How to Filter a Signal in Matlab

```
Wn = [a b];
Num = fir1(30,Wn, chebwin(31,50));
Amplitude4B = filter(Num,1,Amplitude4A);
```

In the above code example the function "filter" does the filtering of a signal contained in the vector "Amplitude4A" using a difference equation with numerator coefficients contained in the vector "Num". The value 1 indicates the denominator coefficient is 1 (see Matlab "Help" for a further explanation of the function "filter ")

To get the coefficient vector Num, you use the function "fir1" which is a finite impulse linear phase filter routine. In the example above the first variable 30 is the filter order (the higher the order the steeper the rolloff of the filter. The variable Wn is a 2 element matrix with "a" being the lower cutoff frequency as a fraction of half the sampling rate (Nyquist frequency) and "b" being the higher cutoff frequency as a fraction. Chebwin is the filter window type (in this case a Chebyshev window). The window length must be the filter order plus 1 (31 in this example) and the "50" is the distance in db between main lobe and side lobe amplitudes. See fir1 for further data.