ECE 257 - LESSON 4 - INTRODUCTION TO TWO-DIMENSIONAL PLOTTING - PART II

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IN CLASS

MORE GRAPHS PLOTTED ON A LINEAR SCALE

1. Two graphs on the same plot

```
x = linspace (0, 2, 10);
y1 = 3*x - 2;
y2 = -2*x + 1;
plot (x, y1, x, y2);
```

   a. What's going on in this program

2. Two graphs with different independent variables on the same plot

```
x1 = linspace (0, 2, 10);
y1 = 3*x1 - 2;
x2 = linspace (0, 3, 12);
y2 = -2*x2 + 1;
plot (x1, y1, x2, y2);
```

   a. What constraints, if any, are there on the dimensions of the vectors x1, y1, x2, y2

3. Specifying the colors and line types of graphs

```
x1 = linspace (0, 2, 10);
y1 = 3*x1 - 2;
x2 = linspace (0, 3, 12);
y2 = -2*x2 + 1;
plot (x1, y1, 'r', x2, y2, '--g');
```

   a. What gets added to this program

4. Adding data points to a graph

```
x = linspace (0, 2, 10);
y = 3*x - 2;
x_data = [0  0.5  1  1.5  2];
y_data = [-1.8  -0.4  1.1  2.3  4.2];
plot (x, y, x_data, y_data, '*');
```

   a. How is data "added" to this plot

5. Connecting data points

```
x = linspace (0, 2, 10);
y = 3*x - 2;
x_data = [0  0.5  1  1.5  2];
y_data = [-1.8  -0.4  1.1  2.3  4.2];
plot (x, y, x_data, y_data, '--*');
```

   a. How is this plot different from the last one

6. More than one kind of graph on the same plot

```
t = linspace(0, 10, 100);
y = cos (t);
plot (t, y)
hold on
nT = 0: 10;
samples = cos (nT);
stem (nT, samples)
hold off
```

   a. What *do hold* on and *hold off* do

7. Changing the frequency of a sinusoid

```
t1 = linspace(0, 3e-3, 200);
y1 = cos (2*pi*1000*t1);
t2 = linspace(3e-3, 5e-3, 200);
y2 = cos (2*pi*2000*t2);
plot (t1, y1, t2, y2)
```

   a. How were we able to plot two sinusoids of different frequencies on the same graph

8. Concatenation

```
t1 = linspace(0, 3e-3, 200);
y1 = cos (2*pi*1000*t1);
t2 = linspace(3e-3, 5e-3, 200);
y2 = cos (2*pi*2000*t2);
t = [t1  t2];
y = [y1  y2];
plot (t, y)
```

   a. How were we able to use concatenation to plot two sinusoids of different frequencies on the same graph

GRAPHS PLOTTED ON A LOG SCALE

9. Plot of an exponential on a linear scale

```
x = linspace (0, 10, 100);
y = 2*exp (x);
plot (x, y)
```

   a. What does the graph of the exponential look like

10. Plot of an exponential on a log scale

```
x = linspace (0, 3, 100);
y = 2*exp (x);
semilogy (x, y)
```

   a. What does semilogy do
   b. Why is the graph a straight line