# MacPhail Music Studio Guide

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# Section 1: Facilitating Music Creation/Ideation

Before there is music creation there is music ideation. In this context, we're talking about the space and activities where musical ideas are formed, engaged with, explored, examined, and nurtured.

## 1. Tools for idea capture/recording archive (voice memo, etc, power of recording)

- Recording and capturing an audio sound or idea is a powerful act that allows musicians to preserve their creative ideas and revisit them later for further development. Feel free to use any device or platform available from voice memo on smartphones to recording in a DAW. Convenience is your friend.

## 2. Tools for playlist creation/curation

- Creating playlists encourages budding musicians to hold their own opinions, curate their own aesthetics, and be a source of inspiration. Platforms such as YouTube, Spotify, and Apple Music are good for this.

## 3. Digital tools for music creation, DJing, and physical instruments

- Digital music creation tools, such as Ekwe, FL Studio, and GarageBand, are tools and platforms that are especially good at encouraging musical ideas from creation to development. These tools provide a wide range of virtual instruments, effects, and recording capabilities, allowing musicians to experiment with different sounds and styles.

- DJing, which is the art of playing and manipulating prerecorded music, can be an excellent addition to the jamming experience. While classic DJing equipment utilized turntables and records, there are very convenient DJ controllers that have all the elements of a traditional DJ setup in one package. Helpful tip, don't be afraid to explore combining DJing with physical instrumentalists.

## 4. Tools for jamming in studios (lo-cost equipment: percussion, keyboards, guitars, portable mic setups)

- Jamming can be a transformative experience for musicians. It allows them to explore different musical ideas, experiment with improvisation, and develop a deeper understanding of music making. Inexpensive instruments not only provide a cost-effective option for musicians but also offer a unique and accessible way to explore different sounds and styles.

## 5. Creative Studio/Playground (allows for supporting all three aspects of music making, ideation, digital music production, distribution). The studios ideally would facilitate work in all three phases.

- *Helpful reminder:* a space for creating music and jamming needs minimal tools and can happen in parts of the room other than the recording space. A simple version can include a portable keyboard, a small hand percussion instrument or two, and dedicated time for making sounds. For example:

*Yamaha PSR*


*Portable Recorder*

*Frame Drum (Remo)*

*Guitar*

*Shakers*

*Cowbell*

# Section 2: The Recording Studio

## A. Computers

The most important part of the music production studio. The computer will run everything from apps to instruments. Some important things to consider are the operating system (Mac vs Windows), the specs of the computer, and whether you'll need it for recording, music production, or everything in between.

### 1. Mac vs Windows

- MacOS runs on Apple computers and laptops. They can be expensive but user-friendly. It's easy to choose your specs, but it comes at a cost. Apple devices are the only ones which allow you to run GarageBand and Logic Pro.

### 2. General Spec Information

- In this day and age, even the most affordable laptops and desktop computers can run music production software. The power of your computer should be determined by how complicated the music you expect to be made with it will be. If you expect beginners, go cheap. If you expect advanced producers, go expensive. Powerful CPUs and plenty of RAM are very helpful when doing music production. 8GB of RAM is considered the bare minimum for doing medium complexity music production in 2024.

### 3. Production vs Recording needs

- A computer that's good for just music production (making beats etc.) is generally less powerful than a computer that's good for recording. That said, this is also a question of what you expect to be facilitating with your studio. If you expect a vocalist to bring in instrumentals to do vocals over, something less powerful can be ok. But if you expect those projects to be complex or you want to be able to craft entire songs from scratch you'll need a powerful machine.

## 4. Storage

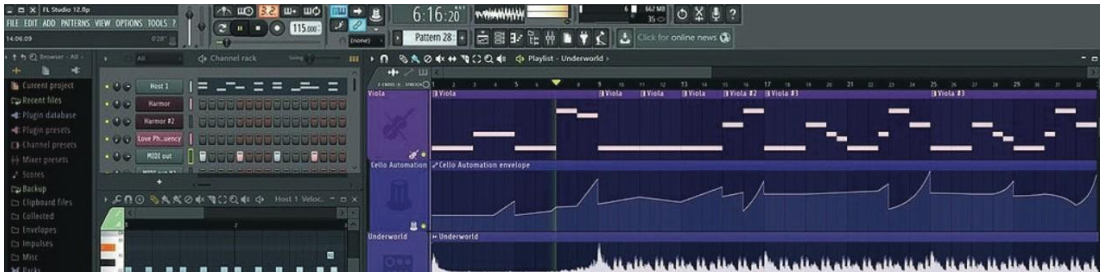
- Storage is an extremely important consideration. Individual recordings and exports can range from 1 Megabyte to 200 Megabytes each depending on the length and quality. That means that a single session can often be multiple gigabytes depending on the complexity. If you expect many people to be using your studio, plan to have different storage options. A large internal drive for the studio computer can be enough when you're in the 1 Terabyte or more range. But if you expect to have music production, software, instruments, and recordings all happening on one machine, external drives and cloud storage solutions can be very useful.

## A. Digital Audio Workstation (DAW)

The software you need to create digital music is called a Digital Audio Workstation (DAW). They differ in terms of workflow, but are fundamentally the same. You can record or create original music in all of them. If you have a DAW, you know, go with that. Otherwise, opt for Pro Tools if you know you'll be specializing in recording. Opt for FL, Ableton or Logic otherwise. FL, Ableton and Logic have very similar toolsets. FL and Logic are best for music production in popular genres like pop, EDM, hip-hop etc. Ableton is best for Electronic Music.

There are ways to get educational discounts for these if you can prove you're providing education. You'll need to reach out to their support since you aren't accredited.

