

Mixing Vocals — Workbook

This workbook turns the course into a repeatable practice routine you can run on every song. Work through one section per module, mixing a real lead vocal against an instrumental as you go. The templates give you a reusable chain log, a frequency cheat sheet, and a final mix checklist so your decisions are deliberate, documented, and easy to repeat.

Foundations: Signal Flow and Gain Staging

Set up a clean session, lock a working reference level, and remove problems before any plugin touches the voice.

Exercise: Gain Stage to -18 dBFS

Load a raw vocal and an instrumental. Insert a gain or trim utility as the first plugin on the vocal track. Play the loudest section and adjust until your meter reads about -18 dBFS RMS with peaks under -6 dBFS. Note your starting and ending values.

- What was the loudest section of the performance, and what did it read before you adjusted?

- How many dB of gain or trim did you apply to reach -18 dBFS RMS?

- Do any single consonants still spike into clipping, and which words are they?

- Where did you find the largest level jump between a quiet and a loud line?

Worksheet: Raw Take Clean-Up Log

Listen to the full raw vocal once with the instrumental and document every problem you hear before fixing anything. Fill in each field with your observations and the move you will make.

High-pass cutoff frequency chosen (Hz)

High-pass slope (dB per octave)

Number of loud breaths to ride down

Breath reduction amount (dB below words)

Mouth clicks or lip smacks to repair (timestamps)

Plosive pops on P or B (timestamps)

Background hiss present (yes or no) and noise-reduction amount

Checklist: Clean Starting Point Checklist

- Gain or trim utility is the first insert on the vocal track
- Vocal averages around -18 dBFS RMS on the loudest section
- Peaks stay under -6 dBFS on the channel meter
- High-pass filter set between 70 and 120 Hz to taste
- Extreme syllables leveled with clip gain before any compression
- Loud breaths reduced 6 to 10 dB but not deleted
- Clicks, pops, and obvious noise removed
- Instrumental is playing while you check, not solo

Shaping Tone with EQ

Cut the resonances that muddy or harshen the voice, then add gentle presence and air so it sounds finished.

Exercise: Sweep-and-Destroy Resonance Hunt

Create a narrow bell band with Q around 5, boost it 8 to 12 dB, and sweep slowly from 200 Hz to 2 kHz. Find the one or two most offensive frequencies, then cut each 3 to 6 dB. Record your findings.

- Which frequency sounded most boxy or muddy, and how much did you cut it?

- Did you find a nasal honk near 800 Hz to 1 kHz, and what did you do about it?

- Which frequency caused the most harshness in the 2 to 4 kHz range?

- How many total cuts did you make, and could you achieve the result with fewer?

Worksheet: Additive EQ Decision Sheet

After your cuts, make only broad, gentle boosts. Record each additive move and confirm you compared it to the bypassed signal at matched loudness.

Presence boost center frequency (3 to 6 kHz)

Presence boost amount (dB) and Q

Air shelf start frequency (10 to 12 kHz)

Air shelf boost amount (dB)

Low-mid body boost frequency and amount, if used

Did the air or presence boost increase sibilance (yes or no)

Matched-loudness bypass comparison confirmed (yes or no)

Checklist: EQ Quality Checklist

- Cuts were made before boosts
- No more than three subtractive cuts in total
- Boosts use a wide Q and stay under 4 dB
- Presence boost improves clarity without harshness
- Air shelf adds sheen without exaggerating S sounds
- Vocal compared to bypass at matched loudness

[] EQ graph looks restrained, not covered in notches

Exercise: Carve a Pocket in the Music

Solo the vocal with the busiest competing instrument. Find the range where they fight, usually 2 to 5 kHz, and make a 2 to 3 dB cut in the instrument, not the vocal. Check the full mix afterward.

- Which instrument competed most with the vocal, and in what frequency range?

• How much did you cut from the instrument to open the pocket?

• Did the vocal sit more clearly after carving, compared to boosting the vocal instead?

Controlling Dynamics: Compression and De-Essing

Build a two-stage compression chain that controls level transparently, then tame the sibilance those moves create.

Worksheet: Serial Compression Settings Log

Set up two compressors in series, each doing a little. Document the settings for both stages and the gain reduction you achieved on the loud words.

