

IM 648 SUPPLY CHAIN MANAGEMENT

SPRING 2007

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Office Hours: Mondays and Wednesdays 9:30-11:00 a.m., otherwise by appointment. In addition, the instructor will be available before and after class for brief consultation. The instructor recognizes that all learning does not occur in the classroom and welcomes student consultations; therefore, an "open door" policy will be maintained at all times.

Course Prerequisites: IM 546 Operations Management, and IM 542 Decision Sciences or their equivalents.

Class Meetings: Wednesdays 6-8:50 p.m. in MG102

INSTRUCTIONAL MATERIALS

The primary materials used for this course are the following:

Text: Business Logistics/Supply Chain Management, 5th Edition by Ronald H. Ballou
Prentice Hall, 2004, ISBN 0-13-107659-0.

Class Notes: including PowerPoint slides, outside readings, and other course materials are available from the course conference.

Software: (1) LOGWARE which comes bundled with the Ballou text, so do not buy the book used unless you can be guaranteed that the software CD comes with it (unless you can borrow it); and (2) Microsoft Excel (used occasionally).

Other readings: these books may be read as time allows, they further elaborate on ideas that will be discussed throughout the course but need not be read before class.

1. Supply Chain Management by S. Chopra and P. Meindl.
2. The Management of Business Logistics by J.J. Coyle, E.J. Bardi and C.J. Langley.
3. Logistical Management by D.J. Bowersox, D.J. Closs, O.K. Helferich.
4. Inventory Management and Production Planning and Scheduling by Edward A. Silver, David F. Pyke, and Rein Peterson.
5. Introduction to Logistics Systems Planning and Control by G. Ghiani, G. Laporte, and R. Musmanno.
6. Supply Chain Management edited by John Mentzer,
7. Fundamentals of Supply Chain Management by John Mentzer.

COURSE DESCRIPTION AND OBJECTIVES

Course Description: Supply chain management is unique and, to some degree, represents a paradox because it is concerned with both one of the oldest activity of business: logistics, and the most newly discovered business paradigm: Supply Chain Management. As the global economy gets more competitive and information is exchanged widely and instantaneously, effective logistics and supply chain management are being recognized as the last frontier in which organizations can achieve significant improvements.

COURSE DESCRIPTION AND OBJECTIVES

Logistics, according to the *Council of Logistics Management (CLM)*, is “the process of planning, implementing, and controlling the efficient, cost-effective flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption for the purpose of conforming to customer requirements.” More casually, logistics is about getting the correct things to the correct places at the correct times, while **Supply Chain Management (SCM)** is the planning and controlling of the *integration* of the supply, production, storage, distribution, and sales functions in the most efficient and cost-effective manner to meet one’s service requirements.

Although these definitions sound similar, in much of the literature *logistics* has a tactical, problem-solving focus while *supply chain management* is more strategically oriented. This dichotomy will influence the structure of this course. The course is meant to be an introduction to and survey of the various logistical and supply chain issues that today’s organizations must address to remain competitive in a business climate increasingly shaped by information, speed, and flexibility.

One major chunk of the course will discuss solution tools to logistical problems. These tools comprise a varied assortment of quantitative methods that address problems in distribution, inventory management, purchasing, warehousing, and customer service. This, roughly speaking, will be the logistics part.

Another large portion of the course will address the *strategic, integrative* issues of the supply chain, like information exchange, buyer-supplier relationships, distribution strategies, outsourcing decisions, cycle time reduction, and strategic alliances. This is essentially the SCM part.

Objectives: One objective of this course is to apprise students on how SCM is growing more important as more organizations embrace e-business. The overarching objective, though, is that through this introduction to and survey of the field, students learn what today’s issues in logistics and SCM are and how they are treated. That is, I expect the students not only to grasp what typical logistics and SCM problem areas are, but also to become familiar and competent with some of the analytical tools that managers use to address these problems. It is this competency with analytical tools that, I believe, provides students in this course value added beyond the knowledge that may be gained simply by reading various nontechnical books on the subject that cover issues broadly but forgo the depth that quantitative analysis provides.

