deadmau5

Teaches Electronic
Music Production

ABOUT
JOEL ZIMMERMAN

Joel Zimmerman was born in 1981 and raised in Ontario, Canada. A creative and technical youth, Joel took an early interest in the piano and computers which impelled him to create music. He started composing electronic music with the program "Impulse Tracker," inspired largely by video game soundtracks, and co-produced a dance music program at a Niagara Falls radio station. In 2005, Joel created the alias deadmau5, and released his first full-length album "Get Scraped." He has subsequently released eight studio albums and headlined Lollapalooza, Outside Lands, Sonar, Ultra, Electric Daisy Carnival, and the Bonnaroo music festivals. To date, Deadmau5 has topped the Billboard Dance Chart three times, earned three Juno awards, and six Grammy nominations.

INTRODUCTION

CLASS WORKBOOK
Joel's Workbook supplements each lesson with a Chapter Review, Take It Further opportunity, and Assignment. This printable PDF is filled with places for you to take notes as you go.

LESSON DISCUSSIONS
Share your works in progress and ask your peers for help and support if you've hit a road-block.

THE HUB
Continue connecting with your MasterClass peers by using our community features, like The Hub.

DEADMAU5'S MUSIC
A few of deadmau5's songs are mentioned repeatedly Have a streaming application handy to be able to listen to songs and albums mentioned in the class.

HOW TO USE JOEL'S MASTERCLASS

Welcome to Joel's MasterClass! Joel wants to teach you how to become an electronic-musician. The exercises in this workbook are designed to help you learn the fundementals of electronic music production, how to create beats and melodies, and attain professional success. Use Joel's workbook to follow along with the video lessons, and share your assignments with the MasterClass online community to put his teachings and experiences into practice.

1.

NOTES

2.
THE DEADMAU5 PROCESS:
THEORY

"90% of my time is just goofing around, trying to come up with something."
—deadmau5

SUBCHAPTERS

- Find a Way to Stop Thinking

- You Don't Have to
  Feel It to Write It

- Experimentation not Inspiration

- Building Your Mister
  Potato Head Bin

- 23 Seconds is a Track

- Every Producer Copies,
  Good Producers Copy
  in New Ways

- You Don't Have to
  Be a Team Player

- Doubts and Mistakes

CHAPTER REVIEW

You don't need to be a formally trained musician to make EDM, but you do need to develop a process. For Joel, music-making is all about experimentation. He experiments with melodies, sounds, and structures until he hears something he likes. Try to keep yourself from being too critical of new ideas as they're taking shape and start saving clips of ideas you like, even if you're not sure yet how to make them work in a song.

Don't worry about cranking out fully realized arrangements. For now, focus on making eight bar loops that you love. That's how every great deadmau5 track got started. (Later, Joel will teach about structuring your loops into songs.)

It can also help to borrow musical ideas from your favorite artists and find ways to make them your own. Joel says the classic deadmau5 sound was born when he put dark Nine Inch Nails style chords together with pulsing house drum beats.

TAKE IT FURTHER

- Listen to some of the classic Nine Inch Nails records that inspired Joel like "Pretty Hate Machine" and "The Downward Spiral." Can you hear the musical ideas that helped shape early deadmau5 tracks like "Faxing Berlin"?

- Now that you know how he works, listen to some of your favorite deadmau5 tracks like "Some Chords" and "Ghosts N Stuff." Think about each individual element of the track. It might help to write down the different sounds or elements you hear. See if you can identify the 8 bar loop that the track was built around (it's where you'll hear every element playing all at once).

2.
THE DEADMAU5
PROCESS:
THEORY

ASSIGNMENT

- Joel likes to work late at night when he's not thinking as
  clearly, so he doesn't second guess himself as much. Find the
  right time and place where you can stop thinking and start
  experimenting with your music more freely. Keep a log of your
  next couple work sessions by noting what the time and setting
  were and how you felt while you were working. Try to pinpoint
  the conditions that make it easiest for you to create without
  judgement.

2.

NOTES

3.
THE DEADMAU5 PROCESS:
PRACTICE

"If I could just play it, I'd play it. But I can't, so I draw it."
—deadmau5

SUBCHAPTERS

• Starting a Track From Scratch

CHAPTER REVIEW

Joel draws all of his melodies, one note at a time, into the piano roll screen of Ableton. If you've never worked this way, you should try it. Even if you're a proficient keyboard player or a formally trained musician familiar with musical notation, drawing notes into a gridded timeline and moving them around by hand can give you a whole new perspective on composing.

When you start drawing notes, don't worry about what synth sound you're using or what groove your track might end up having; just start putting down notes and adjusting them into interesting combinations that sound good to your ears. When you're working this way, your instinctual reactions to the notes are more important than the formal rules of music.

Once you've found a string of notes you like, transpose the whole melody up and down into different keys until you find a range that makes your bass resonate nicely. (If some of the concepts in this chapter — like side-chain compression, synth envelopes or arpeggiation — feel new to you, don't worry. They'll all be covered in more detail in later chapters.)

TAKE IT FURTHER

• Joel live-streams a lot of his studio sessions. Now that you know more about what's going through his head while he's working, watch some of his old streams and pay close attention to what he's doing. Is he following his own rules?

