

DESN 275 Digital Sound Unit 1

Assignments:

- Read ch 1 in Sound Design.
Be prepared to discuss reading questions.
- Read pp 88-96 in Mixing Engineer's Handbook
- Download Audacity and LAME to your machine
- Turn in a step by step list of instructions for setting the sound input source and output for your personal computer. If you do not have a computer of your own, do it for a machine in our CEB labs. This means how to tell your operating system which input device to record from and which output device to playback to.
- Learn how to use FTP and upload a sound file successfully.

Audacity Assignments:

- First download a version of Audacity for your operating system, and a copy of LAME at <http://audacity.sourceforge.net/download/>
- Using the Audacity User Guide and On-Line Manual, become familiar with the following processes: opening a wave or aiff file, importing an mp3 file, loading a second file into a second or third track, play stop or rewind a sound, selecting a portion of or the file with either the selection tool or the selection menu options for editing, trimming out a portion of a sound file, adding a fade in or fade out, changing the level of the sound up or down (amplify), making the volume rise or fall over sections of the sound, and exporting the sound as an MP3.
- As practice, fix the supplied narration by filling in the missing word and shortening the overly long pause. Make certain the level is constant. Remove useless silence. Save it as MP3 with the following naming convention: yourNameWk1As1.mp3, and turn it in.

"The decibel has the ability to conveniently represent very large or small numbers, using a logarithmic scaling that roughly corresponds to the human perception of sound."

- As practice, using only sound files from our class web site, create an interesting 10 second collage. Save it as MP3 with the following naming convention: yourNameWk1As2.mp3
Our FTP site is www.technology.ewu.edu. The username is **s69** and the password is **overtone**.

Reading / Lecture study questions chapter 1 Sound Design

Physically, what is sound?

Physically, what is meant by production, propagation, and perception?

What causes resonance?

What are sound wave compression and rarefactions?

What is psychoacoustics?

What is pitch? What is loudness?

Are loudness and amplitude the same thing?
(*Loudness is perceived and depends on many factors such as frequency, whereas amplitude is simply the maximum sound pressure compared to neutral atmospheric pressure.*)

Why is perceived volume affected by frequency, pressure, harmonics, surface properties of the space, and duration?

What is the fundamental frequency of a sound?

What is the timbre of a sound? (*Quality given by the amount and type of overtones.*)

What do overtones look like on a waveform?

Why do we compare waveforms to sine waves?

What is a periodic waveform? A complex periodic waveform?

Explain sound frequency using the term "cycles."
What are Hertz (Hz)?

What is the general range of human hearing (that is for those people who have not worked in construction, have not owned a big car stereo, and have not attended rock concerts or trap shoots without earplugs)?

In typical musical tones, what % of the total sound heard is represented by the fundamental tone? (50%)

What do dogs hear that you can't hear?

Note that in Table 1-2 you are shown fundamental frequency ranges, not considering overtones. What is the fundamental frequency range of a typical male voice (baritone)? *110-425 Hz* Of a typical female voice (contralto)? *200-700 Hz* Of a bass guitar or double bass? *40-200 Hz* Of a piano? *28-4100 Hz* Of an alto saxophone? *125-900 Hz*

Why might RMS be a better way to measure loudness than peak-to-peak?

Why does it make sense to measure sound intensity in **decibels**, considering it is some logarithmic math thing that sounds kind of complicated?

How many dB do you think would represent the difference between a quiet media background sound and a very loud one?

If you want sound 1 to seem to be twice as far away

from the listener as sound 2, how much quieter should sound 1 be in dB?

What is the relationship between wavelength and frequency?

Explain the parts of a sound envelope: attack, decay, sustain, release.

If you were preparing sound for a scene in a subway, would you mostly want to create the effect of reflection, scattering, or absorption?

Explain why sound sources that are either in-phase or out of phase change the amplitude of the sound.

Vocabulary from Class. Be able to explain each.

Cycles, Waveform, Wavelength, Frequency
Perception
Interference of sound waves, Beats
Formants, Harmonics, Overtones
Envelope
Reflection, Absorption, Diffraction, Resonance
Amplitude
RMS
Decibel
Dynamic Range
Headroom
Loudness
LAME
Amplify
Clipping
Signal to noise ratio
In phase, Out of phase

What are the characteristics of a good mixing / listening room?