

IM 7011 – Information Economics, Fall 2015

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In the field of Information Economics (or Economics of Information), people use economic tools to study the value and impact of information. Information is not only important in the information industry; it has critical impacts in almost all business activities. In this course, we will study how to apply economic modeling to rigorously analyze information-related issues, especially information asymmetry. Applications that we will study lie in marketing, supply chain management, information systems, among others. Students will be required to read textbooks as well as some academic papers. This is a course teaching students how to do academic research with a specific research method. To comfortably take this course, one is suggested to have adequate background in calculus, nonlinear optimization, game theory, and probability.

This is an elective course offered in the Department of Information Management in National Taiwan University. The target "customers" of this course are graduate and senior students, though junior students may still enroll in this course. In most cases, all students who want to enroll in or audit this course are welcome.

Basic information

- Instructor**
- Ling-Chieh Kung (孔令傑). E-mail: lckung(AT)ntu.edu.tw.
 - Office: Room 413, Management Building II. Tel: 02-3366-1176.
 - Office hour: by appointments.
 - <http://www.im.ntu.edu.tw/~lckung/>.
- Teaching Assistants**
- Ian Zhong (鍾冠宇). E-mail: r03725040(AT)ntu.edu.tw.
 - Ho Ho (何禾). E-mail: r03725041(AT)ntu.edu.tw.
- Lectures**
- 9:10am-12:10pm, Monday in Room 204, Management Building II.
- Prerequisites**
- Students need to know the basic ideas of calculus, optimization, and probability.
 - Some knowledge about game theory will be helpful.
- References**
- (SV) *Information Rules* by C. Shapiro and H. Varian.
 - (LD) *Freakonomics* by S. Levitt and S. Dubner.¹
 - (CT) *Contract Theory* by P. Bolton and M. Dewatripont.
 - (G) *Game Theory for Applied Economists* by R. Gibbons.
- On-line Resources**
- For checking grades: CEIBA.
 - For materials: <http://www.im.ntu.edu.tw/~lckung/courses/IE-Fa15/>.
 - For discussions: <https://piazza.com/ntu.edu.tw/fall2015/im7011>.

Grading

- Breakdown**
- Homework 1: 5%. Class participation: 10%.
 - Pre-lecture problems: 10%. Lecture problems: 15%.
 - Paper presentation: 15%. Exams: 20%. Project: 25%.
- Conversion Rule**
- The final letter grades will be given according to the following conversion rule:

Letter	Range	Letter	Range	Letter	Range	Letter	Range	Letter	Range
F	[0, 60)	C-	[60, 63)	C	[63, 67)	C+	[67, 70)	B-	[70, 73)
B	[73, 77)	B+	[77, 80)	A-	[80, 85)	A	[85, 90)	A+	[90, 100]

¹ Translated into Chinese with the book title "蘋果橘子經濟學".

Tentative plan

Week	Date	Lecture	Reading ²	What is due
1	9/14	Overview, <u>quiz</u> , and review of optimization	SV Ch. 1, LD	Homework 1 on 9/18
2	9/21	Review of game theory	G Chs. 1-2	N/A
3	9/28	<u>No class: Mid-autumn Festival</u>	N/A	N/A
4	10/5	Channel selection under competition	McGuire and Staelin (1983)	N/A
5	10/12	Incentives and supply chain coordination	Pasternack (1985)	Homework 2 on 10/16
6	10/19	Theory of screening: Two-type model	BD Sec. 2.1	N/A
7	10/26	Endogenous adverse selection	Taylor and Xiao (2009)	N/A
8	11/2	Cascade contract design	Kung and Chen (2014)	Homework 3 on 11/6
9	11/9	<u>Midterm exam</u>	N/A	N/A
10	11/16	Theory of screening: Continuous-type model	BD Sec. 2.3.3	N/A
11	11/23	Theory of moral hazard	BD Sections 4.1-4.2	Project proposal on 11/23
12	11/30	<u>Proposal discussions</u>	N/A	Homework 4 on 12/4
13	12/7	Quality Segmentation in Spatial Markets	Desai (2001)	Write-up and slides on 12/7
		Product line design for a distribution channel	Villas-Boas (1998)	
14	12/14	Nonlinear pricing of information goods	Sandararajan (2004)	Write-up and slides on 12/14
		Is a better-forecasting retailer beneficial?	Taylor and Xiao (2010)	
15	12/21	Incentives for salesperson forecasting	Chen (2005)	Write-up and slides on 12/21
		Monitoring the market or salesperson?	Kung and Chen (2011)	
16	12/28	Review	N/A	N/A
17	1/4	<u>Final project presentations</u>	N/A	Project report on 1/4
18	1/11	<u>Final project presentations</u>	N/A	Project report on 1/11

Chen, F. (2005), "Salesforce incentives, marketing information, and production/inventory planning," *Management Science* **51**(1) 60-75.

