Beginners Guide To Music Production

It's MusicTech's guide to everything you need to know about music production: from recording to mixing to mastering. Welcome to our Beginners Guide

Are you new to music production? Or are you returning to music making and need a refresher in certain aspects of recording, mixing and mastering? If either of these applies, then you've come to the right place. We're going to explain all of the main principles of music technology and music production in as straightforward a way as possible.

Read the following Guid you should be in a good place to start (or restart) your music making, whether as a hobby, semi-professionally or even as a career.

So Where Do We Start?
The basics of a composition or song are its constituent parts i.e. the instruments (guitar, drums, bass,

keyboards and so on) and the vocals. These are the 'tracks' and the core of the music production process is simply how you get the sounds together for each track, arrange them, mix them together and make them sound 'professional'.

The device that enables all of this – and which has become the heart of the 21st century studio – is the humble computer: a Mac, PC or increasingly, portable devices like tablets and iPads.

Sequencers/DAW's

More specifically, of course, it's the software that the computer runs that turns it in to a music production powerhouse. This software enables the recording, mixing and mastering of music tracks and is called a 'sequencer' or the rather grander-sounding 'Digital Audio Workstation' (**DAW**).

Sequencers vary in price from free to hundreds of pounds and, combined with today's powerful computers, can often allow unlimited tracks of music to be arranged together. You want an orchestra of thousands? You're mad, but you've got it...
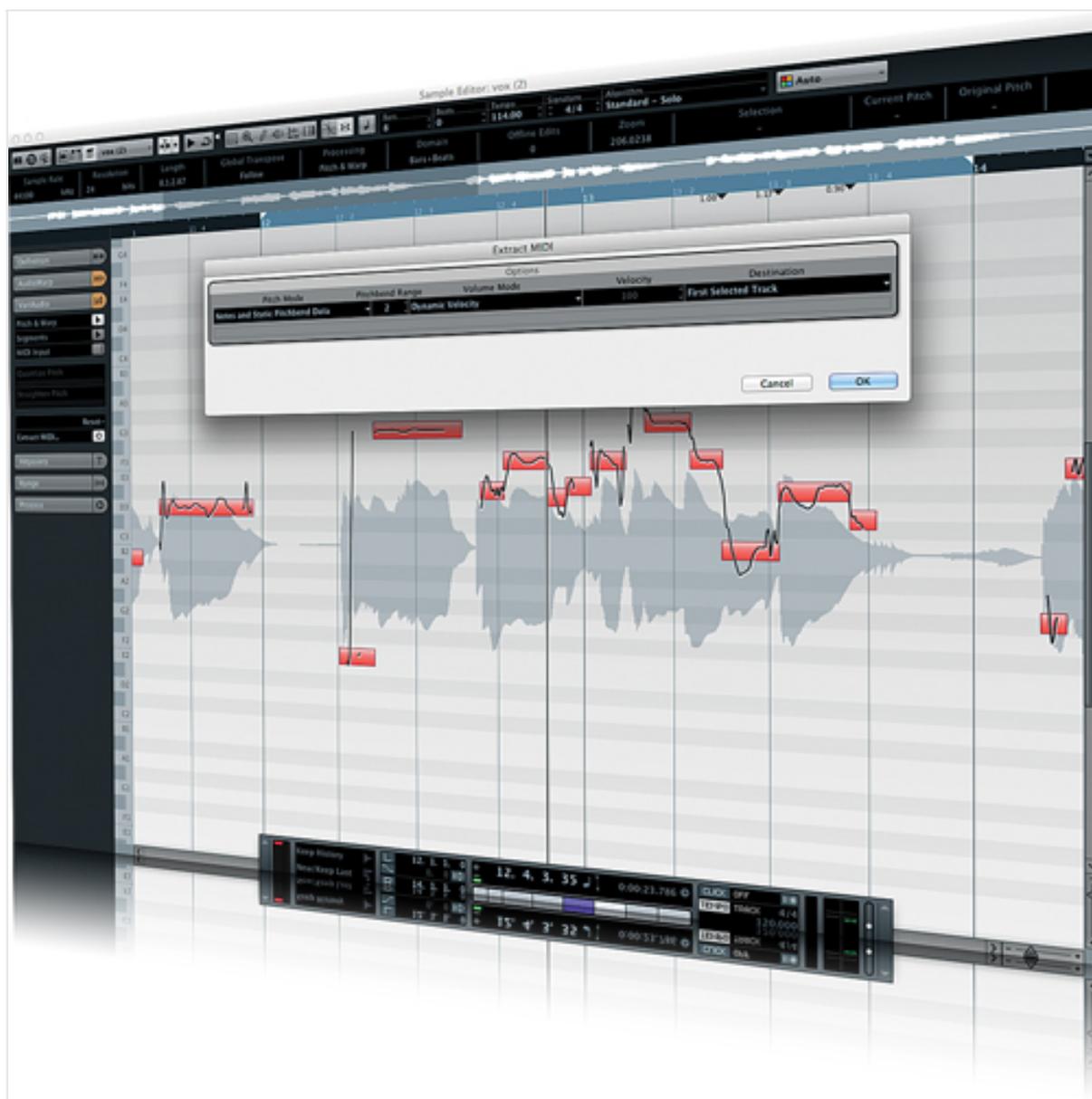
Waveform editing in the Cubase environment – one of the DAW industry leaders

