

In the Studio

Types of Microphones

4 main types of microphones:

Dynamic

Large diaphragm condenser

Small diaphragm condenser

Ribbon

Dynamic Microphones:	Condenser Microphones:		Ribbon Microphones:
	Small Diaphragm	Large Diaphragm	
			
Shure SM58	Sennheiser e614	Neumann TLM 103	Royer 121
Dynamic micr perfect for live use. Commonly used on vocals and guitar cabinets.	Small diaphragm condensers perfect for recording acoustic guitars and strings.	Large diaphragm condenser perfect for recording vocals.	Ribbon mics are perfect for recording guitars and miking up guitar cabinets.

Dynamic Mics

AKA moving coil microphones

[More info on Neumann site here](#)

Dynamic mics are widely used in live sound because they're inexpensive, durable and don't need a power supply to work.

[Examples of dynamic mics](#)

Ribbon Mics are type of dynamic mics

[More info here on Sweetwater](#)



Condenser Mics

Best for studio recording, less rugged than dynamic but more sensitive to detailed sound

Takes phantom power (48v) that is a normally a button on the mixer or audio interface (ADC)

[More info on Neumann site here](#)

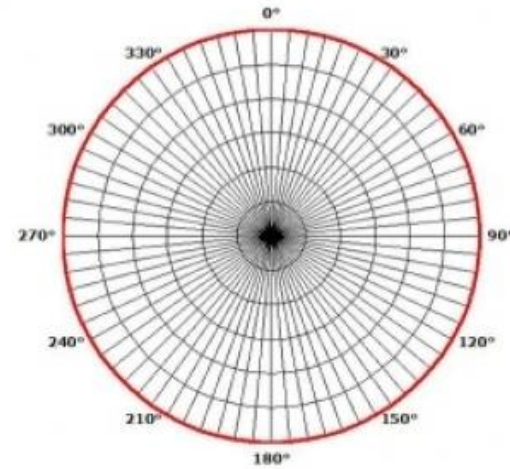
Large diaphragm (top)

Small diaphragm (bottom)

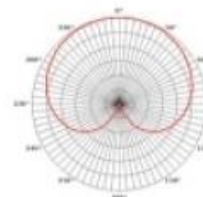
[Large vs. small more info here](#)



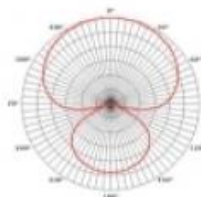
Polarity Patterns



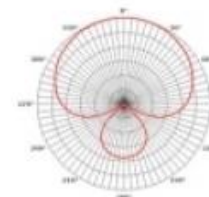
Omni-directional



Cardioid



Hypercardioid



Supercardioid

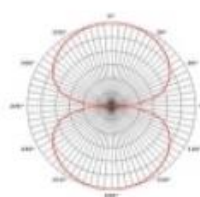
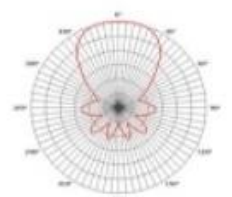


Figure-Eight



Ultra-directional

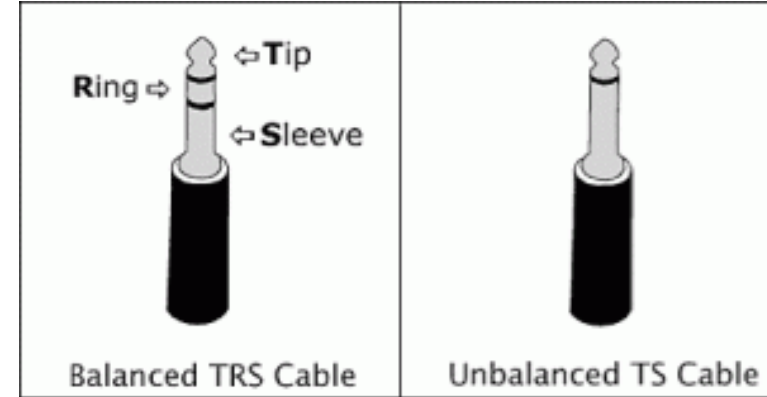
Types of Cables

Microphones take XLR

Instruments take 1/4th inch audio cables

This is often called TRS (tip ring sleeve) because there is a ... yep...a tip and ring and sleeve. This processes the signal as stereo

Some things take 1/8th inch but will need to have an adapter for the audio interface or snake



Studio Outboard Gear

Typically, there will be a "snake" where you plug in cables from mics or instruments

These are connected to a rack with different units

Often will include a preamp, EQ, and compression, maybe a reverb unit

And will then go into the ADC that goes into the computer

The computer is connected to studio monitors for listening back in the sound house



EQ & Compression

Began as outboard gear but now often can be found in a DAW or as a plugin

EQ is used to adjusting specific frequencies within a recording

Compression is used to reduce the space between high dynamic peaks and low dynamic peaks

This is done by setting a threshold which the compression attenuates by a determined amount

This is used to have more control over the dynamic range of the track

[What is compression on splice.com](#)

Reverb

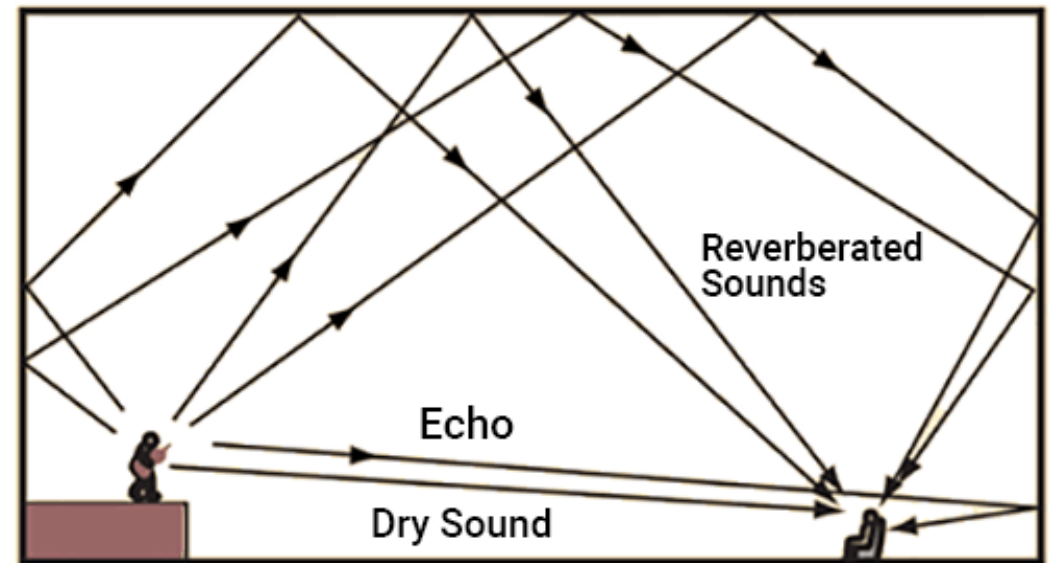
Reverberation is used to add space to a sound

Typically imitate a specific space- i.e., cathedral, concert hall, room

Can add more or less as wet/dry

Reverb can also be done by convolution

Convolution takes an impulse response of a room and "convolves" it to the audio you want to add reverb to.



ADSR Envelope

Envelopes shape a sound

ADSR is a very common one

Attack, Decay, Sustain, Release