ASSIGNMENT

• Joel can get his ideas down and rearrange them quickly by using keyboard shortcuts to navigate in Ableton. Brush up on keyboard shortcuts. Challenge yourself to start doing as much as you can in your projects without touching the mouse.

3.
NOTES

4.

BUILDING YOUR HOME STUDIO

"You can do this in your bedroom. I've heard absolutely disgusting shit come out of high-end studios, and I've heard some amazing shit come off some little kid's laptop in LA."
—deadmau5

SUBCHAPTERS

- Everything Ends Up Digital

- Your Computer Setup

- DAWs

- Hardware Can Come Later

- No Headphones

- Studio Monitors

- It's About Your Ideas Not Your Gear

CHAPTER REVIEW

With digital audio technology being what it is today, the idea that you need expensive studio equipment to make professional sounding EDM no longer applies. You do need a computer to record your music on and a DAW to work in. Ideally, you'd also have a piece of hardware to help your computer process audio (a digital audio converter or DAC) and a pair of monitor speakers to help you hear what you're making in greater detail.

TAKE IT FURTHER

- Joel says different DAWs can teach you different things about how to route and process your audio. You can find free trial versions of most DAWs, like Ableton Live, FL Studio, and Cubase, online.

- Even if you've already got a favorite DAW, download a few others and familiarize yourself with how they work. Is the DAW you've been using really the best for you?

- Listen to Skrillex's album "Scary Monsters and Nice Sprites," and remind yourself how much a producer can do with just a laptop.

ASSIGNMENT

- Whether you're in the market for new gear or not, you should stay current with what's available and train your ear to hear the subtleties of different equipment. Most music stores like Guitar Center and Sam Ash have dedicated rooms where you can listen to all different types of monitor speakers. Take a trip and familiarize your ears with the ways different speakers can shape the sound of a track. If you already own a pair of speakers, figure out how they might be changing the way your tracks sound and how you can compensate for those changes when you're producing.

4.
NOTES

5.
DEVELOPING MELODIC STRUCTURES

"If it doesn't resolve properly, then all that other shit in the middle doesn't matter."
—deadmau5

SUBCHAPTERS

• Resolving

• Writing a Melody

• Drone Notes

• Don't Be Obvious

CHAPTER REVIEW

Don't sit around waiting for inspiration — great melodies are developed, over time, with lots of grunt work and revision. The secret to making your melodic structures work is focusing on the way they resolve. The last bar of your melody should always sound good when it loops back into the first bar. Focus on those two bars, until your ears find something it likes. Once you've got your cycle resolving, you can let your creativity take you even bolder places.

Sometimes constraints can actually help the creative process. For instance, writing to a one note drone can focus your ear and help you build melodies that are sure to resolve. Ultimately, your taste and instincts are what should shape the way your melodies sound. Learning to trust your own ears is the first step in putting together melodies that will keep crowds interested over the long run.

TAKE IT FURTHER

• Spot the resolve. Listen back to some of your favorite deadmau5 songs and find places where the last bar of his loop resolves back into the first bar. Does it sound harmonious to you? What can you learn from the way he resolves his melodies? While you're at it, keep track of how long each of his looped melodic structure are. Most will be four bars, so see if you can spot any that are different. If you don't know where to start, try listening to "Strobe".

ASSIGNMENT

• It's time to start building your own Mr. Potato Head bin of clips and ideas. Spend some time at your DAW developing new melodic ideas using what you've learned about Joel's process. Without worrying about the finished product, play around and build at least five melodic structures you like. Now make a folder system that will help you store and keep track of them. Ultimately, you'll probably want different folders for chord patterns, bass parts, lead lines, drum loops, and drum one shots. You'll be filling those folders up over the course of the class and using the pieces to build full tracks by the end.

5.
NOTES

6.

TURNING MELODIES INTO ARRANGEMENTS

"It's all just derived from sustained chords, which is all fucking music is really."
—deadmau5

SUBCHAPTERS

- Bass Lines

- Lead Lines

- Case Study: Cat Thruster

CHAPTER REVIEW

Turning your melodic structure into a layered arrangement of different instruments is easier than you'd think. Every note you're going to need is already in the chords of your melody. Your bass will be derived from the lowest notes of the chords, and your lead line will be derived from notes near the top of your chords.

You can make your parts more interesting by playing around with the length and order of the notes, moving parts up or down five or seven semitones, or using arpeggiators to make things more complicated.

TAKE IT FURTHER

- Take a deeper listen to "Cat Thruster"—take note of where the chords change and what the bass and leads are doing.

- Get to know your arpeggiator better: whether you use a plug in like Cthulu or the Arp that comes standard with your DAW, spend some time messing around with its features until you feel like you know it inside out. Arpeggiators are all over deadmau5's music. Find an Arp pattern you like in one of his songs and see if you can make something that sounds similar. If you're up for a challenge, his song "4ware" is a good place to start.

ASSIGNMENT

- Go back to the melodic structures in your Mr. Potato Head bin and use what you've just learned to pull bass and lead lines out of each one. Save these into new folders in your clip bin.

