Music and signals

Every idea in this course has a musical counterpart, and this page collects them in one place. Use it as a translation table when the analogy on a guide page doesn't click the first time you read it.

Glossary

Musical term	Signal-processing term	Where it's covered
Pitch	Frequency (f)	Pitch and loudness
Loudness	Amplitude (A)	Pitch and loudness
Beat length	Period ($T = 1/f$)	Pitch and loudness
Two voices out of sync	Phase / delay (ϕ)	Two voices in time
Chord	Superposition (signals added)	Adding signals
Timbre (why instruments sound different)	Harmonic content / spectrum	Timbre and harmonics
Rhythm's "on" fraction	Duty cycle	Rhythm and duty cycle
Equalizer display	FFT / spectrum	The FFT as an equalizer
Distorted / crunchy tone	Harmonic distortion (THD)	Distortion and THD
Wagon-wheel effect	Aliasing	Sampling fast enough
Bass/treble knob	Filter (low-pass / high-pass)	Filters are tone knobs
EQ curve	Bode plot	Reading a Bode plot
Muffled sound through a wall	Low-pass-filtered signal	Filtering a beat

Octaves and doubling

Going up one **octave** doubles the frequency. A3 (220 Hz) and A4 (440 Hz) sound like "the same note" an octave apart, because 440 is exactly double 220. Equal steps in music are equal ratios of frequency rather than equal differences in Hz, so the frequency axes in this course, such as the one on a Bode plot, are often drawn on a log scale.

Note-name to frequency table

Standard concert pitch is A4 = 440 Hz. The table includes every note that the lab snippets and Lab 05 use, along with a few others.

Note	Frequency (Hz)
A3	220.0
C4	261.6
D4	293.7
E4	329.6
F4	349.2
G4	392.0
A4	440.0

Note	Frequency (Hz)
B4	493.9
C5	523.3
E5	659.3
A5	880.0

A C-major triad (C4, E4 and G4) is the chord you'll find in Adding signals, Lab 02 and Lab 05.

Related

- Reading plots: how to read the three plots themselves
- Getting started: how the course is organized