BAUD 622  Optimization and Spreadsheet Modeling  Spring 2017

Instructor: Dr. Bintong Chen, Purnell 358, 831-2756, bchen@udel.edu
Office Hours: TH: 6:00-8:45pm, 10 minutes before and after the class, and by appointment
TA: Deshen Wang, dwang@udel.edu

Reference Books:
- *Contemporary Management Science with Spreadsheets* by David Anderson, Dennis Sweeney, Tomas Williams, and Dennis Anderson, South-Western Educational Publishing, 1999. ($20.11, used)
- Lecture notes and handouts will be distributed in class.

Course Description:
Managers often find spreadsheets natural, intuitive, and user-friendly platforms for organizing information and performing “what if” analyses. Spreadsheets have therefore become popular tools of modern business analysis and decision-making in companies ranging from small mom and pop stores to mega international corporations. This class teaches students basic optimization concepts and techniques and skills to structure, represent, analyze, and solve various business problems on Excel spreadsheets. In particular, it shows students how to use Excel to effectively allocate limited resources (by the optimization engine Solver within Excel), to describe and simulate uncertainties and perform risk analysis, and to summarize data and perform data analysis. Examples from various business applications, ranging from marketing, finance, to manufacturing and logistics, will be used for students to practice the spreadsheet modeling process. All students who choose to take this class should have basic knowledge of Excel. The class is not about technicalities of Excel, rather it is about modeling: the process of understanding, structuring, representing, and solving business related problems as well as providing economic interpretations of solutions and generating business report. Furthermore, the class will enhance students’ analytical thinking and problem solving capabilities. Many students become experienced and advanced Excel users towards the end of the class.

Major Topics:
- Introduction to data analytics and optimization
- Linear program, sensitivity analysis, and Excel Solution
- Excel modeling of various business problems from operations management, logistics, marketing, and financial decision making
- Network models and project management
- Multi-criteria decision making
- Simulation by Excel

Attendance and Participation:
Students are expected to attend all classes. Attendance will be checked randomly to reward those students who regularly show up in class. Each attendance is a bonus worth 0.5% towards the final grades. Class participation is strongly encouraged. Students actively involved in class discussion and demonstration will be awarded by up to 3% towards the final grade, based on my subjective judgment.
Homework:
Homework problems and mini-cases should be done in group of no more than 2 students (or individually). While discussions are encouraged, each student should participate and contribute. Similar problems will appear in quizzes, which need to be completed individually.

Quizzes:
A quiz is scheduled after the completion of each major topic. The exact date of each quiz will be announced at least one week ahead of time. All quizzes are closed book but noncomprehensive. Each quiz covers only materials lectured after the previous quiz. You may be required use computer to formulate and solve some quiz problems. No make-up quizzes will be given.

Course Policy:
Students are expected to follow the honor code of University of Delaware. In particular, please show up for class on time and keep attentive during the entire lecture. Cheating of any kind will result in the most severe penalty at my disposal. As an instructor, I will start my lecture on time and be prepared to answer your questions during my office hour. In case you cannot meet me during my office hour, you are welcome to make an appointment. For short questions, you may also email me.

Grading Policy:
Your total points are based on 3 quizzes (10 points each, 7 pts for the worst quiz), and 3-4 homeworks (5 points each). Your letter grade will be determined based on the percentage of your total points compared with the average total points of the top 5% students from the class plus your attendance bonus and your class participation (up to 3%). The percentage-grade scale is as follows:

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Faculty Bio:
Bintong Chen is Professor of Business Administration and Director of Institute for Financial Services Analytics, with a secondary appointment in the Department of Civil and Environmental Engineering. He received his Ph.D. in operations management/research from the Wharton School, M.S. in systems engineering from the University of Pennsylvania, and dual B.S. degrees in ship-building & naval architecture and electrical engineering from Shanghai Jiao Tong University in China.

His research interests include optimization techniques and applied business modeling. He has published in many high quality academic journals, including Management Science, Operations Research, Production and Operations Management, Transportation Science, Mathematical Programming, SIAM Journals on Optimization, IEEE Transaction on Automatic Control, and his research work has been widely cited.

He has taught operations management/research related classes at undergraduate, MBA, and Ph.D. levels. He has supervised and worked on business projects for JPMC, AstraZeneca, Delaware Department of Transportation, Nordstrom, Cascade Natural Gas Corporation, Key Bank, Northwest Dairy Farm, Burlington Northern Rail, AT&T. He has received many teaching (undergraduate and MBA), research, and faculty excellence awards in institutions he served.