Lecture 1. *22 August 2006*

- Student background survey.
- Course Organization:

  HW: Assigned but occasionally collected, as announced.
  Exams: Midterm and final.
  Projects: independent study projects-paper reviews; electronic reports.
- Overview of the Course Material:

  Textbook/reference books.

  Table of contents of the text.

  Applications of optimization: students work on a substantial project suitable for their background.
- **Course Learning Objectives:**
  - ✓ Fundamentals of optimization: problem formulation, continuous-discrete problems, implicit functions, graphical optimization.
  - ✓ Theory of optimization: optimality conditions, duality in NLP.
  - ✓ Numerical methods for optimization: linear problems, discrete problems, continuous problems.
- **Design Process**: What is optimization?

  System evolution model.

  Design process, conventional vs. optimum.
- **General notation**: vectors, function of a vector variable, vector function.
- **Read**: Chapter 1.