

Chapter 1

Introduction

This book contains miscellaneous information for Fall 2020 hybrid teaching. This information is public. Please contribute by updating the sources to share your knowledge and experience [github repository](#).

Chapter 2

Equipment

We have compiled a list of approved and recommended audio and video equipment for teaching. We encourage you to purchase and request reimbursement through your department or request it from [Jessica Packer](#).

If you are buying yourself, then please make sure that the price that you are paying matches the expected prices that is included in the description of each item. These items are under high demand and some companies such as Amazon apply the so called “dynamic pricing” that can change the price of an item quite significantly. We have included a number of direct links to online stores that you can make a purchase but there are many other sellers.

2.1 Web Cam

2.1.1 Logitech C920S HD Pro Webcam

Overview

This is an HD Camera. Full details are available on [logitech web site](#).

- Full HD 1080P video calls : Premium video quality.
- Full HD 1080P video recording : A glass lens and full HD mean your recorded videos are crisp and vibrantly colored
- HD auto-focus and light correction : Enjoy razor sharp high def in every environment
- Stereo audio with dual mics : Capture natural sound on calls and recorded videos.
- Platform compatibility skype, Google hangouts and FaceTime for Mac Privacy shutter : Puts you in control of what you show and protects the lens with a snugly fitting cover. Cable length: 5 feet (1.5 meters)

Expected price

\$69

Where to buy

- [Amazon](#)
- [B&H Photo](#)

This webcam is now largely unavailable because of demand during the COVID-19 pandemic. We are evaluating the Logitech C930e series as an option with very similar features, including HD video and integrated microphones.

2.1.2 Logitech C930E

Logitech C930E is the new version of Logitech C920S, which has been unavailable.

The technical details are similar. You can read about it on [Logitech web site](#).

Expected price

\$169

Where to buy

- [Amazon](#).
- [Dell](#)
- [B&H](#)

2.2 Desktop Tripod**2.2.1 Mama-Win****Overview**

This is a light weight mini webcam tripod for smartphone and Logitech webcam.

- Mini tripod with adjustable-height metal legs and rubber feet
- Compatible with small digital cameras (not DSLRs), GoPro devices, and smartphone adapters
- Mini ball head for 360-degree rotation and 90-degree tilt
- Provides Support And Stability For Cameras, Webcams, Imaging Devices, etc

Expected price

\$13

Where to buy

[Amazon](#)

2.3 Microphone

How to choose a Mic?. Having a good microphone is extremely important for remote teaching. If the camera quality is a bit off, your audience can often adjust. But poor audio quality is usually a deal breaker. Therefore, it is important to pick the right microphone and learn how to use it. Perhaps, the most important consideration is whether you want to have a omni-directional or a more focused unidirectional microphone. For our purposes here we will consider cardioid unidirection microphones, which pick up the voice from the front and a bit from the side, but very little from the back. This allows you to move around a bit but it does not pick up extra noise from the surrounding.

Comparison between Blue Snowball versus Blue Yeti. Here is a sample video that Nikolas Martelaro over in the HCII made showing the differences between microphones when streaming with Zoom. In the video he tests a lavalier mic, the built-in mics on his MacBook Pro and Logitech webcam, and a high-quality cardioid mic.

Microphone Comparison (this video link is not available here)

2.3.1 Blue Snowball iCE Mic

Overview

This is an Omnidirectional Microphone. If you plan to move around the space, e.g., between a chalk/marker board, screen, an omnidirectional microphone like the Blue Snowball or a lapel microphone are good options. The disadvantage of this microphone is that it will pick up noise from the surrounding space. If you don't have a quiet office (e.g., expect dogs barking, traffic noise, etc), then this microphone is not the best choice. You might want to choose a lapel microphone or something more directional.

More Details

For full details, see [Blue Designs web site](#).