6.
NOTES

7.
INTRODUCTION TO SYNTHESIZED SOUNDS

"Once you've learned the basic food groups of synthesis, then there's no plugin, no synth that's going to completely mystify you."
—deadmau5

SUBCHAPTERS

• We're Here to Create Sounds No One's Ever Heard

• Synth Basics: Waveforms and Filters

• Using Envelopes and LFOs to Modulate Sound

• How to Build the Deadmau5 Pluck

• Your First Synth Can Teach You Everything

CHAPTER REVIEW

Great producers don't just settle for using plug-in presets or out of the box sounds in their tracks. Learning the basic principles of how synthesizers produce sounds will help you build and tweak patches to generate sounds no one can replicate.

The best way to learn synths is by experimenting with them. Get yourself a cheap, simple synth and start twisting knobs and making noise until you get a feel for what each of the parameters does. Joel taught himself all the basics with a Roland MC-303. (You can also use a plug in like Serum.) Once you've got some experience, you'll be able to hear a sound, like the deadmau5 pluck and have a good idea of how to build it yourself.

The basic components of a synthesizer are sound sources (oscillators) and modifiers (filters, envelopes etc). Oscillators produce simple waveforms, and modifiers make these simple sounds more complex. In this lesson, Joel focuses on:

Oscillators produce the basic waveforms of sine, square, and sawtooth, each with its own distinctive sound. These waveforms can have different frequencies, usually from zero to 20,000Hz (Hz = oscillations per second). Having two or more oscillators playing waveforms on top of each other is called "additive synthesis."

Unison is a kind of additive synthesis, where the synth generates multiples of the same wave form, all slightly out of tune with each other, to create a broader, richer sound.

Filters modify a sound by taking away certain frequencies and adding emphasis to others. A low pass filter (LPF) takes out certain high frequencies (the low freqs "pass" through). A high pass filter (HPF) does the opposite. A band pass cuts out low and high frequencies around a certain middle band. The "cutoff" of a filter determines the frequency where the modification begins. The "resonance" affects the sharpness of the modification.

INTRODUCTION TO SYNTHESIZED SOUNDS

CHAPTER REVIEW (CONT'D)

Envelopes shape sounds over time. They usually control either the volume of a sound or the amount it is affected by the filter, from the time a note starts to the time it stops. The basic parameters of an envelope are attack, decay, and release. If the envelope is effecting volume, attack determines how long it takes for the sound to reach full volume; decay determines how long it takes for the volume to start fading down; and release determines how long it take for the sound to go silent once the note is no longer being played. Those parameters together are often referred to as ADR. Sometimes an envelope will also have a sustain parameter (this is an ADSR envelope). Sustain determines how long a sound holds at a given volume after it has decayed.

LFO (low frequency modulation) and Cross Modulation occurs when one waveform alters a parameter of another — usual-ly either the pitch, the volume, or the action of the filter. This can produce tremolo-type effects (waveforms altering volume), vibrato (altering pitch), or sweeping sounds (altering the filter). If the modulation is happening at a rate of about 20hz or lower, it's considered LFO.

TAKE IT FURTHER

- Listen to The Prodigy's "Firestarter", and try to identify the preset sound from the Korg Prophecy.

- Listen to "The Veldt" for an example of the pluck sound you just learned how to build. Can you hear its parameters changing over the course of the track? What do you think is being altered?

- Want to learn more about synth basics? Take a look at The Synthesizer Academy and Beau Sievers.

INTRODUCTION TO SYNTHESIZED SOUNDS

ASSIGNMENT

- Now that you've watched Joel do it, try to build the deadmau5 pluck on your own using the synth or plug-in of your choice. How close can you get it? Now play around with the parameters and make a totally new pluck sound that you find interesting and unique. You might want to try using it to play one of the melodic ideas in your bin.

7.
NOTES

8.

EXPERIMENTING WITH MODULAR SYNTHS

"This is all very intimidating. But it's actually not complex at all. All this shit is no di erent than a VST."
—deadmau5

SUBCHAPTERS

- Cross Modulating Simple Waves

- Using Envelopes to Automate

- Adding Effects

- Playing Sequenced Notes

- Putting Mod Synths in Your Tracks

- Start Experimenting

CHAPTER REVIEW

In modular synthesis, each of the basic elements of a synthesizer — oscillators, filters, envelopes etc — is represented by its own specialized module, which can all be mixed and matched and patched together in different ways. By messing around and connecting modules together, you can create unexpected sounds that are guaranteed to be one of a kind.

Joel spends hours experimenting at his modular walls, until he stumbles across something that catches his ears. Then he records the patches he likes and saves them in a library for later use.

Voltage : While the average VST or keyboard communicates using MIDI (a digital language in which parameters like pitch and volume are assigned to numerical values), modules in a modular system usually communicate using voltage. You'll have to acquaint yourself with the basics of controlled voltage to get started, and if you're looking to make your DAW send note information to a modular system, you'll need a MIDI to voltage converter.

TAKE IT FURTHER

- Listen to deamau5's remix of "Ice Age", and pay attention to the strange sounds he's generating with his modular system. How many different patches can you identify? How do you think they might've been constructed?

- Explore the following resources to learn more about modular systems:
  - Modular Synthesis 101: The Basics
  - Guide To Choosing A Modular Synth
  - Purchase Modular Analog Synthesizers

EXPERIMENTING WITH MODULAR SYNTHS

ASSIGNMENT

- Create your own library of blips and bloops. Whether you've got access to a modular system or you're using a VST or keyboard synth, spend your next studio session messing around with patches, tweaking until you find some sounds that surprise you. Some might be made of musical notes, some might be more like random noises. Record them into your DAW. Export them as audio files, and keep them in your clip bin. Next time you're working on a track, see what they can add for you.

