IEOR 153, Spring 2013

Course Overview
Intense competition, increasing customer expectations and massive outsourcing of manufacturing to Asia force firms to reassess and reevaluate their supply chains in order to become more efficient and more responsive in order to thrive. This, together with advances in transportation and communication technology, and rapidly evolving internet-based strategies, has propelled profound evolution of supply chains and of techniques to manage them. These rapid advances and new approaches provide exciting opportunities for managers and firms that are positioned to take advantage of them.

In this course will explore state-of-the-art logistics strategies, models, algorithms and other analytical tools for designing and operating the supply chain in ways that reduce system-wide costs and improve system-wide service. We will discuss and develop methods that firms can deploy to better cope with the randomness and variability inherent in real-world supply chains. We will identify opportunities, issues and concepts arising from the growth of the Internet and e-commerce, including exchanges, collaborative forecasting and others. We also will discuss information technology for decision support, and develop an understanding of optimization tools suitable for formulation of logistic strategy and design of the supply chain network.

Advanced topics to be addressed include the following:

- Configuration of the supply chain
- Inventory management and risk pooling
- Visibility in supply chains
- Supply contracts
- E-commerce
- Strategic partnerships
- Dynamic pricing and yield management
- Coordination of product design and supply chain design
- Risk management, flexibility, robustness to supply chain disruptions

After completing this course, you will be able to:

- Develop a systematic framework for analyzing the behavior of large and complex supply chain networks
- Understand the motivations of suppliers and distributors and the relationships between them in order to ensure supplies of raw materials and markets for finished goods
- Explain state-of-the-art technologies and analytical approaches that economize production, inventory and transportation costs, and improve service levels and profitability
- Understand the concept of risk in the supply chain, and how it can be best distributed
- Understand the value of flexibility in supply chains
- Understand the concepts of known-unknown and unknown-unknown risk, and be able to discuss how both kinds of risk can be mitigated

Course web site:
Updated versions of this syllabus, reading assignments, homework assignments and solutions, class presentations, etc. will be posted on the course bSpace page, https://bspace.berkeley.edu/.

Questions and Discussion:
For this course to be successful, everyone must participate in classroom discussion. Much of the course will consist of case discussions and analysis, so please complete all of the assigned reading ahead of time, and contribute to class discussions.

Text:
Designing and Managing the Supply Chain, Third Edition, by Simchi-Levi, Kaminsky and Simchi-Levi, 2008, New York: McGraw-Hill. There are a number of typos in this edition. A list of significant typos will be posted on the course bSpace.

Assignments and Grading:
There will be regular reading assignments. There will be weekly or bi-weekly written assignments. Some will be quantitative, some will be qualitative. Homework will not be graded, but you must be prepared to discuss it in class.

There will be one midterm and one final exam.

Your course grade will be based on the final exam score and the midterm exam score, according to the following MAX function: MAX (0.33*MT + 0.67*F, F) where MT is the midterm exam grade and F is the final exam grade.

Course Outline:
We will generally follow the text book. Below is a highly tentative syllabus, which will be updated as we progress. The updated syllabus will be made available on bSpace.

Week	Topics	Chapter
1	Introduction	
2	Introduction Inventory	1-2
3	Inventory Forecasting	2
4	Supply Contracts	4
5	Value of Information	5
6	Value of Information	5
7	Logistics Network Planning	3
8	Network Design Algorithms	
9	Supply Chain Integration	6
	Midterm Exam Mon Week 9	
10	Distribution strategies Network flexibility	7
11	Strategic Alliances Outsourcing	8-9
12	Supply Chain Management	11
13	Pricing	13
14	Global Logistics Risk Management	10
15	Review week	
	Final exam	