ISYE 4111 ADVANCED SUPPLY CHAIN LOGISTICS

Elective

Credit: 3-0-3

Prepared Prof. Anton Kleywegt, Spring 2008

Prerequisite(s): ISyE 3103, ISyE 3133, ISyE3232

Catalog Description:
Courses in special topics of timely interest to the profession, conducted by resident or visiting faculty.

Text:
Ghiani, G., Laporte, G., and Musmanno, R., *Introduction to Logistics Systems Planning and Control*, Wiley, 2004.

Objective
Objectives of the course are
1. to develop a deeper understanding of logistics problems, including design and operational problems;
2. to develop skill in the use of the tools acquired in other courses such as statistics, optimization, and probability models to address logistics problems;
3. to become familiar with some of the complicated nature of practical logistics problems, and to learn how these problems can be attacked with industrial engineering tools.

Topical Outline
1. Less-than-truckload transportation
    a. Traveling salesman
    b. Node routing
    c. Arc routing
    d. Inventory routing
2. Terminal design and operations
3. Truckload transportation
4. Network flow applications
5. Logistics network design
6. Four of the following topics, depending on students' preferences:
    a. Water transportation
    b. Rail transportation
    c. Air Transportation
    d. Forecasting
    e. Military logistics
    f. Security in logistics
    g. Humanitarian logistics

h. Disaster management logistics
i. International logistics
j. Regulation and other legal issues
k. Closed-loop supply chains
l. Outsourcing
m. Procurement and auctions
n. Pricing and revenue management

Course Outcomes and their relationships to ISyE Program Outcomes

At the end of this course, students will be able to:

- Give clear, precise descriptions of logistics problems.
- Formulate logistics problems in a framework familiar to industrial engineers, for example, using mathematical programming and probability.
- Use the tools taught in other courses to analyze and solve logistics problems.
- Be familiar with logistics issues encountered in practice and with approaches used to deal with complex practical problems.

Course outcome \ Program Outcomes	a. apply math	b. data	c. IE method	d. team	e. problem solving	f. prof/ and ethical responsibilities	g. communication	h. global, eco, envi and soc context	i. continue to improve	j. current issues	k. participate in an organization
Clear, precise descriptions …			H				H	M		M	M
Formulate logistics problems …	H	M	H		H		M	L		L	L
Solve logistics problems …	H	H	H		H						
Practical logistics issues …		M	M	L	M	L	M	M		M	M

- H, M and L denote high, moderate and low relationships.
- Team projects are sometimes conducted

Evaluation of the important course outcomes

Three or more important outcomes will be evaluated from direct questions on the Final exam:

1. Students are able to give clear, precise descriptions of logistics problems.

2. Students are able to formulate logistics problems using mathematical programming and probability.
3. Students are able to use the tools taught in other courses to analyze and solve logistics problems.
4. Students are able to describe logistics issues encountered in practice and explain approaches used to deal with complex practical problems.