8.
NOTES

9.
DIGITAL VS. ANALOG SYNTHS

"In analog, there's no amount of steps. It's infinite."
—deadmau5

SUBCHAPTERS

• Hearing the Digital Analog Difference

• Digital vs. Analog Cross Modulation

• Synths in Snowcone

CHAPTER REVIEW

The digital versus analog debate can sometimes sound more like hot air than substance, but by running a scientific A-to-B comparison of what the two sound like, you can hear some fundamental differences. Analog filters tend to be warmer than their digital counterparts in subtle but noticeable ways. More markedly, analog filters have an infinite range of steps between their upper and lower limits, while even the best digital filters, which make use of oversampling and floating point integers, will always sound "steppy" as they make minute adjustments.

TAKE IT FURTHER

• Joel has uploaded the stems from "Snowcone." You'll want to refer back to them throughout the class -- isolating sections, analyzing, and trying to hear the concepts you're learning in action. Start now by diving into the synth tracks. Pay close attention to the patches Joel has built -- have you heard things like that before? How are his sounds unique? Do you think you could build them yourself?

ASSIGNMENT

• Run your own Digital versus Analog test. If you've got access to both kind of synthesizers, set up a simple A/B comparison like Joel did and try to hear the difference for yourself. Play a simple square wave at a given pitch, then run it through a low pass filter. Can you hear any differences in the oscillators on their own? Do you hear the steps in the digital filter? If you can't get your hands on the synths you need, find a music store near you and mess around with their equipment.

NOTES

10.

SHAPING SOUNDS WITH EFFECTS AND PROCESSING

"It's okay to use shitty plug-ins. It's okay to use presets if you're processing it in really creative clever ways."
—deadmau5

SUBCHAPTERS

* Think Outside the Preset Box

* Use Effects to Create Original Sounds

* The Secret to Fat Bass

* Reverbs

* Adding Space and Depth

* Processing Shit Into Gold

CHAPTER REVIEW

If you're not at a point in your career where you're ready to invest big money in vintage synths and modular walls, you can still turn simple VST patches into unique and exciting sounds using creative processing. A good place to start is routing sounds out of your DAW through cheap guitar pedals.

There are also specific effects that can help you get the most out of different instruments. Reverbs can add a lot of texture to your drums — whether it's plate reverb on your snare or some stranger, lusher reverb on the whole kit. Unison effects (doubling and delaying) can make your leads bigger and more potent, and you should always use limiting on your bass tracks to make them sound full and even.

TAKE IT FURTHER

* Joel uses a lot of gear in this lesson, everything from expensive hardware processors, to cheap and free plug-ins. If he's using things you're not familiar with, do some research and see what the processor does—maybe there's a free trial version you can play around with, or a similar plug-in that comes with your DAW. Here's a list of what he's using:

  * reFX Nexus
  * UAD Raw Distortion
  * Fab Filter Pro L Limiter
  * Waves H-Delay
  * Eventide Ultra Harmonizer (Hardware)

ASSIGNMENT

* Try turning some shit into gold. Whether it's in an old production or something unfinished and new, find someplace you used a preset sound and process it into something newer and more exciting. How does freshening up one tired sound change your entire track?

10.
NOTES

11.
BEATS: PART ONE

"There's no such thing as a bad kick sample. There's no such thing as a shit audio signal. You can shape any sound source to sound great."
—deadmau5

SUBCHAPTERS

- Dance Beats Should Be for Everybody

- There's No Such Thing as a Bad Drum Sample

- Building Your Kick Sound

- Watch Out for Phase Cancellation

- Balancing Drums and Melody

CHAPTER REVIEW

EDM beats are relatively simple: 126-130 bpm (beats per minute), with kicks on the quarter notes, snares on every other quarter notes and some hi-hat and percussion to add character. Simple beats are good because they let a really broad audience of listeners lock-in and groove to your music. Getting too complicated means you're probably going to lose some of your listeners. And if you're a melodically driven producer like deadmau5, flashy drum tracks usually end up taking up too much sonic space.

The biggest, most important element of any EDM beat is the kick drum. Joel builds kick drum sounds by layering samples (either from sample packs, or one-shots he cut out of other loops and songs) and EQing the samples around each other so they add up to a full-bodied kick. There are a pair of processors that play a huge role in crafting his drum sound:

Transient Designer: this is a tool for shaping the dynamics of a sound over time — much like the way an ADR envelope shapes the sound of a synth. You can use it to change the attack of a drum sound, making it more or less snappy and punchy. Or to affect the decay — making it ring out shorter or longer. In this chapter, Joel is using the SPL plug-in from Universal Audio.

Compressor: this is another dynamic tool that makes an audio signal more uniform in volume by turning loud parts quieter and quiet parts louder. The "threshold" sets the point at which the compressor starts reducing loud sounds, and the "ratio" determines how strongly it does that reduction.

When used on a drum bus, a compressor can help the different elements of kick, snare and percussion meld together better. In this chapter, Joel is using a plug-in modelled after a famous compressor, the API 2500.

