C&O 671/471 Semidefinite Optimization, Spring 2011

Class Times: T,Th 10:00–11:20, CPH 3602

Instructor:
Levent Tunçel, MC 6066, ext. 35598, ltuncel@math,
Office hours: M 9–10 a.m. W 2–3 p.m., or by appointment.

Topics covered:
Optimization over convex sets described as the intersection of the set of symmetric, positive semidefinite matrices with affine spaces. Formulations of problems from combinatorial optimization, graph theory, number theory, probability and statistics, engineering design and control theory. Theoretical and practical consequences of these formulations. Duality theory and algorithms (ellipsoid method and primal-dual interior-point methods, approximation algorithms based on Semidefinite Optimization).

Pre-requisites (for undergraduate students):
MATH 239/249, PMATH 351 or at least AMATH/PMATH 331, CO 355

Final Grade: Assignments 20%, Takehome Exam 40%, Final Exam 40%. A missed assignment or midterm will be treated the same as a mark of zero unless the cause is illness (a medical note is necessary), or a similar good reason given promptly in writing, in which case the corresponding weight will normally be transferred to the final exam.

On Reserve at the Davis Centre Library:

- **Textbook:** Polyhedral and Semidefinite Programming Methods in Combinatorial Optimization [QA402.5.T86],
- Handbook of Semidefinite Programming [T.57.74.H355 2000],
- Convex Optimization (by Boyd and Vandenberghe) [QA402.5.B69 2004].