

## Advanced Mathematical Programming

ORI 391Q.11    Unique #18005    Spring Semester 2006

**Classroom:**     ETC 5.130

**Meeting Time:** 3:30-5:00pm, Tuesdays and Thursdays

**Prerequisites:** Graduate level knowledge of linear, nonlinear and integer programming.

**Instructor:**    David Morton

**Office:**        ETC 5.122

**Office Hours:** 2:00-3:30pm, Tuesdays and Thursdays

**Telephone:**    512-471-4104

**E-mail:**        morton@mail.utexas.edu

**Text:**            D. Bertsimas and J.N. Tsitsiklis, *Introduction to Linear Optimization*, Athena Scientific, Belmont, Massachusetts, 1997.  
Class handouts including course notes.

**Software:**      Matlab: see <http://hpc.me.utexas.edu/> and  
COIN-OR: see <http://www.coin-or.org/>

### Grading Policy

Problem Sets	75%
Project	25%

Students are encouraged to work together in determining how to do the problem sets, but problem sets must be written-up individually.

### Course Topics

- Ellipsoid method and complexity of linear programming
- Separation and optimization
- Path-following interior point methods
- Decomposition: column and row generation from multiple perspectives (linear, nonlinear, integer)
- System and network interdiction: models and methods
- Proximal terms: uses in modeling and algorithms
- Prioritization versus (and via) optimization
- Semi-definite and cone programming
- Robust optimization

## **Additional Administrative Notes**

The University of Texas at Austin provides upon request appropriate academic adjustments for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4241 TTY or the College of Engineering Director of Students with Disabilities at 471-4382.

An engineering student must have the dean's approval to add or drop a course after the fourth class day of the semester or after the second class day of a summer term. Adds and drops are not approved after the fourth class day except for good cause. "Good cause" is interpreted to be documented evidence of an extenuating nonacademic circumstance (such as health or personal problems) that did not exist on or before the fourth class day.

A Course-Instructor Survey from UT's Measurement and Evaluation Center will be administered near the end of the semester.