LICENSES: It's very important that you find out what the license covers for how many machines can run the software at once. Generally, FL and Logic have the most flexible licenses. Ableton and Pro Tools are more restrictive. So, if you want to install on more than one machine, make sure you research based on your situation.



## 1. About the different DAWs

### Ekwe

- While Ekwe is not a typical DAW, it is a powerful music creation platform that brings a new level of ease and access to digital music creation. By combining a library of 150 sampled authentic musical instruments from around the world with contemporary electronic loops and instruments, and the ability to record external and acoustic sounds, all accessed through an intuitive compositional canvas, creators can easily explore, edit, create, collaborate, and share their compositions. Ekwe is only available for mobile devices, iOS, Android, and Chromebooks, and can be an effective way to help introduce creators to the music creation process.

### Ableton: Live

- Electronic Music, Recording, Expensive but powerful – Ableton: Live is great for teaching music technology and for performing live electronic music with. It was created by a music technologist and live performer. Ableton: Live tends to be a bit more expensive than other DAWs because it comes with a full suite of tools and sounds. The tools Ableton: Live comes with are extremely nuanced and high quality, the downside is that Ableton: Live can also be overwhelming to newcomers. Ableton also offers a certificate program for training with their software. If you decide to focus on Ableton, you can develop an extremely professional and accredited space quite easily.

### FL Studio

- General Music Production, Beat making, EDM, Popular - Good for recording vocals, Easy to learn to use – FL Studio was originally designed as a beat machine like an MPC for the PC. Therefore, it excels at letting people make beats and instrumentals very quickly and easily. FL Studio is the most affordable, professional DAW you can buy in 2024. However, it's workflow and toolset is very unusual and somewhat narrow in terms of what you can do

with it right out of the box. FL Studio is notorious for needing expansion in terms of samples and instruments. That said, it is the go-to software for beat makers and producers in 2024, and you can find many cheap or free options to expand what FL offers.

## Logic Pro 

- General Music Production, Pop, Classical and Film Music, Strong Sound Library - Great for Recording – Logic Pro can only be used on Apple devices. Logic is a powerhouse for recording and music production. It has an extensive selection of professional sounding plugins and instruments. Additionally it has a loop library giving beginners a lot to play around with. Logic is the advanced/ pro version of GarageBand. Therefore, if you're familiar with that tool you can easily get used to it. Logic Pro offers the recording workflow of Pro Tools while allowing for more intuitive use of software instruments. Logic is very useful as a central DAW in a recording/ production studio.However, it can leave something to be desired for beat makers and electronic musicians. It doesn't have some of the expected tools that people from those worlds come to expect or need to use. A close windows alternative is Cubase

## Pro Tools 

- Industry Standard for Recording, plays well with outboard gear - Can work, but not good for music production, needs special 3rd party plugin type (AAX) – Pro Tools is one of the original multitrack recording DAWs. It's still almost exclusively used in professional recording studios. Pro Tools is not the best tool for recording, however, if you plan to use extensive outboard gear like mixers and compressors, or if you plan to do large recording projects or offer professional services, Pro Tools can't really be beat. That said, it offers next to no support for producing music from scratch with software instruments and samples. You can do it, but you'll be forcing it to do something that other tools do much more easily. A close sort-of-free alternative is Reaper.

## A. Speakers & Headphones

Speakers and headphones are the most important part of the music creation process. They're the lens that you see your music through. Speakers and headphones range in price dramatically, and the highest end are subject to constant debate over whether or not people can truly hear the difference. Music production speakers are called "studio monitors". There are all different types of headphones for all different types of purposes. The most all around useful headphones are over-ear, closed-back headphones. Another term is "monitoring" or "reference" headphones.

### 1. Speakers or Headphones?

When choosing between speakers or headphones, generally the choice is based on the environment that everyone will be making music in. If you aren't able to isolate, or you're worried that the sound might bother someone, headphones are the best option. Speakers are generally only a choice when you're creating a true studio space. There are some people who will say that you can't learn to truly produce, mix, or master great music on headphones but they're being proven wrong every day. In a recording situation, it's important to have headphones if you don't have a way to isolate the people being recorded from what they're recording to.

### 2. Passive vs Active and Headphone Impedance

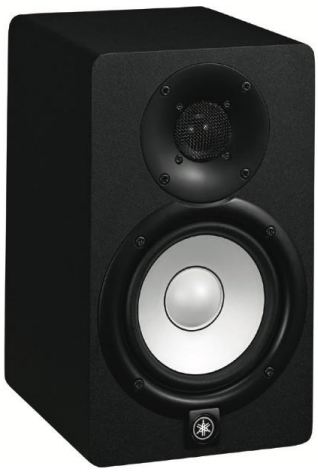
Headphones and speakers require power to run. Amplifiers are traditionally used to power them. There are amplifiers in your smartphone, your computer, and anything else that has speakers or which can use headphones. Speakers come in either passive or active power requirements. An active speaker will come with a power cable attached directly to it, a passive speaker will need an amplifier to power any source going to it. Headphones have impedance ratings, shown in ohms (Ω). 32 ohms is the standard for most headphones that can be used in a computer or some other device directly. If it's much higher than that (could be as high as 600 ohms), you will need an amplifier such as an external DAC or audio interface.