COURSE FORMAT

The course will be conducted by a combination of seminar-type lectures and discussions, casework, and in-class computer applications. The lecture will cover the assigned topic, but will not necessarily cover the material as presented in the text. Class discussions will focus on those areas and issues where comprehension is enhanced by additional elaboration or illustration. An effort will be made to maintain as informal an atmosphere as possible. Individual participation by students is strongly recommended. You are expected to attend all classes and to be prepared to discuss and/or apply assigned discussion problems and readings. Students will be called upon by name to discuss assigned topics and concepts.

GRADING

The grade you receive for the course is intended to certify your demonstrated proficiency in the course material. Proficiency will be estimated by measuring your performance on (1) three tests, (2) three cases, (3) contribution to group work and (4) class attendance and participation as follows:

Tests (3 @ 100 pts. Each)	300 points
Cases (3 @ 25 pts. each)	75 points
Contribution to Group Work	5 points
Class participation and attendance	20 points

Total Possible	400 points

Your final course grade depends on the total number of points you will have accumulated at the end of the semester as follows:

388 - 400 points = A+	348 - 359 points = B+	308 - 319 points = C+	264 - 279 points = D+
372 - 387 points = A	332 - 347 points = B	292 - 307 points = C	240 - 263 points = D
360 - 371 points = A-	320 - 331 points = B-	280 - 291 points = C-	Below 240 points = F

EXAMS

Three tests will be given during the semester. Each test will cover approximately one third of the course materials and include problems like those assigned for homework, questions on lecture materials, assigned readings, and additional items covered in class meetings.

CLASS ATTENDANCE AND PARTICIPATION

Your grade in this category will depend on (1) your class attendance, and assiduity, (2) the quality of the answers you provide to questions posed by the instructor during class, (3) the effort you devote to preparing the *discussion* problems listed in the class schedule below, and (4) the general contribution you make to the creation of a positive learning environment.

There should be enough opportunities for you to participate. To increase opportunities for effective participation, I will occasionally cold call students. Please leave your name card up for the entire duration of each class and make an effort to keep the same seat throughout the semester.

COURSE CONTENT

The course is organized into six major parts as follows.

1. Course Introduction and Supply Chain Strategy

We start by defining business logistics and supply chain management (SCM). We will discuss the significance of SCM and its importance to the success of a firm. We will cover key SCM activities and processes, and discuss SCM scope, dimensions, and trends. Supply chain decisions will be divided into three categories - strategic/design, planning, and operational. We will discuss the concept of implied demand uncertainty, and contrast supply chain efficiency with supply chain responsiveness. We will identify drivers of supply chain performance, and provide a framework within which these drivers may be analyzed.

2. Transportation Decisions in the Supply Chain

We will discuss the role of transportation in the supply chain and raise various tradeoffs that need to be considered when designing and operating a transportation network. We will discuss the domestic and international transportation and consider the different modes and their performance characteristics. We will discuss rate types, profiles, and stop-off privileges schemes. We will motivate the link between transportation and inventory costs in the design of transportation networks. We will also consider different problems that are relevant when making transportation decisions. We will study a variety of quantitative tools that are useful in mode/service selection, freight consolidation, and vehicle routing and scheduling decisions. We will introduce the LOGWARE software.

3. Sourcing Decisions in the Supply Chain

This module discusses the role of sourcing in a supply chain. We will identify dimensions of supplier performance and their impact on costs. We will discuss strategic and tactical issues in supplier selection and rating, purchasing leverage, order quantity allocation. We will examine a variety of purchasing types including speculative, forward, hand-to-mouth, volume/quantity discounts, dollar averaging, deal buying. Also discussed are advances in sourcing such as vendor-managed inventory, electronic data interchange, E-sourcing and global purchasing.

4. Supply Chain Network Design

We will discuss the role of distribution within a supply chain, identify key factors of distribution networks, and discuss the strengths and weaknesses of various distribution options. Also, we will discuss international issues in global supply chain network design and develop a framework for facility location decisions that allows for a multi-plant, multi-warehouse network to supply a large and diverse customer base. We will study a variety of facility location models. Our objective will be to optimally structure the distribution network, taking into account cost and customer service factors.

