

SØRAV MUSIC ACADEMY

LEVEL 3 · MASTERING

A practical guide to preparing a mix, evaluating tonal balance, understanding dynamics and loudness measurements, checking stereo compatibility and delivering verified files.

How to use this guide

Mastering decisions apply to the approved mix as a whole. Work from the delivery brief, listen before processing, compare at matched loudness, and verify the actual exported file. Values are not universal presets; follow the project's requirements.

Lesson 1: What Mastering Is—and Is Not

Learning objective: Understand mastering as the final quality-control and delivery stage for an already-mixed stereo or approved stem deliverable.

Mastering follows mixing

Mixing shapes the relationship between individual tracks. Mastering works on the approved mix as a whole to make final tonal, dynamic, sequencing and delivery decisions. It is not a reliable way to repair every balance or arrangement problem.

Start with the mix, not a loudness target

Before processing, confirm that the mix is complete, the intended version is approved and the export is free from glitches. If the vocal is buried or the kick and bass fight, return to the mix when possible rather than expecting mastering to isolate and fix it perfectly.

Critical listening and references

Listen on a familiar monitoring setup and compare to relevant references at similar perceived loudness. Focus on overall tonal balance, dynamics, low-frequency control, stereo stability and how the song feels at normal and quiet listening levels.

Typical mastering moves

Possible tasks include subtle EQ, broad dynamic control, limiting, fades, sequencing, metadata and delivery checks. Not every song needs every processor. Small changes can have large consequences when applied to the entire mix.

What mastering cannot guarantee

No processor guarantees commercial success, translation to every playback system or a specific streaming loudness. The source mix, arrangement, performance and release specification all matter.

Mixing vs mastering

Individual tracks → MIX → Approved stereo mix → MASTERING → Verified deliverables

Mastering begins with an approved mix; it is not a replacement for fixing track-level issues.

Logic Pro practical

In Logic Pro, create a new mastering project and import a stereo mix as audio. Keep the original file untouched. Create a duplicate playlist/track or project version for processing, label the source clearly, and listen through once before inserting any plugin.

Listening exercise

Compare your mix with one professional reference at matched perceived loudness. Write down three differences you hear without immediately deciding which plugin would fix them.

Common mistakes

- Treating mastering as a substitute for mixing.
- Applying a limiter before checking the source file.
- Judging a reference that is much louder than your mix.
- Using a fixed chain regardless of the material.

Completion task

Prepare a one-page mastering brief: source version, intended destination, reference track, perceived tonal differences, dynamic concerns and required delivery format.

Lesson 2: Preparing a Mix for Mastering

Learning objective: Deliver a clean, clearly labelled mix with sensible headroom and no accidental processing or export errors.

Approve the correct mix

Confirm that the arrangement, edits, tuning, fades and automation are final. Check the beginning and end, listen for clicks and ensure no unintended mute, solo or plugin state is active.

Headroom is room to work

A mix does not need to peak at one exact value to be masterable. Avoid clipping and leave enough margin for processing. Do not turn down a clipped export and assume the distortion is repaired; clipping already printed into the file remains.

Export the intended file

Use the delivery brief to choose WAV/AIFF, sample rate, bit depth and channel format. For an unprocessed mix handoff, avoid unnecessary loudness maximisation unless requested. Keep the original session and a clearly named final mix export.

Stereo mix or stems?

A stereo mix is a single approved stereo file. Stems are groups of related tracks (such as drums, music and vocals) that sum toward the mix; they are not the same as every individual multitrack channel. If stems are requested, ensure their playback and summing behaviour are documented.

Version control and notes

Use clear names with song title, version and date or revision. Include tempo if relevant, references, known issues and delivery requirements. Never overwrite the only copy of the approved mix.

Mastering handoff

Approve mix → Export clean WAV → Verify bounce → Label version → Send brief + references

Always verify the rendered file and preserve the approved source.

Logic Pro practical

Export a WAV from Logic Pro using the supplied or agreed delivery specification. Re-import it into a fresh project, check the full start/end, inspect the Stereo Out for clipping and compare the bounce to the session. Keep a second unprocessed backup.

Listening exercise

Listen to the exported file—not only the session playback—on headphones and speakers if available. Check silence, fades, clicks, missing regions and unintended level changes.

