

IE 460 – Quantitative Methods in Supply Chain Management
Bilkent University, Department of Industrial Engineering
Spring 2018-2019

Instructor

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Teaching Assistant

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Course Schedule

Tuesday 13:40-15:30, Thursday 15:40-17:30 (EE-412)

Catalog Description:

Economies of scale in the supply chain, quantity and transportation discounts. Multi-stage inventory and production systems, risk pooling, decentralized and centralized modeling approaches, bullwhip effect. Supply chain coordination, strategic games in supply chains, and contracting. More complicated examples from industry.

Course Summary

Supply chain management deals with the management of materials, information and financial flows in a network consisting of suppliers, manufacturers, distributors, and customers. The topics that are covered in this course include logistics network configuration, risk pooling and multi-echelon inventory systems, value of information in supply chains, coordination of the supply chain using contracts and other mechanisms, distribution strategies for the supply chain and product design for supply chain efficiency.

Course Objectives

- Introduce basic notions of supply chains.
- Teach concepts that play a key role in supply chains: risk pooling, centralization vs. decentralization, information distortion/bullwhip effect, and postponement.
- Introduce solution techniques that can be applied for supply chain planning.
- Build appreciation on several aspects of supply chains.

Course Textbook

(CM) Chopra, S., and Meindl, P., *Supply Chain Management: Strategy, Planning and Operation*, Prentice Hall, 6th Global Edition, 2016.

The textbook is available at the bookstore.

Prerequisites (Strongly recommended) – IE202, IE325, IE375

Supplemental Texts

(SPT) Silver, E.A., Pyke, D., and Thomas, J.T., “Inventory and Production Management in Supply Chains”, 4th Edition, CRC Press, 2016

(SKS) Simchi-Levi, D., Kaminsky, P., and Simchi-Levi, E., *Designing and Managing the Supply Chain: Concepts, Strategies, and Cases*, 2nd edition, McGraw-Hill, 2003 ISBN: 0-07-119896-2 (or a newer version that might be available in the library).

Papers from different academic journals used as supplements are available at the course WEB page.

Grading

- * Exam 1 – March 19, Tuesday, 13:40-15:30 (in class) - (25%)
- * Final Exam – (35%) – Date and Location: TBA
- * Term Paper/Project (20%) – Find details at the WEB (Term Paper)

* Homework + Cases (Total: 20%) – 4 individual HW assignments, each 2%, one individual Case assignment (2%) and 2 group (of size 3 students) Case assignments, each 5%. See the detailed schedule at the WEB (Schedule).

Grade FZ

20% of the all graded material before FZ garde submission final date.

Course Outline

1. Introduction
2. Inventory Management – Review and Further
3. Cycle Inventories and Supply Chain
4. Supply Chain Coordination – Contracting
5. Transportation Issues in Supply Chain
6. Risk Pooling, Centralization
7. Distribution Systems
8. Bullwhip Effect
9. Inventory Positioning
10. Other Supply Chain Issues

Relation of reading material including course textbook and lectures:

The course text-book is one of the best in the topic if you want to have a quick reference for supply chains and its various subtopics. The text-book utilizes an IE overlook with less emphasis on the actual mathematical models, but more on the intuition parts. However, in this course we will go beyond the models described in the text-book with additional quantitative material covered in class utilizing other references which will be supplied in the course WEB site.

Course Conduct Policy:

1. All students, assistants and instructor of the course are expected to
 - Respect each other.
 - Help each other in creating a suitable environment for learning.
 - Help each other to have fair assessment of the work done.
2. Attendance to sessions related to student presentations (if any) is mandatory and students who will miss should inform the instructor in advance. Additionally, students may need to prepare before such classes.
3. Students are responsible for checking the course website for course material, updates and announcements. The address of the website is to be announced.

Homework Submission Policy:

Five homework assignments will be given. For all these assignments due-dates are fixed; no late assignment will be accepted. An assignment submission box will be placed in front of the office EA325 about two days before submission date and will be removed at the time of the deadline. You need to place your assignment in the designated box before the submission deadline.

Homework Grading Policy:

The homework grades will not be only based on the correctness of the answers provided, but on the perceived degree of effort on the returned assignment. This will hopefully leave no motivation to students to use other solutions, as even without obtaining any correct answers one can obtain full credit. The detailed grading scale will be announced for each assignment separately.

Make-up policy:

- (1) There is no make-up for the homework assignments. In some rare cases your grading percentages may be modified by the course instructor.
- (2) For exams, if you have a legitimate health reason:
 - a. To satisfy university requirements, you should follow the administrative path and submit your health report officially.
 - b. You should contact the instructor immediately (same day) after the expiration date of your health report. If you do not contact, you may lose your right to get a make-up. The make-up exam can be at any time (oral or written) after the expiration date of the health report.

Academic Dishonesty:

Academic misconduct is not tolerated, and violations will be treated in accordance with the University policy.

- For assignments: Discussion of the course material and working in groups are effective ways of learning. However, this does not mean that you can copy the assignment from one of your friends. You can discuss with your friends, but you should be alone, without any written solution in front of you, when you actually prepare your assignment. It is extremely important to understand the value of this exercise in the process of learning. Any violation of the above understanding will result measures outlined in the student rules and regulations.
- For exams: You are expected to act in accordance with the following statement that you will be asked to sign. *Academic integrity is expected of all students of Bilkent University at all times, whether in the presence or absence of members of the faculty. Understanding this, I declare that I shall not give, use or receive unauthorized aid in the examination.* Any violation of the above understanding will result measures outlined in the student rules and regulations.

Solutions to exams, homework and claims for grade change:

(1) No solutions will be distributed for the exams, or any of the assignments. However, for each of the homework and exams a detailed “Comments” document will be prepared. This document will be on the questions asked and will discuss several issues related to the question, including the way that grading was performed, as well as the sketch of the solution and possible extensions. It will also contain information on your performance, your successes, common mistakes, etc.

(2) For any of the assessment activities, you are expected to pick up your assignment (except the exams). If you have any concerns about the way that your work has been graded, please write your claim, and ask for re-grading. The outcome will be mailed to your e-mail account. Note that office hours of the teaching assistant should be used to pick up your assignment or to check your exam. In some cases additional hours may be announced and you are expected to come within those hours. If you will not be able to make at those hours, you can write an e-mail to the teaching assistant asking for an appointment.

Privacy policy:

Grade information and other personal information available to us will not be disclosed publicly. Please, do not demand to learn somebody else’s grade or other pertinent personal information. Also phone inquiries are not accepted.