Syllabus Fall 2009

Instructor

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Class Meetings

ISyE 3103 Lectures: Tuesday-Thursday 9:30-11:00 PM, IC Room 213.

Text

Goetschalckx, M., (Summer 2009), **Supply Chain Engineering**, Course Notes. Available from the Georgia Tech bookstore. Significant updates have been made to earlier versions, so only the version published in Summer 2009 is up to date.

The presentation slides will also be made available through the Georgia Tech bookstore as an optional course packet.

Class Notes and Class Materials

Additional class materials will be available for downloading from the T-Square section for this course. The files are in the Adobe Acrobat 5.0 format (PDF) and are suitable for printing to any postscript printer. They have the PDF extension. You can also print these files to any printer installed under Windows using the Adobe Acrobat reader. The Acrobat reader can be downloaded free of charge from the Adobe site www.adobe.com.

References and Other Materials

Ghiani, G., G. Laporte, and R. Musmanno, (2004), **Introduction to Logistics Systems Planning and Control**, John Wiley and Sons, Chichester, England. ISBN 0470849169.

Ballou, R. H., (2003). **Business Logistics Management**, 5th Edition. Prentice Hall, Englewood Cliffs, New Jersey.

Ernst, R., P. Kouvelis, and P. P. Dornier, (1998), **Global Operations and Logistics: Text and Cases**, Wiley & Sons, New York, New York.

Gourdin, K. N., (2001), **Global Logistics Management**, Blackwell Publishers, Oxford, United Kingdom.

Murphy, P. R. and D. F. Wood, (2008), **Contemporary Logistics**, (9th Edition), Pearson Prentice-Hall, Upper Saddle River, New Jersey.

Nahmias, S., (2004), **Production and Operations Analysis**, 5th Edition, Irwin/McGraw-Hill, Boston, Massachusetts.

Robeson, J. and W. Copacino, (1994). **The Logistics Handbook**. Free Press, New York, New York.

Shapiro, J. F., (2006), **Modeling the Supply Chain**, 2nd Edition, Duxbury Press, Pacific Grove, California.

Simchi-Levi, D., P. Kaminsky, and E. Simchi-Levi, (2008), **Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies**, (3rd Edition), McGraw-Hill Irwin, New York, New York.

Tayur, S., Ganeshan, R., and Magazine, M., (Eds.), (1999), **Quantitative Models for Supply Chain Management**, Kluwer Academic Publishers, Boston, Massachusetts.

Guenes, J. et al. (2002), **Supply Chain Management: Models, Applications, and Research Directions**, Kluwer Academic Publishers, the Netherlands.

Course Objectives

The objective of this course is to teach the student how to successfully complete an engineering design project in order to prepare the student for his senior design project and for design projects in industry. The vehicle used is the design of industrial logistics systems.

There are five basic skills required in each engineering design project and in order to pass the course the student must show mastery of each of those skills:

1) Basic understanding of the methodologies and practices used in the design field, in this case logistics systems design.

2) Cooperation with team members and management of team efforts.

3) Presentation and influencing skills to defend your design and to get it accepted.

4) Acceptance of and adaptation to changing and imprecise design tasks and use of common (engineering) sense.

5) Acquisition of additional information from a variety of sources, such as trade and academic journals, the printed press, and the Internet.

The following is an extract of the address by Fred W. Garry, Vice-President of Corporate Engineering and Manufacturing, General Electric Company, to the Engineering Deans Institute Meeting (March 27, 1985), which remains current to this day.

> "At the bachelor's level we don't expect an expert level of knowledge, but we would expect that the graduate would be generally aware of the state-of-the-art practices in their discipline specialty and familiar with its jargon and basic concepts.
>
> Today's graduates should be capable of communication clearly and realizing that in the complex industrial world they will usually be members of a team and that influencing skills are important for both team and individual career success.
>
> Today's graduates must be comfortable with change, believe that it is the way of life and that they must continue to learn throughout their careers."

The following is a more recent quote of Euan Baird, chairman, president and chief executive of Schlumberger Ltd., who presented a lecture at Georgia Tech in 2001. Schlumberger is an international technical service company providing services and products to global commodity business, primarily in the oil and gas industry. At the end of 2000, the company had 60,000 employees from 140 countries. When recruiting, Baird said “Schlumberger looks for applicants who have been taught to think and to express thoughts clearly, who have been taught to respect others and to enjoy working as a member of a team, and who have their horizons broadened by working and living in a diverse college environment.”

Grading

Laboratory, homework, and reports count for 50 %. Of this 80 % is based on the written reports you submit and 20 % is based on the oral presentations that you make.
The midterm exam counts for 20 % and the final exam for 30 %.

Grades for homework, projects, reports, and exams will be posted on T-Square. Students are responsible for verifying the posted grades and reconciling any possible discrepancies within one week of the posting. The final grade is computed from the posted grades.

Comments and Rules

Exams

Exams will be closed book and closed notes. Students are allowed one double-sided page with handwritten formulas; copied pages are not allowed. Algorithm steps, legends, and text are not allowed, so the formula sheet can only contain formulas and chapter titles. The formula sheet must be submitted with your exam answers. Numerical accuracy is an essential element of an engineering project and will be part of the grade. A working calculator is an essential tool for answering questions correctly. Examinations are to be individual efforts and students will be asked to sign the honor code statement. The exact time of the midterm exam will be announced in class.

Teams

Homework, reports, and presentations, and class discussions are due in teams of a minimum of five persons and a maximum of six persons. Any deviations of this rule must be approved by the instructor. One grade will be given per team. Homework and reports are discussed and corrected during the class period on the date on which they are due. It is the responsibility of the team to assure that each team member has contributed approximately equally to a report or presentation. Each member of the team will be asked to judge and grade the contributions of themselves and other team members. An example of the team grading form can be found on my web site in PDF format in the file "*ISyE Group Project Evaluation.pdf*."

