

**ISyE 4111**  
**Advanced Supply Chain Logistics**  
**Fall 2014**

**Administrative Info**

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**Class Room:** IC 217  
**Class Times:** Monday, Wednesday, Friday 11:05am–11:55am

**Description:**

The course is a continuation of the course ISyE3103 Introduction to Supply Chain Modeling: Logistics. The course covers some topics that have already been encountered in ISyE3103 in more depth, with a more intensive use of the tools acquired in courses in statistics, optimization, and probability models. In the course we also study various cases in which these tools were used to solve logistics problems in practice. In these case studies it will be shown how complicated, messy logistics problems were addressed in various industries.

**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.

**Prerequisites:**

1. ISyE3103 Introduction to Supply Chain Modeling: Logistics
2. ISyE3133 Engineering Optimization, including ability to use an optimization solver. The undergraduate computer lab provides access to optimization solver software such as AMPL, GAMS, Gurobi, ILOG Cplex, and XPressMP. Also, other software packages such as Mathematica, Matlab, SAS, R, and Microsoft Excel often include routines for optimization. First check the limitations of a solver (such as maximum number of decision variables and maximum number of constraints) before using it.
3. ISyE3232 Stochastic Manufacturing and Service Systems

**Textbook:**

1. Ghiani, G., Laporte, G., and Musmanno, R., *Introduction to Logistics Systems Planning and Control*, Wiley, 2004.
2. Goetschalckx, M., *Supply Chain Engineering*, 2011.

**Topics:**

We will not cover all the topics below. Some are core topics in logistics, and will be covered. Others are optional, and will be chosen based on interest expressed by the students.

1. Less-than-truckload transportation
  - (a) Traveling salesman
  - (b) Node routing
  - (c) Arc routing
  - (d) Inventory routing
  - (e) Terminal design and operations
2. Truckload transportation
3. Network flow applications
4. Logistics network design
5. Water transportation
6. Rail transportation
7. Air Transportation
8. Forecasting
9. Military logistics

10. Security in logistics
11. Humanitarian logistics
12. Disaster management logistics
13. International logistics
14. Regulation and other legal issues
15. Closed-loop supply chains
16. Outsourcing
17. Procurement and auctions
18. Revenue management

**Grading:**

Grades will be assigned as follows:

1. Homework: 15%
2. Case studies and class participation: 15%
3. Midterm exam 1: 20%
4. Midterm exam 2: 20%
5. Final exam: 30%

**Homework:**

Late homework will be accepted only in case of unavoidable occurrences, such as illness or death in the family. You are encouraged to discuss homework and learn from each other, but each person must submit his/her own work, unless the homework specifically indicates that you should work in groups. Any queries on homework grades must be submitted in writing to the instructor, together with the homework in question.

**Case Studies:**

Preparation as well as attendance in class are necessary for the case study discussions. Grades will be assigned for participation in class. The instructor will attempt to give each person in class approximately the same opportunity to participate. At the end of the semester the participation grade for each student will be the average of the student's participation grades, thus a smaller number of such grades does not penalize the student. However, absence from class leads to a grade of 0 for the case study. Only unavoidable emergencies such as hospitalization of the student or death in the family qualify as an excuse to miss a case study discussion. No excuses are given for absence from case study discussions and no opportunities

are given for make-up work for job interviews, senior design meetings, athletics, or similar activities.

**Exams:**

Exams will cover material discussed in class, as well as reading assignments, homework and quizzes. The exams will be comprehensive and closed book. It is your responsibility to take the exams at the designated times. Midterm exam 1 is scheduled for Wednesday September 24, 2014, in class. Midterm exam 2 is scheduled for Wednesday November 5, 2014, in class. Make-up exams will be scheduled only in case of unavoidable emergencies. Personal business, such as interviews and travel arrangements are not sufficient reason to warrant a make-up exam or an incomplete grade. All unexcused absences will result in an exam grade of zero. If you have a good reason (unavoidable emergency) for missing an exam, then bring the instructor a letter from the dean of students stating that the reason for missing the exam is legitimate and has been verified, and a make-up exam will be scheduled. If your documentation is fraudulent in any way, or if you falsify in any way your reasons for missing an exam, you will receive a grade of F in the course. Any queries on exam grades must be submitted in writing to the instructor, together with the exam in question. The final examination will be cumulative.

**Quiz and Exam Rules:**

- All exams and quizzes are closed-book and closed-notes.
- Unless you are explicitly told that a calculator is allowed on a quiz or exam, there should not be any calculator within your reach during a quiz or exam. If you are explicitly told that a calculator is allowed on a quiz or exam, then you may use a calculator that can only function as a calculator, and nothing else. No communication device, such as a mobile phone or device that facilitates access to the internet, may be within your reach during a quiz or an exam, not even if you use it as a calculator. In most quizzes and exams no calculator will be allowed.
- You may bring a wristwatch that can function as a watch and nothing else. You may not use any other electronic equipment (unless you are explicitly told that a calculator is allowed). In particular, no electronic equipment that allows you to communicate with others, either inside or outside the exam room, or make web queries, or store notes, may be within your reach during a quiz or an exam, not even if you use it to check the time.
- You will be asked to leave your bags with all your materials that are not allowed during exams in the front of the class room during exams.
- You will not be permitted to go to the restroom during a quiz or exam. No exceptions, so be sure to go before class. If you have a medical reason why this rule is a problem for you, then you have to arrange in advance with the dean of students to take the exam proctored by their personnel.

- Cheating on quizzes and exams will not be tolerated in this course. You may not:
  - Attempt to look at someone else's exam (even for a second).
  - Copy from someone else's exam,
  - Let someone else copy from your exam. (Cover your exam!)
  - Bring or look at any information during the exam (e.g. on your person).
  - Wear caps or headphones/earbuds of any kind.
  - Use unacceptable electronic equipment.
  - Undertake any other activity that can be construed as giving/receiving or attempting to give/receive help during the exam.

If you violate any of these rules, then you will receive an F in the course.

### **Classroom Rules:**

- No mobile phone use in the class. That means no talking, texting, checking email, surfing the internet, or any other mobile phone use in the class.
- No newspaper reading in the class.
- You may bring your laptops, tablets, or other electronic devices to class. However, no checking email or surfing the internet during class unless you are explicitly allowed to do so. If you need to check email or surf the internet during class time, then you may leave the class room and do so outside the class room.

### **Academic Honor Code:**

All course participants (myself, teaching assistant, and students) are expected and required to abide by the Georgia Tech Honor Code. Please familiarize yourself with the code, and use it to guide your conduct. Specifically, you must do your own work in all homework (unless the homework is specifically designated as a group homework), quizzes and exams. Any form of academic dishonesty, such as plagiarism, can result in a serious deduction from your final grade or even a grade of F in the course.