Numerical Optimization
Math 771, Fall 2015

Instructor: Professor Lars Ruthotto

Times.
MoWe 1:00 PM – 2:15 PM, Math & Science Center, Room E406

First day of classes: August 26, 2015
Last day of classes: December 7, 2015
Recess: September 7 (Labor Day), October 12 (Fall Break)

Office hours.
I am looking forward to discuss on course topics, your projects, or other stuff with you during regular office hours (see my website) or by appointment (lruthotto@emory.edu)

Textbook.
The course and the outline below will be based on the book:
Numerical Optimization by J. Nocedal and S.J. Wright

Additional recommended reading materials are:
Introduction to Nonlinear Optimization by A. Beck
Convex Optimization by S. Boyd and L. Vandenberghe

Topics.
The course will cover state-of-the-art numerical methods for solving
- Large-scale unconstrained optimization (Ch. 1-7)
- Linear and nonlinear least-squares problems (Ch. 10)
- Linear and quadratic programs (Ch. 13 - 15)
- Smooth optimization problems with nonlinear constraints (Ch. 17 & 18)

Grades.
There will be several homework assignments and a final project. The final grade will be determined as:

60% homework, 40% final project

Final Exam.
There will be no final exam.
**Homework.**

Homework will be a combination of computing and analysis. Computing will be done using Julia or Matlab.

Solutions, results, and analysis should be submitted as a single, readable document. This document can either be sent to me electronically (as a pdf file), or you can give me a printed copy. All codes used to generate results for the assignments have to be submitted electronically as a single .zip, .tar, or .tgz archive.

**Projects.**

Each participant has to submit a one-page proposal for an individual final project until November 15. Final project reports and possible in-class presentation are due at the end of the term. As far as the topics are concerned there are no fixed rules, but the project must involve a substantial application of numerical optimization. I encourage you to choose your own project, but am also glad to help you find one.

**Class Attendance.**

Attendance is not required, but strongly encouraged. If you miss a class, then you should get a copy of the notes from one of your classmates.

**Students with Disabilities.**

If you have a disability and would like to request classroom accommodations, please see me after class or during office hours to discuss arrangements.

**Honor Code.**

All students must adhere to the provisions of the Graduate Student Conduct Code. For more information, see page 29 of the [graduate student handbook](#).