

Audio Recording in a Sanctuary

There are many considerations when approaching the capture of audio in a space. Microphone selection and acoustics are two of the biggest. Below are some recommendations. This is broken out into three sections: microphones, acoustics, and post-production.

Microphones

Lavalier Microphones*

- Very directional (usually) and pick up only the person speaking
- Do not pick up much “room noise”
 - Pros: good for capturing a single source and removing unwanted noise
 - Cons: unable to capture prayer responses, music, etc; when you have a “dry” track that is only a speaker speaking and zero room noise, it can feel unnatural, like in a vacuum
- XLR or TS out, so you will likely need a mixer before plugging into a camera
- There are wired options that plug directly into a video camera's 1/8” jack (google it, I can't vouch for quality)

Small Diaphragm Condenser Microphones*

- Still directional, but have a much broader area they can pick up
- These can be placed 1-10 feet from a source and pick up anything from an individual to an ensemble
- Do not speak directly into it, as you will “pop” loudly and may damage the diaphragm
- To properly mic music, you will probably want a stereo pair of mic's either in an XY, ORTF, or properly spaced configuration (see bottom for mic techniques)
- This pick up everything; room noise included

Shotgun Microphone*

- These are designed specifically for shooting video and they are extremely directional, so you must point directly at your source
- Great for shooting outdoors (especially with a windscreen), make sure the wind direction is perpendicular (or off axis), as the slats on the side are designed to reject sound
- Expensive

PZM*

- This style is great to set on a desktop or pulpit and pickup a speaker or group of speakers
- Be careful not to bump the desk/pulpit, as it WILL be picked up
- Seriously these are super sensitive, you don't want to bump whatever surface they are on

Direct-into-Camera Microphone

- There are a wide variety of options for mics that plug directly into cameras, but I can't vouch for them

* These microphones require phantom power, so a mixer will probably be required (see below); some of these mic's, like the NTG's for example, take batteries as their power source

Low-end Lav Mic: Shure BLX - \$300

<https://www.sweetwater.com/store/detail/BLXLVCVL-H10--shure-blx14-cvl-wireless-lavalier-microphone-system-h10-band>

Middle-grade Lav Mic: Sennheiser EW100 - \$600

<https://www.sweetwater.com/store/detail/EW112G4-A--sennheiser-ew-100-g4-me2-wireless-lavalier-microphone-system-a-band>

Stereo Pair Small Diaphragm Condensers - \$200

<https://www.sweetwater.com/store/detail/M5MP--rode-m5-matched-pair-compact-condenser-microphones>

Rode NTG Shotgun Mic – price varies


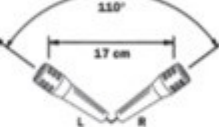
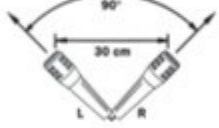
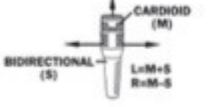

<https://www.sweetwater.com/store/search.php?s=rode+ntg>

PZM (or Boundary) Mic: \$100

<https://www.sweetwater.com/store/detail/Pro44--audio-technica-pro44-condenser-boundary-microphone>

Mixer: Behringer 1202 - \$120

<https://www.sweetwater.com/store/detail/1202--behringer-xenyx-1202-mixer>

STEREO PICKUP SYSTEMS	MICROPHONE TYPES	MICROPHONE POSITIONS	
X-Y	2 - CARDIOID	AXES OF MAXIMUM RESPONSE AT 135° SPACING: COINCIDENT	
ORTF (FRENCH BROADCASTING ORGANIZATION)	2 - CARDIOID	AXES OF MAXIMUM RESPONSE AT 110° SPACING: NEAR-COINCIDENT (7 IN.)	
NOS (DUTCH BROADCASTING FOUNDATION)	2 - CARDIOID	AXES OF MAXIMUM RESPONSE AT 90° SPACING: NEAR-COINCIDENT (12 IN.)	
MS (MID-SIDE)	1 - CARDIOID 1 - BIDIRECTIONAL	CARDIOID FORWARD-POINTED; BIDIRECTIONAL SIDE-POINTED; SPACING: COINCIDENT	
SPACED	2 - CARDIOID OR 2 - OMNIDIRECTIONAL	ANGLE AS DESIRED SPACING: 3-10 FT.	

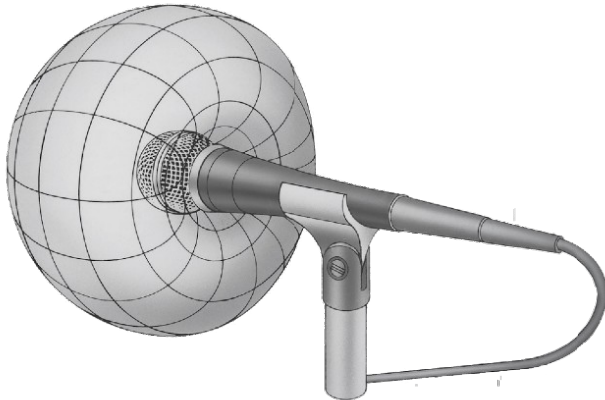
Acoustics

Some tips for room treatment:

- Clap your hands in a space to understand how the room echoes naturally. There is a LOT more echo in almost all rooms than we realize; our brains process it out. But mic's do not, it will be in the mix and it may be a problem.
- Be in as “dry” or “dead” a space as possible. As much carpet as possible, few reflective surfaces, etc.
- Consider bringing in an area rug, pinning sheets to the back walls (behind the camera), etc. You want to remove as much echo as possible.
 - This is especially important when recording music.
- Shooting outdoors is especially challenging, as wind is usually really loud in microphones, as is street noise.

Some tips for microphone placement:

- Make sure the diaphragm (the part that picks up sound) is pointed directly at your subject.
- Close-miking will provide presence and reduce room noise; the mic should be 6”-18” away.
 - The closer you are, the more danger of “popping”, use a foam pop filter and be careful not to pop your P's and T's.
- Middle-miking is good for groups of speakers and musical ensembles.
- Most mic's have a cardioid pickup pattern (see below). So get your head directly behind the mic when placing, and imagine that pattern radiating outward.



Cardioid Pickup Pattern

Post-Production

Once you have recorded your sound, you need to treat it before sending it out for consumption. Consider a free application like Audacity (google it for a free download).

- EQ: Remove anything below 100Hz and use a “noise reduction” effect tastefully.
- EQ Advanced: there are ways you can enhance vocals, do a google search for “EQ Male/Female vocals” for some tutorials.
- Compress: I like -15 to -20 dB with a ratio of around 4:1, as a starting point; remove the big peaks and bring all sound closer in volume.
- Normalize: after compressing, bring your peak to 0dB.