**A Basic Mixing Method**

Mixing is one of the most difficult things to get right in music production and one of the most important. Every producer and engineer will approach a mix differently and like many elements of music production, there are no right or wrong ways to go. It’s your music and only you know how it should really sound. A unique mixing and production style can go a long way towards creating your own personal style or sound.

Start by cleaning up your tracks. Solo each track and remove any unwanted noise or through the use of mutes or gates. You want to eliminate any extraneous sounds like coughs, squeaky chairs and lip smacking before you begin to mix. Also check for unwanted noise on continuously playing tracks like amp hiss on an electric guitar part. Eliminate it with a noise reduction unit.

Most people start with a solid foundation to build on. That usually means mixing the rhythm section first. Start by adjusting the master volume to a level that you might expect a home listener to be at when listening to your music. Most people won’t be listening to your music at deafening levels, try to be sensible.

Start with the bass drum, then add the snare and then the rest of the percussion. Avoid using any EQ at this point — when the rest of the instruments are added the rhythm section is going to sound different anyway.

Once the rhythm section sounds good, add in the bass line. We’re still just working with volume for now to get the parts sitting where you think they should be in the mix.

Once the fundamental groove is established the vocals or lead instrument should be added. We work with these two elements first simply because these are the most important parts of the mix. The groove will get people listening and the vocal is what they’ll hum along to and remember later.

Once the vocal is sitting about right in the mix you need to add in the other instruments. If you’re using guitar add it in next, but keep the volume level slightly below the vocal. Next add in any pads, keyboards or sythesizers and balance these out to suit how you want the track to sound. Remember that for the moment you are looking for a gentle balance between all of the instruments in the mix. You’re still just working with the volume levels of the track more than how it all fits together. Once you think you have it go to an adjoining
room or stand in the doorway to try to gain some perspective on the mix so far. Adjust any levels which sound a little off and leave for the evening. Do not overtax your ears and beware of ear fatigue, especially at the beginning stages of mixing. Each time you accomplish a part of the mix it is best to walk away — have dinner, listen to some CDs and come back the next day with a fresh set of ears and a new perspective. Listen carefully to your favorite CDs. It is often a good idea to bring them into the studio and A/B them with your own mix to see how your levels compare with what you consider to be a good mix. Also, this will help you become familiar with the speakers and the room that you’re mixing in. Our studio isn’t acoustically perfect by any means. If you have a well-mixed CD and try to replicate that in the studio by A/B-ing your mix and the CD, you should come close to your ultimate mix.

**Processing Your Mix**

Now that are the volume levels are pretty well set we can begin to process the mix. A likely first place to start is compression using the Waveshell plugins. Compressing every instrument is a matter of taste and opinion. The New York style of mixing generally uses a lot of compression and we’ll compress each instrument. If that’s not for you, skip ahead to EQ-ing.

I like to use the Waves C-1 and C-4 compressor because it’s suitable for most parts of a mix. It’s best to start by compressing the bass drum and snare. Start with an attack time of around 5ms, a release time of 10ms, a threshold of about —15db and a ratio between 5:1 and 8:1. Keep adjusting the ratio until you get a good, solid, tight sounding kick and snare combination that really pierces the mix. Compress the kick to where it's punchy, but not ringy. Over compression on the kick will make it vibrate and ring and eat up the bottom end.

After compressing the volume will have decreased slightly, so use the compressor’s make up gain to get the volume back to where it was originally. There’s no need to compress the rest of the percussion parts since we’ll be compressing the entire again mix in the final stages of our mix.

The bass line is next. If the source is a sample or synth it will already be heavily compressed at the source. If you’re using "real" bass sounds they’ll need compressing. Start with an attack of 5ms, a release of 10ms, threshold of —6db and a ratio of 8:1. Again use makeup gain to increase the volume level of the track to its original level.
Vocals will definitely require compression, mainly to reduce any peaks in volume and to keep them at a consistent level. The best settings are generally the fastest attack time, a threshold of —5db and a ratio you can set, a release time of around 0.5ms and a ratio between 4:1 and 12:1.

To make a rock vocal really stick out, compress the track really hot to get it as loud as possible. Next run it through a little tube distortion if possible. Finally, copy the track to another channel and boost the high end EQ. This will bring the vocal close to the brink of disaster for that old fashioned Rolling Stones type of vocal sound.