Sounds

So where do the sounds come from and how do you get them together within your computer? It's easiest to think of these as 'internal' and 'external' within the context of your desktop environment. You can record 'external sounds' – guitars, vocals, acoustic instruments such as pianos and violins, or electronic keyboards like synthesizers – and arrange them together in your sequencer.

These are 'digital audio' tracks – no need to worry too much about the name just now, but it does become important later. They contain the actual audio information, the recorded waveform of the external instrument.
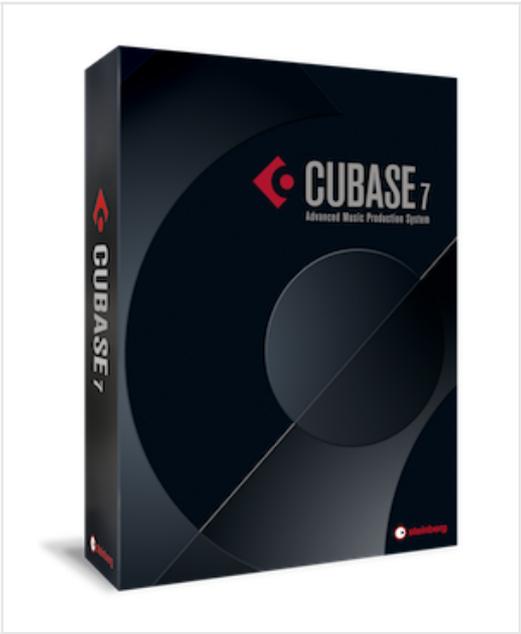
Three of the Big Six: Cubase , Reason and Pro Tools

Now to the internal sounds, sounds generated within your DAW. Most sequencers have what are called 'virtual instruments' that recreate, for example, drum kits, keyboards or guitars for you to play or strum with your mouse or a connected keyboard.

These are known as MIDI tracks. Again you don't need to worry too much about semantics here but the data within a MIDI track is more about the note information (which notes are played, how hard and for how long). These notes can be moved around and edited after being recorded simply by using the sequencer's editor, clicking on them and dragging them around on screen.

