IE598 Special Topic Course

Logistics and Supply Chain Management

Lectures: Friday 2pm-4:50pm
Location: 243 MEB

Office Hours: Wednesday 4:15pm-5:15pm
Office: 216C TB

Instructor: Dr. Xin Chen
Email: xinchen@illinois.edu
Website: http://publish.illinois.edu/xinchen/homepage/

Overview: Intense competition and continually increasing customer expectations continue to force firms to become more efficient and more responsive in order to thrive. This, together with continuing advances in transportation and communication technology, and rapidly evolving internet-based strategy, has motivated the continuous evolution of the supply chain, and of techniques to manage it. At the same time, these rapid advances and new approaches provide exciting opportunities for managers and firms that are positioned to take advantage of them.

In this course, we will explore the state-of-the-art logistics strategies, models, algorithms and tools for integrating the supply chain in ways that reduce system-wide costs, and improve system-wide service. Our main focus is on building mathematical models, developing efficient algorithms and performing rigorous analysis. For this purpose, we will cover theoretical foundations such as dynamic programming, convex analysis and lattice programming essential to analyze these models. Some recent related research will also be covered.

Teaching Materials. We will use the books below as a textbook. Additional materials and papers will be supplied by the instructor.

ASSIGNMENTS AND GRADING:
There will be approximately bi-weekly written assignments. Assignments will be due at the start of class on the due date. You will be allowed to turn in one homework one week late without penalty. Any other late homework will receive a grade of 0. This policy is non-negotiable. Homework write-ups must be completed alone; however, you can work with others on particular problems. If you do so, you must acknowledge the names of these colleagues as part of your write-up. Failure to do so will be considered cheating.

There will be no final exam. You will form a group with another student to finish a course project in which you analyze a logistics and supply chain problem, and make a project presentation.

Your final grade will be based on:

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<tbody>
<tr>
<td>Homework</td>
<td>30%</td>
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<td>Project</td>
<td>35%</td>
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<td>Project Presentation</td>
<td>15%</td>
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<td>Participation</td>
<td>20%</td>
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**COURSE OUTLINE:**

I’m not sure how quickly we will move through the material. For the most part, we will follow the textbook, with additional materials added as we go along. This is a very tentative syllabus, which I will update as we progress.

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<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tr>
<td>1.</td>
<td>August 30 Introduction and EOQ models</td>
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<td>2.</td>
<td>September 6 Single-warehouse, multi-retailer models</td>
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<td>3.</td>
<td>September 13 Economic Lot Sizing models</td>
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<td>4.</td>
<td>September 20 MDP I</td>
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<td>5.</td>
<td>September 27 MDP II</td>
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<td>6.</td>
<td>October 4 Convex Analysis/Lattice Programming</td>
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<td>7.</td>
<td>October 11 Stochastic inventory models I</td>
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<td>8.</td>
<td>October 18 Stochastic inventory models II</td>
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<td>9.</td>
<td>October 25 Assembly to order system (Professor Qiong Wang)</td>
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<td>10.</td>
<td>November 1 Pricing models I</td>
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<td>11.</td>
<td>November 8 Pricing models II</td>
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<td>12.</td>
<td>November 15 Process flexibility</td>
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<td>13.</td>
<td>November 22 Inventory centralization</td>
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<td>14.</td>
<td>December 6 Course project presentations</td>
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<td>15.</td>
<td>Reading Week</td>
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<td>16.</td>
<td>Examination</td>
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**subject to change**
Reading list (Papers in blue color are intended for students’ presentation):

a) Inventory Models

b) Pricing Models


c) Process flexibility


d) Risk Pooling/Inventory Centralization/Collaboration
e) Lattice Programming/Discrete Convex Analysis