

**UNIVERSITY OF SOUTH CAROLINA**  
**MOORE SCHOOL OF BUSINESS**  
**MGSC 491**  
**SUPPLY CHAIN MANAGEMENT**  
**COURSE SYLLABUS**

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<b>TERM</b>	Spring 2008 (15 <sup>th</sup> January, 2008 – 5 <sup>th</sup> May, 2008)
<b>CLASSROOM</b>	BA 701
<b>CLASS TIME</b>	Tuesdays & Thursdays: 3:30 PM – 4:45 PM
<b>INSTRUCTOR</b>	Professor Anand Nair, BA 706, <a href="mailto:Nair@moore.sc.edu">Nair@moore.sc.edu</a>
<b>OFFICE HOURS</b>	Wednesdays: 1:00 PM – 4:00 PM & by appointment

**COURSE OBJECTIVES**

Even as companies have learnt to squeeze efficiencies out of their manufacturing plants through concepts like just in time replenishment, statistical process control, and lean manufacturing practices, they still find that moving goods and services through several layers of their global supply chains is time consuming and costly. Logistics and supply chain management has become one of the last frontiers that still remain to be conquered by most businesses in the twenty first century. Yet this cannot be done unless *all* managers and supervisors, irrespective of their functional orientation and current job responsibilities, fundamentally understand their supply chains and how their effective functioning flows right down to the bottom line.

Since today it is not uncommon to see companies develop a product in one country, manufacture it in another, and sell it to a third country, the complexities associated with global trade must be accounted for in designing and managing supply chain. In addition, new products could be introduced in several countries almost simultaneously, and suppliers with special expertise and technology could collaborate with manufacturers in different countries to create global products. As the world moves toward an international economy, the battle cry for corporations is increasingly becoming one of “global operations and supply chain management”. While globalization promises enormous strategic benefits by coordinating operations located in different countries, it is imperative for managers to develop a perspective that can fully understand and exploit the intricacies of the global marketplace. Managing manufacturing and service operations across cultural, economic, and political boundaries is a formidable challenge, because of which many globalization efforts are falling far short of their promise.

This class will help the students to learn some of the state of the art decision models used in supply chain management, understand the linkage between a firm’s supply chain strategy and business strategy by means of case analysis and discussions, illustrate supply chain decision making using a simulation framework in which students will utilize firm resources more

effectively, and coordinate the manufacturing and movement of goods and services through different echelons of supply chains to create a competitive advantage.

**More specifically, the course will promote the following learning objectives:**

- Understand the linkage between the coordination of the global supply chain and other functional areas of the firm.
- Understand progressive approaches to decision making in integrated supply chain management.
- Understand some key factors in the design of supply chain networks.
- Learn supply chain planning approaches in the presence of uncertainties.
- Understand approaches to plan and manage inventories in a supply chain.
- Learn how to design and manage transportation networks.
- Learn sourcing decision models for supply chain management.
- Apply the concepts and tools learnt in the course in the context of a supply chain simulation game.

**REQUIRED MATERIALS**

1. “Supply Chain Management: Strategy, Planning and Operation” by Sunil Chopra and Peter Meindl, Prentice-Hall, 3<sup>rd</sup> edition, 2006
2. A supplementary packet containing cases. Available at COPY PICKUP (799-COPY).
3. LINKS Supply Chain Simulation Manual. (Available on course homepage) – You will have to register and pay for the simulation experience on Links simulation website <http://www.links-simulations.com/> (click on “Pay for Links”). Cost per student is \$45.

**Note:** All cases must be read before the class they are to be discussed in (whether a submission is required or not). Chapters from the required text book have been assigned as background reading with the material being covered. Lectures will follow the book. The book is best read right after the lecture to reinforce the concepts discussed. The book also provides technical details that may not be discussed in class. All other readings can be read as time allows. They further elaborate on ideas that will be discussed in class but need not be read before class.

**OTHER TEXTBOOKS THAT MAY BE OF INTEREST:**

1. Strategic Logistics Management by D.M. Lambert and J.R. Stock
2. The Management of Business Logistics by J.J Coyle, E.J. Bardi and C.J. Langley
3. Supply Chain Logistics Management by D.J. Bowersox, D.J. Closs, M. B. Cooper
4. Business logistics Management by Ronald H. Ballou
5. Inventory Management and Production Planning and Scheduling by Edward A. Silver, David F. Pyke, and Rein Peterson

**OTHER BOOKS THAT WILL BE OF INTEREST TO STUDENTS TAKING THIS COURSE:**

1. Clock Speed by Charles H. Fine
2. Mass Customization by B. Joseph Pine
3. Markets of One by James H. Gilmore and B. Joseph Pine

4. Towards a Better Supply Chain by Charles C. Poirier
5. Time Based Competition by Joseph D. Blackburn
6. Competing Against Time by George Stalk, Jr. and Thomas H. Hout
7. Developing Spreadsheet-based Decision Support Systems by Michelle M. H. Şeref, Ravindra K. Ahuja and Wayne L. Winston.

