



EE513
Audio Signals and Systems

**Digital Signal Processing
(Synthesis)**

Kevin D. Donohue
Electrical and Computer Engineering
University of Kentucky

Filters

Filter are designed based on specifications given by:

- spectral magnitude emphasis
- delay and phase properties through the group delay and phase spectrum
- implementation and computational structures

Matlab functions for filter design

- (IIR) besself, butter, cheby1, cheby2, ellip, prony, stmcb
- (FIR) fir1, fir2, kaiserord, firls, firpm, firpmord, fircls, fircls1, cremez
- (Implementation) filter, filtfilt, dfilt
- (Analysis) freqz, FDATool, SPtool

Filter Specifications

Example: Low-pass filter frequency response