Desai, P.S. (2001), "Quality segmentation in spatial markets: when does cannibalization affect product line design?" *Marketing Science* **20**(3) 265-283.

Kung, L.-C. and Y.-J. Chen (2011), "Monitoring the market or salesperson? The value of information in a multi-layer supply chain," *Naval Research Logistics* **58**(8) 743-762.

Kung, L.-C. and Y.-J. Chen (2014), "Impact of reseller's and sales agent's forecasting accuracy in a multilayer supply chain," *Naval Research Logistics* **61**(3) 207-222.

McGuire, T.W. and R. Staelin (1983), "An industry equilibrium analysis of downstream vertical integration," *Marketing Science* **2**(1) 115-130.

Pasternack, B.A. (1985), "Optimal pricing and return policies for perishable commodities," *Marketing Science* **4**(2) 166-176.

Sundararajan, A. (2004), "Nonlinear pricing of information goods," *Management Science* **50**(12) 1660-1673.

Taylor, T. and W. Xiao (2009), "Incentives for retailer forecasting: rebates vs. returns," *Management Science* **55**(10) 1654-1669.

Taylor, T. and W. Xiao (2010), "Does a manufacturer benefit from a better forecasting retailer?" *Management Science* **56**(9) 1584-1598.

Villas-Boas, J.M. (1998), "Product line design for a distribution channel," *Marketing Science* **17**(2) 156-169.

² The meanings of these abbreviations can be found in the "Basic Information" section.

Policies

- "Flipped Classroom"**
- Before most Monday lectures, the instructor will upload videos containing some materials to be discussed on that Monday. The total length of those videos for one lecture will be around 60 to 90 minutes. Students must find their own time to watch the videos before the lecture.
 - For each set of videos, there will be a pre-lecture problem that requires students' submissions. Pre-lecture problems should be submitted as hard copies at the beginning of each lecture.
 - During lectures, we answer students' questions regarding materials in the videos, give examples, do on-site exercises and discussions, and introduce further materials.
 - For most problems assigned in lectures, students form teams to discuss about and solve them to earn points for lecture problems.
- Teams**
- Students must form teams to do lecture problems. One's teams for different weeks can be different. Each team should have exactly three students, unless a special approval is obtained from the instructor.
- Homework**
- Thanks to in-class exercises and lecture problems, students do not need to submit homework (except Homework 1)! To give students more chances to do practices, several homework assignments will be given. Solutions will be provided on the due dates.
 - To submit a homework paper, put a hard copy of the work into the instructor's mailbox on the first floor of the Management Building II by the due time. No submission in class. Being late for less than one hour gets deductions on grades; being late for more than one hour gets no grade.
- Paper presentations**
- Students will form six teams to present six academic papers. Each team will be responsible for one paper. Each oral presentation, including Q&A, must be done in 50 minutes with slides. The number of members in a team will be determined when the class roster is finalized.
 - On the date that a team present, they should submit one paper summary and their slides.
- Project**
- Students will form "teams" to do a final project by applying the techniques learned in this course to a self-selected problem. Each team will make an oral presentation in one of the last two lectures and submit a report. The written report is due on the date the team makes the oral presentation. The number of teams and number of students in each team will be determined after the class size is finalized.
- Class Participation**
- We encourage class participation and include it in evaluating each student. During lecture time, students are more than welcome to ask or answer questions and provide comments. One gets good participation grades if her/his participation enhances the learning experiences of the class or she/he simply impresses the instructor with her/his passion and diligence.
- Office Hour**
- You are welcome to the instructor's office hour to ask him any question. You may ask him to clarify some concepts, give suggestions on homework, or discuss the final project. Discussions not related to this course are also welcome. If you do not want to come in the designated time, feel free to send me an e-mail to schedule a meeting.
- Exams**
- The exam will be in-class and open whatever you have (including all kinds of electronic devices). However, no information is allowed to be transferred among students. Cheating will result in severe penalty.