11.
BEATS: PART ONE

TAKE IT FURTHER

- Start paying attention to tempo. Use a BPM detector (some synths and drum machines have a 'tap' function built in), or you can use something like All 8.

- Check the BPM of some of your favorite EDM songs, then widen your search to different genres. What BPMs do some other genres of music live in? What BPM are most of your own productions set at?

- Go back over the "Snowcone" stems, paying special attention to the drums. How many different elements can you count, and how are they coming in and out of the track. Joel will dive deeper into the "Snowcone" beat in the next chapter.

ASSIGNMENT

- Build some layered kick drums. Build a library of kick sounds, either by snipping samples out of tracks and loops you've already got on hand, or downloading one of the collections listed from FL Studio Music or Ear Monk Free Libraries. Now try using Joel's methods to put five or ten kick drum sounds together using layering, EQing, and transient design. Soon you'll have your very own library of original kick drums.

NOTES

12.
BEATS: PART TWO

"No one shat on Mozart for not having a drop."
—deadmau5

SUBCHAPTERS

• The Secret to Snare Sounds

• Making Your Drums Breathe

• Case Study: Snowcone Drums

CHAPTER REVIEW

Subtle adjustments can make all the difference between lifeless and full sounding drum tracks. Joel always slips the timing of his snare hits very slightly to offset them from his kick drums. This lets the snares ring through with more clarity and punch. You can also add breath to your drums by reverbing the snare and side-chain compressing it, using your kick as the key. Side-chaining is a form of compression that reduces the volume of sounds to make more auditory space for other "key" sounds. In the case, the compressor is reducing the sound of the ringing reverb to let the kick drums punch through with more force.

The drums in "Snowcone" are made up of about 10 elements including kick, snare, a creatively reinterpreted sample, and a bunch of percussion and noise to add texture. Much like composing a melodic structure, Joel built the drum track for the song by making one very dense and complicated eight bar loop that he liked, then copying it across the track's timeline and muting or unmuting elements to create dynamics and drama.

TAKE IT FURTHER

• You can find loads of drum loops available in online resources like at SampleSwap. Start collecting loops and listening through, noting which ones you want to keep in your bins and ones you never need to hear again. You can also start playing with your loops by snipping out one-shots you like or chopping things up into entirely new loops.

ASSIGNMENT

• Build your own eight bar drum loops. Put together everything you've learned about kicks, snares, percussion, and drum processing to build a handful of your own completely original drum loops. Upload your favorite to Rate and Review and see what your classmates think about your sounds and the way you've mixed them.

NOTES

13.
STRUCTURING SONGS

"It's all stems from the track at its fullest, then copying, adding and subtracting parts."
—deadmau5

SUBCHAPTERS

- Copy, Copy, Add and Subtract

- Find the Right Track Length

- Think Ahead to Your Live Set

- There's More to Music Than Big Drops

CHAPTER REVIEW

Once you've developed your melody and split it into an arrangement with multiple instruments with honed synth sounds, built drum beat, you should have about 23 seconds of looping music that you love — now it's time to start thinking about structuring it into a song.

Joel's structuring process starts with copy and paste. Paste your loop across a timeline, then start deleting tracks here and there. The idea is to leave behind a structure that starts sparse and develops into something full.

Once you've done that front to back, take another "bells and whistles" pass: lay in new sounds to fill dead space and add energy, or tweak your drum pattern to highlight transitions.

Structuring is also a time to look ahead to your live set. Think about what other track your new song might follow in a live mix and try to make the intro of the new track blend well with the outro of the other.

TAKE IT FURTHER

- Listen to "Strobe" again, which Joel said was essentially two tracks sewn together. Can you hear where one track starts and the other begins? What else do you notice about the structure?

- Joel and Mozart have a lot common — they're both rebel composers who used their popularity to shake up the tired conventions of the musical circles they moved in. Watch the film *Amadeus*, which dramatizes the difficult truth that devoting yourself to your art often means turning your back on social norms.

ASSIGNMENT

- Break down the structure of "Phantoms Can't Hang." Listen critically to the track, paying attention to every detail and try to write down how the track changes over time. What are the different tracks? When are they coming in and out? What are the the bells and whistles? Now share your breakdowns with your classmates and see if they heard things you didn't. If you want a bigger challenge, try it again with "Strobe."

13.
NOTES

14.
REMIXES

"I tend to ignore what they've done musically, rhythmically. I reinvent the track completely."
—deadmau5

CHAPTER REVIEW

The best remixes reinvent the songs they come from, transforming them into wholly original works. Joel usually starts his remixes by getting rid of everything in the old track except for one featured part he wants to build around. Often it's a vocal track. This frees him up to change keys, rhythms and write whatever he wants around the feature.

He expects the same treatment from people remixing his work. He's most impressed by remixers who rearrange his chord orders, rework his grooves, and produce things that are surprising and original.

TAKE IT FURTHER

- Listen to deadmau5's original recording of "The Veldt". Then compare it with the remixes by Freeform Five and Tommy Trash. What can you learn from these two very different approaches?

- Check out deadmau5's Kaskade/Skylar Grey collaboration, "Beneath With Me." Now listen to the other track Joel wrote around Skylar's vocals, "Three Pound Chicken Wing." Can you hear how one song came from the elements of the other?

