OTM 640
Business Logistics Analysis
Fall 2010
11:00-12:15 TR
1190 Grainger

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Office Hours: 2:30-3:30 TR or by appt.
Office Phone: 263-6986
Final: Tuesday, December 21st , 5:05 pm

Course Description:

The goal of business logistics is to manage the material and information flows between sources of raw materials and final customers at the lowest cost and at a service levels that conform to customer needs. Logistics is a principal source of value (profit) and competitive advantage for many firms and an integral part of their overall competitive strategies. Logistics encompasses a wide range of technical areas. Knowing transportation carrier and IT capabilities, customer service requirements, and advanced analytical techniques is essential in designing today's efficient supply chains. The ability to analyze and implement logistics improvements is highly valued by employers.

In this course, key strategic, design, planning, and operational issues are analyzed. Topics include transportation and inventory management, warehousing and material handling, facility location, systems design, customer service, and demand forecasting. Other topics that deal with system design, quick response, order processing, and e-business supply chains are introduced. We identify tradeoffs between (1) logistics activities (e.g., transportation and inventory), (2) logistics, marketing, and operations of a firm (e.g., inventory and customer service), and (3) logistics activities of the all firms in a supply chain. Quantitative models are used extensively throughout the course. Several cases will be discussed to provide 'real world' context.

Classes are a mixture of lecture, class discussion, and problem solving. Powerpoint notes that cover lecture material are located on our course website.

Course Objectives:

Our objectives are to understand
1. how logistics affects an organization's performance (revenues, costs, profits, and service levels).
2. trade-offs between a) logistics activities, b) logistics and other functional areas, and c) activities of various members of the supply chain.
3. analytical techniques used to solve logistics problems.

Course Material:

Required Text:

Ronald H. Ballou, *Business Logistics/Supply Chain Management, Fifth Edition* (Upper Saddle River, NJ: Prentice-Hall, 2004).

Recommended Texts:

Gerard Cachon and Christian Terwiesch, *Matching Supply with Demand: An Introduction to Operations Management* (New York: McGraw-Hill, 2009).

Gianpaolo Ghiani, Gilbert LaPorte, and Roberto Musmanno, *Introduction to Logistics Systems Planning and Control* (West Sussex, England: Wiley, 2004).

Class Notes: Class notes will be available on our course web page. Other readings will be available on the Business School's electronic library and accessed through MyUW.

Optimization Software, Statistical Estimation, and Forecasting:

Excel with the Solver add-in will be used to solve problems in class and should be used for homework problems (rather than Ballou's software). The R™ statistical program will be used for forecasting and other statistical problems. R™ is freely downloadable on the internet and both are available on the Business School network.

Exams and Grading:

There will be two midterm exams and a final exam. Each will contain a mix of problems, short essays, and possibly objective questions. The exams are closed book and notes and are not cumulative. A previous semester exam will be placed on the course website to give you an idea about the types of questions that may be asked .

Homework assignments are due in class on or before their due dates (see the homework schedule below). Only hard (printed) copies accepted. Assignments should be prepared using Excel (or similar software) and show enough detail to demonstrate your methods. If you work with a group (which is encouraged), each member of the group must individually write up and turn in their own assignment. Your homework may <u>not</u> be returned to you. So keep a copy. Solutions will be posted on our course web after the due date. Late assignments will not be accepted.

You are required to prepare for, attend and participate in all classes. **Your grade depends upon your attendance and participation**.

The grading will be as follows:

First Midterm Exam	(October 7th in class)	25%
Second Midterm Exam	(November 11th in class)	25
Final Exam	(December 21st , 7:45 a.m.)	25
Homework Problems and Other Assignments		15
Instructor Evaluation (and class participation)		10

A 10-15 page term paper (double spaced) may be written on an APPROVED topic. If you wish to do a term paper, you and I must meet, agree on a topic and information sources to be used, and how you will do it. On a single page, you then need to provide a title, an one or two paragraph outline, and a bibliography by the eighth week of class. The completed paper is due before the last class. The paper is worth an extra 10% and is graded on an A-F basis. If your paper were to lower your grade or if you later decide not to do it, there is no penalty.

If there is class interest, we will tour of an area distribution center at the end of the semester. The tour, if we have one, will probably be on the last Friday morning of the semester.

Cases and Auctions:

The class will be divided into three- or four-person team. The teams will compete against each other in a transportation procurement auction simulation. Acting as trucking firms serving a network of locations, each team will offer their services to a shipper (me) at prices and quantities that maximize their profits while considering their costs, traffic, network demand patterns, and competitive price and service offerings of other teams.