Compressor 1 type (FET, optical, VCA)

Compressor 1 attack and release

Compressor 1 ratio and gain reduction on peaks (dB)

Compressor 2 type

Compressor 2 ratio and gain reduction (dB)

Total combined gain reduction (dB)

Makeup gain matched on both stages (yes or no)

Exercise: Attack and Release by Ear

On your first compressor, set a fast attack and listen, then a slow attack of 10 to 30 milliseconds and listen again. Do the same with a short and a long release. Decide which combination suits your vocal and why.

- Did the fast attack dull the consonants, and did the slow attack add punch?

• What attack value kept the consonants present without losing control?

• What release setting let the meter return to zero between phrases without pumping?

• Is your target sound smooth and controlled, or punchy and forward?

Exercise: Find and Set the De-Esser

Insert a de-esser after compression and tone EQ. Use the listen or solo mode to sweep for the loudest sibilant band, set it there, and lower the threshold until it reacts only on S and SH sounds. Aim for 3 to 6 dB of reduction on the worst S.

- What frequency was the center of sibilance for this voice (5 to 9 kHz)?

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- How much reduction did the de-esser apply on the harshest S?
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- Did you hear any lisp from over-de-essing, and how did you back it off?
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- Did the de-esser stay quiet on vowels and held notes?
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Checklist: Dynamics Checklist

- Two light compressors used instead of one heavy one
- Each compressor shows only a few dB of gain reduction
- Makeup gain matched so compressed equals bypassed level
- Compressed vocal sounds steadier, not crushed
- De-esser placed after compression and tone EQ
- De-esser band centered on the actual sibilance frequency
- No lisp introduced, de-esser reacts only on sibilant sounds

Space, Layers, and Automation

Add depth on sends, build width with doubles and ad-libs, and ride automation so every word lands.

Worksheet: Send Effects Setup Sheet

Create separate aux buses for reverb and delay, each set fully wet, and feed them from vocal sends. Document your effect choices and the EQ you applied to each return. Reverb type (plate, room, hall) and decay time

Reverb pre-delay (milliseconds)

Reverb return high-pass and low-pass frequencies

Delay type and note value (quarter, eighth)

Delay return EQ and feedback amount

Reverb ducked or sidechained to the vocal (yes or no)

Exercise: Tuck the Effects Under the Vocal

Raise the reverb and delay sends until the vocal sounds slightly wet, then pull them back until it sounds dry again. Find the point just below where you consciously notice the effect. Compare with the sends muted.

- At what send level did the vocal start to sound wet, and where did you settle?
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- Did high-passing and low-passing the reverb return keep the mix clear?
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- Did ducking the reverb under the vocal keep the words intelligible?
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Exercise: Build the Chorus with Doubles and Ad-Libs

Record or place doubles on the chorus, pan them hard left and right, and set them well below the lead. Add any harmonies on their own bus and place ad-libs in the gaps. Document the balance.

- How many dB below the lead did you set the doubles, and did you roll off their highs?
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- Are the doubles real performances or duplicates, and how did that affect the width?

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- Where did you place ad-libs so they answer the lead instead of cluttering it?
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- Did you group each layer type on its own bus for processing?
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Checklist: Final Polish and Automation Checklist

- Reverb and delay live on sends, not inserts
- Reverb and delay returns are EQ-filtered to stay clear
- Doubles panned wide and set below the lead
- Ad-libs placed in gaps and pushed back with more effects
- Volume automation rides every buried word up 1 to 3 dB
- Loud words that poke out are pulled down
- Final chorus lifted slightly for energy
- Every single lyric is intelligible against the full mix

Your Action Plan

1. Set up the session: import the raw vocal and instrumental, and gain stage to -18 dBFS RMS as the first insert.
2. Clean the take: high-pass between 70 and 120 Hz, ride down breaths, and repair clicks and pops.
3. Cut problems with subtractive EQ using the sweep-and-destroy method, limiting yourself to two or three cuts.
4. Add character with gentle presence and air boosts, comparing to bypass at matched loudness.
5. Build a two-stage compression chain, a fast FET-style first then a slow optical-style, each at a few dB of reduction.
6. Insert and tune a de-esser after compression and tone EQ, centered on the voice's sibilance band.
7. Set up reverb and delay on separate aux sends, EQ the returns, and tuck them just under the dry vocal.
8. Layer doubles, harmonies, and ad-libs on their own buses to build width and energy in the choruses.
9. Ride volume automation through the whole song so every word is intelligible and sections build correctly.
10. Reference against a commercial track at matched loudness, then bounce and check the mix on phone, earbuds, and a car or laptop.