The second type of internal sound is called a sample. Again these are audio, so digital recordings of real sound but they are especially-created riffs, melodies, drum patterns (loops), or vocal parts produced by third party manufacturers. You can buy collections of these (on CD, DVD or download – or get them free with MusicTech each month!) and simply drop them on different tracks to build up a tune.
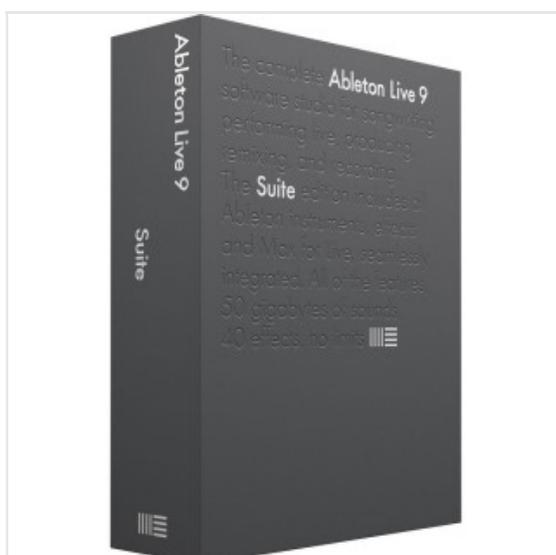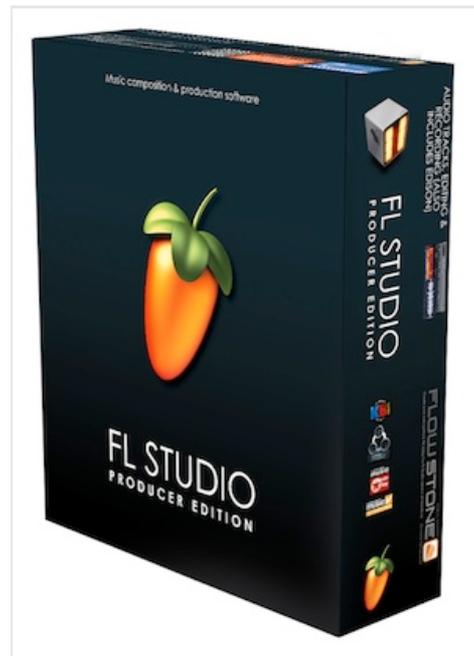
The rest of the Big Six: Ableton Live , Logic and FL Studio. The premiere DAWs/Sequencers

So, three different ways of getting sounds together for song creation. You can now create songs using external sounds, virtual instruments and samples or, more likely, a combination of all three. In theory, that's all you need to know to go and produce music but there's more if you want it, so let's delve a little deeper and look at each method a little more closely…

1. Recording External Sounds

When we talk about 'recording' these days what we generally mean is the process of getting external sounds – vocals and instruments – into a computer. This could simply be a matter of pointing an iPad mic at a guitarist and pressing record (not the best quality) or recording individual members of a band simultaneously using an 'audio interface'. This interface is a key part of music technology. It is required because most computers simply don't have the right connections for you to go plugging a band or instruments into, so your interface might allow your drummer, guitarist, bass player and vocalist to plug directly into your computer and play and record into the tracks of your sequencer.
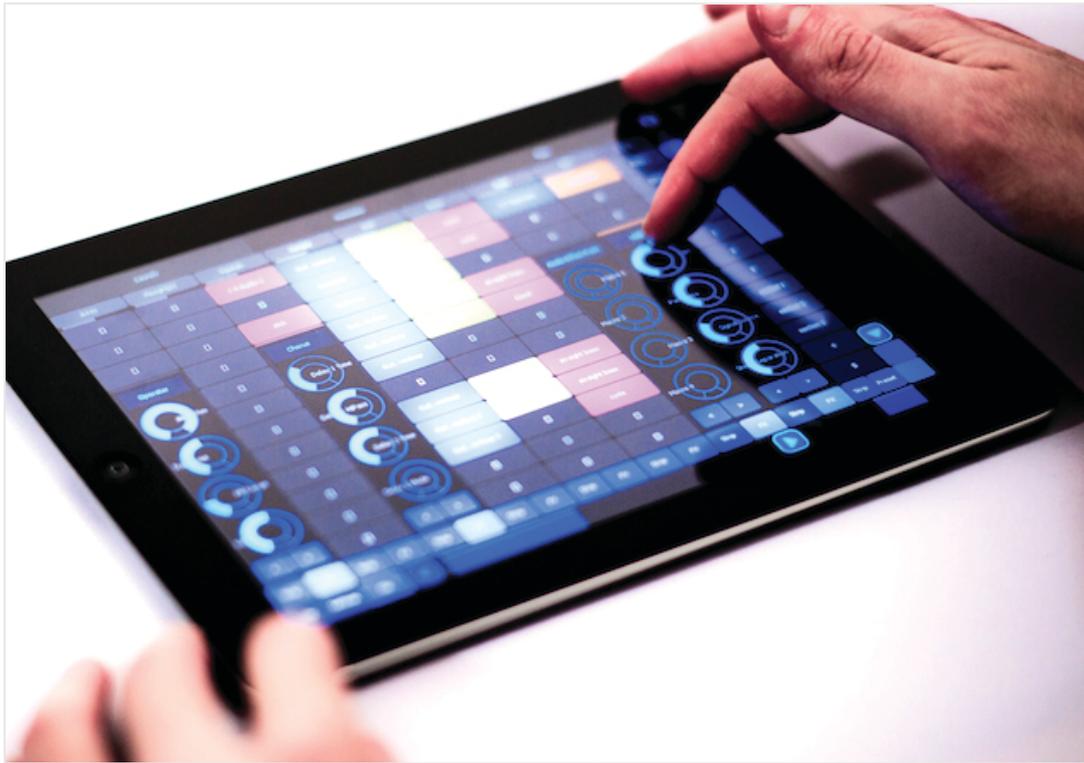
*There are many great apps available for your mobile devices and tablets, **check out our list***

