

All work is to be done using MATLAB.

You can look at m files (those with extensions .m) on the textbook CD with MATLAB or NOTEPAD (an accessory program in Windows). If Windows explorer does not show the file extensions, click on tools > folder options > view and uncheck the box  hide file extensions for known file types.

The file fem1d.m on the textbook CD contains a user defined function InputData() which has many of the MATLAB functions you might use. Notice how a user defined function is called from the main part of the script near the beginning. The user defined function itself is just a script with a function heading. For now, you may make simple scripts without user defined functions.

If you make an error in MATLAB, you can highlight multiple lines of the command history window by clicking while holding down the ctrl or shift key, and copy them to a text editor (like notepad) via the clipboard. Correct your mistakes, and copy back to the cleared command window.

1. Repeat the first homework using MATLAB. Print the command window showing your calculations on paper. Start each numbered problem on a new sheet of paper. Turn the paper in.

2. Open the input data file HW2data.txt in MATLAB. You can download it with your browser from <http://www.uic.edu/classes/me/me512/HW2data.txt>

The format of this file is as follows:

The value of n on the first line.

Then n values of a on the following n lines.

Then n values of b on a single line.

The n values of a are the values of vector  $A=[a_1 a_2 \dots a_n]$ . Likewise for vector B.

Read the contents of the input data file into scalar n and vectors A and B.

Create vector C containing the n values of  $e^{-0.05x}$  for  $x = 1$  to 16

In a single figure, on a single set of axes where  $f(x)$  is the vertical axis and  $x$  is the horizontal axis, plot  $A(x)$  and  $B(x)$  for  $x = 1$  to n, and  $C(x)$  for  $x = 1$  to 16.

The features of the plot are to be as follows:

Title:	HW2 by <insert your name>
vertical axis label:	x
horizontal axis label:	f(x)
Grid	displayed (ON)
line types:	dotted for A
	dashed for B
	solid for C

Turn in your graph.

4. Open the output file <your net ID>.txt. Write the value 16 on the first line, and then the 16 values of  $e^{-0.05x}$  for  $x = 1$  to 16 on the next 16 lines.

Close all files

Using notepad (one of the accessory programs in windows), open <your net ID>.txt file with notepad. Do not modify anything. Use the notepad default format for header and footer, print the result on paper and turn it in.