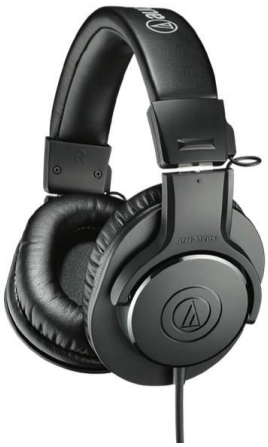
## 3. Price range vs “Quality”

The price range on speakers and headphones is extremely wide. However, it’s more important to have speakers and headphones than it is to have expensive ones. Always follow your budget when choosing speakers and headphones. I generally think that between $100 and $200 for headphones and speakers will get you something that you can craft high quality work with in 2024. There’s an upper limit to quality that is subjective and situational. Only go to that limit if you know why you need to upgrade. If you don’t know why, stay affordable. Your skill at listening and using the tools is more valuable than quality when it comes to speakers and headphones.

## 4. Room issues (mixing & mastering)

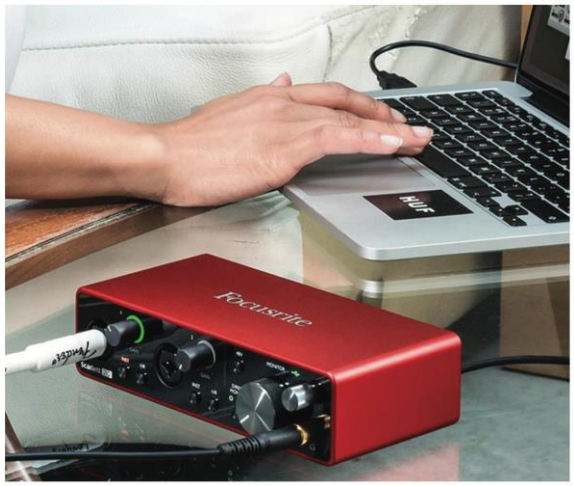
One possible issue you will run into if you choose speakers is the quality of the room you’re working in. You’ll often see images of recording studios with foam or other treatment on the walls. These are aiming to reduce the reverberations of the room to give you a more accurate picture of what your speakers are producing. They’re also to help create more controlled recordings. When it comes to production, mixing, or mastering. Sometimes treatment like that can actually make problems worse. It’s often better to get used to your room than buy treatment for no reason. In the case of recording, reducing background noise and reverberation comes at a cost. If you can afford to create a dedicated recording booth or buy an iso booth, go ahead and do that. That said, for most situations that’s a luxury and you can still make great music without those things.





## A. Audio Interfaces

An audio interface is a device used to interface analog audio equipment like microphones and studio monitors with the digital world of your computer. It's a modernized device that combines microphone preamps, digital to analog, and analog to digital converters. You can technically buy all of those things separately if you want to. You will absolutely need an audio interface if you want to use microphones and studio monitors. They range in terms of how many things you can plug in at the same time. They're usually listed by how many inputs and outputs they have like so: #x#. 2x2 = 2 inputs x 2 outputs. 1x1= 1 input x 1 output etc. Things you want to record go through the inputs.




Things you use to playback sound use the outputs. You need cables to connect things to those ports. The more basic interfaces usually have 1 or 2 inputs for microphones or guitars, an output for speakers, and an output for head- phones. Higher end interfaces have more inputs and outputs and usually sound better.

### 1. What is recording?

- Recording is the process of converting sound waves to electricity and storing that electricity in some form that can be reproduced later. In 2024, we primarily store and reproduce sound through digital files. We can use those digital files to create anything you can imagine that involves sound in some way.

- Besides the thing you're trying to record, the two major concerns when recording are the space you record in, and other noises that you may or may not want to capture. A microphone will try to pick up everything around it. Always bear those things in mind when trying to make a suitable recording.

- Whether a recording is high quality, good or bad, is majorly subjective. Sometimes, there are good reasons to make something distorted or low quality sounding. Sometimes, it's enough to simply record the moment. The

most important aspect of recording is what's being recorded, and your ability to hear that back– not the quality of the recording. Always remember that because we use digital files, your ability to do something high quality is sometimes just a matter of software developers' capabilities. Do your best, and focus on capturing the moment. Quality comes with practice.

## 2. How to choose an Audio Interface

You only need as many inputs as you expect to use. A larger interface or board will not necessarily be better. If anything, too many inputs can overcomplicate things. Always stick to what you need. The big difference between each interface comes down to price and the sound of the converters. If that doesn't mean anything to you, work within your budget. The most important thing to bear in mind is that some interfaces, particularly those that are like mixing boards, only have XLR inputs. That means that if you want to plug in something other than a microphone or maybe a guitar, you'll need more gear. Most budget interfaces come with combo inputs that let you use either a 1/4in (6.35mm) or XLR cable.

## 3. Outboard Options

As mentioned at the beginning of this section, audio interfaces are made up of different pieces of recording technology that are also available as separate units. Those options include Preamps, Power Amps, Equalizers, Compressors, etc.

### Preamps

A preamp is used to amplify a microphone or other source before it enters your recording device. Often the preamps in interfaces and mixers are simple and transparent in terms of any color they introduce to your sound. Outboard preamps give you additional options in terms of tone for your microphones and other sources as you record them. They aren't a requirement, but can make a difference if you know what to do with them.

### Mixing Desks/Controllers

Outboard mixers include audio interfaces built like mixing desks. Analog mixing desks require a huge amount of effort to setup and maintain. If you or someone you might work with want the option to use your DAW like a mixing desk by mixing or recording using your hands, there are numerous MIDI controllers available on the internet. Take care that you make sure whatever mixer you're looking at is compatible with your DAW as many require some setup.

### Power Amps/ Monitor Amps

If you decide to use outboard gear, you'll need power. Power amps like those from Furman are often in order to power gear. You can certainly run straight out of a wall or a power strip, but that power can be noisy or unstable. Power amps will help with that issue. If you use passive monitors you'll need a monitor amp of some sort.

