OPERATIONS & SUPPLY CHAIN STRATEGY
MA 324
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1. Course Description and Objectives

This course begins with a general introduction to operations management and then examines topics in supply chain management and logistics. Operations management is the management of business processes, that is, the recurring activities of a firm. Along with finance and marketing, operations is one of the three primary functions of a firm. At the risk of being simplistic, one may say that marketing generates the demand for products and services, finance provides the capital, and operations produces the product.

Logistics and supply chain management is concerned with one of the oldest and also the most newly discovered activities of business. Supply chain system activities - communication, inventory management, warehousing, transportation, and facility location - have been performed since the start of commercial activity. It is difficult to visualize any product that could reach a customer without logistical support. Yet it is only over the last few years that firms have started focusing on logistics and supply chain management as a source of competitive advantage. There is a realization that no company can do any better than its logistics system. This becomes even more important given that product life cycles are shrinking and competition is intense. Logistics and supply chain management today represents a great challenge as well as a tremendous opportunity for most firms.

In this course we view operations in general and supply chain management in particular from the point of view of a general manager. Logistics and supply chain management is all about managing the hand-offs in a supply chain - hand-offs of information, product, or funds. Our goal in this course is to understand how supply chain design and planning decisions impact the performance of the enterprise.

2 Course Outline

Class	Date	Topic	Reading	Submission due
1	Sep 24	Introduction to operations	MBPF Chap 1 & 2	
2	Sep 26	Process measures & Little's Law	MBPF Chap 3	
3	Oct 1	Targeting improvement		Portland Computer Systems
4	Oct 3	Flow time &capacity	MBPF Chap 4 & 5 Prepare Pizza Pazza	
5	Oct 8	More on capacity		Bariatric Case
6	Oct 10	Systems with variability	MBPF Chap 8	
7	Oct 15	Economies of scale and priorities in queuing systems		BAT Case
8	Oct 17	Midterm review		
9	Oct 22	***MIDTERM***		
10	Oct 24	Managing cycle inventory in supply chains	MBPF Chap 6	
11	Oct 29	Coordinating cycle inventory	MBPF Appendix 6.2	
12	Oct 31	Managing inventory with demand uncertainty	C&M Chap 12	
13	Nov 5	Discrete review policies		
14	Nov 7	Discrete review policies		Inventory problem set
15	Nov 12	The impact of pooling		
	Nov 16	***NO CLASS***		
16	Nov 19	Managing availability		Managing Inventories at ALKO Inc.
17	Nov 21	Determining the optimal service level		
18	Nov 26	Coordination with uncertain demand	Prepare Video Vault case	
19	Dec 3	Managing flexible capacity		Seagate case
20	Dec 5	Final review		
	TBA	***FINAL***		

Note: All readings and cases except for MBPF chapters are in the course pack. The Inventory Problem set will be passed out via Blackboard.

3. Grading and "Rules of the Game"

Submission cases and assignments will account for 20% of the grade. There will be five full case write-ups due during the quarter. There will be one inventory assignment. Each submission is due in groups. Group assignments will be posted during the first week of the term. Please read the *Guidelines for Written Case Analyses* at the end of this syllabus and try to structure your reports accordingly. A final peer review will be done on group work.

Grade Component	Individual / Group	Weight
Submission (6 in total)	Group plus Peer Review	20 %
Class participation	Individual	10 %
Midterm Exam	Individual	30 %
Final Exam	Individual	40 %

When you are in class, you will be expected to fully follow the principles of the Kellogg code of classroom etiquette (http://www.kellogg.northwestern.edu/stu_aff/policies/etiquette.htm). Three important etiquette aspects in my class are:

1. All cell phones must be turned off before the start of class
2. The computer should only be used to take class notes. All other programs should be shut down before the start of class. Any chatting, web surfing, e-mail etc. disturbs the class and is a breach of classroom etiquette. All computer users should make sure to be seated in the last row of the class.
3. Please make you are in your seat and ready to go for the start of class.