**ASSESSMENT GUIDELINES**

<b>Item</b>	<b>Weight</b>	<b>Type</b>
Final Exam	30%	Individual
Class Participation	10%	Individual
Participation in a Buyer-Supplier Role Play	5%	Individual
<b>Individual Subtotal</b>	<b>45%</b>	
Cases (3 written reports)	30%	Group
LINKS – Annual Report	10%	Group
LINKS – Board of Directors Report & Performance	10%	Group
LINKS Presentation	5%	Group
<b>Group Subtotal</b>	<b>55%</b>	
<b>Total</b>	<b>100%</b>	

The teams for the case analysis and LINKS simulation game will be formalized on January 22, 2007. Note that all group effort grades are contingent upon team member evaluations. Individual grades will take into account a peer review from each group member of other members in the group. It is extremely important and part of the honor code that each member of a group contributes to the case analysis and LINKS simulation game decision making by the group. If any individual has not contributed for a particular week, (s)he should not append his/her name to the case report and LINKS report but submit a separate report on their own. It will also be the group’s responsibility to ensure that this happens.

**Grading Scale**

A = 90 or higher	B+ = 87-89.99	B = 80-86.99	C+ = 77-79.99
C = 70-76.99	D+ = 67-69.99	D = 60-66.99	F = under 60

**FINAL EXAM**

There will be one closed-book, closed-notes in-class final exam. The final exam will consist of a series of short conceptual questions. The primary objective is for you to review all concepts in class one last time.

**CLASS PARTICIPATION**

Your grade will depend on the quality of your contribution in case discussions in class. Generally, you should contribute to the creation of a positive learning environment. Some key characteristics of valuable contributions are:

- Relevance: Are your comments timely and linked to the comments of others?

- Advancement: Do your comments take the discussion farther or deeper than previous comments?
- Fact-based: Have you used specific data to support the assertions that you are making?
- Logic: Is your reasoning consistent and logical?
- Originality: Do your comments merely restate the facts or do they provide new insights?

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 keep the same seat for the duration of the semester. Class participation can also occur in terms of postings on the class discussion board (available through blackboard). This is especially true if you are uncomfortable speaking in class or if I have not allowed you the opportunity to do so.

## **CASE ANALYSES AND OUTLINES**

Cases will be assigned for write-up by each team. I will assign students to case teams. Please read all assigned readings for that week before attempting the analysis. All members of a team should be involved in analyzing the case and discussing it in the class. I will request each team member to hand-in a summary sheet at the end of term that evaluates the relative contribution of each team member. Use of any notes or material from any other course in which any of the cases might have been discussed, including discussions with a former student or consulting a previous case report, *is strictly prohibited and will be considered a serious violation of the honor code.*

### **Case analysis guide questions**

Use case questions that will be provided to help identify and respond to key issues, but do not allow them to become your only analysis. Rather, independently analyze each case from a business standpoint, using the tools you have learned as well as good business sense. A good analysis style includes problem definition, discussion of issues and conclusions, proposed alternatives, recommendation, and plan of action (all these are described next). Data analysis is almost always essential to good conclusions. However, it is most effective if separated from the discussion.

### **Problem Definition**

This statement is what your report is about. It defines the business problem you believe needs to be addressed (e.g., situation improved, decision taken). It defines what you are going to analyze and not your view of root cause, which follows later. The problem may be stated as long and short-term problems, if appropriate.

### **Issues**

Each issue is a factor where a conclusion about it either supports your recommendation or plan of action. In this section, identify each issue, define it if necessary, and state the

conclusion. Support it with minimal discussion that is required to make the point. Do not repeat case facts except to make a point. Issue titles or headings are helpful to a reader.

### **Alternatives**

Stated alternatives identify the primary management decision that must be made and the real choice facing management. Together with the problem definition, alternatives define the business focus. Many decisions may be required; however, alternatives highlight the pivotal choice. Lesser decisions can be included within the plan of action without identifying alternatives. Avoid alternatives that are "straw dogs" or "throw-aways." Credible alternatives must be real possibilities that show depth of understanding. Arguments used here are most powerful if they reference issues fully discussed and conclusions already drawn.

### **Recommendation**

The recommendation proposes the general decision to be taken, and usually represents the selection of one of the alternatives listed above. Justification must also be provided for choosing that alternative.

### **Action Plan**

The action plan should flesh out the specific decisions or activities to be undertaken. This really identifies what the recommendation comprises. Generally it is helpful if key actions have been included in the issues discussion.

### **Case Evaluation**

The expected length of the detailed case analysis is 5 pages (plus exhibits if used). Outlines should be typed on 8 1/2 x 11 paper, single-spaced, with normal margins, and *Times 12 font*. The cover page should include the names of team members, name of the case, date, and course title. The exhibits should contain specific types of analysis (e.g. financial, break-even, capacity, cost, competitive), as also information that supports your analysis and is relevant, but would be too detailed for the body of the report. Exhibits should not simply be an extension of the text.