5. Supply Chain Coordination

This module will discuss information system issues within the supply chain. Our goal will be to identify the role of various information systems as well as some current considerations in the industry. We will also illustrate the importance of sharing information throughout the supply chain by means of a computerized simulation of the *Beer Distribution Game*. We will also discuss the *Bullwhip Effect* and means by which to minimize its intensity in the supply chain.

6. Closed-Loop Supply Chains and Reverse Logistics

Recovery of used products and their remanufacturing into new ones is gaining justifiable popularity among many companies worldwide. In this module we will discuss the impact of product recovery and remanufacturing on the design and operations of supply chains and examine the roles of closed-loop networks and reverse logistics in facilitating product returns and remanufacturing.

TENTATIVE CLASS SCHEDULE

Note: We will stay as close to this schedule as possible; however, coverage will depend on overall class progress and discussion.

Session	Date	Learning Activity	Topic	Reading	Additional Homework
Introduction and Strategy					
1	01/24	Lecture	Course Introduction and Supply Chain Strategy	Chapters 1, 2	12 page 31 13 page 60
Tranportation					
2	01/31	Lecture	Transportation in the Supply Chain	Chapter 6	14 & 15, page 217
		Discussion	Prepare answer to 21	page 218	
3	02/07	Lecture	Transportation Decisions: Mode/Service Selection, Shortest Route Method, Transportation Method, Introduction to LOGWARE	Chapter 7 pp. 219-231	4 pp. 256-257
		Discussion	Prepare answer to 1, 3	pp.255-256	
4	02/14	Lecture	Transportation Decisions: Vehicle Routing and Scheduling	Chapter 7 pp. 235-249	12 page 263
		Discussion	Prepare answer to 6	page 259	
5	02/21	Test 1	Chapters 1, 2, 6, 7		
Sourcing					
6	02/28	Lecture	Sourcing Decisions in the Supply Chain: Importance of Purchasing, Supplier Selection and Rating, Order Allocation Quantities and Timing	Chapter 10 pp. 446-449 pp. 458-462	
		Discussion	Prepare answer to 4, 9	pp. 465-466	
7	03/07	Lecture	Sourcing Decisions in the Supply Chain: Timing of Purchases, Quantity Discounts	Chapter 10 pp. 450-458	7, 10 pp. 466-467
		Discussion	Prepare answer to 6, 8	pp. 465-466	
		Case 1 Due	Orion Foods, Inc.	pp. 276-280	
	03/12-16		Spring Break		

Session	Date	Learning Activity	Topic	Reading	Additional Homework
8	03/21	Lecture	Vendor Managed Inventory, Electronic Data Interchange (EDI) and Purchasing, E-Sourcing and Purchasing, Global Purchasing	Instructor's Notes	
9	03/28	Test 2	Chapters 9, 10, Instructor's Notes		
Network Design					
10	04/04	Lecture	Supply Chain Facility Location Decisions: Single Facility Location Methods	Chapters 13 pp. 551-562	
		Discussion	Prepare answer to 1 (a, b, & c), 3	pp. 597-600	
11	04/11	Lecture	Supply Chain Facility Location Decisions: Multiple Facility Location Methods	Chapter 13 pp. 562-582	3 page 598
		Discussion	Prepare answer to 1d, 9	pp. 597-601	
		Case 2 Due	Industrial Distributors, Inc.	page 468	
Coordination					
12	04/18	Lecture	Supply Chain Coordination	Instructor's Notes	
		Discussion	The Beer Distribution Game and the Bullwhip Effect		
Closed-Loop Chains					
13	04/25	Lecture	Closed-Loop Supply Chains and Reverse Logistics	Instructor's Notes	
		Case 3 Due	Superior Medical Equipment Co.	pp. 607-609	
14	05/02	Test 3	Chapters 13, Instructor's Notes		