Common mistakes

- Assuming a high peak automatically means a bad mix.
- Exporting the wrong cycle range or file format.
- Sending a clipped file and expecting mastering to unclip it.
- Using confusing filenames such as final_final_new2.

Completion task

Create a handoff folder with the approved WAV, session backup, reference audio/link notes and a short README listing format, sample rate, bit depth and version.

Lesson 3: Tonal Balance and Reference Listening

Learning objective: Evaluate broad tonal relationships and use references without chasing someone else's exact spectrum.

Tonal balance is contextual

A mix can be warm, bright, dark or mid-forward and still be appropriate. Genre, arrangement, playback level, monitoring and listener expectation influence judgement. There is no single spectrum curve that every song must match.

Use relevant references

Choose a professionally released track with similar style, instrumentation and intended energy. Match perceived loudness as closely as practical. Switch between short, comparable sections instead of comparing different arrangement moments.

Broad EQ versus narrow repair

Mastering EQ often uses broad, modest adjustments to overall tonal balance. Narrow moves may address a specific resonance, but a problem isolated to one vocal or instrument usually belongs back in the mix.

Avoid monitoring bias

Very loud playback can make bass and treble feel exciting and can increase fatigue. Check at a comfortable level and occasionally quietly. Use familiar playback systems and take breaks.

Make one move at a time

State the observation first, then choose a subtle adjustment and level-match the bypass comparison. If the change is not clearly beneficial in context, undo it.

Reference comparison loop

Match loudness → Compare same section → Describe difference → One subtle change → Re-match & decide
A reference informs judgement; it does not provide a mandatory EQ curve.

Logic Pro practical

Place a broad EQ such as Logic Pro Channel EQ or another suitable EQ on the stereo mix. Try only a small broad adjustment if you can identify a consistent tonal issue. Level-match bypass and active states; keep an A/B note describing the difference.

Listening exercise

Compare low end, low mids, vocal/presence range and high-frequency detail with a reference. Note whether each difference is a preference, a technical issue or an intentional production choice.

Common mistakes

- Copying a reference's exact EQ curve.
- Using a spectrum analyser as the only judge.
- Making large master EQ boosts to fix one instrument.
- Comparing at unequal loudness.

Completion task

Write three observations and choose only one candidate mastering adjustment. Explain why the other observations should be left alone or fixed in the mix.

Lesson 4: Dynamics and Limiting

Learning objective: Understand dynamic range, compression and limiting at the final mix stage while protecting transients and musical impact.

Dynamics have musical meaning

The contrast between quieter and louder moments, as well as transient shape, contributes to emotion and groove. Reducing every peak can make a track denser, but excessive control may remove impact and make listening tiring.

Compression on a stereo mix

A stereo compressor responds to the combined signal. A kick, bass note or vocal peak can influence gain reduction across the whole mix. Use modest settings when the aim is cohesion; aggressive settings can cause audible pumping or tonal shifts.

Limiting and ceiling

A limiter constrains peaks according to its design and settings. The ceiling is not a guarantee against all inter-sample peaks unless true-peak behaviour is specified and correctly configured. Check the output meter and the final rendered file.

Loudness is not quality

A louder master can seem more exciting in an unmatched comparison. Level-match when judging changes. The correct amount of limiting depends on style, source dynamics and intended destination.

Listen for trade-offs

Listen to the kick transient, snare crack, vocal consonants, bass sustain and chorus lift. If the limiter causes distortion, pumping, flattened drums or a smaller emotional contrast, reduce the amount or revisit the mix.

Dynamics and limiting

Input → Compressor / Limiter → Output ceiling → Loudness & transient check

More gain reduction can increase density but may reduce punch or create distortion.

Logic Pro practical

Use a copy of the stereo mix. Insert Logic Pro Compressor or a limiter after the approved mix file. Start gently, observe gain reduction and compare at matched loudness. Do not aim for a specific reduction number; document the audible benefit and any cost.

Listening exercise

Compare bypass and processed versions at matched loudness. Listen for transient punch, chorus impact, vocal clarity, bass movement and any pumping.

