

# Foundations of Matlab: Summer II.1 2012

Course: Foundations of Matlab (half Summer module for rising second-year PhD students)  
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 course will build students' fundamental skills in Matlab in preparation for 2nd-year PhD modules. Another name for it could be "What I wish I had learned before starting my second year of the PhD program." Students will become familiar with the Matlab's features and language structure; learn general programming skills, data management techniques, and how to describe data; and code a variety of extremum and maximum likelihood estimators introduced in the first year of the PhD program using Matlab's different functional optimizers.

## Prerequisites

I am going to assume that all students are comfortable with OLS, logit and probit models. These models will be discussed in lectures as if students already have a working knowledge of them.

## Textbooks

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

## 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. 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 final grade will be an average of your two highest module grades. Because of this favorable grading policy, you are invited to take more than two modules.

## 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) and/or writeup. Each Friday morning I will post solutions at 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 7/3	Intro to Matlab interface; program structure; loops; matrix operations; introduction to functions/syntax	Lec1.1.pdf
2	Thu 7/5	Functional optimizers; debugging; Data management; fminunc; fminsearch <i>PS1 due by 11:59 p.m.</i>	MLEIntroNotes.pdf Lec1.2.pdf
3	Fri 7/6	Go over code for Problem Set 1	
4	Tue 7/10	L <sup>A</sup> T <sub>E</sub> X L <sup>A</sup> T <sub>E</sub> XLab	OptimizerNotes.pdf L <sup>A</sup> T <sub>E</sub> X.pdf; L <sup>A</sup> T <sub>E</sub> XLab.pdf
5	Thu 7/12	Good programming practices Accessing cluster resources <i>PS2 due by 11:59 p.m.</i>	LecCluster.pdf ProgrammingPractices.pdf
6	Fri 7/13	Go over code for Problem Set 2	
7	Tue 7/17	Graphics in Matlab; Inference	LectureGraphics.pdf LectureStandardErrors.pdf
8	Thu 7/19	Exporting estimation results <i>PS3 due by 11:59 p.m.</i>	LectureGraphics.pdf ExportationLab.pdf
9	Fri 7/20	Go over code for Problem Set 3	