ISyE 6203 Supply Chains and Logistics Systems
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Course Objective

This course concerns the modeling, analysis, design and control of supply chain and logistics systems.

More specifically, the course seeks to offer:

- A systematic exposition of the design and control problems that arise in the context of the aforementioned operations.
- A formal analysis of these problems based on concepts and techniques borrowed from Deterministic and Stochastic Operations Research.
- Practical guidelines for the design and operation of these systems that derive from the aforementioned analysis.

Tentative Course Outline

1. Introduction: Course Objectives, Context, and Outline
2. Corporate Mission and Strategy and their interconnection to the supply chain operations
3. Deterministic and Stochastic Inventory Control theory
4. Integration of Inventory Control with Pricing Policies
5. Supply Chain Design and Coordination Models
   - Classical Hierarchical Production Planning Models based on Time-based Decomposition
   - Contract Design
   - Facility Location and Supply Chain Network Design
6. Vehicle Routing Problems and Models

Course Prerequisites: ISYE 6650 (Probabilistic Models) and ISYE 6669 (Deterministic Optimization)

Course Policies

Homework A set of homework problems will be assigned at the end of each course unit. The main role of this homework will be to strengthen the student understanding of the material presented in class and to help them prepare for the exams, but it will not be graded.

Exams: There will be one midterm and a final exam. Exams will be closed-book, with 3 pages of notes allowed for the midterm and 6 pages for the final. The final exam will be comprehensive, while the exact date of the midterm and the material to be covered by it will be specified during the course development. Naturally, it is expected that the *Academic Honor Code* will be respected.

Grading:

- Midterm: 40%
- Final: 60%

Course Reading Material

- **Textbook:** D. Simchi-Levi, X. Chen and J. Bramel, The logic of Logistics, 2nd ed., Springer, 2005.
- Course slides and any other material posted at my homepage and/or the library electronic reserves.

It should also be noticed that the textbook will have a complementary role to the material presented in class.