

Introduction

- course topics
- basic course information

Course topics

Motivation

- computers are inexpensive, fast, have lots of memory
- it is easy to collect, store, transmit large amounts of data
- numerical software makes advanced algorithms simple to use

Main topics

- numerical linear algebra, focusing on least squares and extensions
- nonlinear least squares and nonlinear equations
- introduction to floating point numbers and rounding error
- applications in signal and image processing, control, machine learning, ...

High-level languages for numerical computing

- MATLAB
- GNU Octave (www.octave.org)
- Julia (www.julialang.org)
- Python (via the libraries NumPy, SciPy, matplotlib, ...)
- R (www.r-project.org)
- ...

Course information

Course material

- textbook, lecture notes, slides, homework assignments are available at
`www.seas.ucla.edu/~vandenbe/ee133a`
- homework solutions on CCLE course website

Course requirements (see syllabus on CCLE website)

- weekly homework, most assignments include programming exercises
- closed-book midterm exam (Tuesday, November 6, 10am)
- closed-book final exam

Software

- you can use MATLAB, Octave, or Julia
- for an introduction to Julia, see the *Julia Language Companion* to the textbook
`web.stanford.edu/~boyd/vmls`