

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN  
DEPARTMENT OF MATHEMATICS

## COURSE DESCRIPTION - FALL 2012

### MATH 484 NONLINEAR PROGRAMMING

**Sections D13 and D14: 10:00-10:50 MWF, 443 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 11:00 - 11:50 PM MW

Final Exam: 8:00-11:00 AM, Monday, December 17

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.

**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 20%, evening exams 45% and final 35%. 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.