ISyE 3103
Introduction to Supply Chain Modeling: Logistics
Spring 2001
Syllabus

Instructor: Alan L. Erera
Office: Groseclose 334
Office hours: Tuesday, Wednesday, Thursday 11:00am-noon
e-mail: Alan.Erera@isye.gatech.edu
WWW URL: http://www.isye.gatech.edu/faculty/Alan_Erera
Phone: (404) 385-0358
Fax: (404) 894-2301

Teaching Assistant: To be announced

Class Room: IC213
Class Times: Tuesday, Thursday 9:35-10:55am

Description:
An introduction to logistics systems, including

- the components of logistics systems, such as supplies, storage, materials handling, production, inventory, orders, transportation, and information systems;

- the interactions and trade-offs between these components;

- models and techniques for the analysis of logistics systems and the development of decision support systems.

Objectives:

- to develop a familiarity with logistics concepts;

- to understand the issues in logistics system design and operation;

- to develop the ability to formulate models of systems and to analyze results obtained with such models;

- to develop skill in applying a variety of techniques to solve logistics problems.
Prerequisites:
Probability and Statistics: ISyE2027 and ISyE2028, Modeling: ISyE2030. You must know how to use a spreadsheet and a database, whether or not you have taken a database class.

Textbook:

Other References:

Topics Covered:
- Logistics Concepts and Terminology
  - shipper/consignor, consignee, private carrier, common carrier, freight forwarder, NVOCC, transportation broker, shippers’ association, interline shipment, integrators, door-to-door, 3PL, EDI, terminal, TL/FTL, LTL, FCL, LCL, in-vehicle consolidation, out-of-vehicle consolidation, hub-and-spoke, cross-docking, dead-head, backhaul, intermodal, COFC, TOFC/piggyback, pickup and delivery/cartage, drayage, switching, longhaul, FOB terms, detention/demurrage, diversion/reconsignment,
transit privileges/stopoff charges, dunnage, loss and damage, postponement, bulk cargo, break-bulk cargo, pallet/skid, container, reefer, chassis, SKU, hundredweight/CWT, deadweight, TEU, FEU, slot, liner shipping, tramp shipping, ocean conference, alliance, container leasing, lo-lo, ro-ro, hi-lo, straddle carrier, transtainer/RTG, quay crane/portainer crane. (week 1)

• Supply Chain Management (weeks 2 & 3)
  – Supply Chain Game
  – Bullwhip Effect
  – Vendor Managed Inventory
  – Johnson Toy Company Case

• Order Processing (week 4)
  – Cheezy Weezy Case
  – Handy Andy Case

• Information Systems (week 4)

• Transportation (weeks 5–10)
  – Transportation Costs and Rates
  – Trade-off between Transportation and Inventory Costs
  – Shortest Path Problem
  – Traveling Salesman Problem
  – Bin Packing Problem
  – Assignment Problem
  – Matching Problem
  – Vehicle Routing Problem
  – Arc Routing (Chinese Postman) Problem
  – Network Flows
  – Multistage Network Flows
  – Task Scheduling

• Estimation and Forecasting (week 11)

• Revenue Management (weeks 12–14)

• Location (week 15)
Grading:
Grades will be assigned as follows:

- Homework/Cases: 25%
- Quizzes: 15%
- Midterm exam: 30%
- Final exam: 30%

Homework and Cases:
Homework will be assigned approximately once a week. You should start working on each homework early, that way you will have time to ask (and understand) questions in class before the homework is due. Late homework will be accepted only in case of serious, unavoidable occurrences. Some cases will be discussed in class. Answers to case questions are due in the class in which the case is to be discussed. Grades are assigned for case preparation and class participation. You are encouraged to discuss homework and cases and learn from each other, but each person must submit his/her own work, unless the assignment specifically indicates that you should work in groups. You may be asked to present your group assignments in class. Any queries on homework and case grades must be submitted in writing to the instructor, together with the homework/case report in question.

Quizzes:
Quizzes will cover material discussed in class, as well as reading assignments, homeworks and cases. Quizzes may be given without prior notice. Any queries on quiz grades must be submitted in writing to the instructor, together with the quiz in question.

Exams:
Exams will cover material discussed in class, as well as reading assignments, homework and quizzes. The exams will be comprehensive, and closed book. Any queries on exam grades must be submitted in writing to the instructor, together with the exam in question. Make-up exams will be scheduled only in case of unavoidable occurrences. It is your responsibility to take the exams at the designated times. The midterm exam is scheduled for Wednesday February 28, 2001, at 7:00pm for both sections. If you have other Georgia Tech related obligations at that time, you must notify the instructors before the end of January so that we can make alternative arrangements for such people. Travel arrangements are not sufficient reason to warrant a make-up exam or an incomplete grade.

Academic Honor Code:
It is your responsibility to familiarize yourself with the Georgia Tech Honor Code. Specifically, you must do your own work in all homeworks, quizzes and exams; when homework is specifically assigned as group homework you may and should work with the other members of your group.