- What are some of your favorite deadmau5 remixes? Share them with the class community.

ASSIGNMENTS

- See what you can do with some deadmau5 stems. Take the "Snowcone" stems and use everything you've learned about melody development, drum tracks, and song structure to build a new derivative work. You can post your work to the class' Rate and Review, and see what your fellow students did with the same stems.

14.
NOTES

15.
MIXING

"This can all be done correctly with a minimal amout of software and less hardware."
—deadmau5

SUBCHAPTERS

- Tracks and Groups

- Earballing

- EQing for Clarity

- Getting Your Leads to Sit in the Track

- Shaping Your Bass

- LFO Tool vs. Compression

- Mixing in Home Studio

CHAPTER REVIEW

A good EDM producer has to have great musical instincts, and also some serious technical knowledge about processing and handling audio. The mixing process starts as you're laying down your first tracks. Set up groups to help you keep organized, with the drums all summing into a drum group and the bass and synth pads each doing the same. Balance your track volumes against each other roughly, and try to keep your master volume around −6 db so you have headroom to work with when you go into your mastering plug-ins later.

Use EQs to help similar instruments or instruments that play in similar ranges fit together without sounding muddy or dull. Figure out what part of the harmonic spectrum you want from a given instrument — top end shimmer, or bass resonance for instance — and duck the rest of the frequencies to make sonic room for other sounds.

Use side-chain compression, keyed to your kick drum, to make big leads feel like they're a cohesive part of your track. This ducks the lead's volume every time the kick hits, and keeps it from sounding like it's sitting awkwardly on top of the mix.

You also want to duck your bass volume when your kick drums hit, to avoid phase-cancellation dulling your kick sound. An LFO tool works even better than side-chain compression for this.

Most importantly, don't feel like you need better gear to be better at mixing. DAWs like Ableton come with all the plug-ins you really need to make a great sounding mix. Focus on training your ears and getting used to what the plug-ins can do for you before you start investing in more studio equipment. Joel admits he doesn't really need most of the gear he uses — for him, expanding his studio is a matter of passion, not necessity.

Joel used Fab Filter Pro L Limiter, Ableton Compressor Plug-in, Ableton Graphic EQ, Xfer LFO Tool, and Waves Max Bass.

15.
MIXING

TAKE IT FURTHER

- Listen to the full tracks Joel uses as examples:
    - "Polaris" for EQing stacked synths
    - "No Problem" for side-chaining a lead line
    - "Imaginary Friends" for carving low-end with an LFO Tool.

- Get to know the frequency spectrum. The better trained your ears are at distinguishing different frequencies, the better you'll be at EQing your tracks. Spend some time experimenting with your DAW's graphic EQ, or use this program to start getting used to what the different frequencies sound like.

ASSIGNMENTS

- See what mixing can do. Find a track of yours that hasn't gotten a lot of mixing attention and try out the skills you've picked up in this chapter. EQ your mid-range synths and pads around each other, carve your bass and compress your leads. Export versions of the track before and after you tweak the mix so you can hear the overall difference when your work is done.

15.

NOTES

16.
MASTERING

"The first time I ever made a piece of music, and no one said 'God that sounds terrible', I thought, "Well, I got away with that."
—deadmau5

SUBCHAPTERS

- Mastering Yourself

- Mastering Basics

- Limiting

- No Magic Master Chain

- Loudness. Perceived Loudness

- Getting Feedback on Your Mix

CHAPTER REVIEW

Lots of people send their recordings to mastering engineers to put on the final touches. If you're like Joel and you want total sonic control over your music (or if you can't afford a mastering engineer yet) you should be mastering your tracks yourself at home.

Mastering is usually just three processes: adjusting the dynamics of an entire track (difference between loud and quiet sounds), the overall EQ, and the overall volume. Joel starts his mastering process by turning his channel volumes down until his master volume is peaking around -6db. Next he EQs out every frequency in the sub-audible range below 30Hz.

Then comes the master chain, which usually consists of some combination of compressors, multi-band compressors (which can compress different frequency ranges with different intensities), parametric EQs, and limiters.

A limiter is almost always the last thing on his chain. Limiters are like harder working compressors — they apply very serious gain reduction to all sounds over a certain volume threshold. The more you limit, the more you can turn up your entire mix without it clipping. But the more you limit, the less dynamic range you have between the quiet and loud sounds in your track. Dubstep mastering is all about overcranking your limiter. Joel likes to find a sweet spot for his limiting where his track feels loud, but the quiet parts still sound quiet.

Here's some of the gear featured in this lesson: Fab Filter L1 Stereo Maximizer, Fab Filter Pro L Limiter.

16.
MASTERING

TAKE IT FURTHER

- Listen to some different approaches to limiting. Listen to Skrillex's "Scary Monsters and Nice Sprites" again. Which are the loud sounds and which are the quiet sounds? How much difference can you hear between them?

- Now listen to Rush's "Tom Sawyer" and ask yourself the same questions. Now listen back to some of your favorite tracks. What kind of dynamic range do they have? This will help you gure out what kind of limiting might be right for your music.