Check the compression basics lecture for more information. Again use make up gain to bring the level back to where it should be and once again give a listen from the doorway or the next room. Are the elements distinct? Do certain parts of the mix fade away if you’re not sitting right in front of the speakers? You’ve been working a long time now, so have another break or call it a day and come back with fresh ears.

**EQ-ing Your Mix**

With EQ, it’s better to cut, rather than boost a signal as this tends to make an instrument sound unnatural. Boosting the EQ of a track will also tend to increase the amount of noise - especially if you are using an analog mixer.

You need to practice the art of subtractive mixing on midrange frequencies. Start by dialing in a fairly radical cut - say 15db. Set the bandwidth to a narrow Q setting. Now sweep the frequency spectrum slowly from hard left to hard right while listening to how the cut affects the signal at different frequencies. Next do the same thing with a 15db boost and compare. What you're listening for is how a cut on one side of the frequency spectrum results in a sound quite similar to a boost on the other side. For example, a low-mid cut can result in an apparent brightening of the signal - much like what you would expect from boosting the mid-highs.

It's best to EQ an instrument in the context of the entire mix. Soloing an instrument to EQ it can be helpful, but it only matters what an instrument sounds like in the mix.

The bass is usually the instrument most in need of EQ because it’s frequency range goes below 80Hz and can frequently clash with the kick drum. Try to keep the bass between 80 and 100Hz. IF the bass is still overpowering the kick
drum you can try a few tricks to make either one or the other seem louder and more up-front.

In rock music you need to record the bass guitar so that it is bright enough to cut through the mix. There's often a frequency hole between the bass and the low end (or lack of low end) of the guitars. This is one case where you may need to boost the mid-range of the bass. Find just the right amount of boost so that the bass will peak through under the guitars. A trick is to re-mic the bass through an amp or to add a little distortion to get more grind out of the top end.

One idea is to use reverb, which will make an instrument move back in the mix. Unfortunately this will make the instruments seem washed out and possibly destroy the rhythmic integrity of the track. One way around this is to use a reverb pre-delay with a very short release time. The pre-delay fools the brain into thinking that the instrument is further away than it really is and it doesn’t wash out the sound.

Another idea is based on the way our brain perceives sounds. If two sounds have the same relative volume level but one starts slightly before the other, then we perceive the first sound as louder. You can use this trick on bass line or drum track. If they both sound at the same time, try moving the bass line a tick or two forward to make it sound more prominent in the mix. If the bass drum and snare are still fighting with the bass after EQ-ing, try cutting the kick drum at around 40 to 70Hz and boost the snare drum at around 105Hz. In general, you don't want to cut any low end from the kick drum, but cutting a little around 400Hz can take out some of the boxiness. It's best to keep the kick and bass at good relative levels to avoid problems during the mastering stage. That way, if there's not enough or too much low end, it's easy for the mastering engineer to fix it with EQ.

Vocals shouldn’t require much EQ but if you have too much sibilance try cutting a little bit around 6kHz. If that still doesn’t help, you’ll need to use a deesser — but these can make your vocals sound quite artificial.

Again, step back from the speakers and listen to the mix from the doorway and see how you mix sounds. If things are sounding good it’s time to start adding effects and working with the stereo spectrum. If the guitars are overpowering the mix at this point don’t drop their volume as it will affect the entire mix and you’ll start raising and lowering volumes of other instruments to compensate as you try to acquire the correct balance again. This is where many beginners mess up. You need to use EQ, not volume to fix the guitars. In nature, sounds that are brighter, are perceived as closer and slightly louder. If guitars are too
loud, cut the EQ slightly to drop then further back in the mix. Conversely, if they are too quiet, boost the EQ slightly to bring them forward. Go easy on the EQ and keep the entire track playing as you adjust specific instruments, then solo the EQ’d track to hear clearly what effect you’re having on it.

Guitars, pianos, and synth pads are notorious for taking up too much of a mix’s frequency spectrum. Sometimes no amount of EQ will help the situation and it’s

Best to employ an effect to thin out the offending sound. A chorus/flanger effect is designed to add movement to a mix and make it louder, but with the correct settings you can also use them to thin out a sound. A setting with a very short delay (5 or 6ms.) and the delayed sound output set to —50 creates a comb-filtering which will result in a thinner sound.

