*.
- C.D. Aliprantis, Subir K. Chakrabarti (2010), *Games and Decision Making*.
- Dirk Bergemann, (2009), *Information Economics*, Springer-Verlag
- Lars A. Stole, (2001), *Lectures on the Theory of Contracts and Organizations*, Mimeo.
- Laffont, J.-J. and Martimort, D. (2002). *The Theory of Incentives: The Principal-Agent Model*, Princeton Press.
- B Caillaud and B.E. Hermalin, (2000) *Hidden Action and Incentives*, University of California Berkeley, Mimeo.
- B Caillaud and B.E. Hermalin, (2000) *Hidden Information Agency*, University of California Berkeley, Mimeo.
- Jackson, M. O. (2000). *Mechanism Theory*, Pasadena, CA: Humanities and Social Sciences, California Institute of Technology.
- Bolton, Patrick & Mathias Dewatripont (2005), *Contract Theory*, MIT Press
- Andreu Mas-Collel, Michael D. Whinston, and Jerry R. Green. *Microeconomic Theory*, 1995. New York: Oxford University Press
- Frank H. Page, Jr, 2013, *Foundation of Principal-Agent Games*, Indiana University, CAEPR working paper, #2011-002.

### Tentative Course schedule:

Week	Content
3	🚩 Introduction and background sharing.
4	🚩 Riview of mathematics preparation.
5	🚩 Review of Math/game theory
6	🚩 Static single-agent Moral Hazard Model
7	🚩 Multi-agent Moral Hazard Model
8	🚩 Dynamic Moral Hazard Model
9	🚩 Advanced topics in Moral Hazard Model
10	🚩 Static single-agent Adverse selection

11	🚩 Static single-agent Adverse selection
12	🚩 Multi-agent Adverse selection and mechanism design
13	🚩 Multi-agent Adverse selection and mechanism design
14	🚩 Advanced topics in Mechanism Design/Contracting
15	🚩 Advanced topics in Mechanism Design
16	🚩 Student Proposal presentation
17	🚩 Student Proposal Presentation
18	🚩 Student Proposal Presentation

### **How I teach this course:**

Nanjing University Business School is seeking internationalization to the greatest extent. As requested by Business School, we will use ENGLISH as the language in the classroom.

I hope to establish an INTERACTIVE classroom environment. Basically I will lecture the most content, but I highly expect students to be active in the classroom. Students can feel free to raise questions whenever they want. I will also keep asking students questions and include student presentation sessions a few times.

I will help students form study groups. In the groups, students can study and discuss together. Also, each group needs to present one academic paper and one term research proposal in class. Collaboration is very important!

### **Grading Policy:**

- 1) Individual attendance and classroom performance will weigh 15pts.  
I will track attendance for each class since Week 3. One attendance counts 1 point. That means you can be absent for 3 classes without getting deduction in attendance credits. I may also ask student questions or ask student to show something on the blackboard. If a student answers some question correctly once or if he or she at least try to show something on the blackboard, he or she can get 2 extra credit points. (up to 10 points) I will record those in class and curve the points in the end.
- 2) Paper presentation 40 pts.  
Each student will present a research proposal related to this course. Students should make PPT or Beamer slides and present the slides in classroom. Each student is also expected to be prepared for any questions or comments the audience may raise and discuss.
- 3) Take-home Exam 45%.  
I will give a problem set covering most BASIC content I lecture at the end of Week 15. Students should finish it at the end of this semester.

### **A few tips for study and research:**

1. PDF documents are widely used in mainstream academia and industry. Learn it. Better know how to use Adobe Acrobat instead of Acrobat reader. It is a more powerful tool of processing PDF documents.
2. Although Microsoft Word and PowerPoint are popular in most down-to-earth situations, academic customs prefer Latex/Scientific Workplace/Beamer. If you aim to academia, I highly suggest you use them from now on.
3. Searching literature is ultimately important for academic work. Learn to use Google Scholar (or its Chinese mirror website: <http://scholar.glgoo.com/>). Google web may also offer some links for some papers. Maybe Baidu Scholar is a complement as well. If you use NJU campus network, you can input the desired paper's title via those searching engine to find the link to automatically download it. You do not even need to enter NJU library system then.
4. When you present or do homework/research, try your best to make clear your points. Any good idea without clear expression cannot become good work. State explicitly any key claims/procedures in your work and make your logic complete and rigorous. If you fails to do so, you cannot convince anyone. Communication is extremely important in any aspect of human society!

**I sincerely hope we can enjoy this class!**