Clarity and organization of outline are critical elements of success. Use the available pages wisely, and forego summarization of the case facts that are obvious and already known. In addition, the following guidelines will be used to evaluate the reports and quality of case discussion in the class:

- ◆ Understanding of the decision situation
- ◆ Completeness, depth, and accuracy of analysis
- ◆ Incorporation of relevant tools of analysis
- ◆ Demonstration of the relationships among the important factors in the situation
- ◆ Ability to relate concepts discussed in class to the case situations
- ◆ Effectiveness, practicality, specificity, and completeness of action plan and recommendations
- ◆ Appropriateness, relevancy, and quality of exhibits

- ◆ Effective communication of key issues
- ◆ Effective leading of discussion and stimulating class interest

## LINKS SUPPLY CHAIN SIMULATION GAME

One of the main learning tools for this course is an Internet based simulation. The best ways to understand how to manage a business and understand the strategic underpinnings of supply chain management is to do it. The simulation game allows you to undertake the strategic and operational management of a manufacturer of high technology set-top boxes with limited risk (either to investors, your bank account, or your career). Teams of 3-4 students will be formed for this exercise. Your team will submit decisions online during 9 rounds as listed in the syllabus schedule. Decisions must be submitted by 1 P.M. for each decision's due date. It is highly recommended that each team enter their submissions at least one hour before the time deadline each period. No adjustments will be made in the event of teams being unable to submit due to computer problems.

### Key Learning Objectives

1. *Application:* Over the past year, you have learned many functional business concepts and skills. While you have applied many of these skills to cases in the core, you never had to “live” with the results of your proposed actions. LINKS gives you a chance to move from textbook concepts and tools to actual application in an environment where you will see the supply chain results of your ideas and actions.
2. *Integration:* While the first year core integrates business functions around key business decisions, there is still a natural tendency to think in functional silos. LINKS will help you see how firm level decisions, although efficient, affect the chain of suppliers and retailers. Your success will require decisions that are globally based and provide the best results for all entities in the supply chain.
3. *Strategic thinking:* We will be running 9 decision periods in LINKS. Rather than approach each of these decision periods independently, you will likely perform far better if you first step back and, based on your analysis of the supply chain and your company, develop a general guiding strategy.
4. *Inference making:* You have at your disposal a large volume of market research reports and various performance reports reflecting your firm's results. All teams in your industry have access to the same information. The issue then is which team is best able to apply that information.
5. *Quantitative analysis:* Related to #4 above, the data you have to work with will allow you to apply many of the quantitative tools learned in the core.
6. *Organizational Structure:* The simulation will begin in a basic mode with a few options. As the term progresses, new options will be introduced that will increase the complexity of your decision-making. As the simulation becomes more dynamic, you will need to become more efficient at reading and interpreting your reports. Assigning specific tasks and responsibilities to each team member will help improve your results. The simulation is dynamic and outcomes for each period depend upon decisions made by all teams in each industry, collectively. You will need to maintain a journal of deliberations and decisions including interpretations of industry dynamics, assumptions, strategic actions, the outcomes of those actions, and changes that may be necessary. The information that you compile during the simulation is to

be used to create the annual report and the Board of Director's paper due at the end of the semester.

### **Annual Report – Due on February 28<sup>th</sup>**

The first graded paper is due after the result of the 4th decision round (7<sup>th</sup> month in LINKS). With the assignment, you will generate an annual report much like a report that would be created by a publicly held company. In this report, you will need to show financial data, market share reports, quality and operations graphics and data. Feel free to find a real annual report to use as a template. This should be a professional document that highlights your first four periods performance, a write-up of how your performance compares to your strategy and goals contained in your original strategic plan, and a write-up of what you perceive as the positives (**strengths**) and areas of improvement (**weaknesses**) in terms of the overall company performance. The last section of the paper should be devoted to your strategy for the remaining periods. This section will be similar to the mission statements except you now have had some experience in deciding your future course of action. This second half of the paper should detail your firm's perceived **opportunities** and **threats** in quantifiable terms.

### **Board of Directors Final Report – Due on April 10<sup>th</sup>**

The second paper is a report to the Board of Directors. It should be a professional and formal document, typed double-spaced, and including attachments containing important graphs and tables relating to your company's performance. The journal of decisions that your team has taken towards accomplishing the goals that were stated in your annual report should be discussed in the report. The Board of Directors Reports should contain the following discussions:

1. Describe and analyze your strategies, tactics and performance throughout the simulation
2. Analyze the organizational structure and decision making processes of your team,
3. Identify the two most successful parts of your supply chain management strategy and tactics,
4. Identify the one thing you would change if you were going to participate in the simulation again and explain your reasoning,
5. Identify and discuss three to six major learning opportunities that your team gained from the LINKS simulation program
6. Describe any limitations of your learning experience as it related to the course

### **HOME ASSIGNMENTS**

I will be assigning several home works over the course of the semester. You are strongly encouraged to work on these home work questions as it will enhance your learning experience. These assignments are for practice and they will not be graded. If you have questions related to the homework problems you are encouraged to meet me either after the class or during office hours.

**SCHEDULE**

The rest of the syllabus gives a tentative schedule. We may be ahead or behind the schedule in different weeks. Please take this into consideration when preparing for a given class day. We will also calibrate and benchmark our progress with respect to this schedule on a regular basis.