Schedule

Ses-sion	Date	Topic		
1	9/2	**Introduction** -Definitions and Development of Field -Activities and Decisions	Read:	**Ballou Ch. 1** **GLM, Ch. 1**
2	9/7	**Logistics and Corporate Strategy** -Total Cost Concept -Network Orientation	Read:	**Ballou Ch. 2** **Roscoe Case** (class website)
3	9/9	**Supply Chain Management** -The Bullwhip Effect Marshall L. Fisher, "What is the Right Supply Chain for Your Product?" **Harvard Business Review**, March-April 1997, 105-116. Hau Lee, "Mass Customization at Hewlett-Packard: The Power of Postponement," **Harvard Business Review**, January-February 1997, 117-119.	Read:	**Cachon Ch. 16.1-16.2**
4	9/14	**Product** -80/20 curve and pricing	Read:	**Ballou Ch. 3**
5	9/16	**Customer Service** -Defining customer service -Determining Sales-Service Relation -Setting service levels	Read:	**Ballou Ch. 4**
6	9/21	**Forecasting** -Exponential Smoothing	Read:	**Ballou Ch. 8** **GLM, Ch. 2**
7	9/23	**Forecasting** -Regression and Trend Analysis		
8	9/28	**Transportation Modes and Services** -modes, legal forms, third-party, and intermodal services -cost, services, rates, and operations	Read:	**Ballou Ch. 6**
9	9/30	**Transportation Decisions** -carrier selection -vehicle routing and scheduling -equipment requirements -costing	Read:	**Ballou Ch. 7** **GLM, Chs. 6-7.**
10	10/5	**Transportation Policy Issues**		

Ses-sion	Date	Topic		
11	10/7	**First Exam**		
12	10/12	**Transportation Strategies** Yossi Sheffi, "Combinatorial Auctions in the Procurement of Transportation Services," *Interfaces*, 34, 4 (July-August 2004), 245-252.		
13	10/14	**Auction Game**		
14	10/19	**Inventory Management - Basics** -Sales-inventory relationship, ABC classification, cycle and safety stock -optimal order quantity	Read:	**Ballou Ch. 9 (326-340, 376-384)**
15	10/21	**Inventory Management - Deterministic Models**	Read:	
16	10/26	**Inventory Management - Single Period**	Read:	**Ballou Ch. 9 (341-348)** **Cachon Chs. 11 and 16**
17	10/28	**Inventory Management - Uncertainty**	Read:	**Ballou Ch. 9 (348-390)** **Cachon Ch. 13** **GLM, Ch. 4**
18	11/2	**Supply Scheduling** -JIT -DRP and ERP -push vs. pull concepts	Read	**Ballou Ch. 10** **Cachon Ch. 10**
19	11/4	**Storage and Material Handling** -storage and handling functions, storage alternatives, costs and rates	Read:	**Ballou Ch 11** **GLM, Ch. 5**
20	11/9	---		
21	11/11	**Second Exam**		
22	11/16	**Storage and Material Handling Decisions** -site selection, sizing, configuration, space layout, product layout dock design	Read:	**Ballou Ch. 12**

Ses-sion	Date	Topic		
23	11/18	---		
24	11/23	**Risk Pooling Strategies** -Location Pooling -Lead Time Pooling	Read:	**Cachon Ch. 14-1 and 14-3**
25	11/30	**Facility Location**	Read:	**Ballou Ch. 13** **GLM, Ch. 3**
26	12/2	**Facility Location**		
27	12/7	**Network Planning Process** -Wareloca Logware	Read:	**Ballou Ch. 14**
28	12/9	**Order Processing, EDI/XML, and RFID**	Read:	**Ballou Ch. 5**
29	12/14	---		
		Final Exam (Thursday, December 21st , 5:05 p.m.)		

Homework

Session	*Date*	*Homework Assignments (Chapter-Problems)*	*Due Date*
1	9/2		
2	9/7	Ballou Ch 2- 13	9/16
3	9/9		
4	9/14		
5	9/16	Ballou Ch 3- 11, 12, 13	9/23
6	9/21	Ballou Ch 4- 8, 9	9/23
7	9/23	Forecasting Assignment	9/30
8	9/28	Ballou World Oil	9/30
9	9/30	Ballou Ch 7- 1, 2, 3, 4, 5, 7ab using CW on lower triangle, 9	10/7
10	10/5		
11	10/7		
12	10/12	Exam 1	
13	10/14		
14	10/19	Ballou Ch 9- 4, 9, 10, 14, 15, 16, 19	11/4
15	10/21	Inventory Assignment	11/4
16	10/26	Cachon Ch 11- 1, 4, 6	11/9
17	10/28		
18	11/2	Ballou Ch 10- 1, 2, 3, 7, 8, 9, Industrial Distributors	11/9
19	11/4		
20	11/9		
21	11/11		
22	11/16	Exam 2	
23	11/18	Ballou Ch 12- 3, 4, 7, 8, 10	12/2
24	11/23	Warehousing Assignment	12/9
25	11/30	Ballou Ch 13- 1, 2, 3	12/9
26	12/2		
27	12/7		
28	12/9		
29	12/14		
		Final Exam	12/21