The academic integrity would require the following:

- **Cases for submission and homework** may not be discussed with anyone outside your study group. You also may *not* use any outside materials in preparing the case write ups. This includes (but is not limited to) handouts from past terms and materials found on the Internet. If a student on the team has seen the case in a previous class, this must be noted on the case submission. Failure to do so will result in all team members getting a zero for the case submission.
- **It is extremely important and part of the honor code that each member of a group contributes to each case analysis of the group. If any individual has not contributed for a particular write-up, s/he should not append his/her name to the case report but submit a separate report his/her own.** It will also be the group's responsibility to ensure that this happens. Only one written report will be due per group per assignment. However, as I have stressed, each member must contribute to the analysis leading to the report
- For **standard violations of academic integrity**, please check out a description of some of the standard violations at http://www.northwestern.edu/uacc/defines.html
- For a **detailed discussion on plagiarism** by the Northwestern Undergraduate Academic Conduct Committee, please see http://www.northwestern.edu/uacc/plagiar.html

- **Peer reviews:** Your grades will take into account a peer review from each group member of other members in your group. Forms are available on the course home page and will be handed out in class.

4. Course materials and other readings

The required book for the course is *Managing Business Process Flows*.

> *Managing Business Process Flows: Principles of Operations Management (MBPF)* by Anupindi, Chopra, Deshmukh, Van Mieghem and Zemel. Prentice Hall, 3rd edition, 2011. ISBN: 0136036376

All others materials for the course are included in the course pack.

The books below are purely optional but may be of interest if you want to pursue the topics of the class in greater detail.

- The Machine that Changed the World: The Story of Lean Production by James P. Womack, Daniel T. Jones and Daniel Roos, Harper Perennial, 1991.
- Chasing The Rabbit: How Market Leaders Outdistance the Competition and How Great Companies Can Catch Up and Win, by Steven Spear, McGraw-Hill, 2008.
- Call Center Management on Fast Forward: Succeeding in Today's Dynamic Customer Contact Environment by Brad Cleveland, ICMI Press, 2006.
- Matching Supply with Demand: An Introduction to Operations Management by Gerard Cachon and Christian Terwiesch, McGraw-Hill/Irwin; 2 edition 2008.
- Operations Strategy: Principles and Practice by J.A. Van Mieghem, Dynamic Ideas, 2008.
- Uncommon Service: How to Win by Putting Customers at the Core of Your Business, Frances Frei and Anne Morriss, Harvard Business Review Press, 2012.

Also check out Kellogg's operations management blog, *The Operations Room*:

http://operationsroom.wordpress.com/

5. Guidelines for Written Case Analyses

The reports are graded for both content and presentation. A good paper should clearly and succinctly state the recommendations in the first paragraph to provide the reader with a framework. (If a lengthy description of the recommendation seems necessary, append it to the report.) The remaining paragraphs should each present a major part of the rationale for the recommendation in terms of the desirable and undesirable consequences of adopting it. The rationale must consider capabilities that the logistics system under study needs to excel at, and how the current system either provides these capabilities or fails to provide them.

Some common problems in preparing reports result from inadequate analysis. Analysis for a report is a time consuming and intellectually challenging task. Many cases have a set of questions which are a *guide* to help you with the analysis – however, you should not limit your analysis to narrowly answering these questions. The objective is to evaluate a complete range of alternatives and anticipate and discuss the full consequences of your recommendation.

A good report is not a chronology of analysis, but a clearly articulated statement of recommendation and support. If there are options under consideration in the case that are rejected by you, a clear rationale for your decision should be provided. Facts stated in the case need not be restated unless used to make a point. I will assume that the most important issues are raised in the report and that all else is less important to the writer. Both *desirable* and *undesirable* consequences should be factually stated and supported. In the overall evaluation of the report the discussion of all consequences of the recommendation is of the greatest importance. You must clearly discuss how your recommendations aid in the development of capabilities that are important for the logistics system under study.

The following table summarizes deadlines, submission and formatting guidelines.

Written Case Analyses: Deadlines, Submission and Format Guidelines

- Written case analyses and homework assignments are due at the beginning of the class session for which they are assigned.
- Late assignments are not acceptable - no credit will be given.
- Submit a hardcopy of your analysis in class – one per group – except if the entire group is absent from class. If so, leave your report in my mailbox (and request email confirmation) or email it to me.
- Length & format: Typed, double-spaced and about 3 to 4 pages, not including appendices and exhibits. Exhibits need not be typed but should be neat and easy to understand.