Matlab for Applied Micro Empiricists: Summer II.2 2012

Course:	Matlab for Applied Micro Empiricists (half Summer module for rising second-years)
Instructor:	Tyler Ransom
Time:	Tue/Thu 10 a.m. - 12:30 p.m.; Friday 11 a.m. - 12 p.m.
Location:	Social Sciences 113
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Office Hours:	By appointment

About this course

This module will build on the skills introduced in the first module and introduce topics covered in second-year applied micro modules. These topics include multinomial choice models, numerical integration, Monte Carlo simulation and bootstrapping. The course will cover specific applications of these topics in the fields of labor, education and industrial organization.

Prerequisites

I am going to assume that all students know the material from the first Matlab module. This includes familiarity with Matlab basics (most notably Matlab's functional optimizers) as well as a working knowledge of LaTeX.

Textbooks

There is no formal textbook for the course, but students may find the following resources helpful: *Discrete Choice Methods with Simulation* (Train)[1], *Econometric Analysis of Cross Section and Panel Data* (Wooldridge), *Econometrics* (Hayashi), *Time Series Analysis* (Hamilton), *Econometric Analysis* (Greene), and *Numerical Methods in Economics* (Judd).

Registration, Enrollment and Overall Class Grades

In order to get credit for this course, you need to first enroll in Econ 360 or Econ 370 in ACES. Because each module is not listed separately in ACES, I can only determine your enrollment in this course through your completion of problem sets and/or attendance in lectures. In order to get credit for Econ 360 or Econ 370 in ACES, each student must enroll in at least two modules. Grades from those two modules will be averaged into a final grade for Econ 360/370. If you enroll in more than two modules, your two highest grades are averaged. Because of this favorable grading policy, you are encouraged to take more than two modules.

[1] This is available for free online at `http://elsa.berkeley.edu/books/choice2.html`

Grades for this Module

Grades will be determined by the average score from three problem sets, due each week by 11:59 p.m. on Thursday. Late problem sets will not be accepted. Submit problem set materials to your "dropbox" folder on Sakai. You are allowed to work on problem sets in groups (no larger than 3, please), but each student must turn in his/her own copy of the problem set. In particular, each student should avoid copying/pasting code and instead type the code out on his/her own. (This is the only way to learn how to program.) Put your name and the names of those in your group at the top of your code file(s). Each Friday morning I will post solutions at approximately 8 A.M. We will then spend the Friday lecture time going through the code together. Problem sets will be graded on the following scale (some convex combination of effort and accuracy):

4: Problem set is complete and mostly correct
3: Problem set is complete with errors; or mostly complete and mostly correct
2: Problem set is complete with many errors; or barely complete and mostly correct
1: Problem set is barely attempted or completely incorrect
0: Problem set turned in late or not at all

Problem set grades will be combined to an unweighted average to determine course grade.

Schedule of Topics (subject to change)

Class	Date	Topics	Lecture Notes
1	Tue 7/24	Intro to multinomial choice	Multinomial.pdf
		Unobserved heterogeneity	MultinomialDerivations.pdf
		Fixed effects/random effects	UnobservedHeterogeneity.pdf
2	Thu 7/26	Advanced programming tricks	TipsAndTricks.pdf
		Constrained optimization	DeltaMethod.pdf
		PS1 due by 11:59 p.m.	
3	Fri 7/27	Go over code for Problem Set 1	
4	Tue 7/31	Improving computational efficiency	ComputationalEfficiency.pdf
		Analytical gradients	LinuxLab.pdf
		mex files and compiled languages	
5	Thu 8/2	Simulation	NumericalIntegration.pdf
		Integration	Bootstrap.pdf
		Bootstrapping/Inference	
		PS2 due by 11:59 p.m.	
6	Fri 8/3	Go over code for Problem Set 2	
7	Tue 8/7	Multi-stage estimation algorithms	IterativeAlgorithms.pdf
		Intro to Bayesian Inference	IntroBayesianInference.pdf
8	Thu 8/9	Model fit	ModelFitCfl.pdf
		Counterfactual simulation	DurationCount.pdf
		Duration Analysis	
		Count Data Models	
		PS3 due by 11:59 p.m.	
9	Fri 8/10	Go over code for Problem Set 3	