CAAM 565: Convex Optimization (Fall 2016)

- Instructor
  Yin Zhang, Room: DH 3090, Phone: X5744.
  Office Hours: Tue.: 3:30–5:30pm or by appointment.
  Textbook: *Convex Optimization* by S.Boyd and L.Vendenberge

- Objectives and outcomes
  Students should develop a working knowledge of convex optimization, i.e., to develop the skills and background needed to recognize, formulate, analyze and solve convex optimization problems.

- Topics
  Introduction to optimization; convex sets and convex functions; formulations of convex optimization problems; duality theory and optimality conditions; convex optimization algorithms; applications

- Prerequisites
  Matrix analysis, multi-variable calculus, Matlab programming.

- Reference Books
  — Convex Analysis and Nonlinear Optimization: Theory and Examples (2nd Ed.)
    Authors: Jonathan Borwein and Adrian S. Lewis. Springer.
  — Lectures on Modern Convex Optimization: Analysis, Algorithms, and Engineering Applications.
    Authors: Aharon Ben-Tal and Arkadi Nemirovski. SIAM.

- Assignments
  Assignments will be posted online at the course website. Late submissions are not accepted unless explicitly permitted for the whole class, or individually approved by the instructor under special circumstances.
  The assignments may be problem sets or computer projects. The former type usually consists of theoretical questions requiring mathematical proofs, while the latter type involves problem-solving and/or algorithm implementations. All assignments will be counted towards the final grades, even though some of them will not be graded in details.
  Students can study assigned problems with classmates, but must eventually write out the solutions and/or programs on an individual basis (no sharing of identical solutions or copying codes from each others).

- Exams
  Two pledged take-home exams are planned, but one may be replaced by a pledged, comprehensive project.

- Grading
  The course grades will be based on a weighted average of the assignments (50%), and the exams or project (25% each). Demanding assignments may be weighted more than others. Class attendance/participation will be a factor in determining borderline cases, and excessive absence will result in a penalty.

The above information may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

*Any student with a disability requiring accommodation in this course is encouraged to contact the instructor during the first week of class, and also to contact Disability Support Services in the Ley Student Center.*