Generally when you record a band in your studio you record one track at a time (your guitarist playing over the already-recorded drum part, for example). But with computer power as it is and with interfaces capable of recording many instruments simultaneously, there's no reason why you can't record a band's entire live performance, each track recorded individually but at the same time, with one computer and a suitable interface.

The quality of the interface is also a key point because you want to get the best quality recordings of each instrument into your computer. Start with a high quality recording and you will have to do less later on in the mixing process. This is where things get a little techy as the process of recording external signals into a computer means that you are converting analogue signals into digital ones, so a good analogue to digital converter is required. Without wishing to get too geeky look out for 24-bit 96kHz interfaces.

i) Interface types So you can plug your instruments and microphones into interfaces to record them but how do these interfaces plug into your computer? Many utilise the USB socket which handles audio data no problem. More channels (inputs and outputs) may require that you use the computer's Firewire connection and there are adaptors to convert Firewire to the newer Thunderbolt connections.

ii) Improving the input signal As we've said signal quality is key – put garbage in, you'll get garbage out. So another key component in your signal chain is the microphone pre-amp, specifically for, no surprise here, microphones. If you are recording a band or lots of vocalists your may need mic preamps to make sure

that the signal you are recording is good enough. Many audio interfaces have mic preamps built-in so you can increase the level of it is weak.

RULE! A key component in your studio is the interface. Invest in a good one to record and deliver the best quality external sounds to your sequencer.

Getting yourself a decent interface is essential – Focusrite's Scarlett range are interface industry leaders

iii) Improving the signal… again!

In the olden days mixing desks were used to record and featured extra elements to manipulate the input signal like EQ (to adjust the bass and treble); the aforementioned mic preamp; compression (to reduce the highs and lows of a signal so that it can be raised in perceived volume – more on this later); and noise gates (so stop 'hiss').

With most of the mixing now done inside the computer (see later) actual proper mixing desks are becoming rarer but 'channel strips' are becoming increasingly popular to emulate individual channels of a mixer so you can apply compression, noise gating, EQ and preamps to individual instruments as you record their signals into your computer. Many channels strips are based on classic (read 'expensive')

mixers which were used in the analogue heyday of recording (the 60s and 70s) and deliver a classic analogue character to your signal.

Be warned: you can (and arguably should) spend a lot of money on decent quality interfaces and channel strips.

RULE! Getting the best signal in to your computer is vital. Make sure you put aside a larger portion of your budget aside for a decent interface and channels strip or combination of the two.

So that's the outside world of music taken care of. With a decent interface you can mic up and plug in vocalists and instruments into your computer and record them. You now have track after track of these external audio tracks to play with and mix. Time to look inside your computer and see what's on offer there to go with them…

2. Using Internal Sounds: Virtual Instruments

In theory you don't have to record anything from the outside world at all if you don't want to. Grab a laptop with a sequencer full of virtual instruments and you can do it all yourself, or at least give it a go. Virtual instruments offer versions of pretty much every instrument you can imagine… and a lot you can't. They can recreate a guitar, piano, synth or drum kit within your sequencer environment all played and recorded using your computer's mouse, or a MIDI keyboard/controller.

This virtual instrument technology has opened up different worlds of music making to whole new audiences so even if you can't play a note on a 'proper' instrument, virtual instruments allow you to strum, pick, hit, tap and play, all within the safety of your virtual studio.