ASSIGNMENTS

- Do a blind loudness taste test. Take one of your own tracks and add a limiter to the master channel. Export three different versions of the track with different levels of limiting — one very light, one in the sweet spot that still gives good dynamic range, and one with the limiter cranked to dubstep levels. Now listen to each of those three tracks on different stereo systems—in your car, over headphones, on big and small speakers. Which style of limiting is usually your favorite?

16.
NOTES

17.
MASTERING CASE STUDY:
SNOWCONE

"The processors should each do one thing as opposed to having one thing that will do it all for you. It won't."
—deadmau5

SUBCHAPTERS

• Comparing Different Master Chains

• Parametric EQing

• Keep an Eye on Signal Path

CHAPTER REVIEW

When you sit down to do your mastering work, remember, your track was built out of one eight bar loop then copied, pasted, and tweaked across the timeline. Focus on mastering your initial loop first, and your whole track should sound pretty good.

TAKE IT FURTHER

• Listen to the track and try to hear what it needs. Does your bass sound weak at times? Try multiband compressing the low end. Is one instrument too loud? Try to limit it down, or carve its main frequencies out with an EQ. What's important to remember is that every track needs a different master chain, with a different array of processors. Here's the gear that went into mastering "Snowcone":

  • Fab Filter Linear Phase EQ
  • Waves MStereo expander
  • Xfer Records OTT multiband compressor
  • Fab Filter PRO MB
  • Fab Filter Pro L

• Since you have the stems for "Snowcone", you can play around with remastering it yourself. Hear what different personalities and loudnesses you can get out of the piece using the tools Joel's discussed.

• Joel uses these plug-ins in the lesson: Waves L2 Limiter and Waves C4 Multiband Compressor.

ASSIGNMENT

• Congratulations, you've made it through deamau5's entire production process! It's time to put everything you've learned in the studio together. Take a break from watching the class and focus on producing one finished track using Joel's methods to arrange, structure, mix and master it. Go back and rewatch the studio lesson chapters if you find yourself getting stuck. When you're done, upload your track to Rate and Review so your fellow classmates can listen and offer you some well deserved feedback.

NOTES

18.
STARTING YOUR PRODUCING CAREER

"Nobody likes a guy who keeps sending out tons of demos."
—deadmau5

SUBCHAPTERS

- Labels are Looking for the Total Package

- The Truth About Getting Signed

- Invest in Yourself

- Making Music Your Full Time Job

- Define Your Brand

- The Secret to Selling Yourself: Don't

CHAPTER REVIEW

Joel started out probably a lot like you — making tracks at home, wondering if he'd be able to turn his passion for music into a career. He didn't even plan on being a superstar. He figured working as an engineer, or any other job where he could work with sound would be a great way to make a living. Now he's made it as a producer, runs his own label, and has to sign the next generation of up and coming EDM artists. Along the way, he's formed some strong opinions on what producers should be focusing on to jumpstart their careers.

Focus on putting a great package together, and don't worry as much about bombarding the world with your music. Make sure your songs sound great, that you understand your brand and image, that you invest in your studio and stage show when you can, and that you're prepared to present labels with a professional, market-ready package.

While you're doing that, get involved in the music world. Meet real people who have the same passions as you do. Real-world personal connections are always worth more than cold submissions. That's how deadmau5 got discovered and how deadmau5 discovered Skrillex. The rest is history.

TAKE IT FURTHER

- Check out Rez, the newest artist on Joel's label. Pay attention to her art, her image and how it all ts together with her music to make something EDM fans will want to buy. Can you tell why Joel signed her?

- Listen to deadmau5's breakout hit "Faxing Berlin" again. And get to know Pete Tong, the British radio DJ who gave it its rst airplay on his BBC Radio show.

- And if you still don't know, but would really like to, you can find out how deadmau5 came up with his stage name.

18.
STARTING YOUR
PRODUCING
CAREER

ASSIGNMENT

- Think about your brand and do some market research. Come up with one word or one image (something you can put on a coffee mug) that lets people know who you are. Now share that word or image or logo with other people in your network and the class community, and see what meanings they take away from it. How does it make them feel? Is your message getting across the way you expected?

18.
NOTES

19.

UNDERSTANDING THE MUSIC BUSINESS

"I became business savvy because I learned very early on how people get exploited in the arts."
—deadmau5

SUBCHAPTERS

- Learn the System and Make It Work For You

- The Problems With Major Labels

- Building Your Team

- The Online Marketplace

- An Approach to Making Albums

- Don't Stress Over Titles

CHAPTER REVIEW

The music business is not out there to be your friend. It's there to make money for record labels — which means that sometimes artists get exploited in the process. Joel did. He's not the first and he won't be the last. Once your career is getting near the record label stage, you'll want to prepare yourself by learning the basics of entertainment law and publishing deals. It's also crucial to get an honest, hardworking team of people around you to look out for your interests. You can't expect your record label to do any of that for you.

ASSIGNMENT

- Read up a little on entertainment law and music publishing basics. Check out these articles and continue to do your own research.

    - [Music Publishing Basics: An Overview](#)
    - [Music Publishing Basics to Know](#)

19.
NOTES

20.
ON STAGE:
THE MUSIC

"Nobody remembers what happened in the middle of your set. It's all about the start and the end, those are the kind of moments you need to make happen."
—deadmau5

SUBCHAPTERS

• Programming Shows

• Playing the DAW

• Crafting Your Set List

• Openings and Endings Matter Most

CHAPTER REVIEW

A deadmau5 concert isn't a "live" set in the sense that he's playing all the music then and there on the spot. But his set is a lot more technically involved that your average EDM concert (which usually consists of a DJ hitting play on a CDJ machine). Joel performs using his DAW, a mixing board, and an array of outboard synths that give him more options for manipulating sounds on the fly.

