

# Math 433/833: Nonlinear Optimization

Spring 2009 Sections 001 — University of Nebraska–Lincoln — Course Policies

INSTRUCTOR: Stephen Hartke

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COURSE WEBPAGE: [www.math.unl.edu/~shartke2/teaching/math433](http://www.math.unl.edu/~shartke2/teaching/math433)

OFFICE HOURS: Mon, Wed, Fri 10:25am–11:25am, or by appointment.

MEETING TIMES: Mon, Wed, Fri 8:30am–9:20am in Oldfather Hall Room 208

FINAL EXAM: Tues May 5, 7:30am–9:30am in Oldfather Hall Room 208

TEXT: *The Mathematics of Nonlinear Programming* by A. Peressini, F. Sullivan, and J. Uhl, Undergraduate Texts in Mathematics, Springer, 2nd printing, 1993.

## COURSE OVERVIEW:

In this course, we will study mathematical aspects of problems in nonlinear optimization. The course will follow the textbook, with supplemental material provided by the instructor.

We will begin by reviewing the optimization methods of calculus, and then proceed to the major topic of the semester: convexity. We will consider methods of optimization, including least squares optimization and iterative methods such as Newton's method. A major highlight of the latter part of the semester will be the Karush-Kuhn-Tucker condition for optimality of a convex program.

## COURSE REQUIREMENTS:

Homework will be assigned roughly weekly. The homework provides practice employing techniques learned in class and finding and writing proofs; writing up the solutions is among the most effective ways of keeping up with the material in the course. Discussion with other students is a great way to better understand a problem and to get ideas, but each student must write his or her submission individually. Late homework will not be accepted.

There will be three projects assigned during the semester. These projects will be larger than homework sets, include applications, and will require the use of a computational program. The projects may be done in small groups.

There will be two 2-hour evening tests; they are tentatively scheduled for the weeks of Feb 23 and Apr 13. The final exam will be cumulative over the entire semester. Makeup tests will only be given in the case of extreme illness or other hardship. The decision to give makeups is at the discretion of the instructor.

The different components contribute to the final grade as follows: homework assignments (lowest score dropped): 30%; projects: 5% each; two tests: 17.5% each; final exam: 30%.

All students are expected to be aware of and abide by the University's policies on student conduct and academic integrity and honesty.

**RESOURCES:**

Announcements will be made in class and posted on the course webpage. Some announcements may also be sent to the student email address listed on WAM. The course webpage will have handouts and a log of the topics covered each day. Grades for assignments and tests will be recorded on Blackboard.

**STUDENTS WITH DISABILITIES:**

Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska–Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.