Optimization theory and methods are a foundation to many areas in modern science and engineering, e.g., machine learning.

Optimization is about achieving the “best result” given an objective and a set of constraints. Optimization problems can be found in communications, signal processing, power, transportation, and many other areas.

In this course, we will learn the theory and methods of convex optimization, including the basic concepts, optimization problems, optimization algorithms, and applications. In the course project, you may either find an optimization problem or choose an application and formulate a problem, and use an optimization tool (CVX) to solve the problem in MATLAB.

Prerequisites:
Linear Algebra, Introduction-level Algorithms, Probability

Textbook:
“Convex Optimization”, Cambridge University Press, 2004

Instructor:
Dr. Jie Gao, Electrical and Computer Engineering, Marquette University