Numerical Methods in Continuous Optimization

Applied and Comp Math 923

Section: G100

Term: 2011 Fall

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Discussion Topics:
Continuous optimization has found many exciting applications
in data mining, machine learning, mechanical design, engineering management,
statistics and etc. and it has become one of important operations research
branches. In this course we focus on the algorithms of continuous optimization.
The topics to be covered include: 1) optimality conditions for unconstrained and
constrained optimization problems; 2) unconstrained optimization algorithms such
as gradient methods, conjugate direction methods, Newton method, quasi-Newton methods;
3) constrained optimization problems and the methods for solving them such as
penalty, barrier methods and augmented Lagrangian method; 4) various applications
in data mining, machine learning, mechanical design and statistics.

Grading: Homework (20%)
Midterm (only one, 30%)
Final (50%)

Required Texts: Textbook: J. Nocedal and S. Wright, Numerical Optimization, 2nd Edition,
Springer, 2006.

Recommended Texts:

Materials/Supplies:

Prerequisite/Corequisite: Students with credit for MATH 853 or 923 may not take APMA 923 for
further credit.

Notes: THE INSTRUCTOR RESERVES
      THE
      RIGHT TO CHANGE ANY OF THE ABOVE INFORMATION.

      Students should be aware that they have certain rights to
      confidentiality concerning the return of course papers and the
      posting
      of marks. Please pay careful attention to the options discussed in
      class at the beginning of the semester.

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