While, I will try to create a good learning experience for you, I think it is important to get continuous feedback from you. I would really appreciate it if you could send me your feedback by clicking on the following link:

<http://mgscweb.moore.sc.edu/nair/feedback.htm>

Please note that the feedbacks I receive will be anonymous. You have an option to specify your e-mail i.d. in case you want me to reply to you; however you may choose to send a feedback without specifying it. Given the anonymous nature of the feedback, feel free to provide an honest and open-ended feedback.

<i>Session</i>	<i>Date</i>	<i>Readings</i>	<i>Submission</i>
1	Jan. 15	<ul style="list-style-type: none"> <li>▪ <b>Chapters 1 – 3 in C&amp;M</b></li> <li>▪ Get Leverage from Logistics</li> <li>▪ Tailored Logistics: The Next Advantage</li> </ul>	
2	Jan. 17	<ul style="list-style-type: none"> <li>▪ <b>Chapters 1 - 3 in C&amp;M</b></li> <li>▪ <b>LINKS Manual</b></li> <li>▪ Just modeling through: A rough guide to modeling</li> </ul>	
3	Jan. 22	<ul style="list-style-type: none"> <li>▪ <b>Chapters 1 - 3 in C&amp;M</b></li> <li>▪ <b>Seven Eleven Japan</b></li> <li>▪ The Power of Virtual Integration: An Interview with Michael Dell</li> <li>▪ What is the right supply chain for your product</li> </ul>	
4	Jan. 24	<ul style="list-style-type: none"> <li>▪ <b>Chapter 7 in C&amp;M</b></li> </ul>	
5	Jan. 29	<ul style="list-style-type: none"> <li>▪ <b>Chapters 7 - 9 in C&amp;M</b></li> </ul>	
6	Jan. 31	<ul style="list-style-type: none"> <li>▪ <b>Chapters 7 - 9 in C&amp;M</b></li> <li>▪ <b>Specialty Packaging Corporation – Part B</b></li> <li>▪ Philips Electronics Synchronizes its Supply Chain to End the Bullwhip Effect</li> </ul>	LINKS DECISION # 1 (By 1:00 PM)
7	Feb. 5	<ul style="list-style-type: none"> <li>▪ <b>Chapters 7 - 9 in C&amp;M</b></li> <li>▪ <b>Halloran Metals</b></li> </ul>	Halloran Metals
8	Feb. 7	<ul style="list-style-type: none"> <li>▪ <b>Chapter 10 in C&amp;M</b></li> <li>▪ Making supply meet demand</li> </ul>	LINKS DECISION # 2 (By 1:00 PM)
9	Feb. 12	<ul style="list-style-type: none"> <li>▪ <b>Chapters 10 &amp; 11 in C&amp;M</b></li> <li>▪ The Triple-A Supply Chain</li> </ul>	
10	Feb. 14	<ul style="list-style-type: none"> <li>▪ <b>Chapter 11 in C&amp;M</b></li> <li>▪ Inventory decisions in Dell's supply chain</li> </ul>	LINKS DECISION # 3 (By 1:00 PM)
11	Feb. 19	<ul style="list-style-type: none"> <li>▪ Buyer-Supplier Role Play # 1</li> </ul>	
12	Feb. 21	<ul style="list-style-type: none"> <li>▪ <b>Chapter 12 in C&amp;M</b></li> <li>▪ Inventory driven costs</li> <li>▪ Improving Asset Management and Order Fulfillment at John Deere &amp; Company's C&amp;CE Division</li> </ul>	LINKS DECISION # 4 (By 1:00 PM)
13	Feb. 26	<ul style="list-style-type: none"> <li>▪ Buyer-Supplier Role Play # 2</li> </ul>	
14	Feb. 28	<ul style="list-style-type: none"> <li>▪ <b>Chapter 12 in C&amp;M</b></li> <li>▪ <b>ALKO Incorporated</b></li> </ul>	LINKS Annual Report

