ORIE 630: MATHEMATICAL PROGRAMMING I
Fall 2006

Instructor: David Shmoys (shmoys@cs.cornell.edu, 232 Rhodes Hall, 255-9146)
Teaching Assistant: Dennis Leventhal (leventhal@orie.cornell.edu, 292 Rhodes Hall)

Lecture Schedule: Tuesdays & Thursdays, 1:10-2:25 111 Upson Hall
Recitation Schedule: Wednesdays, 2:30-3:30, 253 Rhodes Hall

Office Hours for David Shmoys: Mondays 10:30-12, 232 Rhodes Hall
Office Hours for Dennis Leventhal: To be announced

Prerequisites: advanced calculus and elementary linear algebra

Course Requirements: There will be weekly problem sets (40%); responsibility to provide edited
scribe notes for two lectures (10%); mid-term exam (15%), in-class final exam (30%), lecture-
recitation participation (5%).

Textbook: There is no required textbook. The class will refer to a number of sources throughout
the semester, including

- Bertsimas and Tsitsiklis, “Introduction to Linear Optimization”;
- Chvátal, “Linear Programming”;
- various handouts prepared for this and previous iterations of the course, which will be available
  on the course web page,

www.orie.cornell.edu/~shmoys/or630 ;

- the scribe notes prepared for the lectures in this class.

This course gives a rigorous treatment of the theory and computational techniques of linear pro-
gramming and its extensions, including formulation, duality theory, algorithms, sensitivity analysis,
network flow problems and algorithms; theory of polyhedral convex sets, systems of linear equa-
tions and inequalities, Farkas’ Lemma; and exploiting special structure in the simplex method and
computational implementation. Topics covered will include the ellipsoid algorithm, interior-point
methods, and computational complexity issues related to optimization problems.