

# Bus 9872A1105 Supply Chain Management 2013 – 2014

## Course Logistics

## Course Syllabus Sept. 03 2013 - Subject to Change

### Instructor

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First & Final Class	Hours	Location
Sept.11th-Nov. 27th 2013	36	Ivey, 3102

The class meets once a week for 3 hours. Each 3-hour class is divided into two parts. In the first part the instructor will lead a lecture/discussion based on the technical topic. In the second part the class will engage in an article discussion (based on the technical topic covered in the first part). Students are expected to have read both the assigned chapter and article reading before each class, and be prepared to engage in the class-discussion.

### Course Description

This is the first part of the Supply Chain Management (SCM) foundation series which focused on the application of game theory in the research field of SCM. In this course, students will mainly learn technical topics related to game theory. Specifically, the detailed topics are: strategic form games, Nash equilibrium, sub-game perfection, repeated games, information asymmetry/information sharing, Contract, Optimal Mechanism, and Coordination etc. In addition, students will also learn applications of the techniques and tools, and how to identify, formulate, and investigate a research problem which can be analyzed through the tools under each technical topic.

### Topics Covered

Strategic form games, Nash equilibrium, Sub-game perfection, Players Relationships, Repeated games, information asymmetry/information sharing, Contract, Optimal Mechanism, and Coordination.

### Grading

- 20% Class Contribution
- 20% Assignment Questions
- 30% Leading Article Discussion
- 30% Report & Presentation: Research Proposal

## Grading Component Description

**Class Contribution:** Students are expected to actively participate and contribute to the class-room discussion. Students are therefore required to have read the required reading and prepared questions and discussion points to share with their classmates.

**Assignment Questions:** Each week students will be given a set of 3-4 questions from **Roger B.**

**Myerson** "Game Theory: Analysis of Conflict". Students are required to turn in the assignments within 1 week. Late assignments are not accepted and the student will receive a zero for that week.

**Leading Article Discussion:** Each week we will discuss an applied research article (see list below). Students will sign-up to lead class-discussions per term. The discussion should include a description of the problem, motivation, brief literature review, model framework, assumptions, analysis/results explanation, and future work or extensions.

**Term Report & Presentations:** Each student will write a 5-8 page term report, and give a 20 minute (around) presentation at the end of the term. The objective of the spring term report is to write a research project proposal on a problem of choice (ideally related to the literature review from the previous term). The proposal should include a problem description/motivation, research questions/objective, model framework and assumptions, and how the analysis will address the research questions. A 1-2 page interim report is due mid-way through the term.

## Academic Integrity

Students must write their essays and assignments (at Ivey this includes case exams and reports) in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offense Policy in the Western Academic Calendar).

All required papers (at Ivey this includes case exams and reports) may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (hyperlink [www.turnitin.com](http://www.turnitin.com)).

For more information see:

[http://www.uwo.ca/univsec/handbook/appeals/scholastic\\_discipline\\_grad.pdf](http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_grad.pdf)

## Course Material

The listed materials are all REQUIRED.

**Roger B. Myerson** "Game Theory: Analysis of Conflict".

**Drew Funenberg & Jean Tirole** "Game Theory"

## Articles *(subject to change)*

Note that each student is responsible for retrieving the articles themselves, i.e. there is no course package containing the articles.

1. Lingxiu Dong, Niles Rudi. 2004. "Who Benefits from Transshipment? Exogenous vs. Endogenous Wholesale Prices". *Management Science*. 50(5) 645-657.
2. N. C. Petruzzi, A. Dada. 1998. "Pricing and the Newsvendor Problem: A Review with Extensions". *Operations Research*. 47(2). 183-194.
3. S. C. Choi. 1991. "Price Competition in a Channel Structure with A Common Retailer". *Marketing Science*. 10(4). 271-296.
4. Martin A. Lariviere, E. L. Porteus. 2001. "Selling to the Newsvendor: An Analysis of Price-Only Contract". *Management Science*. 3(4) 293-305.
5. R. D. Banker, I. Khosla, K. K. Sinha. 1998. "Quality and Competition". *Management Science*. 44(9)

- 1179-1192.
6. Daniel Granot, Greys Sosis. 2003. "A Three-Stage model for a Decentralized Distribution System of Retailers". *Operations Research*. 51(5) 771-784.
  7. Greys Sosis. 2006. "Transshipment of Inventories Among Retailers: Myopic vs. Farsighted Stability". *Management Science*. 52(10) 1493-1508
  8. Lode Li, and H. Zhang. 2008. "Confidentiality and Information Sharing in Supply Chain Coordination". *Management Science*. 54(8) 1467-1481.
  9. W. S. Lim. 2001. "Product-supplier Contracts with Incomplete Information. *Management Science*. 47(5). 709-715.
  10. Xinghao Yan, Hui Zhao. 2011. "Decentralized Inventory Sharing with Asymmetric Information". *Operations Research*. 59(6). 1528-1538.
  11. Lode Li. 2002. "Information Sharing in a Supply Chain with Horizontal Competition". *Management Science*. 48(9). 1196-1212.
  12. G. Cachon, F. Zhang. 2006. "Procuring Fast Delivery: Sole-sourcing with Information Asymmetry". *Management Science*. 52(6). 881-896.
  13. G. Cachon, M. Lariviere. 2005. "Supply Chain Coordination with Revenue-Sharing Contracts: Strength and Limitations". *Management Science*. 51(1).30-44.
  14. Taylor, T. 2002. "Supply Chain Coordination Under Channel Rebates with Sales Effort Effects". *Management Science*. 48(8). 992-1007.
  15. Chick, S. E., H. Mamani, et al. (2008). "Supply Chain Coordination and Influenza Vaccination." *Operations Research* **56**(6): 1493-1506.
  16. Mamani, H., E. Adida, et al. (2012). "Vaccine market coordination using subsidy." *IIE Transactions on Healthcare Systems Engineering* **2**(1): 78-96.
  17. Choi, S. Chan. (1991). "Price competition in a channel structure with a common retailer" *Management Science* **10** (4): 271-295.
  18. Gal-Or, Esther. (1985). "First mover and second mover advantages" *International Economic Review* **26**(3): 649-653.

## COURSE OUTLINE

### Sept. 2013 – Game Theory

Week	Topic	H & L	Articles
1	Why Game Theory? Research without Game		[1][2]
2	Strategic Form Game/Nash Equilibrium	Ch 1-3	[3]
3	Different Relationships (1): Sequential Game	Myerson Ch.4,5	[4]
4	Different Relationships (2): Simultaneous Game	Myerson Ch.4	[5]
5	Different Relationships (3): Repeated Game/Coalition	Myerson Ch.7	[6] [7]
6	Information structure (1): Perfect /Complete Information	Myerson Ch.6	[8]
7	Information structure (2): Information Asymmetry	Myerson Ch.9	[9]
8	Information structure (3): Information Sharing/Information Leaking		[10] [11]
9	Contract /Optimal Mechanism		[12]
10	Coordination		[13] [14]
11	Game Theory Wrap Up: Other Issues		[15] [16][17] [18]
12	Term Projects Presentations		