

Appendix A – Matlab

1 Overview

MATLAB® is a commercial software package for data analysis, graphics and programming. Matlab has an assortment of built-in functions convenient for time series analysis. The graphics environment is conducive to illustrating time series techniques. Matlab is widely used as a main technical computing environment by several notable research institutions. Many user-written functions and toolboxes applicable to time series analysis are available free over the web.

The course assignments make use of built-in M functions as well as functions and scripts written by the instructor. To do the course assignments you must have access to Matlab and four of its toolboxes (see below). Faculty, staff and students at the University of Arizona (UA) have access to the software at no cost through a site-license, available through a link at <https://sitelicense.arizona.edu/nocost.shtml>; links to installation instructions for Windows, Linux and Mac OS operating systems can be found at the same site. Other students taking the course must make their own arrangements to access Matlab, including the four required toolboxes. Possible options are: (1) purchase Student Matlab (<http://www.mathworks.com/academia/>), or (2) get access to the software through your university department.

The scripts and functions for the course were developed with various versions of Matlab over the last 10 years, and have most recently been tested with Version 7.11.0.584 (R2010b). The class scripts and function are updated from time to time using features that may not be available in earlier versions. Make sure your version is at least as recent as Release 2007b. The required toolboxes are:

- Statistics
- System identification
- Signal processing
- Curve fitting

Before this year, the required toolboxes were statistics, system identification, signal processing and spline. With Release 2010b the spline toolbox is no longer offered, but the spline functions needed have been merged by Matlab into the curve fitting toolbox.

2 Make a working directory for the class files

Put all your data, class scripts and user-written functions in a dedicated directory. The name of this directory is unimportant. What is important is that you start with an empty directory and keep all data, functions and scripts for the course in that directory, and that when you do the assignments you use that directory as your Matlab "current working directory".

Download `tsfiles.zip` from the GEOS 585A course website

(<http://www.ltr.arizona.edu/~dmeko/geos585a.html>) to that directory and unzip it there.

3 Using Matlab

Although no Matlab programming is required for this course, you will need to run scripts and functions and be able to manipulate graphics windows. Matlab has an excellent help system.

For a basic introduction to Matlab:

- * start Matlab, and from the top menu choose *Help--Product Help*
- *from the left panel, click the "+" beside "MATLAB" to expand the menu
- *Click "Getting Started", and explore the menu options