MATH 4435 Mathematical Programming
Fall 2017   MWF10   Gasson 205

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Mathematical programming is an applied mathematics course that focuses on solving optimization problems involving linear functions of variables that satisfy linear constraints. What is perhaps amazing is that such problems include an extremely large set of complex and useful applications, such as: personnel and equipment assignments, optimal use of limited resources, distribution of goods through a transportation network, game theory, investment portfolio funding, and project or maintenance scheduling. As we'll see, every linear programming problem corresponds to another linear programming problem, called its dual. Their respective solutions are related and inform each other.

The text we'll use is **An Introduction to Linear Programming and Game Theory, 3rd Edition, by P. R. Thie and G.E. Keough**, Wiley; ISBN 978-0-470-23286-6. We will cover the first six chapters and most of chapter 9. Topics include linear optimization models, the theory and development of the simplex algorithm, duality, convexity, sensitivity analysis, the dual simplex algorithm, integer programming, and zero sum two person games.

Prerequisite: MATH2210 or an equivalent linear algebra course.

How to reach me: my office is **543 Maloney; 617-552-3769**; email (chambers@bc.edu) is the most reliable method of reaching me.

Office Hours: M3-4, W2-3, F12-1 or by appointment.

Homework will be assigned and collected on a regular basis. I will post correct solutions and you should look over any mistakes and make sure you understand the solutions.

If you are having trouble with the homework problems, I'm available for assistance and hints. You are also allowed to discuss the problems with other students, but **you alone are to write up your work**; discussion with other students is simply to understand the concepts and techniques so that you can solve the problems. **Papers containing transparent copying will be returned with zero credit.** Late homework will generally not be accepted. University procedures will be followed in integrity cases; see **www.bc.edu/integrity** for these.

Exams: there will be two semester exams and a cumulative final. You are only allowed a make-up for a missed exam for a serious reason. If you must miss one, please clear it with me beforehand. Tentative exam dates are October 6 and November 17; the final is on Friday, December 15 at 9:00 am.

Semester grades will be based on homework (10%), semester exams (30% each), and final exam (30%).

I'll be using my website (https://www2.bc.edu/daniel-chambers and follow the appropriate link) rather than Canvas. Homework assignments and solutions, a calendar, etc. can be found there.

If you are a student with a documented disability seeking reasonable accommodations in this course, please contact Kathy Duggan, (617) 552-8093, dugganka@bc.edu, at the Connors Family Learning Center regarding learning disabilities and ADHD, or Paulette Durrett, (617) 552-3470, paulette.durrett@bc.edu, in the Disability Services Office regarding all other types of disabilities, including temporary disabilities. Advance notice and appropriate documentation are required for accommodations.