When you're putting your live rig together, think of a way to perform your music that both keeps the audience engaged and keeps you challenged and engaged. (If things go well, you'll be performing your live set a lot, you don't want to get bored). Also remember to make the beginning and end of your set as powerful as they can be. Yes, you should pay attention to the overall arc of your concert and how one song leads into the next, but the moments that really matter are the beginning and end. That's where your best tracks should be. Nail the beginning and end of your set, and the average audience member will forget the rest.

TAKE IT FURTHER

• Watch a deadmau5 concert dvd, like *Meowingtons Hax 2k11*. What can you learn about what he's doing on stage and how he's ordering his set?

ASSIGNMENT

• If you're already performing your music live, try rewriting your setlist while keeping Joel's advice in mind. Next time you perform, pay attention to how the crowd reacts to the beginning and end of the set, are you putting your best songs where they belong? If you're not actively performing, then it's time to start. Offer to DJ a friend's party, or ask your favorite bars if they ever have live DJ sets. Find a local college radio station and see if you can DJ your own show, or work up to it. Get yourself out in the world — people will start taking your music as seriously as you do.

20.

NOTES

21.
ON STAGE: THE TECHNICAL SIDE

"Shit will go wrong, shit you can't foresee."
—deadmau5

SUBCHAPTERS

- A Show, B Show

- Rehearse Every Aspect of Your Show

- What's in the Cube

- Learn Your Systems

- Keeping Your Equipment Running

- Keep it Cool

CHAPTER REVIEW

A deadmau5 show is a massive production, full of moving parts — computers, synths, lights, projections, staging, robotics etc. Your live show might not be as intense, but you can still follow the basic principles that have turned Joel's road show into a success.

Always rehearse your whole set, in detail, with every technical system running. Don't trust that things will work out magically when you get to the club. If you bring gear on the road with you, try to make sure it's cheap and easily replaceable. For instance, Macs are a lot easier to replace than custom built PCs. Get into all the technical aspects of your show — learn about projections, lights, and other systems outside of your expertise — both as a challenge to yourself, and to help your team run their systems better.

Most importantly, get ready for things to go wrong. It's happened to Joel at every level of his career, and it's going to happen to you too. And when things do go wrong, keep it cool. A DJ freaking out is always more embarrassing than a technical glitch.

TAKE IT FURTHER

- Look up DJ fails on YouTube and share some of your favorites with your classmates (as examples of what not to do).

ASSIGNMENT

- Rehearse. Find a way to rehearse your set, from front to back, at concert-level volume, with any visual and stagecraft elements you're using. Maybe you can do this in a rehearsal studio or in a friend's basement. Make sure you get involved in the technical details — if there are any systems in use that you don't understand, ask questions, research solutions and get to know the systems better.

NOTES

22.
ON STAGE:
THE SHOW

"I like to not know everybody's there....I can't read an audience and play to them, that's just not my thing."
—deadmau5

SUBCHAPTERS

- Forget the Crowd
- Don't Be Like a Saw Movie
- Putting on a Show
- Another Day at the Office
- Feeling Comfortable on Stage

CHAPTER REVIEW

You don't need to be comfortable on stage, or be a performance master, to put on a great live show. Joel still gets nervous every time he takes the stage, and chances are you always will too.

It's important to understand that people at a concert expect a spectacle. It's got to be about more than just playing your music and sounding great. (They could get that at home, listening to your record.) Give them something they'll never forget — a bit of showmanship, a touch of the unexpected — and they'll be back to see you again and again.

TAKE IT FURTHER

- Watch Joel drop "Old Mcdonald" via Martin Garrix at One Ultra.

ASSIGNMENT

- Think about what you can do to add a spectacular element to your live sets. Then take a video of your performance and upload to Rate and Review to share it with your classmates. Ask for feedback and see if they're impressed!

22.

NOTES

23.
CLOSING
THOUGHTS

"It's de nitely 100% not going to happen if you don't go out there and try it for yourself."
—deadmau5

CONGRATULATIONS

You've finished your MasterClass with deadmau5! We hope you feel inspired to set out to achieve your goals as an electronic music producer. In the words of deadmau5: it's all about experience and experimentation. The less time you spend worrying about making a finished product and selling it to people, the more time you have to hone your producing skills, surprise yourself, and develop your own sound. And don't spend too much time in front of your computer! You've watched this whole class, now it's time to get out and get involved in your local music community. The real world's waiting for you. Good luck!

We want to make sure that your experience with deadmau5 and your peers doesn't end when you finish watching the video chapters. Here are a few ways to stay in touch:

- Contribute to the lesson discussions after each video and read what others have to say

- Complete and upload your relevant assignments to 'Rate and Review' for peer feedback

- Submit an Office Hour question to deadmau5.

NOTES

NOTES

NOTES

NOTES

NOTES

DEADMAU5 TEACHES
ELECTRONIC MUSIC PRODUCTION