

## Notes on Filter Order

The *order* of a filter describes how quickly the gain approaches zero in the stopband.

First-order: Slope = -20 dB/decade

Second-order: Slope = -40 dB/decade

Third-order: Slope = -60 dB/decade ...

Below are sample Bode plots of first-, second-, and third-order low-pass filters. The -3 dB cutoff frequency for each filter is  $\omega_c = 2\pi 400 \approx 2513$  rad/sec. You can listen to music that is processed by each filter in the demonstration at <http://www.eg.bucknell.edu/~kozick/elec32004/notes.html> that was played in class.

