Syllabus Fall 2010

Instructor

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Teaching Assistant

TBA (Has not yet been assigned)

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Class Meetings

Lectures: Monday and Wednesday 4:00 – 5:30 PM, location IC 217.

Text

Goetschalckx, M., (2010), **Supply Chain Engineering**, Course Notes. Available from the Barnes and Noble at Georgia Tech bookstore. Note that only the August 2010 edition is up to date and prior versions should not be purchased.

The presentation slides will also be made available through the Georgia Tech bookstore as an optional course packet. Again only the August 2010 edition is up to date.

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 7.0 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 web site www.adobe.com.

References and Other Materials

Ballou, R. H., (2004). **Business Logistics Management**, 5th Edition. Pearson Education, Upper Saddle River, New Jersey.

Blanchard, B., (2004), **Logistics Engineering and Management**, 6th Edition, Pearson Education, Upper Saddle River, New Jersey.

Chopra, S. and P. Meindl, (2004), **Supply Chain Management: Strategy, Planning, and Operation**, 2nd Edition, Pearson Education, Upper Saddle River, New Jersey

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

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

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

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

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.

Shapiro, J. F., (2001), **Modeling the Supply Chain**, Duxbury Press.

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.

Course Objectives

The objective of this course is for the students to learn how to successfully complete an engineering design or analysis project according to systems engineering principles in order to prepare the student for future projects in industry. The vehicle used is the design of supply chains and industrial logistics systems.

There are five basic skills required in each engineering design or analysis 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 supply chain and 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 relevant 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 60 %. 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 15 % and the final exam for 25 %.

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.

Rules and Comments

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. The maximum number of students will be based on the class size and will be announced during the first lecture. The typical maximum size for a group is six students. Any deviations of this rule must be approved by the instructor. The teams should be heterogeneous, in other words teams with students of a single country of consisting of mostly Ph.D. students will not be allowed. 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 of your 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. In other words, the penalty for the sixth homework would be 30% of the received grade even if this the first homework submitted after the start of the class for this group. Late homework and reports will neither be accepted nor graded. All homework and reports are submitted on paper but some supporting materials may have to be submitted electronically through T-Square. The T-Square server will not accept submissions after 4:00 PM of the due date. Preliminary versions of the electronic components of the homework or reports can be submitted and are encouraged, but in order to avoid multiple versions all submissions for a particular homework must be done by same team member. Unless explicitly stated otherwise, the supporting materials for a homework must be submitted as a single archive file in ZIP format. If a presentation is submitted, it must be a PowerPoint presentation formatted in landscape orientation and have four display slides to a page. Any submission file must have as part of its file name the team number and the homework title. Example of file names are: "Homework VRP II Group 7.zip" and "Homework Inventory Group 7 Question 2 Presentation.ppt".

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. Teams volunteer by sending an email message to the instructor and volunteering teams will be accepted per question 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 a PowerPoint presentation or materials that can be projected from an electronic source. 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 if a limit has been specified. 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 must be created by computer. Handwritten items, comments, and corrections are not acceptable. Appendices without title or explanation of the content of the appendix will not be graded. Fifty percent of the grade will be on the content of the report; the other half will be on the exposition and 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. Students may want to display a sign with their first and last names readable from the lecture stand. An electronic picture will be taken at the end of the first class of the second week 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	23-Aug	Overview. Introduction to logistics systems.	1
2	30-Aug	Engineering Planning and Design. Single Flow Routing	2, 6
3	08-Sep	Single Flow Routing	6
4	13-Sep	Multiple Flow Routing	7
5	20-Sep	Multiple Flow Routing, Transportation Systems	7,5
6	27-Sep	Transportation Systems, Single Vehicle Routing	5, 8
7	04-Oct	Single Vehicle Routing	8
7	11-Oct	MIDTERM EXAM	
8	13-Oct	Multiple Vehicle Routing	9
8	18-19-Oct	Fall Break	
9	20-Oct	Multiple Vehicle Routing	9
10	25-Oct	Multiple Vehicle Routing	9
11	01-Nov	Inventory Systems	10
12	08-Nov	Inventory Systems, Supply Chain Systems	10, 11
13	15-Nov	Supply Chain Systems, Supply Chain Models	11, 12
14	22-Nov	Supply Chain Models	12
15	29-Nov	Supply Chain Models	12
16	06-Dec	Advanced Supply Chain Models	13
17	17-Dec	FINAL EXAM (11:30 AM – 2:20 PM)	

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