Syllabus
Supply Chain Logistics MSIS 22:711:580
Spring 2004
Farid Alizadeh
Last updated February 28, 2004

Text books


Prerequisites

In addition to MBA standing, there are two prerequisites for this course: First: you must have completed the Data Models course or equivalent. Second: You should be fairly comfortable with spreadsheet software capable of performing statistical and optimization calculations such as Excel and comparable software. You don’t have to be experts; you won’t be required to write VBA macros and such, however you are required to know the basic operations of spreadsheet.

Required work: Home works, Exams and Grading Policy

1. Home works: There will be five or six homework assignments. They will be NEITHER collected NOR graded, however it is essential that you work on all the assignments and make sure you understand them. The exams will be closely related and in fact will be based on these home works. The answers to home works Will not be posted or distributed on the course web site. Students are strongly encouraged to take advantage of office hours to discuss home work assignment (to ask questions or check and see if their answers are right.)

2. Exams: There will be three exams. The first two, each worth 30% of the grade will take approximately one hour. The final exam will be worth 40% of your grade.
3. Depending on our progress I may assign a term group project that will be worth 10% of your grade (which will come off from the third exam.)

Topics in Brief

Topic 1  Review of Supply Chain Management  Reading: Ch. 1 (one lecture)

Topic 2  A quick review of forecasting and Times series analysis  Reading: Ch. 2 (one lecture)

Topic 3  Aggregate Planning, Supply Chain Management. Tools: Linear Programming, integer and mixed integer programming, transportation and network flow problems.  Reading: Ch. 3, Supplement 1, and Ch. 6 (three lectures)

Topic 4  Inventory Management with known and unknown demand  Reading: Ch. 4 & 5. (two lectures)

Topic 5  Simulation modeling Queues  Reading: Supplement 2 and notes (two lectures)

Topic 6  Scheduling projects  Reading: Ch. 9 (two lectures)

Topic 7  Statistical Quality Assurance  Reading: Ch. 11 (two lectures)

A Detailed, but Tentative Time line

<table>
<thead>
<tr>
<th>Week Of</th>
<th>Tentative Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/20–1/27</td>
<td>● Discuss Policies</td>
</tr>
<tr>
<td></td>
<td>● Short Introduction to Supply Chain Management (SCM)</td>
</tr>
<tr>
<td></td>
<td>● Quick Review of Forecasting and Using Times Series</td>
</tr>
<tr>
<td></td>
<td>Reading:</td>
</tr>
<tr>
<td></td>
<td>● Ch. 1: Read through section 1-8 quickly. Read section 9, 10, (skip subsection on “Dynamic Capacity Expansion” and “Plant Location” on p. 41-47) and Appendix 1-A carefully</td>
</tr>
<tr>
<td></td>
<td>● Ch.2: Read through sections 2.1-2.3 quickly, Read sections 2.4 through 2.10 more carefully (skip part of section 2.9 titled “Winter’s Method for Seasonal Problems” on pages 87-92)</td>
</tr>
</tbody>
</table>
Week Of          Tentative Topics

2/3–2/24

• Linear Programming (LP), Integer Programming (IP) and Mixed Integer Programming (MIP) models
• Understanding and Solving LP, IP, and MIP
• Aggregate planning, transportation and routes in SCM
• Issues involving design and planning of supply chains
• Modeling SCM problems in LP, IP and MIP

Reading:
• Read all of supplement 1
• Ch. 3: Read through 3.1-3.4 quickly, Read sections 3.5, 3.6 carefully, (skip 3.7 to 3.10) Read through 3.11 and 3.12.
• Ch. 6: Read all of this chapter.

Week Of          Tentative Topics

3/2

First hour exam

Week Of          Tentative Topics

3/2-3/9

• Purpose and cost of Inventories with deterministic demand
• Optimal inventory policies under deterministic demand
• Meaning and behavior of random demands
• optimal inventory policy under random demand

Reading:
• All of Ch. 4
• All of Ch. 5

Week Of

3/16

Spring Break

Week Of

3/23

NO CLASS, I'll be out of town
<table>
<thead>
<tr>
<th>Week Of</th>
<th>Tentative Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/30–4/6</td>
<td>• Simulation, random numbers, simulation of other distributions, simulation by computers</td>
</tr>
<tr>
<td></td>
<td>• Basic Queuing theory, role of exponential and Poisson distributions, various Queues: M/M/1, M/M/c, M/G/∞</td>
</tr>
<tr>
<td>Reading:</td>
<td>• Supplement 2</td>
</tr>
<tr>
<td></td>
<td>• Hand-out (to be posted) for simulation</td>
</tr>
<tr>
<td>4/13–4/20</td>
<td>• Scheduling of projects, processes and services</td>
</tr>
<tr>
<td></td>
<td>• Network representation of time line and dependencies</td>
</tr>
<tr>
<td></td>
<td>• Critical Paths, PERT</td>
</tr>
<tr>
<td>Reading:</td>
<td>• All of Ch. 9</td>
</tr>
<tr>
<td>4/27</td>
<td>• Quality control using statistical charts</td>
</tr>
<tr>
<td>Reading:</td>
<td>• Ch. 11 (Sections to be specified later)</td>
</tr>
<tr>
<td>5/4</td>
<td>• Third and Final hour Exam</td>
</tr>
</tbody>
</table>