Another trick is to EQ the effect on an instrument rather than the instrument itself. This is especially useful if you're happy with the quality of the signal (how well you recorded the instrument) and only want to alter the tonal balance subtly.

**Effects**

A common mixing mistake is the over or under use of effects which results in a muddy sounding mix or a hole in the area between the bass and guitars. If your mix has this hole, it’s best to fill it in with another part. If you don’t want to tinker with the arrangement then you’ll have to use reverb. Guitars have a large amount of treble associated with them and not much bottom end to fill in the gap between the bass and guitars. A modulated reverb or a reverb with a low bandwidth setting is ideal to tackle this common problem. TC’s Native reverb plug-in is ideal for this as it can be set with a low bandwidth setting. Be careful not to wash the guitar in excessive amounts of reverb — it will make the mix muddy. Using a small amount of pre-delay with an even shorter tail is often a good solution. Muddy mixes are almost always caused by excessive reverb. Use just enough reverb to make to make it noticeable if it isn’t there. Another good reverb plug-in is the Waves TrueVerb.

One of the more common uses of too much reverb is on vocals. Reverb affects the overall tone of a sound and therefore interacts with the rest of the mix. When too much reverb is applied it affects the sibilance of the vocals. Cutting EQ around 12kHz can help if you need to use large amounts of reverb on vocals, but it’s best not to use too much to start with.
An underused effect is the gate. If you’re using a large amount of reverb with a long tail, then a gate can come in handy for cutting the tail end dead. If the tail goes on for too long it can swamp other instruments. Clever use of gating can prevent the tail from continuing when the next note is played. The same trick can be applied to any delay effects you may be using to cut off any repeats which don’t need to be present. They can also prove useful for any sudden stops in a track — music that suddenly stops and goes dead silent has a much bigger impact than music that suddenly stops to reveal background hiss.

So far we’ve been mixing in mono — if it sounds good in mono then it’ll sound much better in stereo. A gentle pan here and there can help separate parts of the mix which are occupying the same bandwidth as each other and can’t be EQ’d. In general, you don’t want to pan instruments hard left or right as it often unbalances a mix. Panning should be seen as part of the mixing process rather than as an effect. Bass, drums and vocals should remain dead center in the mix unless it’s for creative purposes. Background vocals and percussion can be made more noticeable if panned either right or left a small amount. If two instruments are fighting each other for the same sonic space try panning them far apart in the stereo field. On the other hand, most older rock records recorded on old 4 track consoles had only three pan positions — hard left, center and hard right. Almost all of the Beatles records were panned in this manner and sound great.

**Final Production**

Hopefully your mix sounds pretty full at this point. The instruments should all sit well in the mix — each clearly heard and distinctive and the stereo spectrum should sound full. If there are still problems you need to single out the problem by soloing each track one at a time and listening to it. If you think one track is causing problems, mute that track and listen to the rest of the track without the offending track. If the track sounds better without the track you’ll need to re-record the track, use a different instrument for that part or leave it out all together. A mix only sounds as good as the arrangement itself. If the mix seems too busy, try to simplify the arrangement. If you can’t lose any of the instruments then try dropping them back in the mix so that you only notice them if you turn them off. Remember that with most songs it’s only the vocal or melody and the fundamental groove that matters. Everything else is just decoration.

It’s worth adding a little reverb to the entire track once it’s finished to add a little more sparkle. A little pre-delay with an almost nonexistent tail set at 50/50
should work. It’s also advisable to reduce the bandwidth of the track with a little compression to give the track more energy. It depend what you’re expecting to do with the mix. Radio and Television broadcasters will compress your track a staggering amount. Waves RCL compressor is probably the best plug-in around for finishing up a mix. Set the threshold around —9db with a ratio of 2:1 and a quick release and attack time.

If the track sounds a little dull after compression applying a small amount of distortion can add some extra harmonics and warmth like a tube used to. If you’re looking for radio or TV play, apply a small amount of EQ boost at around 4kHz to lift the treble of the track which will make it sound more polished over the air.

Finally listen to your track over as many different systems and speakers as possible.

Back to Syllabus.