The class met at 10 AM.

The point of this week was for the students to become familiarized with the basic language of speaker design, but also build something before they keeled over in boredom. Looking ahead, you'll notice I haven't done anything to actually motivate crossover design. So, next week will be about driver distortion, diffraction and off-axis irregularities. And the 25th (first day of spring break) will be our MATLAB crossover design activity.

Equipment on hand

- Microphone, preamp, soundcard and laptop
- Edgerton Center amplifier and CD player
- IAP class speaker with and without crossover
- Soldering irons and other Edgerton tools

Chat/Review - Give up at 10:15

Audio Measurements and Terminology - Give up at 10:45

- Decibel scales for SPL and voltage
- Phase shift and physical offsets
- Hearing sensitivity (Fletcher Munson) curves
- Meaning of frequency response and distortion
- Measure and compare the available speakers
- On-axis, off-axis and power response (measure those too)

Introduction to Impedance and Filters - Give up at 11:15

- Review of complex numbers and relevance to phase
- Ohm's Law and a resistive voltage divider
- Introduce R, L, and C - how they're made
- Demonstrate each of those in series with speaker
- Derive the frequency responses; compare to reality
- Cutoff frequency and order
- Filter examples
- Passive vs. active implementation

Soldering and Circuit Construction - Class ends at 12:00

- Soldering: loop of wire
- Activity: build active filter of your choice
- Use components on hand
- Predict basic idea of frequency response
- Try out your filter in the loop on selected driver, measure its effect