Using MATLAB

Each and every assignment will have a MATLAB component. Numerical analysis is about *implementing* algorithms, so coding is a key part of learning the theory. The first thing you need to decide is how and where you will use MATLAB.

MATLAB is available on the computers in the Math Lab in Chapman 305, and on many engineering or science labs on campus. For using MATLAB in an engineering/science lab, it is very likely that you will need to be a major for access to these labs. They are not open access. Another option is the computers in the Rasmussen library.

An excellent option is to purchase a student version of MATLAB. The cost is $99 and it's a steal. You can also buy an unbundled version for $49. Having your personal copy gives you access to MATLAB anywhere and any time. The MATLAB version is good forever, but is not to be used for professional work.

See http://www.mathworks.com/academia/student_version/ for details, including how to make a MathWorks account. A list of FAQ is also available on the MathWorks website; just follow the link https://www.mathworks.com/store/link/faq#student.

Coding etiquette.

Each program you write should begin with a header that has your name, the date, the name of the mfile, and a brief explanation of what your code does. As an example, this is the header from my file that implements a function to perform Newton's method.

```
function newton(fname, dname, x0, M, delta, epsilon)


%  newton.m
%  a generic implementation of Newton's method
%
%  newton(fname, dname, x0, M, delta, epsilon)
%
%  The arguments for this function are:
%       fname is the string for the function f(x) for Newton's method
%       dname is the string for the derivative f'(x)
%       x0 is an initial guess for the root
%       delta is a measure of closeness for |r - x*|
%       epsilon is a measure of closeness for |f(x*)|
%
% May 1, 2014

% Elizabeth S. Allman
```

In addition, since I will be reading your code, it is *essential* that you comment abundantly your code. Your job is to make your code easy to read, and to do that you need lots of comments. Failure to adequately comment your code will result in point reductions on homework.

Shared drive.

You will need to set up a folder on some drive (Google Drive, Dropbox, ...) where you will deposit your code on the day it is due. This folder is to be shared with me. This way, if I have questions about your code, I can access it and run it to test things. In general, you will include a printout with your homework assignments too. Part of your first assignment is to make arrangements for this shared drive.

Learning MATLAB.

You do not need to be an expert programmer in this class (though you do need to write legible code with lots of comments). This is a *math* course and not a computer science one. However, you should like to code and be willing to learn how to do it. Of most importance is that your code is correct and computes the quantities including error analysis that we are studying. Basics of MATLAB will be demonstrated in class. If you are new to MATLAB or coding, start your homework assignments early. Indeed, everyone should start their homework assignments early, but for those new to MATLAB it is doubly important.

Here is a useful link to tutorials to programming in MATLAB. A simple Google search will come up with many more.

Video tutorials: http://www.lynda.com/MATLAB-tutorials/Up-Running-MATLAB/124067-2.html