UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
DEPARTMENT OF MATHEMATICS

COURSE DESCRIPTION - FALL 2013

MATH 484
NONLINEAR PROGRAMMING

Sections D13 and D14: 11:00-11:50 MWF, 345 Altgeld Hall

Instructor: B. Lidický, 222 Illini Hall, 244-5468, lidicky@illinois.edu
Web page: `http://www.math.uiuc.edu/~lidicky/484/`
Office hours: tentatively 12:00 - 12:50 PM MW
Final Exam: 8:00-11:00AM, Friday, December 20

The aim of this course is to give an introduction to an important field of mathematics, a part of optimization problems. We emphasize techniques, but also present proofs of theorems. Some of the topics covered: Iterative and analytical solutions of constrained and unconstrained problems of optimization; gradient and conjugate gradient solution methods; Newton's method, Lagrange multipliers, duality and the Kuhn-Tucker theorem; and quadratic, convex, and geometric programming. The class follows the textbook. If time permits, the class may also cover some more recent topics semidefinite programming. Notes for topics not covered in the book will be provided.

PREREQUISITES: MATH 241; MATH 347 or MATH 348; or equivalent; MATH 415 or equivalent; or consent of instructor.

TEXT: **A. Peressini, F. Sullivan and J. Uhl: The Mathematics of Nonlinear Programming**, Undergraduate Text in Mathematics, Springer

REQUIREMENTS: There will be roughly 10 homework assignments, three exams during semester and a final exam. The weighting is homework 25%, evening exams 45% and final 30%. Grades thresholds are 90% for A, 80% for B, 70% for C and 60% for D. Below 60% is F.

4 CREDITS: One has to register (soon!) in the Math Office at Altgeld to take 4 credits, and I will sign it. Additional requirements involve more homework and extra problems on exams (may include proofs).

RESOURCES: Electronic mail is a medium for announcements and questions. Do not hesitate to contact the instructor by email.