Statistics 726 **Assignment 4** **Due: June 3**

The data sets in this assignment are accessible from the class web page.

`http://www.stat.auckland.ac.nz/~ihaka/726`

1. Compute the power spectrum for the following time series (this is a theory question).

   (a) Differenced white noise.

   (b) Seasonally differenced white noise.

   (c) Differenced MA(1).

   (d) The general ARMA(p,q) series.

2. The file wheat.dat contains the (yearly) price of wheat in Western Europe from 1500 to 1869, normalized so that the average. The data were originally collected to investigate whether there were underlying cycles present. Do you see any evidence of this?

3. Investigate the effect of varying the amount of smoothing used to compute spectrum estimates on the resulting cross spectral estimates. Use the Vienna and Berlin temperature series and examine the fitted gain, phase, coherence, residual spectrum and impulse response.