- Compatible with PC and Mac.
- USB 2.0 device (USB 3.0 compatible as per USB 3.0 backward compatibility specification)
- Custom condenser capsule offers crystal clear audio

- Record vocals, create podcasts, and add narration to your home movies
- Frequency Response: 40 –18 kHz
- Easy plug and play directly to your Mac or PC—no drivers to install

Expected price

\$50

Where to buy

- [Blue Designs](#)
- [Amazon](#)

Fifine versus Blue Snowball. Fifine versus Blue Snowball (this video link is not available here)

Comparison between Blue Snowball versus Blue Yeti. Blue Snowball versus Blue Yeti (this video link is not available here)

2.3.2 Samson Lapel Mic

Overview

If you expect to have noise from the surrounding when you are teaching (your office receives traffic noise, there are multiple people sharing the same office space, etc), then you will want to have a directional microphone. In our tests, we have found that a lapel microphone is best for this purpose.

More Details**[Samson XPD2 Lavalier USB Digital Wireless System \(SWXPD2BLM8\)](#)**

- 2.4GHz USB digital wireless system
- Plug-and-play operation with Mac and Windows computers.
- Works with iPads and iPhones via Apple's Lightning to USB camera adapter and Android devices via a host OTG Adapter.
- RXD2 USB receiver with 1/8" (3.5mm) headphone/ line output that allows for headphone monitoring or connection to any mixer
- PXD1 belt pack Transmitter offers 20 hours of battery life using two AA batteries (not included)
- Includes Samson LM8 omnidirectional lavalier microphone

- 100' Operating range (line of sight)
- System includes lapel clip and USB extension cable

Expected price

\$120

Where to buy

- [Amazon](#)
- [B&H Photo](#)

2.3.3 ModMic

Overview Another option for focused audio is to use a headset mic. Headset mics put the microphone right near your mouth. This allows you to reduce the gain and prevent picking up background noise. Typically, headset mics result in high quality audio capture but have a few downsides.

- The gain must be tuned so that your voice does not “clip” and cause the audio to become very loud and noisy.
- the mic should be position far enough away so that you avoid “popping.” This is that breathy and loud sound you hear when you say ‘P’s’ and the audio pops. This can usually be avoided by placing the mic about 1 - 2 inches (25 - 50 mm) from the *corner* of your mouth.
- Some people don’t like the look of a mic across their face. Some people don;t mind and kinda like the NASA control room look.

If you like using over the ear headphones, you can purchase headphones with built in headset mics. These are often found in gaming headsets.

If you already have headphones that you like and would like to add a headset mic, the ModMic is a nice option.

The ModMic comes in different configurations including wireless Bluetooth, USB, and analog (3.5mm). The ModMic has a magnet that let’s you quickly attach the mic to the side of your over-the-ear headphones.

More information and their online store is here: [ModMic](#)

Here is a video showing a comparison of the different ModMics

(this video link is not available here)**Expected Price**

- [ModMic Wireless](#) \$120 (recommended)

- [ModMic USB](#) \$80 (recommended)
- [ModMic Analog and USB Sound card](#) \$55 (Recommended if you have a set of analog headphones you already like)
- [ModMic Analog](#) \$50 (note: you need an analog mic input on your computer or a headphone and mic splitter for a combo audio jack - the kind on Mac's and many lighter PC's with a single audio output)

Where to buy Note: Stocks may be low at different vendors. Here are some options.

- [ModMic](#) (Direct purchase from manufacturer)
- [B& H](#)
- [Amazon](#)

2.3.4 FIFINE K670

If you don't want to use a Lapel Microphone and you have a relatively noisy office, then you want to consider a unidirectional Microphone. FIFINE K670 is a unidirectional (cardioid) USB 2.0 microphone that delivers very good quality overall sound.

More Details

- This is all metal construction has a very solid feel to it.
- It has quite a long cable (perhaps 6 feet) that can be wrapped around its stand when not needed.
- It is not big and bulky.
- More details are on [FIFINE web site](#)

Expected Price

\$ 55

Where to buy

- [Amazon](#)
- [FIFINE](#)

2.3.5 Blue Yeti

Blue Yeti as multi-dimensional microphone. It is optimized for unidirectional (cardioid) use like the Fifine K670 but it also allow you to broaden directionality to includes the sides and the back, moving towards an omnidirectional microphone. It does not do a good job, however, with the omnidirectional use, and we don't recommend this microphone if you plan to move about a lot as you teach. But if you are planning on being mostly stationary, this microphone is excellent and is considered to be the benchmark. In practice and in unidirectional use the difference between this and the Fifine K670 is small. Fifine is also a bit simpler with fewer knobs to turn and thus fewer things to go wrong. Blue yeti is quite a bit larger than Fifine.