		<ul style="list-style-type: none"> <li>▪ Mass Customization at Hewlett Packard: The Power of Postponement</li> <li>▪ Aligning Supply Chain Strategies with Product Uncertainties</li> </ul>	LINKS DECISION # 5 (By 1:00 PM)
15	Mar. 4	<ul style="list-style-type: none"> <li>▪ <b>Chapter 14 in C&amp;M</b></li> <li>▪ Strategic Sourcing: From Periphery to Core</li> <li>▪ Building Deep Supplier Relationship</li> <li>▪ Reinventing the Supplier Negotiation Process at Motorola</li> </ul>	
16	Mar. 6	<ul style="list-style-type: none"> <li>▪ <b>Chapter 12 in C&amp;M</b></li> <li>▪ <b>Sport Obermeyer</b></li> </ul>	<i>Sport Obermeyer</i> LINKS DECISION # 6 (By 1:00 PM)
<b>SPRING BREAK</b>			
17	Mar. 18	<ul style="list-style-type: none"> <li>▪ <b>Chapter 13 in C&amp;M</b></li> <li>▪ Llenroc Plastics</li> <li>▪ Mumbai Tiffin</li> <li>▪ The transforming power of complementary assets</li> </ul>	
18	Mar. 20	<ul style="list-style-type: none"> <li>▪ <b>Chapter 13 in C&amp;M</b></li> <li>▪ <b>Chapters 4 – 6 in C&amp;M</b></li> <li>▪ Back to the Future: Benetton Transforms its Global Network</li> </ul>	LINKS DECISION # 7 (By 1:00 PM)
19	Mar. 25	<ul style="list-style-type: none"> <li>▪ <b>Merloni Elettrodomestici SpA.</b></li> </ul>	<i>Merloni Elettrodomestici</i>
20	Mar. 27	<ul style="list-style-type: none"> <li>▪ <b>Chapters 4 - 6 in C&amp;M</b></li> <li>▪ Making the Most of Foreign Factories</li> </ul>	LINKS DECISION # 8 (By 1:00 PM)
21	Apr. 1	<ul style="list-style-type: none"> <li>▪ <b>Chapters 4 - 6 in C&amp;M</b></li> <li>▪ Hewlett-Packard Combined OR and Expert Knowledge to Design its Supply Chain</li> </ul>	
22	Apr. 3	<ul style="list-style-type: none"> <li>▪ <b>Applichem (A) Case Discussion</b></li> </ul>	LINKS DECISION # 9 (By 1:00 PM)
23	Apr. 8	<ul style="list-style-type: none"> <li>▪ <b>Chapters 16 &amp; 17 in C&amp;M</b></li> <li>▪ <b>i2 Technologies</b></li> <li>▪ Collaborative Business Communities: The Next Advantage</li> <li>▪ E-Hubs: The New B2B Marketplaces</li> </ul>	
24	Apr. 10	<ul style="list-style-type: none"> <li>▪ <b>Chapter 4 in C&amp;M</b></li> <li>▪ <b>Ford Motor Company</b></li> <li>▪ Which e-business is right for your supply chain?</li> <li>▪ Changing the Game in Strategic Sourcing at Proctor &amp; Gamble: Expressive Competition Enabled by Optimization</li> </ul>	<i>LINKS Board of Director's Report</i>
25	Apr. 15	<ul style="list-style-type: none"> <li>▪ LINKS Presentations</li> </ul>	
26	Apr. 17	<ul style="list-style-type: none"> <li>▪ LINKS Presentations</li> </ul>	
27	Apr. 22	<ul style="list-style-type: none"> <li>▪ LINKS Presentations</li> </ul>	
28	Apr. 24	<ul style="list-style-type: none"> <li>▪ LINKS Results &amp; Discussion</li> </ul>	
29	May. 5	<ul style="list-style-type: none"> <li>▪ <b>FINAL EXAM (9:00 AM – 11:00 AM)</b></li> </ul>	

**Session 1: Tuesday, January 15<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will go over the syllabus and the course policies. We will also formalize the teams for the case analysis and simulation game.

Over the course of first two sessions we will then discuss supply chain management, its importance to the success of a firm and the different ways to view a supply chain and raise a variety of supply chain related questions that need to be answered by any firm. We will provide a framework within which supply chain drivers may be analyzed and appropriate tradeoffs considered.

We will define key performance measures for a supply chain and establish initial links to logistical drivers that a supply chain designer or manager may control.

We will consider the changing environment and look at some of the key challenges for logistics today. We will discuss the notion of Tailored Logistics and its importance in today's environment. This will be an important concept that we will refine in the context of different logistical drivers in the course of the quarter. We start discussion on how a firm can manage inventories to ensure a fit between strategic supply chain objectives and inventory management.

Readings

1. Chapters 1-3 in C&M
2. "Get Leverage from Logistics," Roy D. Shapiro, *Harvard Business Review*, May-June 1984, 119-126
3. "Tailored Logistics: The Next Advantage," Joseph B. Fuller, James O'Connor and Richard Rowlinson, *Harvard Business Review*, May-June 1993, 87-98.

**Session 2: Thursday, January 17<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will continue our discussion of supply chain management. We will go over the basics of LINKS simulation.

Readings

1. Chapters 1-3 in C&M
2. LINKS Simulation (Manual)
3. "Just modeling through: A rough guide to modeling," Michael Pidd, *Interfaces*, 29(2), 1999, 118-132.

**Session 3: Tuesday, January 22<sup>nd</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will illustrate the strategic framework for supply chain decisions in the context of the Seven Eleven Japan case. Please read the case before class.

Readings

1. Chapters 1-3 in C&M
2. “The Power of Virtual Integration: An Interview with Michael Dell,” Joan Magretta, *Harvard Business Review*, March-April 1998, 73-84.
3. “What is the right supply chain for your product,” Marshall L. Fisher, *Harvard Business Review*, March-April, 1997, 105-116.

**Session 4: Thursday, January 24<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will discuss demand planning in a supply chain.

Readings

1. Chapter 7 in C&M.

**Session 5: Tuesday, January 29<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will discuss demand planning in a supply chain illustrating basic methodologies for forecasting and aggregate planning.

