Linear Optimization

640:354:03, Spring 2006

Time: Monday, Thursday, 8:40 – 10:00am
Location: ARC 110, Busch Campus

Instructor: Marcin Kaminski
Email: marcin.kaminski@rutgers.edu
Office: RUTCOR, Room 163, Busch Campus
Office Hours: Monday, 10:15 – 11:15 or by appointment

Textbook. B. Kolman, R. Beck, *Elementary Linear Programming with Applications*, Academic Press, Second Edition, 1995

Homework. There will be about 8 homework assignments during the semester. Each set is due two weeks after it is posted and will be collected in class. If you wish, you may leave your paper in my mailbox at Rutcor anytime before the day the assignment is due. Late homework will not be accepted.

Midterm exam. There will be one 80-minute, closed book midterm exam administered in the week after the spring break.

Final exam. The final exam is a cumulative, 3-hour, open book exam. (Time and location will be announced later.)

Grading. Your final score = (homework assignments + midterm + final) / 3

Course outline.
1. *Optimization on graphs and networks* – minimum spanning tree, shortest path, maximum flow, minimum cut
2. *Linear Programming* – geometry of LP, simplex method, degeneracy, cycling, artificial variables
3. *Duality* – duality theorem, complementary slackness
4. *Integer Programming* – cutting planes, branch and bound
5. *Special types of LP* – transportation problem, traveling salesman problem, assignment problem
6. *Computational aspects* – LP solvers