ORF523: Convex and Conic Optimization

Spring 2023

Instructor:	Liza (Elizaveta) Rebrova
Class:	Tue and Thu 1:30-2:50pm , room TBD
E-mail:	elre@princeton.edu
Webpage:	https://erebrova.github.io/ORF523.html and Canvas website
Office hours:	Thursday 3-5pm, room TBD or by appointment, please email
Discussions:	check out the Ed page on Canvas website!
AI Abraar Chaudhry:	azc@princeton.edu, Monday 5:30-7:30pm, room 107

Course description

A mathematical introduction to convex, conic, and nonlinear optimization. Topics include convex analysis, duality, theorems of alternatives and infeasibility certificates, semidefinite programming, polynomial optimization, robust optimization, randomized approximations, computational complexity in numerical optimization, and convex relaxations in combinatorial optimization.

Course materials

- **Recommended Textbooks:**
  - S. Boyd and L. Vandenberghe, Convex Optimization
  - M. Laurent and F. Vallentin, Semidefinite Optimization
- **Tentative course schedule:** see github class website
- **Supplementary materials:** to appear as class goes on github class website

Grading

Your grade is formed based on the bi-weekly homework assignments, the midterm, and the final exam.

- Homeworks (50% of the grade; 5-6 total – approximately biweekly) You can collaborate on homeworks, you are encouraged to discuss the problems with others. However, you should write up all the problems individually, turn in HW in Gradescope for yourself only, and mark the names of all your collaborators. Unless there is a valid reason, requests for extension on homework will not be accepted.

- Midterm (20% of the grade, last week before spring break, 1.5 hours, in class or timed submission in gradescope, no collaborations). Most likely during the last class before spring break.
- Final exam (30% of the grade, 3-4 hours, no collaborations)

Any grading complaints and requests for re-grading must be submitted to the instructor or AI within one week of receiving your score. Grading complaints not initiated within this period of time will not be considered.

Honor code

All work in this course must uphold the University's commitment to academic integrity. This includes the Honor Code (for written examinations, tests, and quizzes) and guidelines for the submission of original work on all other assignments.

Participation

This is an in-person class by current University guidelines. There will be no zoom. In case of any excused absence: the best way to make up class material is to look for the notes on canvas or/and materials mentioned on github website, discuss them at the next office hours. The corresponding book readings are highly encouraged whether you've been in class or missed it.