Readings

1. Chapters 7 - 9 in C&M.

**Session 6: Thursday, January 31<sup>st</sup>, 2008 (3:30PM – 4:45 PM)**

This session will start with a discussion of the Specialty Packaging Corporation, Part B case (at the end of Chapter 8 in C&M). In this context we will continue discussion of demand planning and the use of supply as well as demand management strategies to match supply and demand in the supply chain.

Case: *Specialty Packaging Corporation, Part B* (at the end of chapter 8 in C&M). Questions are included in the case itself.

Readings

1. Chapters 7 - 9 in C&M.
2. Specialty Packaging Corporation, Part B (Case)
3. “Philips Electronics Synchronizes its Supply Chain to End the Bullwhip Effect,” Ton de Kok, Fred Janssen, Jan van Doremalen, Eric van Wachem, Mathieu Clerkx and Winfried Peeters, *Interfaces*, 35(1), 2005, 37-48.

**Session 7: Tuesday, February 5<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will discuss the Halloran Metals case to bring up issues involved in designing a supply chain. We will then discuss demand planning in a supply chain illustrating basic methodologies for forecasting and aggregate planning.

Case: *Halloran Metals* (HBS Case 9-683-062). Use the following questions when preparing your case report.

[1] What are the differences in logistics/operating strategies and structure between Halloran and Allied? What impact do those differences have on the kind of business they are and the way they operate?

[2] What are the strengths and weaknesses implicit in Allied's operating stance? What are the strengths and weaknesses implicit in Halloran's operating stance? *A priori*, how would you expect an economic downturn to affect the two firms? How would an upturn affect the two firms?

[3] What economic risks are implicit in Halloran's logistics choices? How has the firm endeavored to reduce these? How successful have they been?

[4] What should Jim Rochleau recommend to the president?

#### Readings

1. Chapters 7 - 9 in C&M.
2. Halloran Metals (HBS Case 9-683-062)

#### **Session 8: Thursday, February 7<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

We will start discussion on the management of inventory in the supply chain to ensure fit with stated strategic goals. Our focus will be to understand key inventory related levers that may be used to improve the performance of a supply chain. We will discuss the effect of volume discounts and short term discounts on order sizes and thus inventory and cycle times in the supply chain. Read Chapter 10 in C&M and play with the **excel workbook** associated with examples in the chapter. These examples will be discussed in class using the workbook. We will review the notion of pooling and its impact on supply chain inventories.

#### Readings

1. Chapters 10 in C&M.
2. "Making supply meet demand," Marshall L. Fisher, Janice H. Hammond, Walter R. Obermeyer and Ananth Raman, *Harvard Business Review*, May-June, 1994, 83-93.

#### **Session 9: Tuesday, February 12<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will characterize products by demand characteristics (highly uncertain to stable) and see how appropriate purchasing decisions can be made. We will start by discussing products with uncertain demand and the factors that affect purchasing decisions in this case. The discussion will be based on Chapter 11 of C&M. You are provided **excel workbook** to help simulate various ordering policies. Play with the

workbook before the lecture to get a feel for the different issues involved in ordering under uncertainty.

### Readings

1. Chapters 10 & 11 in C&M.
2. "The Triple-A Supply Chain," Hau L. Lee, *Harvard Business Review*, October 2004, 102-112.

### **Session 10: Thursday, February 14<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will conclude our discussion of safety inventories.

### Readings

1. Chapter 11 in C&M.
2. "Inventory decisions in Dell's supply chain," Roman Kapuscinski, Rachel Zhang, Paul Carbonneau, Robert Moore & Bill Reeves, *Interfaces*, 34(3), 2004, 191-205.

### **Session 11: Tuesday, February 19<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this class we will have the first buyer-supplier role play.

### **Session 12: Thursday, February 21<sup>st</sup>, 2008 (3:30PM – 4:45 PM)**

In the session we will continue discussing the role of inventory in the supply chain.

### Readings

1. Chapters 12 in C&M
2. "Inventory driven costs," Gianpaolo Callioni, Xavier D. Montgros, Regine Slagmulder, Luk N. Van Wassenhove and Linda Wright, *Harvard Business Review*, March, 2005, 135-141.
3. "Improving Asset Management and Order Fulfillment at John Deere & Company's C&CE Division," Loren Troyer, James Smith, Sean Marshall, Elan Yaniv, Sridhar Tayur, Martin Berkman, Alev Kaya and Yong Liu, *Interfaces*, 35(1), 2005, 76-87.

### **Session 13: Tuesday, February 26<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this class we will have the second buyer-supplier role play.

### **Session 14: Thursday, February 28<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

We will start the session with the ALKO case (at the end of Chapter 11 in C&M) to discuss various factors that affect organization of inventories within the distribution system. Using the lessons learnt from the ALKO case, we will discuss the role that a

firm like McMaster Carr plays in the supply chain. This firm is a supplier of industrial items and specializes in supplying small emergency orders overnight. A key objective will be to understand the role pooling of stock plays in the face of independent demand and how this understanding can be used strategically, as well as to improve operations.

In this session we will then discuss the notion of Accurate Response. The idea is particularly suited for seasonal and high variability products but has more general applicability. We will discuss a variety of accurate response strategies that improve the matching of supply and demand in such a setting. In this context we will also discuss how supply contracts can aid in accurate response.

