PHYS 160 - Homework #7

It's the economy stupid!

With all this talk of recession and failing economies, let's do some research for ourselves. An oft-quoted statistic in America is the joblessness rate, or unemployment. The US government keeps records of this economic indicator as far back as 1942. We will be using data pulled from the Bureau of Labor Statistics (www.bls.gov). Open the unemployment data and do the following:

- Import the data into Excel. Use a comma separated format so that the data divides neatly.

- Chart the unemployment data. Include a proper x-axis and title.

- Calculate the average unemployment, add this into the title of your first chart.

- Use a third column to subtract this average unemployment from the original data. This data should now have zero-mean (check it!).

- Chart this new zero-mean data. Include a proper x-axis and title.

- Explain why it may be useful to subtract the mean from this data (as a comment in your sheet).

Sax-a-ma-phone!

While I've chosen a specific date range for your assignment, you'll find many other interesting items in this data set for political ammunition. The point is not to rely on others, but to learn the tools to validate conclusions yourselves.

- In a new chart, plot the range from 1992 to 1999 (not the zero-mean data).

- Fit a straight line to the data

- Show the equation on the chart

- Show the R^2 value. Excel uses (sum of squares of y-value diff)/(sum of squares of totals) which is essentially a correlation coefficient.

- Explain what historical conclusions can be drawn from your charts about the Clinton administration and unemployment (as a comment in your sheet). Assuming the next president was exactly the same, could this have been kept up indefinitely?

Numerical Integration

Leave the answers to these questions labeled clearly on your worksheet.

- Use numerical integration to integrate the range from 1992 to 1999 (not the zero-mean data).

- Assuming that the population was approximately 220 million over this interval and the median personal income was \$28,000, give a physical interpretation of the integral you just calculated.

- **25 pts Extra Credit:** Use the data set to find another interesting datum. Be original, multiple submissions of the same idea will have their score diluted proportionally.