This is a course on optimization for graduate students in mathematics, statistics, computer science, engineering and physics. Students who take this course are required to have advanced calculus, linear algebra and basic numerical methods.

**Topics:** Subgradient, cutting-plane, and ellipsoid methods. Decentralized convex optimization via primal and dual decomposition. Alternating projections. Exploiting problem structure in implementation. Convex relaxations of hard problems. Robust optimization. Selected applications in areas such as signal processing and image processing. The instructor will balance mathematical theory of optimization and numerical algorithms.

**References:**


**Grades:** Homework 30%, project 40%, final 30%