## Microphones

A microphone is a device used to convert sound waves into electrical energy for the purpose of amplification or recording. Microphones come in many shapes and sizes and they're all purpose-built. They're mainly made up of a diaphragm, a thin piece of some material which vibrates in response to sound hitting it, some kind of housing for the diaphragm, and electricity.  When recording, the position and polar pattern of the microphone matters a lot. The polar pattern refers to the directions that the microphone can pick up sound from. Some common patterns include: Cardioid and Omni- directional. Cardioid means that the microphone picks up sound directly in front of the diaphragm. Omni-direction means it picks up sound from all around the microphone.

## 1. Condenser vs Dynamic (48v)

The 2 main types of microphones are called dynamic and condenser. Dynamic mics are sturdy and directional, but have a less detailed sound. Condenser mics are delicate, and pick up almost everything around them, but have a more detailed sound. You can hold a dynamic mic while recording or performing. You want a stand and a quiet space for a condenser mic. Dynamic mics are great for vocals, podcasts, and recording very loud things like guitar amps and drums. Condenser mics are great for everything, except for very loud things. Dynamic mics are usually cheaper than condenser mics.

### 48 Volts aka Phantom Power

Condenser mics require power to work. This is called 48v or Phantom Power on whatever you're planning to plug your microphone into.

### Small diaphragm vs large diaphragm

There are two types of condenser mics: Large and Small diaphragm. Large diaphragm mics are slightly less accurate and detailed, but add a lot of creative color. This is why they're typically used for vocals. Small diaphragm mics are actually more advanced tech and are extremely accurate and detailed.


*Condenser Microphone*


*Dynamic Microphone*

## 2. How to decide what you need (dynamic can be enough)

As usual, the choice in microphone largely comes down to budget. Dynamic microphones can be used for everything from live performances to studio work. Condenser microphones are extremely detailed and so are usually only useful in recording situations. Dynamic microphones can be dropped and carried around with no concern of breaking. Condenser microphones need to be carefully handled.

## A. Hardware/Cables

You'll need all sorts of cables when building your studio. Generally price comes down to durability, not sound quality.

## 1. Balanced vs Unbalanced Cables

There are many different plugs that you'll encounter when working with audio. The main ones are 1/8th inch(3.5mm), 1/4th inch(6.35mm), and XLR. Adapters between any of these work just fine as long as the cable has 2 rings on it. This is known as TRS or balanced. One ring on a jack is unbalanced and two rings is balanced. Almost every situation that you need a cable you can use a TRS or balanced cable. There are only specific circumstances where you'll need an unbalanced cable. So generally it's good to just buy balanced cables. You need balanced cables for your speakers and interfaces. XLR is a balanced cable.

## 2. USB Cables

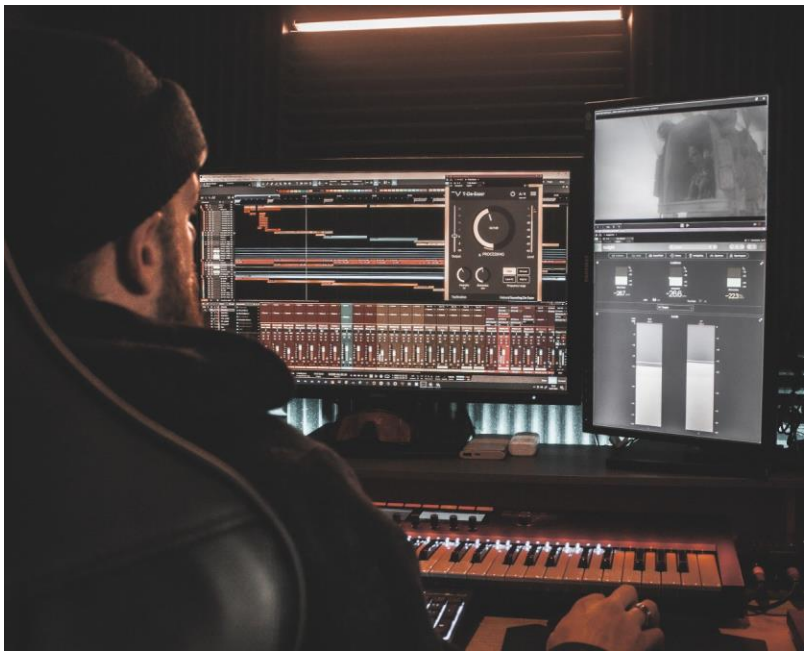
There are different types of usb cables and they're almost entirely backwards compatible. This means that if you have an older usb port, you can often use or get an adapter for a newer cable and it will work, but not the other way around. One important thing to bear in mind is not all USB cables are rated to carry data, some only carry power. So make sure to check what you have or need. USB cables come in generations (1.0, 2.0 etc.) and shapes (USB-A, USB-B etc.)

## B. Mixing & Mastering

Mixing & Mastering are integral parts of studio music making. Sometimes they happen as part of the process, and other times they happen as separate stages done by amateurs and professionals alike.

### 1. What's the difference?

The difference between mixing and mastering can be summed up as follows: Mixing is all of the decisions and tools you use to make your music sound exactly as you want it to.



Mastering is all of the decisions and tools you use to make your music sound as good as possible in as many places as possible once you distribute it from your studio to the world. Mixing is about creativity and expression. Mastering is about control and translation. There are many overlaps between the two, but understanding them this way can help you know when to make certain decisions over others.

### 2. What's the need?

When doing music production or making recording projects, we're always doing some sort of mixing. Blending tracks together with EQ or compression, or just balancing the different elements with volume faders. Mixing in a professional sense can be an art in and of itself. At some point you might find that you need to release music out into the world. For music production, that usually means that people you share it with will be listening through their own systems.