Common mistakes

- Choosing settings by loudness alone.
- Assuming the loudest master is the best master.
- Ignoring distortion at the output.
- Using the limiter to solve an unbalanced mix.

Completion task

Export a conservative version and a more aggressively limited version. Level-match them, write a comparison and choose the one that better serves the song.

Lesson 5: Peak, RMS and LUFS

Learning objective: Distinguish sample peak, true peak, average-level measures and loudness measurements used in audio evaluation.

Sample peak

Sample peak measures the highest stored sample value. It is useful for detecting digital full-scale overload, but it does not fully describe average loudness or reconstructed peaks between samples.

True peak

True-peak measurement estimates the maximum of the reconstructed waveform between digital samples. A file with sample peaks below full scale can still have a higher reconstructed peak, depending on its waveform.

RMS and average energy

RMS is a mathematical measure of signal magnitude over a window and can help describe average energy. It is not identical to perceived loudness because frequency weighting, duration and auditory perception matter.

LUFS and loudness measurement

LUFS is a loudness unit referenced to full scale and is used by common programme-loudness measurement systems. Integrated loudness summarises a programme over time; short-term and momentary readings describe shorter windows. Different meters may implement standards and gating in specific ways.

Use measurements as tools

Measurements help verify delivery and compare versions, but no single number determines musical quality. Always listen and follow the actual delivery requirements rather than assuming every platform or client uses one universal target.

What the meters tell you

Sample peak: highest stored sample | True peak: estimated reconstructed peak | RMS: average energy | LUFS: perceived programme loudness measure

These measurements describe different properties and should not be treated as interchangeable.

Logic Pro practical

In Logic Pro, inspect available level meters or use a trusted loudness meter if installed. Measure the same passage and full song. Write down sample peak, true peak if available, and integrated loudness if available; clearly label unavailable measurements rather than guessing.

Listening exercise

Compare a sparse verse and dense chorus. Notice that similar peaks can coexist with different perceived loudness because density, spectrum and dynamics differ.

Common mistakes

- Treating RMS and LUFS as interchangeable.
- Assuming sample peak tells you the whole loudness story.
- Quoting a true-peak value when the meter does not measure it.
- Chasing a target without checking the release specification.

Completion task

Create a measurement report that lists the meter/tool used, measurement type, reading, section measured and what the reading does—and does not—tell you.

Lesson 6: True Peak and Clipping

Learning objective: Recognise digital clipping and inter-sample peak risk, and check the rendered file rather than trusting one meter.

Digital clipping

In fixed-point delivery, samples beyond full scale cannot be represented normally and may clip. Clipping can create distortion that cannot be removed simply by lowering the file's fader after the fact.

Inter-sample peaks

Digital-to-analogue reconstruction estimates a continuous waveform from samples. The reconstructed waveform may peak between stored samples. True-peak meters estimate these maxima using oversampling or related methods.

Limiter ceiling and oversampling

Some limiters offer true-peak modes and oversampling. These can help control reconstructed peaks, but settings, meter calibration and export processing still matter. Verify the actual bounce when delivery requirements are strict.

Clipping at different stages

Distortion may occur in a plugin, an internal stage, a hardware output or the final file. A safe Stereo Out meter does not guarantee that no earlier plugin has been overloaded.

Quality-control pass

Listen to loud transients and the busiest section. Inspect peak and true-peak readings if available. Re-import the rendered file and confirm the start, end and absence of unintended distortion.

Peak safety path

Plugin input → Processing stages → Stereo Out → Export → Re-import & verify

A downstream fader cannot repair clipping already printed by an earlier stage.

Logic Pro practical

Create a copy of the mix and compare an unclipped version with a deliberately overdriven test version at safe monitoring levels. Observe how lowering a fader after distortion differs from reducing the input before the clipping stage. Do not use the distorted version as a deliverable.

Listening exercise

Listen for brittle transients, crackle, flattening and harshness. Distortion may be subtle or may be an intentional sound-design choice; in a final master, it should be deliberate rather than accidental.

Common mistakes

- Thinking a lower output fader repairs clipping created earlier.
- Assuming every limiter ceiling is a true-peak ceiling.
- Checking only the session and not the exported file.
- Using excessive limiting to avoid all visible peaks.