Forest Kingdom II – A typical example of a MIDI-based Virtual Instrument

Virtual instruments have been with us for some years now and are fairly straightforward to program so there are gazillions out there. Pretty much every classic hardware synth and instrument has been emulated over the years as have many instruments that have never existed. In fact it's fair to say that there is a mind-boggling choice. Thankfully most sequencers now come with a good selection of virtual instruments which cover a lot of bases, so if you choose one of the big six DAWs (Cubase, Logic, Pro Tools, Reason, FLStudio and Ableton Live) you will have more than enough virtual power at your fingertips.

However if you want to sound different from everyone else then you might want to consider the many others that are available. We'll have a buyers guide here soon including some of the top 10s in different categories so be sure to check back.

3. Using Internal Sounds: Samples

There are many, many companies that produce ready made samples of instruments, drum loops, and vocal lines for you to buy and drop into your music creations. There used to be a bit of snobbery about using samples but not so these days – in fact many a tune (and indeed genre) has been based on the inclusion of great samples.

You can buy collections of samples based on literally anything you can imagine because everything that can be recorded probably has been recorded and is available. Dance music has beats, basses and leads for every genre. All other genres are catered for and there are collections based on obscure instruments and cultures from every corner of the world. Instrument samples like these can also be loaded into software samplers where they can then be mapped across a keyboard and then 'played' adding another level of flexibility to sample use.

Sample collections are great as a quick fix and especially useful if you are working on many different pieces of music against tight deadlines. If you want to try some samples out for free MusicTech magazine has collections available on its DVD every month. You can also find an exclusive collection here so have a play and see how you get on. You might find that they act as the bare bones of your tracks and then you flesh them out later with VIs and external recordings. Either way they are a fast and quick ingredient and it's well worth having at look at some of the collections available.

4. Mixing

OK, by now we're assuming you've got your head around how you get sounds into your sequencer, generate them from within it or use sample collections. The next stage is to arrange them and mix them together. Arranging is simply the process of how your song develops over time, usually with an intro followed by verses and choruses. Discussing the different aspects of arrangements could be a website in itself as each arrangement depends on the genre you are working within, but mixing is a subject that we can cover, albeit on a simple level, right here and right now.

Try to think of your song mix in two dimensions: how it spreads across the stereo spectrum (left to right across your speakers or headphones) and how it spreads across the frequency range (think bottom, bass, to top, treble). Generally speaking having a good spread in both dimensions is the key. You don't want a too bass-heavy mix in the same way that you do not you want everything coming out of just your left speaker.

In terms of stereo placement the panning controls in your sequencer track channels allow you to place each track anywhere between far left and far right. The rule is the bassier the track the more central it is so bass-lines of tracks tend to sit in the middle of the stereo spectrum acting as the backbone of a track. The vocal can sit close to it as its higher frequency allows the vocal to still be apart from the bass and this is a rule you can follow (although you don't have to!): instruments can sit with each other in the same stereo position as long as their frequencies don't clash too much. Feel free to experiment though, move things around, and if it sounds good it is good! And don't be afraid to EQ certain parts of a track to make them sit better and not clash against other parts.

Effects For Mixing

As well as virtual instruments most sequencers come packed with stacks of virtual effects, many of which you can use in the mixing process. We've discussed how EQ can lift or lower the impact of certain elements in a mix. Effects such as reverb can make parts of your mix sound like they have been recorded in different rooms by adding reflective echoes. Echoes themselves can make parts repeats while chorus and harmony effects add additional melodic content.

It can be easy to get overwhelemed when using too many effects!

More creative effects include amp simulators that can be, for example, applied to acoustic guitar tracks to make them sound electric. In fact guitar effects like this are very common so expect to see tremolos, distortion, overdrives, flangers and the like too. Like the virtual instruments mentioned above, virtual effects replicate pretty much every hardware unit ever made (and in many cases not made). Imagine anything you can do to a sound and that effect will be available as one of the virtual ones that ship with your DAW or from third party developers.

Again check out MusicTech magazine and this website for regular, more in depth guides to mixing within different sequencers.

5. Monitoring

RULE! Buy the best monitors you can afford. They are arguably the most important items in your studio…That's quite a claim but it's also a true one.