Those systems will be different enough from yours that the sound of your music can change, sometimes drastically. Mastering is a stage that can help you make decisions about your music so that those differences don't dramatically affect the listener's experience. You will find people who dedicate their entire life to mixing and mastering. Professionals can often help elevate the music of artists and producers to a level expected in the music industry, but it's never a requirement.

## 3. Mixing and mastering tools

The tools of the mixing and mastering trade include everything in a DAW. Particularly, volume, panning, equalization, compression, and distortion aka saturation. You will find all of the tools needed to mix and master in your DAW. Additionally, there are new tools arising in 2024 to help automate this process via AI. Tools besides the ones in your DAW can help add precision and speed to the process.

### Volume & Panning

Volume and panning are essential techniques in music production for controlling the amplitude and spatial placement of audio elements within a mix. Volume adjustments regulate the loudness of individual tracks to achieve balance and clarity, utilizing methods such as gain staging and automation. Panning determines the positioning of sounds within the stereo field, enabling producers to create width, depth, and movement in the mix by strategically placing elements across the spectrum. Together, these techniques allow producers to sculpt a dynamic and immersive sonic environment that enhances the listening experience.

### Equalization (EQ)

Equalization, commonly known as EQ, is a pivotal tool in music production used to manipulate the frequency balance of audio signals. It allows producers to adjust the tonal characteristics of individual tracks or the overall mix by boosting or cutting specific frequencies. EQ is employed to enhance

clarity, balance, and separation among instruments and vocals, as well as to address any problematic frequency buildups or deficiencies. By sculpting the frequency spectrum, producers can emphasize desired elements, remove unwanted resonances, and ensure each component occupies its rightful place within the mix, ultimately contributing to a more cohesive and polished sound.

## Compression

Compression is a dynamic processing technique used to control the dynamic range of audio signals by reducing the difference between the loudest and softest parts of a track. It works by attenuating the level of audio signals that exceed a certain threshold, effectively evening out the volume fluctuations. Compression can enhance the perceived loudness and punchiness of a track, as well as increase its presence and clarity in the mix. Additionally, it can help maintain a consistent volume level, particularly useful for controlling the dynamics of vocals, drums, and other dynamic elements. Properly applied compression can add depth, impact, and cohesion to a mix, while over- compression can result in artifacts and a loss of natural dynamics.

## Distortion & Saturation

Distortion and saturation are audio processing techniques commonly used in mixing and mastering to add character, warmth, and harmonics to audio signals. Distortion involves intentionally overdriving audio signals beyond their normal limits, resulting in the introduction of harmonically rich overtones and a gritty, aggressive sound. Saturation, on the other hand, simulates the analog saturation characteristics of vintage audio equipment by gently clipping the peaks of audio signals, adding subtle harmonic content and a sense of warmth and depth. These techniques can be applied to individual tracks or the entire mix to impart character, excitement, and depth, enhancing the overall sound and contributing to a more engaging and professional mix or master.

## 4. Creative considerations

Although mixing and mastering can be very technical processes, it doesn't mean that they should be strictly done in a technical way. Always move forward with the motto: "If it sounds good, it is good." It doesn't matter how it gets done.

## A. Creative Tools

DAWs are expandable by nature. If there's some tool or sound that you feel like you need, most likely there's someone out there creating one that you can simply add to your DAW. Common tools include plug-ins aka soft synths or VSTs, samples, and MIDI controllers. Plugins and samples require a DAW or some other host to operate and MIDI controllers may or may not come with sounds built in.

## 1. MIDI and DJ Controllers

- MIDI Controllers come in various shapes and sizes. They are devices used to play different instruments and sounds inside a DAW. They may or may not come with sound included. They are almost all plug and play in 2024, meaning you can find one you like and it should automatically work with your DAW of choice. The most important thing is that your MIDI controller is useful for whatever purpose you might want to use it for. A simple piano-style midi controller is often plenty. MIDI controllers are not a requirement for doing music production, in fact there are many people who never use them at all while making amazing electronic music.

- MIDI DJ Controllers are available in different form factors to control DJ software.

## 2. Plugins

- Plugins, also known as VSTs (or AU for Mac or AAX for Pro Tools), are pieces of software which you can load into your DAW or other VST host. Generally they take the form of tools, including synthesizers, compressors, volume faders, you name it. Anything that can be used for music production can generally take the form of a plugin.

- **1st vs 3rd Party**

  Your DAW will come with a suite of great plugins that will generally let you make anything you can dream of. We call those 1st party plugins. People who love music technology also develop their own plugins. We call those 3rd party plugins. If there's some tool that you think you want, chances are someone out there has developed a plugin that can give you that. For example, if your DAW doesn't have a good piano plugin to play, you can find someone who makes a specialty piano plugin that will be very high quality. 3rd party plugins can help you access trendy or more advanced and technical sounds and techniques.

- **Digital vs Analog**

  There are many debates over whether digital or analog tools are better or worse. In 2024, the gap between digital and analog tools is getting very narrow. Digital tools are becoming extremely high fidelity to the point that digital recreations of analog tools are almost indistinguishable from their real counterparts. In 2024, you should feel free to skip analog gear in favor of cheaper digital recreations unless totally necessary.

