

Math 7620 - Optimization Theory

Fall 2005

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Office Hours: Tue., Th. 2:00–3:00, Mon. 8:00–10:00, and *and by appointment*. See the web for the most up-to-date office hours.

Description: Unconstrained problems: basic descent, conjugate gradient, and quasi-Newton methods. Constrained problems: gradient projection, penalty, cutting plane, and Lagrange methods. Prerequisites. Math 6640 and an ability to program in a high-level language, or departmental approval.

The course is an introduction to optimization theory and some basic numerical optimization methods and algorithms.

Text: E. K. P. CHONG AND S. H. ZAK, *An Introduction to Optimization*, Second Edition, John Wiley & Sons, Inc., New York 2001.

Reference: T. A. DAVIS AND K. SIGMON, *MATLAB Primer*, Seventh Edition, Chapman & Hall/CRC, Boca Raton, 2005.

Coverage: Part I - Mathematical review, most of Part II - Unconstrained optimization, and if time permits parts of Part IV - Nonlinear constrained optimization.

Homework: Homework (which may include problems and computer assignments) will be assigned, graded, and will be counted towards the final grade.

Grading: Homework will be assigned and will count as 60% of the final grade. There will also be a take-home mid-term exam and there may be a final project or a take-home final exam which will count as 40% of the final grade.