There's no use spending thousands on audio interfaces, channels strips, sequencers, effects and external instruments if you are going to listen to the results of your music production through a pair of tin cans tied to a piece of string. General rule: the cheaper the speakers, the more coloured they are i.e. they are enhanced in certain frequency ranges to make them better than they really are. Sub £100 computer speakers, for example, often have their bass response extended so they sound like beefier and bigger monitors. Trouble is, when you mix on monitors like this your bass might sound good on them but as soon as you play the resultant mix on another set of less bass-enhanced speakers the results will almost definitely sound weedy because you will have lowered the bass while mixing on your bass-heavy monitors.

Check out our lists of the best monitors you can buy on a budget and for an intermediate price here

Think of it this way: those cheaper monitors are lying to you! What you really need are monitors that don't lie, monitors that are totally, almost brutally honest – monitors that tell it like it is. If your mix is ****, they will tell you, simple!

Good monitors reveal exactly what your mix sounds like: from left to right, from top to bottom. They

translate everything you do within your sequencer exactly, so if you decide to enhance the bass of your kicking kick, you will be able hear the result of that enhancement and pinpoint the effects it has on the rest of your mix.

So, honesty is key and you've probably guessed by now, honestly costs. Yes, the more you pay, the more honest your monitors will be i.e. they will have a flat frequency response with no enhancements in the bass, mids or trebles, just flat across the board. Having said that you can get good monitors at all price ranges. Those £5k monitors might be the best out there, but those £1k ones might deliver 95% of the benefits.

Ultimately it's up to you: is that extra 5% worth another £4k? Here at MusicTech we firmly believe that less, more expensive items in your studio will give you a better sound so, yes, that extra outlay is worth it. One other thing to remember, no matter what you spend on your monitors you will need good acoustics.

6. Mastering – Welcome To The Dark Side

According to many experienced mastering engineers, you aren't going to master mastering unless you've been at it for at least 30 years. It's certainly not something, they would say, that beginners should even consider. But we disagree… to a certain extent anyway. Mastering is certainly something that you should be aware of at the mixing stage of your music production, and if you want to give it a go, it's best to learn about this 'dark art' by getting hands on and giving it a go. But what exactly is it?

The mastering process begins as the mixing process ends. It's what takes that mix and delivers the final 'master' of the track to the end user, possibly via CD, or MP3, so takes into account fades, track lengths and codes, and noise reduction. But aside from these more technical issues it is a process that uses EQ, compression and stereo spreading to make your mix sound more commercial and professional.

It begins once you are happy with your mix – that everything sits in the right place, that everything is EQd to perfection and that the mix sounds good on several systems. First it's time to add a touch of magic dust, a feel to the mix that makes it sound brighter, and right up there with the tracks you are trying to emulate in terms of quality.

So this is one of the rules of mastering: have some of your favourite commercial mixes by your favoured artists loaded into your DAW ready to A-B with your track. You might as well aim for the top and this is an instant way to hear how your mastering process is developing by doing direct comparisons with 'the real thing'.So what is the process? You have your stereo mix and the first stage of mastering is generally to EQ and compress – and this is where it gets a little controversial. When you do any processing at this stage remember you are thinking about the whole mix, not just parts of it.

So if you think that you need to add bass to your bass line at this stage, it's too late, this should have been done at the mix stage. EQ-ing at this stage is more subtle: to add a shimmer at the high end or a sparkle to mids but to do these actions across the whole track, not parts of it.

Compression is all about gently compressing certain elements within a mix so the whole thing can be lifted with limiting. You are not trying to crush the mix and then simply make it louder, otherwise you'll be entering 'the loudness wars' which have seen mixes get ever louder – but not necessarily better – over recent years. A great master is not just loud, it is full and dynamic, it has highs and lows, impact and punch... So compress carefully and drive the input of your limiter for extra impact.

The final aspects of mastering include possible noise reduction – used less these days as people mix inside their computers so any noise is reduced at the mix stage or simply doesn't exist as everything is done within the digital environment – and stereo spreading. Again, it's best to use this latter process subtly and sparingly as much of the stereo spread should have been dealt with at the mix stage and most of your instruments will have been placed carefully here so if you start pushing them further here it may just be too much. Which is the overall rule of mastering...

Rule! Be subtle when mastering, don't increase everything just for the sake of it and never master to make it simply louder.

And that's it for now. This was a (hopefully) gentle and general introduction to the world of music production. We'll be returning regularly to enhance sections and add to it. If you have any questions or areas you'd like us to include, **get in touch here**

Comments

5 comments

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