
MATLAB Information and Problems

MATH 2255 – Fall 2007

MATLAB is a computer program designed to (among other things) carry out operations using matrices. Many (if not all) of the things that we will talk about in Math 2255 can also be done with MATLAB. We will learn about MATLAB and do a number of assignments involving this program. There are at least two purposes for these assignments: (1) we will see that computers can be used in the study of mathematics, and (2) we will be able to use MATLAB in our study of linear algebra.

How to get started. MATLAB is installed in two labs on campus. These labs are ATAC 3001 and 3002. (You can also buy a version from the computer store, but it's expensive, around \$100+.)

In order to use the computers in ATAC 30001 and 3002, you will need a login and password. If you have already used these computers, you probably already have these things. If not, the defaults are as follow:

login: *this will be your email login*

password: *this is your birthday, in the form YYMMDD*

If this does not work, you will have to go talk to the friendly people at the computer help desk on the second floor of ATAC.

Once you have logged into the computers in the lab, you can open MATLAB by opening up the following menus:

```
Start > Programs > Matlab > R2006b > Matlab R2006b
```

Note that the MATLAB icon may also be on the desktop; if it is, simply click the icon. You are now ready to start using MATLAB.

MATLAB Projects. You are now ready to use MATLAB to tackle the projects. There are four projects, plus one introductory project (which does not need to be handed in) that will help you learn how to use the program.

MATLAB projects can be done in groups of up to three people. Make sure everyone puts their name on the project. You are allowed to work with different people for different projects.

Your projects should be written up by hand (do not rip out the pages of this notebook and write your answers on them - this will not be accepted) unless computer output is asked for. Your projects should also conform to the requirements that I have for homework assignments.

Schedule. All of the projects for the semester are included in this handout. Here is the schedule for their due dates. (Of course, you can always hand them in early.)

0. **Getting Started with MATLAB** (We will only work on this one in class. You do not need to hand this project in)
1. **Practice Row Operations and Exchange Economy and Homogeneous Systems** (Due: Sept. 19, 2007)
2. **Visualizing Linear Transformations of the Plane** (Due: Oct. 10, 2007)
3. **Elementary Analysis of the Spotted Owl Population** (Due: Nov. 7, 2007)
4. **The Adjacency Matrix of a Graph** (Due: Nov. 21, 2007)

If you need help with MATLAB, just Google the word MATLAB – you will probably be able to answer your question quite quickly this way. Otherwise, please feel free to come and talk to me. Have fun!!

A special file! Although you now have MATLAB running, I actually lied when I said you are ready. In order to use the projects in this package, you will also have to download one more file. Carry out the following steps.

1. Open a web browser and go to the following address:

http://media.pearsoncmg.com/aw/aw_lay_linearalg_3/data_sets/data_index.html

I have also added a link to this page on my webpage.

2. Under the column labeled MATLAB, download the file `laytoolbox_matlab.zip`. Save this file to the Desktop.

3. When the file is downloaded, right click on the file on the Desktop, and pick the following menu options:

Winzip > Extract to C:\Documents and Settings\student\Desktop\laytoolbox_matlab

4. In the MATLAB program that you have opened, you will see a prompt denoted by `>>`. At the prompt, type the command:

```
addpath('c:\Documents and Settings\student\Desktop\laytoolbox_matlab')
```

Now you are ready to use MATLAB. (You will need to do the above procedure every time you want to use the commands in `laytoolbox_matlab`. However, if you just want to use MATLAB, you don't need to do this.)