Basic information

Instructor: Oleg Prokopyev, prokopyev@engr.pitt.edu
Lectures: MW 2:00-3:15 pm
Classroom: Benedum 1020
Office: Benedum 1037
Office hours: M 3:30-4:30 pm. You may also contact me to set up an appointment.
Course website: http://www.engr.pitt.edu/industrial/faculty-staff/prokopyev/ie2082/

Prerequisites

1. Introductory course in Linear Programming/Operations Research and familiarity with the simplex algorithm.

2. Knowledge of (a) linear algebra, (b) differential calculus, and (c) basic mathematical concepts such as sets, functions, vectors, matrices etc.

3. An interest in mathematical methods.

Topics

We will focus on linear programming, including solution methods (simplex algorithm, interior-point algorithms), a particularly in-depth look at the simplex algorithm, duality and sensitivity analysis, and decomposition techniques. Depending on time, we will also look at some related problems/techniques: network flows, multi-criteria optimization, quadratic and convex programming.

The tentative order of topics is as follows:

- simplex algorithm
- duality and sensitivity
- interior-point algorithms
- computational issues
- network problems
- decomposition techniques
- additional topics

Assignments and Exams

There will be regular homework assignments and 3 exams: 2 mid-term (in class) and the final (take-home). The first exam will probably be in the week of October 6-10. The second exam will probably be in the week of November 10–14. The final exam will probably be in the week of December 6–13.
Grading

Tentative weighting is 25% homework, 25% each mid-term and 25% final.

Attendance

No attendance will be taken, but the students are responsible for the announcements made in the class.

Supplemental texts

- *Linear Programming and Network Flows* by Bazaraa, Jarvis, and Sherali. The first alternative I would consider if you don’t like Vanderbei’s text.

- *Operations Research* by Winston (or *Introduction to Mathematical Programming* by the same author). Typical undergraduate level text.

Disability

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both me and Disability Resources and Services, 216 William Pitt Union, (412) 648-7890 as early as possible. DRS will verify your disability and determine reasonable accommodations for this course.