## 3. Sampling

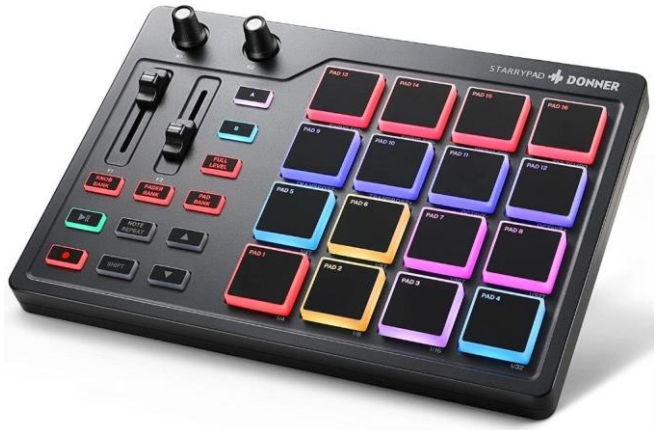
Sampling has a long history going back through hip-hop and musique concrète. Sampling is using different lengths of recorded audio to make new music. In 2024 sampling has become such an integral part of music production that there are entire companies dedicated to creating new and original samples for music producers to use.

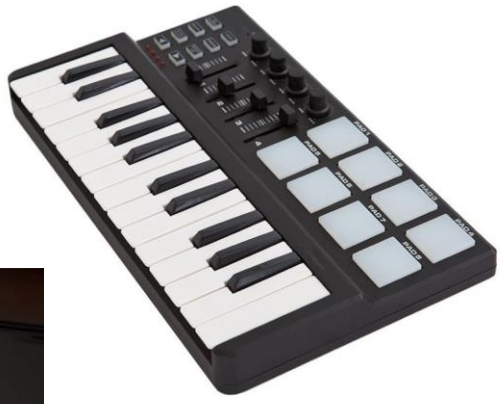
- **Most necessary**

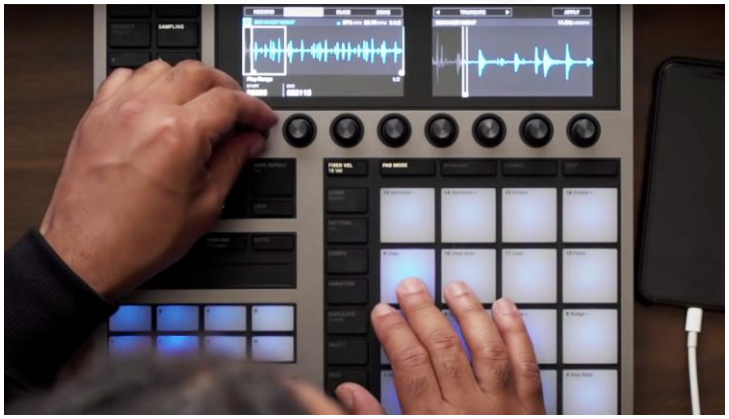
  The most commonly used samples are drum sounds. It's very important to have a selection of them on hand. Many DAWs come with them.

## Legality, and services/ where to get

The legality of sampling is largely why there's an entire industry dedicated to making samples. If you aren't making money from the music you're making, you don't really need to worry about sampling. If you start distributing someone else's work as your own– that's when you may have a problem. There are many free and paid options for samples, all that's required in 2024 is a google search.





# Section 3: Distribution & Sharing

Sharing and distributing your music might sound like very similar acts, but they entail very different considerations of what tools or methods you might use. As musicians and artists, we should try to share what we do with our world, whether it be friends, family, or the entire planet. Different methods will take us in different, and personal, directions.

## 1. Mastering

- Mastering is the process of preparing our music or art for sharing with the world. The wider the audience, the different considerations need to happen in our music. See the section on mastering in the Recording Studio Guide for more info.

## 2. Platforms & Marketing: Social Media, Streaming, CDs, etc.

- In 2024 things are changing very quickly around streaming platforms and different ways to share your music with the world in order to make money. However, the fundamental aspect will never change: sharing. Any way that you can manage to share with people is distribution. How you choose to share is completely personal, ultimately whatever serves your needs is valid. In 2024 we can put our music on social media platforms like Instagram and Soundcloud, streaming services like Apple Music and Spotify, or share CDs or digital files via CD baby or download links. It's important to remember that most of these methods are to help sell your music as a good or service. If that's not your ultimate goal, choose your method of sharing accordingly.

## 3. Labels, Communities, Sharing, Interdisciplinary

- Labels used to be the primary method for creating collectives around certain types of music. In 2024 making music independent of a label is easier than ever. However, it will never change that we need communities to spread and enjoy the music of artist's. There are many aspects to creating and sharing amazing music that require a team effort. We can do many things on our own, but great work will

always be made in collaboration with others. Using different tools in addition to DAWs, whether it be graphic design tools, cameras, or 3D printers, you can create major productions surrounding any art being made. However you decide to create a collective for creativity, remember that you can reflect that collective through the tools and channels that you share and distribute your music through.

## 4. Distribution Services & Who they're for (DistroKid etc.)

- In order to spread your music far and wide, music distribution services offer a range of services to help you achieve that goal, largely for the purposes of making money off your art. In 2024 they're most often used as a go-between from artists to streaming platforms. But they can also help generate large amounts of products like CDs or USB drives to share music with any number of people. Even if your goal isn't to make money, distribution services can connect you with different platforms and tools that a majority of listeners are using every day. Some popular options in 2024 include: DistroKid, CD Baby, and Tunecore.