*Case: ALKO Incorporated.* Detailed questions are contained in the case description at the end of Chapter 11 in C&M.

### Readings

1. Chapters 12 in C&M
2. ALKO Incorporated (Case Study)
3. “Mass Customization at Hewlett Packard: The Power of Postponement,” Edward Feitzinger and Hau L. Lee, *Harvard Business Review*, January-February 1997, 116-121
4. “Aligning Supply Chain Strategies with Product Uncertainties,” Hau L. Lee, *California Management Review*, 44(3), April 2002, 105-119

### **Session 15: Tuesday, March 4<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will develop the notion of Tailored Purchasing based on the uncertainty of product demand and discuss its application across different product categories as well as for a single product. This will be discussed in the context of global sourcing.

We will also discuss the role that contracts play in accurate response and actions that a supply chain can take to increase profits through accurate response.

### Readings

1. Chapter 14 in C&M
2. “Strategic Sourcing: From Periphery to Core,” Mark Gottfredson, Rudy Puryear, and Stephen Philips, *Harvard Business Review*, 83(2), February, 2005, 132-139.
3. “Building Deep Supplier Relationship,” Jeffrey K. Liker and Thomas Y. Choi, *Harvard Business Review*, 82(12), December, 2004, 104-113.
4. “Reinventing the Supplier Negotiation Process at Motorola,” Theresa Metty, Rob Harlan, Quentin Samelson, Tom Moore, Avner Schneur, Olga Raskina, Rina Schneur, Joshua Kanner, Kevin Potts and Jeffrey Robbins, *Interfaces*, 35(1), 2005, 7-23.

### **Session 16: Thursday, March 6<sup>th</sup>, 2008 (3:30 PM – 4:45 PM)**

In this session we will illustrate the notion of Accurate Response using the Sport Obermeyer case. This is most appropriate for product categories with highly uncertain demand. We will discuss the role that high cost, low cycle time suppliers can play for a firm that may be competing on low cost. This will relate back to the role of a small order emergency supplier in a supply chain.

Case: Sport Obermeyer (HBS# 9-695-022). Use the following questions when preparing your case report.

[1] Using the sample data in Exhibit 10, make a recommendation for how many units of each style Wally Obermeyer should order during the initial phase of production. Assume that there is no minimum order size requirement, and that Obermeyer's initial production commitment must be at least 10,000 units. Assume that an initial order of 10,000 units leaves sufficient capacity for the second order.

[2] Using the sample data in Exhibit 10, make a recommendation for how many units of each style Wally Obermeyer should order during the initial phase of production. Assume that all ten styles in the sample problem are made in Hong Kong (a minimum commitment of 600 units per style ordered), and that Obermeyer's initial production commitment must be at least 10,000 units. Ignore price difference among styles in your initial analysis. Clearly spell out the methodology you have used to make your ordering decisions in an exhibit. Spell out the logic behind your methodology. Note that I am not looking for one optimal solution. My focus will be on your thinking about how such an issue can be approached.

[3] Can you come up with a measure of risk associated with your ordering policy? This measure of risk should be quantifiable.

[4] Repeat your methodology now assuming that all ten styles are made in China. What differences (if any) result?

[5] What operational changes would you recommend to Wally to improve performance? Clearly list the expected benefits from each change. Please try and be very specific in terms of the changes and benefits in response to this question.

[6] How should Obermeyer management think (both short term and long term) about sourcing in Hong Kong versus China. What sourcing policy would you recommend?

#### Readings

1. Chapter 12 in C&M.
2. Sport Obermeyer

**Session 17: Tuesday, March 18<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

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 use the Llenroc Plastics case to discuss key factors that affect costs and customer service when making shipping decisions. In the context of cross-docking and transit points we will discuss Mumbai Tiffin article. How are they able to run such a responsive system so cheaply? How is their distribution system structured? What characteristics of the system (besides low labor cost) facilitate its performance? Are there environmental changes that will make success harder in the future from a supply chain perspective? We will develop the notion of Tailored Transportation and discuss its applications.

We will discuss the domestic transportation industry and consider the different modes available. 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.

Case: Llenroc Plastics: The Atlanta Transportation System. You are provided with a simulation program (trucks.exe) that allows you to simulate and evaluate different transportation decisions in terms of cost and customer service. Instructions for the simulation are contained in the case description and can also be obtained by using the help menu in the program. Note that you will need to ensure that all files (including trucks.exe) related with the Llenroc case should be in the same directory. From Windows you can then run the trucks.exe file. You will then be guided by a set of menus. As a first step load the llenroc.trk file as prompted by the menu and then proceed. Use the following questions when preparing for class discussion.

- [1] What are the tradeoffs that must be considered when dispatching vehicles?
- [2] Describe a procedure for making routine routing and scheduling decisions?
- [3] What is the impact of the order horizon policy variable?
- [4] What are the economic inefficiencies in the design of the transportation system?