The team is responsible for assuring that at least one member of the team attends every class for getting all information, materials, and scheduling arrangements for the team. You are encouraged to collaborate with the members of your team on homework, reports, and presentations. However, you are not allowed to communicate in any way regarding homework, reports, and presentations with anyone not who is not a member from another team, the teaching assistant, or the instructor. Any such communication will be considered a violation of the honor code.

Homework

All homework and reports are due at the start of the class period on the posted due date. The penalty for submitting a printed report after the start of the class period is 5% for the first homework and increases by 5% with each following homework. Homework and reports submitted after the class period will neither be accepted nor graded. Some homework and reports have components that have to be submitted electronically through T-Square. The T-Square server will not accept submissions after the start of the class period on the due date. Preliminary versions of electronic homework or reports can be submitted and are encouraged, but on order to avoid multiple versions all submissions for a particular homework must be done by same team member. Unless explicitly stated otherwise, for each homework the report must be

submitted as a single file in Microsoft Word format and the presentation must be submitted as a single file in Microsoft PowerPoint format. Any submission file must have as part of its file name the team number and the homework title.

Presentations

Unless a team volunteers in advance to present, a team will be chosen at random to present their solution in front of the class. Volunteering teams will be accepted on a first-come, first-served basis after the homework has been posted. The team can select one or more team members who will present a particular solution. For any presentation, at least a title page must be handed to the instructor before the presentation starts. The persons listed on the title page of the report or presentation will receive a grade for that report or presentation. The grade for the presentation will be based on the clarity and professionalism of the presentation and the ability of the team to answer questions, not on the correctness of the solution. Presentations should be of professional quality. No font size smaller than 18 points should be used. Audio-visual aids, if used at all, should be limited to overhead transparencies or a PowerPoint presentation. The team member(s) presenting the solution should be prepared to defend the team's assumptions, methods, and solution and to answer questions. A clear and concise presentation of the solution and insight into the problem are of prime importance, and strict time limits will be imposed. An example of the presentation evaluation worksheet that I use can be found on my web site in PDF format in the file "*ISyE Presentation Evaluation Form.pdf*." You are encouraged to use the services of the communications lab to prepare for your presentations.

Reports

Reports should be typewritten, double-spaced, use fonts no smaller than 12 point, and be on one side of 8.5 by 11 inch paper and *within* the length limit. Pages should have a one-inch margin on all sides and have a page number. All computer printouts and other material must be resized to fit the same 8.5 by 11-inch size and be integrated into the report. The reports should be of professional quality and contain a title page. The persons listed on the title page of the report or presentation will receive a grade for that report or presentation. Spelling and grammar errors are penalized with significant point deductions. Drawings should satisfy engineering standards; i.e. all elements must be properly dimensioned. Drawings can be created by computer or by hand using a ruler and compass, but lines or circles drawn without ruler or compass are not acceptable. Handwritten items, comments, and corrections are not acceptable. Fifty percent of the grade will be on the content of the report; the other half will be on the format of the report.

Class Attendance

Class attendance and participation is not mandatory, but highly recommended and the strongest predictor of your grade. The team is responsible for assuring that at least one member of the team attends every class for getting all the information, materials, and scheduling arrangements for the team. An electronic picture will be taken at the end of the first class after the end of registration to create a class roll with pictures.

Academic Honesty

All students are expected to know and comply with the Georgia Tech Honor Code, which can be found at http://www.honor.gatech.edu/honorcode2.htm. Any evidence of cheating or other violations of the Georgia Tech Honor Code will be submitted directly to the Dean of Students. Cheating includes, but is not limited to: using any materials, tools, or any form of notes except those specifically allowed on tests or quizzes; copying directly from any source including friends, classmates, tutors, or a solutions manual; allowing another person to copy your work; signing another person's name or having another person sign your name on an attendance sheet; taking a test or quiz in someone else's name, or having some else take a test or quiz in your name; or asking for a re-grade of a paper that has been altered from its original form. In addition for this particular class any communication regarding homework or projects with people that are not a member of your lab team is a violation of the honor code. A student violating the honor code will receive immediately a zero score for that particular exam, homework, or assignment in addition to any other penalties for the honor code violation that may be assigned.

Graduating and Special Needs Students

Students graduating at the end of this semester or students that have special needs should contact the instructor immediately so that these special schedules and arrangements are known from the beginning of the course term.

Course Outline

Week	Start Date	Lecture Topic	Notes Chapter
1	17-Aug	Overview. Introduction to logistics systems.	1
2	24-Aug	Engineering Planning and Design. Single Flow Routing	2, 6
3	31-Aug	Single and Multiple Flow Routing	6, 7
4	07-Sep	Multiple Flow Routing	7
5	14-Sep	Multiple Flow Routing, Transportation Systems	7,5
6	21-Sep	Transportation Systems, Single Vehicle Routing	5, 8
7	28-Sep	Single Vehicle Routing	8
8	05-Oct	Multiple Vehicle Routing	9
	08-Oct	MIDTERM EXAM	
9	12-Oct	Multiple Vehicle Routing	9
10	19-Oct	Multiple Vehicle Routing	9
11	26-Oct	Inventory Systems	10
12	02-Nov	Inventory Systems, Supply Chain Systems	10, 11
13	09-Nov	Supply Chain Systems, Supply Chain Models	11, 12
14	16-Nov	Supply Chain Models	12
15	23-Nov	Supply Chain Models , Advanced Supply Chain Models	12, 13
16	30-Nov	Advanced Supply Chain Models	13
17	07-Dec	FINAL EXAM WEEK	

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