

ECON 280: Computation
Instructors: Yixiao Sun
Department of Economics, UCSD
Winter 2007

Homepage: webct.ucsd.edu

Location: [CLIS 263](#)

Time: MW 9:00am -- 10:20am

Office Hours: W 3:00pm -- 4:30pm

Course Description

The first half of the course will be dedicated to the basics of three software packages: Matlab, STATA and SAS. We will focus on Matlab and Stata and give a brief introduction to SAS. Whereas STATA and SAS are useful for carrying out standard data-analysis procedures, Matlab provides the power to carry out non-standard procedures without having to rely on other people's computer programs. The second half of the course will be dedicated to numerical methods to solve a nonlinear equation and to optimize a nonlinear objection function. If time permits, the course will also introduce simulation-based econometric methods.

Schedule

- Overview of statistical packages and computing environment, 0.5 week
- MATLAB Guide, 3 weeks
- STATA: A Primer, 2.5 weeks
- SAS: A Short Introduction, 1 week
- Computer Arithmetic, 0.5 week
- Numerical Methods, 1.5 weeks
 - Root finding algorithms
 - Optimization algorithms
 - Numerical Differentiation and Integration
- Monte Carlo Methods, 1 week
 - Random Number Generator
 - Monte Carlo Experiments: Design and Execution
 - Simulation-based econometric methods

General References: MATLAB

- Higham D. J. and Higham N.J. (2005). [Matlab Guide](#), SIAM

- Moler, C.B.(2004) [Numerical Computing with MATLAB](http://www.mathworks.com/moler/). Free on-line text available at <http://www.mathworks.com/moler/> A hard copy of this text is also available from Amazon. Moler is the Chairman and Chief Scientist of the MathWorks, which produces Matlab. He is the original author of Matlab and knows what he is talking about.
- Duane Hanselman and Bruce Littlefield (2005), Mastering MATLAB 7. This book covers all essential aspects of MATLAB. More book information is available at <http://www.eece.maine.edu/mm/mm7.html>

General References: STATA

- Hamilton: Statistics with STATA 9. <http://www.stata.com/bookstore/sws.html>
- Handout.

General References: SAS

- Lora D. Delwiche and Susan J. Slaughter: The Little SAS Book: A Primer, Third Edition

General References: Numerical Methods

- Press, et al, Numerical Recipes Chapters 9 – 10, available on line at <http://www.nrbook.com/a/>
- Judd, K. (1998) [Numerical Methods in Economics](#), MIT Press.
- M. Miranda and P.L. Fackler (2002) [Applied Computational Economics](#), MIT Press.

General References: Monte Carlo Methods

- Train, K., (2002), [Discrete Choice Methods with Simulation](#), Cambridge, MA: Cambridge University Press, Ch. 9&10

Grading Policy

Grades will be based on (i) class attendance and participation (ii) three to four homework assignments. It is necessary to do all of these assignments with a passing grade to pass the course.