Math 30210 --- Introduction to operations research

University of Notre Dame, Fall 2007

http://www.nd.edu/~dgalvin1/30210/

Course arrangements

Caveat: I have tried to make this information as accurate as possible, but it is subject to change.

Official course description: ``An introduction to linear programming, duality theory, simplex algorithm, the transportation problem, network analysis, dynamic programming and game theory."

Prerequisites: Any course involving a significant component of linear algebra and/or differential equations (such as Math 20580, 20610, 20750 or 20810).

Learning goals: By the end of this course, I hope that you will be able to:
1) Implement algorithms, such as the simplex method and the transportation algorithm, to solve mathematically formulated operations research problems.
2) Analyze the stability of solutions to these algorithms when the input is perturbed (modified) slightly.
3) Identify real-world situations in which it is appropriate to use these algorithms,
and create mathematical formulations of these problems that allow the algorithms to be implemented.
4) Interpret the solutions back in the real-world situations, and interpret the significance of perturbations.

Scheduled meeting times: MWF, 3pm-3.50pm, DeBartolo Hall 217.

Professor's contact information: David Galvin, 248 Hayes-Healy, (574) 631-4181, dgalvin1@nd.edu. Office hours M4.30-5.30, W12.30-2.00. Please feel free to email me anytime. I try to respond quickly to any question or comment, the one caveat being that I tend not to be email-active in the late evening or early morning ...

Text: *Operations research, an introduction* (Eight edition) by Hamdy A. Taha (published by Pearson); ISBN 0 13 188923 0. This book is currently available online and at the university bookstore. The plan for the course is (roughly) to cover Chapters 1-5 and Chapter 13, plus perhaps some other topics as time at the end of the semester permits.

Listserv: The course listserv address is MATH30210-01-FA07@listserv.nd.edu. This is an unmoderated list. If you have questions to ask me which are not of a private nature (e.g., concerning your grade), and you feel that the question and answer may be of interest to everyone else in the class, I encourage you to use the listserv to contact me. Furthermore, I encourage you to use the listserv address to answer a posted question, if you wish.

Exams: There will be two mid-semester exams, both in-class. The first will be on October 10, roughly covering chapters 1-3; the second will be on November 19, roughly covering chapters 4-5. Each of these will count for 20% of your final mark. The cumulative final exam will take place on Friday, December 14, from 4.15pm to 6.15pm (room to be announced), and will count for 35% of your final mark. All exams will be closed-book, and no notes will be allowed. For the mid-semester exams, no make-ups are planned; you must contact me (in writing) before the time of tbe exam if an emergency prevents you from attending. If you have a legitimate conflict with the final exam time, you should contact me (in writing) by December 1 at the latest.

Weekly assignments: Each Wednesday, I will announce a weekly written assignment and post it on the course website . The assignment will be due at the beginning of class the following Wednesday (exception: the last assignment, announced Wednesday, December 5, will be due the following Monday, the last day of class). Each assignment will involve some reading and some problems, possibly on an area not yet covered in lectures. Presented assignments should be neat and legible, and contain a cover page with your name, the course number, the assignment number and the due date. The course grader reserves the right to leave ungraded any assignment that is disorganized, untidy or incoherent. After your lowest two marks are dropped, your weekly assignment count (equally weighted) for 15% of your final mark. Weekly assignments can be turned in in class, or left in my mailbox (outside 255 Hurley Hall). They can also be emailed; if you plan to email, please check with me to see if the format you plan to use is one that I can read. No late assignments will be accepted. It is permissible (and encouraged) to discuss the assignments with your colleagues; but the writing of each assignment must be done on your own.

Weekly quiz: Each Wednesday, there will be a short quiz in class, based on the material of the assignment due that Wednesday. Exception: there will be no quiz on October 10, and none on November 21. After your lowest quiz mark is dropped, your weekly quizzes count (equally weighted) for 10% of your final mark. Quizzes will be closed-book. No make-ups will be given; I drop the lowest quiz mark to allow you to miss a quiz (for whatever reason) without it affecting your mark.

Grade: Your final mark for the course will based on a weighted average of your quiz marks (10%), your weekly assignment marks (15%), your mid-semester exam marks (20% each) and your final exam mark (35%). A cumulative average mark of 85% will earn you an A; 70% a B, and 55% a C.

Grading disputes: If you have any issue with the grading of your weekly assignments or quizzes, or with your mid-semester exams, you must let me know (in writing) within seven days of receiving the work back; otherwise I do not promise to consider the issue.

Academic code of honor: You have all taken the Honor Code pledge, to not participate in or tolerate academic dishonesty. For this course, that means that although you may (and should) discuss assignments with your colleagues, you must write the final version of each of your assignments on your own; if you use any external sources to assist you (such as other textbooks, computer programmes, etc.), you should cite them clearly; your work on quizzes, mid-semester exams and the final exam should be your own; and you will take quizzes and exams with book closed and without notes.

Class conduct: The lecture room should be a place where you should feel free to engage in lively discussion about the course topic; don't be shy! But non course related interruptions should be kept to a minimum. In particular, you should turn off silence all cell phones, etc., before the start of class. If for some good reason you need to have your phone on during class, please mention it to me in advance.