Completion task

Complete a clipping audit: check the signal path, Stereo Out, limiter settings, rendered file and listening notes. Record what you checked and which measurements were available.

Lesson 7: Stereo and Mono Compatibility

Learning objective: Evaluate stereo width, phase relationships and mono fold-down so important elements remain stable across playback systems.

Stereo image

A stereo mix uses differences between left and right channels to create placement and width. Panning, stereo recordings, time-based effects and modulation can all contribute. Wider is not automatically better.

Correlation and phase

Left-right correlation meters can offer clues about similarity and opposing relationships, but a meter is not a complete diagnosis. Phase differences can create width and may also weaken elements when summed to mono.

Mono fold-down

When left and right are combined, some out-of-phase information may cancel or change tone. Check whether lead vocal, kick, bass and other important anchors remain present and clear.

Low-frequency stability

Very wide low-frequency content can make playback less consistent. Many productions keep the deepest foundation relatively centred, but this is a creative and arrangement-dependent choice rather than a universal rule.

Fix problems at the source

If mono checking reveals an issue, inspect stereo widening, chorus, doubled takes, sample polarity and time-based effects. Correct the specific source where possible instead of applying random widening or narrowing to the whole master.

Stereo / mono check

Stereo audition → Mono fold-down → Compare anchors → Locate source → Fix at source
Check important elements and investigate the track or effect responsible for cancellation.

Logic Pro practical

Use Logic Pro's available mono monitoring or a suitable utility to audition the stereo mix in mono. Compare the lead, low end and ambience. If something disappears, return to the mix session and identify the responsible track or effect.

Listening exercise

Switch stereo/mono at matched loudness. Note changes in vocal level, bass weight, snare body, guitars and ambience. Distinguish normal loss of width from a serious cancellation problem.

Common mistakes

- Assuming a positive correlation reading guarantees perfect translation.
- Widening the master to hide a crowded mix.
- Ignoring mono because the mix sounds good on headphones.
- Changing the whole master before checking individual sources.

Completion task

Make a stereo-versus-mono report with at least four elements and note whether each remains stable, narrows naturally or suffers a significant loss.

Lesson 8: Delivery Formats and Quality Control

Learning objective: Export the correct final file, verify it, and document technical requirements for the client or release.

Follow the delivery brief

Format, sample rate, bit depth, channel count, peak ceiling, loudness range and metadata needs vary by destination. Confirm requirements instead of guessing. WAV and AIFF are common uncompressed PCM formats; compressed formats may be requested for previews or distribution.

Sample rate and bit depth

Sample rate describes samples per second; bit depth relates to digital amplitude representation and noise performance. Keep the session and export settings appropriate to the project and brief. Sample-rate conversion and bit-depth reduction should be handled deliberately.

Dither

Dither is low-level noise added during bit-depth reduction to decorrelate quantisation error. It is relevant when reducing bit depth to a fixed-point delivery format; do not add it repeatedly at every intermediate step. Follow the delivery workflow and tool documentation.

File naming and versioning

Use clear, consistent names such as SongTitle_Master_24bit_48kHz_v03.wav. Avoid ambiguous filenames and make sure the exported file corresponds to the approved mix and master.

Final QC checklist

Listen to the entire render, check start/end and fades, inspect peak/true peak and loudness if required, verify sample rate/bit depth/channels, confirm the filename, and archive the approved master plus source session and notes.

Master delivery QC

Specification → Export → Verify format → Full-file listen → Meter check → Archive/version

The delivery brief governs file settings; quality control checks the actual bounce.

Logic Pro practical

Export a final WAV from Logic Pro using a written specification. Re-import it into a new project, confirm the duration and channel format, listen through, check the meters available, and compare the filename and settings to your delivery brief.

Listening exercise

Listen from the first sample to the end. Check for clipped starts, missing tails, unexpected silence, clicks, glitches, unintended fades and changes in balance.

Common mistakes

- Using a platform loudness target when the client gave a different specification.
- Exporting the wrong sample rate or bit depth.
- Applying dither multiple times without a reason.
- Skipping the final bounce check.

Completion task

Deliver a mock mastering package: final WAV, lower-resolution preview if requested, delivery-specification sheet, version notes and a QC checklist marked complete.