

**ECE 8440 Spring 2017**  
**Homework 6: Due Wed, Mar 12**

Programmatic Simulation with MATLAB or Python

1. Re-build Example 4.9 (p. 192 hardcover) from Oppenheim and Schafer (3rd ed) in either programming environment. Reproduce similar figures illustrating each step. You may attempt to re-build the exact figures through your example, or for simplicity, consider choosing a signal that is easy for you to reproduce that has similar characteristics (such as a composite of sinusoids with known frequencies).
2. Re-build Example 5.13 (p. 314 hardcover). Reproduce similar graphs for each stage.
3. Read the specifications set forth in Example 7.1 (p. 495 hardcover). See also Example 7.5 as well as Sections 7.6 and 7.8.1. Implement and graph results from Butterworth, Chebyshev I, Chebyshev II, elliptic, Kaiser, and Parks-McClellan designed filters. Afterwards, re-visit Example 6.8.5 and generate similar example graphs demonstrating quantization error introduced.

Bonus: Complete the audio problem linked on the website.