# Section 4: The Standardized Studio

A computer musician needs access to a modern DAW, a playback system, the ability to record, and a selection of basic sounds. The following is the minimum set of tools you need to support a computer musician who comes to your space:

- **Computer:** Mac or Windows
- **DAW:** All purpose: FL Studio Producer Edition or Logic Pro. Recording specialized: Pro Tools
- **Plugins:** Antares Autotune, NI Komplete
- **Samples:** Cymatics Ultimates Bundle or Splice Subscription
- **Audio Interface:** Scarlett 2i2 (2x2)
- **Headphones:** ATH m20x w/ 1/4" adapter (Closed-back over ear studio)
- **Speakers:** PreSonus Eris E5 5.25-inch Powered Studio Monitor (Pair - 3-5" Active Studio Monitors) Microphones: Shure SM58/at2020 ( for vocals)
- **Hardware:** On-Stage MS7701B Euro Boom Microphone Stand, Shure PS-6 Popper Stopper Cables: 2x Pro Co TRS 2x Pro Co XLR
- **MIDI:** Akai MPK mini

# Extra Music Studio Tools & Upgrades

## 1. Computers: Mac or Windows

- The only difference between Mac and Windows is that you won't have access to Logic if you go with Windows. Otherwise, it's all the same.

## 2. DAW

- The software you need to create digital music is called a Digital Audio Workstation (DAW). They differ in terms of workflow, but are fundamentally the same. You can record or create original music in all of them. If you have a DAW you know, go with that. Otherwise, opt for Pro Tools if you know you'll be specializing in recording. Opt for FL, Ableton or Logic otherwise . FL, Ableton and Logic have very similar toolsets. FL and Logic are best for music production in popular genres like pop, EDM, hip-hop etc. Ableton is best for Electronic Music.

- There are ways to get educational discounts for these if you can prove you're providing education. You'll need to reach out to their support since you aren't accredited.

- LICENSES: It's very important that you find out what the license covers for how many machines can run the software at once. Generally, FL and Logic have the most flexible licenses. Ableton and Pro Tools are more restrictive.

## 3. DAW Overview

1. **Ekwe:** Beginners, Collab, Accessible but deep - ***Good for total beginners, limited for professionals.***

2. **Ableton:** Electronic Music, Recording, Expensive but powerful - ***Great for teaching music technology***

3. **FL:** General Music Production, Beat making, EDM, Popular - ***Good for recording vocals, Easy to learn to use***

4. **Logic:** General Music Production, Pop, Classical and Film Music, Strong Sound Library - ***Great for Recording***

5. **Pro Tools:** Industry Standard for Recording, plays well with outboard gear - ***Can work, but not good for music production, needs special 3rd party plugin type (AAX)***

## Speakers & Headphones

Speakers for music production are called Studio Monitors. Which you opt for will depend on your situation. Monitors are good for isolated rooms or sharing audio with the world. Headphones are good for rooms with other things going on in them, and for using while recording. You can opt for headphones in addition to speakers if the speakers you can get aren't super hifi or loud to give people options for working on their audio/music. Always remember: you can't record and listen at the same time. If you can't, or don't plan to create a separate booth to record in you'll need headphones available.

### Headphones:

There are all different types of headphones for all different types of purposes. The most all around useful headphones are over-ear, closed-back headphones. Another term is "monitoring" or "reference" headphones. The impedance on a headphone refers to how much electricity is needed to make them work. The options I'm suggesting will work out of a standard headphone jack. But certain high-end options will need an audio interface or headphone amp. You can work within a budget from reputable brands like Sony, AKG, and Audio-Technica:

- *General Purpose:* ATH-m20x, AKG K-240, HD 280
- *Pro. Mixing/Mastering:* ATH-m50x, DT770 Pro, AKG K-612

### Monitors:

If you search around for Studio Monitors specifically, you probably won't come across any- thing particularly bad. Popular brands include Yamaha, KRK, and JBL. They are listed based on the size of the main woofer in inches and whether they are near-field or far-field. You most likely want near-field unless you're creating a high-end studio. Active monitors come with power built in, passive monitors don't. Active monitors are more user friendly and affordable,

passive monitors are generally much larger and more high-end. Studio monitors are sometimes sold individually and sometimes sold as a pair. If you want to use passive monitors you need a studio monitor amplifier as well.
Subwoofers should generally match whatever brand of monitor you buy. So if you buy KRK Rokits, look for a KRK Subwoofer.

- *A few studio favorites:* Yamaha HS5, KRK Rokit, JBL 300 series

## 4. Interfaces:

An audio interface is a device used to interface analog audio equipment like microphones and studio monitors with the digital world of your computer. It's a modernized device that combines microphone preamps, digital to analog, and analog to digital converters. You can technically buy all of those things separately if you want to. You will absolutely need an audio interface if you want to use microphones and studio monitors. They range in terms of how many things you can plug in at the same time. They're usually listed by how many inputs and outputs they have like so: #x#. 2x2 = 2 inputs x 2 outputs. 1x1= 1 input x 1 output etc. Things you want to record go through the inputs. Things you use to playback sound use the outputs. You need cables to connect things to those ports. The more basic interfaces usually have 1 or 2 inputs for microphones or guitars, an output for speakers, and an output for head- phones. Higher end interfaces have more inputs and outputs and usually sound better.

- *A few studio favorites:* Focusrite Scarlett series, MOTU M series, UAD Apollo

## 5. Microphones

A microphone converts sound waves to electrical energy. For most situations, something simple is all you need. The 2 main types of microphones are called dynamic and condenser. Dynamic mics are sturdy and directional, but have a less detailed sound. Condenser mics are delicate, and pick up almost everything

around them, but have a more detailed sound. You can hold a dynamic mic while recording or performing. You want a stand and a quiet space for a condenser mic. Dynamic mics are great for vocals, podcasts, and recording very loud things like guitar amps and drums. Condenser mics are great for everything, except for very loud things. Dynamic mics are usually cheaper than condenser mics.

**48 Volts aka Phantom Power:** Condenser mics require power to work. This is called 48v or Phantom Power on whatever you're planning to plug your microphone into.

