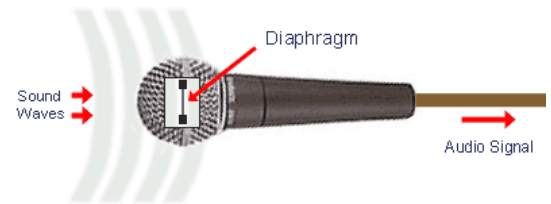


# Music Recording and Production

[make.acfpl.org](http://make.acfpl.org) ← The guide to all things! I cannot possibly teach you everything today. You have to learn on your own! Check out the videos and guides posted here.

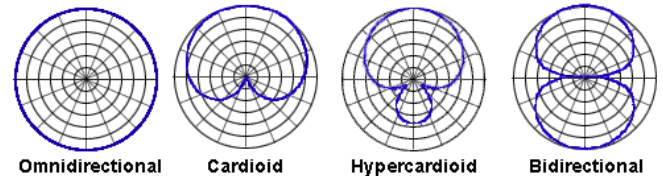
## Microphone Basics

Microphones are a type of *transducer* - a device which converts energy from one form to another. Microphones convert acoustical energy (sound waves) into electrical energy (the audio signal). Sound to electricity!

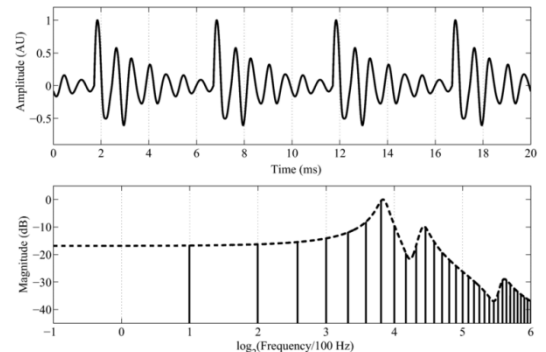


There are three basic things to consider when choosing which microphone to use for your recording:

**Pickup Pattern** – How well the microphone hears from different directions? Common pickup patterns are shown to the right:



**Frequency Response** – How well does the microphone hear and reproduce sound across the whole range of frequencies (pitches)? No microphone has a completely “flat” response, meaning it hears all pitches equally.



**Transducer Type** – How does the mic change the sound into electricity? There are three types: Dynamic, Ribbon, and Condenser. Check out [make.acfpl.org](http://make.acfpl.org) for full descriptions of each type and their use.

Never shake or drop a microphone. The diaphragm is very delicate.

## Microphone Techniques

When using a microphone, you always want to eliminate as much extraneous noise as possible. There are several accessories that might help you:

**Mic Cables:** You’ll need these cables (sometimes called XLR cables) no matter what, but the key to reducing noise is to keep your cables untangled. Don’t let them overlap.

**Pop Filters:** In the picture to the right, the pop filter is the round thing in front of the microphone. It tones down the plosives (“b” and “p” sounds) that can overload your mic and sound overly loud on a recording.



**Shockmount:** In the picture to the right, the microphone is sitting inside a shockmount. This helps isolate the microphone from any vibrations that might travel through the mic stand.

The positioning of the microphone makes all the difference when recording sound. Different instruments have different recommended mic types and placements. You may want to record with multiple microphones in multiple locations to get the fullest sound. For instance, when recording an acoustic guitar, consider placing a large diaphragm condenser mic in front of the acoustic hole and two small diaphragm condensers by the frets.

## Audio Terms

Gain vs. Volume – Ultimately, gain is the loudness of the raw signal coming IN, and volume is the loudness of the processed sound coming OUT. Consider a guitar connected to an amp. Gain is the loudness of the guitar going into the amp, and volume is the sound coming out of the amp.

MIDI vs. Audio – MIDI is data, audio is actual sound. MIDI data can control lots of things, not just sound. It can be mapped to theater lights, robots, and anything else that can take in and use data. Audio is actual sound vibrating the air! MIDI makes no sound without being hooked up to something that makes sound.

In Ableton Live, you will record your live audio (vocals, guitars, etc.) on audio tracks. You will make your beats and play other software instruments on MIDI tracks.

## Ableton Live

Live is a very powerful music program that's more like two pieces of music software smashed together. It has the left-to-right editing mode (Arrange Mode) that will look familiar if you've used any kind of sound editing software before (Audacity, FruityLoops, Logic, ProTools, etc.). It also has a totally different mode unique to Live that allows you to perform music in real time or build a track by improvising (Session Mode). Switch between the two using the buttons in the top right corner (like the image to the right).



Ableton is a very complicated bit of software, but there are numerous video and written guides online. The best teacher, as always, is doing it yourself. Just dive in and start pushing buttons, see what happens! The computer won't blow up if you click the wrong button.

The Ableton Push is a touchpad instrument that lets you control an incredible number of parameters in Ableton and perform music live. It's impossible to explain – you have to see it to understand. Go to [make.acfpl.org](http://make.acfpl.org) to check it out.

## Additional Notes

Learn music terminology, & learn to read music, no matter what type of music you make.

Vocabulary to know:

- Quantize
- Subdivide
- Bars and beats
- Key signature
- Loop
- Major, Minor, Chromatic

## Last notes

- Always save your work on the external hard drive named "Save Here". The computer is wiped every time it restarts.
- Keep an eye on our events calendar for "Teen Recording Nights". Those are nights where the audio equipment will be set up in the meeting room so you can have a quiet recording environment.



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