#### Readings

1. Chapter 13 in C&M.
2. Llenroc Plastics: The Atlanta Transportation System
3. Mumbai Tiffin
4. “The transforming power of complementary assets,” Alan Hughes and Michael S. Scott Morton, *MIT Sloan Management Review*, 50-58

#### **Session 18: Thursday, March 20<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this class we will continue our discussion of transportation. Subsequently, we will develop a framework for facility location decisions that allows for a multi-plant, multi-warehouse network to supply a large and diverse customer base. Our objective will be to optimally structure the distribution network, taking into account cost and customer service factors. **Excel workbooks** will be used in class discussion.

Readings

1. Chapter 13 in C&M.
2. Chapters 4 - 6 in C&M
3. “Back to the Future: Benetton Transforms its Global Network,” Arnaldo Camuffo, Pietro Romano and Andrea Vinelli, *MIT Sloan Management Review*, Fall 2001, 46-52.

**Session 19: Tuesday, March 25<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will discuss the Merloni Elettrodomestici case.

Case: Merloni Elettrodomestici SpA (HBS# 9-690-003). Use the following questions when preparing your case report.

- [1] What are the costs and benefits of Merloni’s current distribution system?
- [2] What are the costs and benefits of a transit-point-based distribution system?
- [3] Should Merloni replace its network of regional warehouses with transit points?
- [4] What contingency plans and support systems are necessary to support the logistics network comprising of transit-points?
- [5] If transit-point distribution system is not recommended what changes, if any, would you recommend Merloni make to its distribution system?

Readings

1. Merloni Elettrodomestici SpA.

**Session 20: Thursday, March 27<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

We will continue our discussion facility location decisions.

Readings

1. Chapters 4 - 6 in C&M
2. “Making the most of foreign factories,” Kasra Ferdows, *Harvard Business Review*, March 1, 1997, 73-88.

**Session 21: Tuesday, April 1<sup>st</sup>, 2008 (3:30PM – 4:45 PM)**

In this session we will conclude our discussion of supply network design.

Readings

1. Chapters 4 - 6 in C&M
2. "Hewlett-Packard Combined OR and Expert Knowledge to Design its Supply Chain," Claude Laval, Marc Feyhl and Steve Kakouros, *Interfaces*, 35(3), 238-247.

**Session 22: Thursday, April 3<sup>rd</sup>, 2008 (3:30 PM – 4:45 PM)**

In this session we will discuss the Applichem Case Study.

Case: Applichem (A) (HBS# 9-685-051). Use the following questions when preparing for class discussion.

[1] Compare the performance of Applichem's six Release-ease plants. Please be specific about the measures of plant productivity selected by you and why they are important.

[2] Why are some plants "better" performers than others? List the factors that you feel affect performance. How should plant performance be compared?

[3] You are provided a workbook **APPLICHEM.XLS** to help you evaluate production and distribution decisions.

How do you think Joe Spadaro should structure his worldwide manufacturing system. Assume that the past is a reasonable indicator of the future in terms of exchange rates and inflation. You must provide a detailed justification for your answer.

[4] What impact do you think the abolition of all duties will have on your recommendations?

Readings

1. Applichem

**Session 23: Tuesday, April 8<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

We will conclude the discussion on location decisions within the supply chain and start the discussion on the role of information in the supply chain. We will use the contents of the i2 Technologies case to 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.

Readings

1. Chapters 16 and 17 in C&M
2. i2 Technologies
3. "Collaborative Business Communities: The Next Advantage," Alyse D. Terhune, *Supply Chain Management Review*, March 2000, 36-42.
4. "E-Hubs: The New B2B Marketplaces," Steven Kaplan & Mohanbir Sawney,

*Harvard Business Review*, May-June, 2000, 97-103.

**Session 24: Thursday, April 10<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

The goal of these sessions will be to discuss the structure of various supply chains in the context of the various supply chain drivers discussed over the last several weeks. We will apply the ideas in the context of e-commerce to evaluate the opportunities that the Internet provides from a supply chain perspective.

We will also take the Ford Motor Company case to see if the Dell structure is appropriate for Ford and look for reasons why it may or may not be so.

Readings

1. Chapter 4 in C&M
2. Ford Motor Company (Case Study)
3. “Which e-business is right for your supply chain?” S. Chopra and J. Van Mieghem, *Supply Chain Management Review*, July/August 2000, 32-40.
4. “Changing the Game in Strategic Sourcing at Proctor & Gamble: Expressive Competition Enabled by Optimization,” Tuomos Sandholm, David Levine, Michael Concordia and Paul Martyn, *Interfaces*, 36(1), 2006, 55-68.

**Session 25: Tuesday, April 15<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

LINKS PRESENTATIONS

**Session 26: Thursday, April 17<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

LINKS PRESENTATIONS

**Session 27: Tuesday, April 22<sup>nd</sup>, 2008 (3:30PM – 4:45 PM)**

LINKS PRESENTATIONS

**Session 28: Thursday, April 24<sup>th</sup>, 2008 (3:30PM – 4:45 PM)**

LINKS SIMULATION RESULTS & DISCUSSION

**Session 29: Monday, May 5<sup>th</sup>, 2008 (9:00 AM – 11:00 AM)**

**FINAL EXAM**