- *Dynamic Mics:* SM57, SM58, SM7B
- *Condenser Mics:* Rode NT1, AT4040, TLM-102
- *Microphone Stands:* Microphone stands hold microphones in place. The boom style is by far the most popular for the studio because it lets you position a microphone anywhere you need. You can usually go cheap on these, but if they get used a lot the hardware can go missing— worth having backups. You can also get versions that sit on a desk.
- *Pop Filters:* Pop filters are essential for recording vocals. They keep the air that comes out of a person's mouth while talking or singing from smacking into the microphone and ruining the recording. A cheap one that clamps to the stand is more than enough. Cheap ones are made of nylon, expensive ones are made of metal. Expensive pop filters change the recording less than the cheap ones

## 6. Hardware/Cables

- The main types of cables in the studio are called TR, TRS, and XLR. XLR is a special type of connector most often used with microphones. TR and TRS come in 2 sizes: 1/4"(6.35mm) and 1/8"(3.5mm). 1/8" is sometimes called aux cord. TR and TRS refer to the rings on the jack. TR can only carry a mono signal and is susceptible to noise so they're normally only used with instruments like guitars and key- boards. TRS can carry a stereo signal and is grounded, so much less noisy. TRS should always be used in critical listening situations like from your audio interface to your speakers. TR cables are unbalanced, TRS and XLR are balanced.

- You can get them in various lengths based on your needs. Cheaper cables tend to wear out faster, but you should try and opt for more expensive cables if you're making permanent connections.

    - *Cheaper options*: Hosa, Stuff on Amazon.

    - *High-end options:* Pro Co, Mogami

## 7. MIDI Controllers

- MIDI Controllers are tools like keyboards and drum pads that can connect to your computer and let you play things in your DAW by hand. Some people find these useful, others don't. MIDI Controllers come in a wide variety of styles and options. Keyboard/ piano style controllers tend to be plug and play. Other controllers like mixers, knobs and faders, and sometimes even drum pads won't always work right out of the box. A lot of modern DAWs have automatic settings for some more popular controllers— but usually only the more expensive controllers. Make sure you check to see if that's how yours is supposed to work, otherwise plan to map out those knobs and faders in your DAW's settings yourself. MIDI Controllers usually refers to MIDI keyboards or MIDI drum pads. Control Surface usually refers to knobs and faders, like a mixing console.

- Akai, Novation and M-Audio make some of the more popular MIDI Controllers right now

  *Here are some examples of controllers built for specific DAWs*:

  - 1. FL: Novation FLkey, Akai Fire
  - 2. Ableton: Ableton Push, Novation Launch Control 3. Logic: Behringer X-Touch
  - 4. Pro Tools: Avid S3

## 8. Plugins

- Plugins are the instruments and effects that you use in a DAW for creative and mixing + mastering purposes. Your DAW will come with some plugins that will normally get the job done. That said, there are some better options when it comes to sound selection and professional mixing + mastering. Here is a short list of some places to check out when looking around. Plugins are also called VSTs which is the term for the technology. Windows use VST, Mac uses AU and a special kind of VST, and Pro Tools uses AAX. If you're using Pro Tools, make sure whatever plugin you're getting offers AAX.

  - *Mixing + Mastering:* Companies usually ofter a full set of professional tools for either a subscription or by purchasing in bundles. You can normally also purchase single plugins. Companies like iZotope and Sonible make tools that even newbies can use to get pro sounding mixes by using AI aka "Content Aware" technology that automatically detects a starting point for your mixes.

    - *Subscription Based:* Plugin Alliance, Slate Digital
    - *One-off purchase/ bundles:* Waves, Fab Filter, MeldaProduction
      - *AI aka Content-Aware:* iZotope, Sonible

- *Instruments:* Virtual instruments come in many shapes and sizes. Some come with hundreds of sounds built in, others come with only a few sounds, but give you unlimited control over creating your own.
    - *Lots of Sounds:* Output Arcade, Sonic Cat Purity, ReFX Nexus, Spectrasonics Omnisphere
    - *Sounds Design Tools aka Workhorse Synths:* Xfer Serum, Arturia Pigments, Vital
    - *Instrument Bundles:* Arturia V Collection, Roland Cloud, Native Instruments Komplete

## 9. Samples

- Samples are short sounds like melodies and drums that a producer can use in their music. They are just audio files, usually of one sound at a time. Samples most often come in packs like drum sample packs. Some sample packs have hundreds of sounds. Drums are by far the most common use for samples, but other standard sounds are 808s, vocal chops, and melodic loops. It's not as popular to get sounds in packs today as it used to be because people make and share with each other. So, some companies offer subscriptions for high quality samples. Sometimes, samples have copyright issues when you release music. Companies like this offer "royalty free" samples so you won't need to worry.
    - *Subscriptions:* Splice, Tracklib
    - *Packs:* Cymatics, Loopmasters

## 10. Music Studio in the Computer Lab

- If you want to put music software in the general lab of the TTC, you have 2 options. Either get multiple licenses to legally install on multiple computers, or use web-based DAWs. You can sometimes get EDU discounts on multiple licenses for institutions. Sometimes DAW licenses let you install on 2 or 3 computers, so check the terms for yours. You should also have some headphones so people can work in a professional way— you won't need an interface unless you want to allow for recording in the lab. Recording isn't really an option if it's noisy, but a hyper-cardioid dynamic mic could be used to allow people to record vocals even in a noisier space.
    - The main Web-Based DAWs out now are BandLab and SoundTrap. Both are valid, but BandLab is 100% free. SoundTrap offers a subscription for additional sounds.