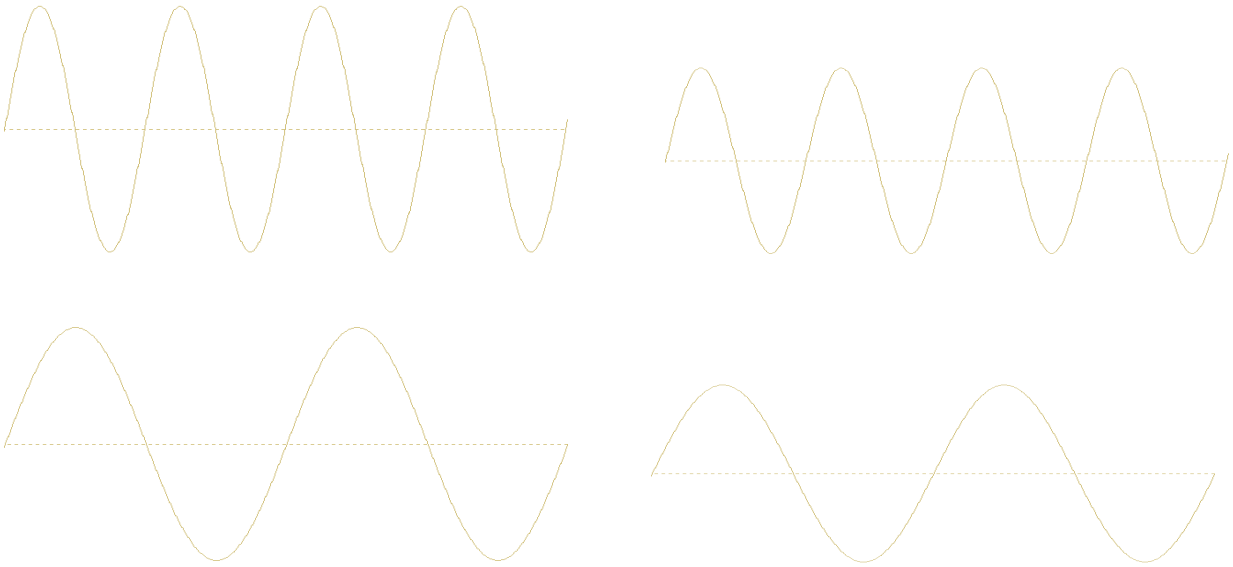
025:250 COMPOSITION: ELECTRONIC MEDIA I
Aug. 22, 2005

1. Sound Waves:
   a. Shape (sine, sawtooth, square, others). Related to timbre.
   b. Frequency. Related to pitch.
   c. Amplitude. Related to loudness.



2. Sound File Types:
   a. Audio Integrated File Format (AIFF or AIF). Mac.
   b. WAV. Windows.
   c. Sound Designer II (SDII). Legacy.
   d. IRCAM. Legacy.

3. Sampling Rate:
   a. 44.1 kHz samples at 44,100 times per second. CD quality. Samples frequencies up to 22.05 kHz
   b. 48 kHz samples at 48,000 times per second. DAT and DVD. Samples frequencies up to 24 kHz.
   c. 96 kHz samples at 96,000 times per second. Digidesign and other workstations. Samples up to 48 kHz.
   d. Nyquist theorem says that sample rate must be twice as great as the highest frequency to be sampled.
   e. Another view is that high sampling rates not only capture high frequencies (which may or may not be able to be recorded, played back or perceived) but also acquire data with greater resolution than low sampling rates.
   f. Sampling rates may be downsampled or upsampled. Downsampled denigrates the sound, while upsampling maintains the original sound quality. Further processing of upsampled sound resullts in greater fidelty than processing low-sampled sound. In short, more data is better.

4. Bit-depth, also called word size:
   a. 8-bit words have amplitude range of $2^8 = 256$ increments.
   b. 16-bit words have amplitudes range of $2^{16} = 65{,}536$ increments.
   b. 24-bit words have amplitudes of $2^{24} = 1{,}677{,}216$ increments.
   c. More data is better.

5. Mono and stereo formats:
   a. Mono is one channel of sound.
   b. Stereo is two channels of sound.
   c. Stereo as two mono files.
   d. Stereo interleaved is a single file with two channels.
   e. Multiple mono files usually used for multiple channel works.