More Details

- This is quite big and bulky for most uses.
- You can find full technical details here on [Blue Designs](#).

Where to buy

You expect to pay about 130 dollars for this microphone. If you use Amazon to do your purchase, then you might find that the price is a lot higher, because of Amazon's dynamic pricing. Please try other web sites such as

- [B&H Photo](#)
- [Dell](#)

Fifine versus Blue Yeti. Fifine versus Blue Yeti (this video link is not available here)

2.3.6 Blue Yeti Nano

This is a small version of Blue Yeti microphone. It has a unidirectional (cardioid) and omnidirectional support. It produces very good sound quality that is essentially the same as Blue Yeti.

More Details

You can find full technical details here on [Blue Designs: Yeti Nano](#).

Where to buy

You expect to pay about 100 dollars for this microphone. If you use Amazon to do your purchase, then you might find that the price is a lot higher, because of Amazon's dynamic pricing. Please try other web sites such as

- [B&H Photo](#)
- [Amazon](#)

Blue Yeti versus Blue Yeti Nano. Blue Yeti versus Blue Yeti Nano (this video link is not available here)

2.4 Accessories

2.4.1 USB 2.0 Extension Cable

More Details

Full details available on [Amazon](#)

- USB 2.0
- A-Male to A-Female Adapter Cord
- One 6.5 or 9.8-foot-long (2 or 3 meters) high-speed extension cable
- Extends your USB connection to your computer with USB computer peripherals
- Constructed with corrosion-resistant, gold-plated connectors
- Features shielding that provides protection against noise from electromagnetic and radio-frequency signals
- Typically, the Male A connector plugs into your computer and the Female A connects to the cable you need extended.

Expected Price

\$ 5-10

Where to buy

- 6.5 feet [Amazon](#)
- 9.8 feet
[Amazon](#)

Chapter 3

Second Displays

TODO: PURCHASING INSTRUCTIONS [Jessica Packer](#).

3.1 Pen Display

For effective remote lectures, having some display space for drawing and writing things can be very important. When lecturing in a classroom, the lecturer typically has access to a white or a chalk board for this purpose. Tablet computers such as iPad and Surface work reasonably well in many cases but in some lectures, a bigger space may be helpful and even necessary. We recommend using a Wacom Pen Display for this purpose.

3.1.1 Wacom Pen Display

16 inch Display. The 16 inch “Wacom Pen Display” offers writeable display. It can be attached as a second display to Mac, Windows, and Linux computers. It does not have its own operating systems and is basically plug and play after you set them up. These displays use a “passive pen” that does not require charging.

More details.

You can find full technical details on this display [on Wacom’s web site](#)

Setup for Mac. TODO: ENTER INSTRUCTIONS FOR SETTING UP ON MAC

Setup for WINDOWS. TODO: ENTER INSTRUCTIONS FOR SETTING UP ON WINDOWS

3.1.2 Apple iPad (w/Apple Pencil)

Apple iPad. A new Apple iPad with Apple Pencil can be used as a drawing tablet for digital whiteboard content.

iPad w/Zoom. You can connect your iPad to Zoom using the Zoom App for iPad and calling into the meeting.

From there, you can **Share Content** on the iPad and choose the **Whiteboard**. This will give you access to the Zoom whiteboard feature.

This video show how to use the Zoom whiteboard from the iPad app.

[(this video link is not available here)How to Present a Remote Whiteboard Lecture with Zoom, iPad, and a digital pencil]

You can also share your iPad screen and use another drawing app (ex. ProCreate or Adobe Sketchbook). For this, select **share screen** when you are

[(this video link is not available here)How to use Zoom Screen Sharing from an iPad]