STRETCHLEARN · WORKBOOK

Spatial & Immersive Audio — Workbook

This workbook turns the course into a hands-on toolkit for building real binaural and Dolby Atmos mixes. Each section mirrors a course module, with exercises to build the spatial mixing and rendering skills, worksheets to plan your bed-and-object placement and delivery, and checklists to keep every immersive mix translation-safe. Use the templates to plan your spatial mix, map binaural distance modes, and confirm you hit Apple Music loudness and ADM BWF specs before you deliver.

How Immersive Audio Actually Works

Build the mental model of object-based audio and the bed-and-object structure, and set up your Renderer and monitoring path correctly.

Exercise: Audition the Same Mix Across Devices

Find a few Dolby Atmos tracks on Apple Music and listen to each on full headphones, then on basic earbuds, then through a phone speaker. Notice how the spatial impression changes as the playback system folds the same master down differently.

• Where did you clearly hear sounds placed behind you or above you, and on which playback systems did that survive?

• What collapsed or disappeared when you switched from headphones to the phone speaker, and why might that happen?

• Which elements felt like the stable foundation (bed) versus precisely placed highlights (objects)?

Worksheet: Bed vs Object Planning Brief

Before you mix a song in Atmos, decide what belongs in the channel-based bed and what should become a placed or moving object.

Track / song title and source DAW

Monitoring path (7.1.4 speakers / binaural headphones)

Session sample rate (should be 48 kHz)

Elements for the 7.1.2 bed (reverbs, pads, room tone, ambience)

Elements to make objects (lead vocal, featured instruments, traveling effects)

Elements that should move vs stay static

Anything intended for the LFE (deep impact only, not main bass)

Rough count of objects planned (of 118 available)

Checklist: Immersive Setup Checklist

[ ] Project set to Dolby Atmos so channels gain the Atmos panner
[ ] Session sample rate set to 48 kHz
[ ] Dolby Atmos Renderer open and monitoring layout selected (7.1.4 or binaural)
[ ] Renderer meters confirmed moving when the session plays
[ ] Original stereo mix of the song open as a reference
[ ] Good headphones connected for the binaural check

Building a Dolby Atmos Mix

Practice routing the bed, creating and panning objects in three dimensions, and using movement and size with intention.

Exercise: Route the Bed, Then Add One Object at a Time

Open a multitrack song in an Atmos project. Route all reverbs, pads, and ambient material to the 7.1.2 bed and listen to the foundation alone. Then pull out the lead vocal as a 3D object placed front and center at ear level, and add main instruments as objects one at a time, A/B-ing against your stereo reference after each.

• Which tracks did you keep in the bed, and did the foundation feel solid and enveloping on its own?

• Where did you place the lead vocal on the X, Y, and Z axes, and why there?

• After adding objects, did the Atmos mix still match the tone and balance of the stereo reference?

Exercise: Pan in 3D with Size and Snap

Take one instrument object and experiment with all five spatial controls: move it on X (width), Y (front-back), and Z (height); open its size from a tight point to a broad spread; and toggle snap to lock it to the nearest speaker. Note how each control changes the sense of placement.

• How did raising the object on the Z axis change the feel, and did it start to sound unnatural if pushed too high?

• What did increasing size do to how defined versus diffuse the sound felt?

• When did snap improve the placement, and when did rendering between speakers sound better?

Exercise: Automate One Deliberate Move

Choose a single moment in the song (a transition, build, or effect) and automate one object's position through space, for example sweeping front-left to rear-right or spiraling up on a riser. Keep the rest of the mix static so the move reads as special.

• What path did you draw and why did that moment earn movement?

• Did keeping everything else stable make the move land harder?

• Did you handle the LFE correctly, keeping main bass full-range in the bed rather than routing it all to the LFE?

Checklist: Atmos Mix Build Checklist

[ ] Static, ambient material routed to the 7.1.2 bed
[ ] Lead vocal as an object, front and center at ear level
[ ] Height used selectively, not on every element
[ ] Core bass kept full-range in bed and objects, LFE used only for deep impact

[ ] Movement reserved for moments that earn it, with most of the mix stable
[ ] Atmos mix A/B-checked against the stereo reference for tone and balance

Binaural and VR Immersive Audio

Render to headphones with correct distance cues and translation, and encode ambisonic and head-locked audio for VR and 360 video.

Exercise: Build Front-to-Back Depth with Distance Modes

Audition your mix in the Renderer's binaural fold-down. Set the lead vocal to Off or Near, main instruments to Mid, and reverbs and ambiences to Far. Compare against having everything at the same distance, listening for how depth opens up.

• How did pushing reverbs to Far while keeping the vocal at Off change the sense of depth?

• Did any element feel too distant or too forward, and how did you re-stage it?

• Did changing the distance modes affect only the binaural render, leaving the speaker mix untouched as expected?

Exercise: Test Binaural Translation on Consumer Earbuds

Render a binaural version of your mix and listen on the everyday earbuds your audience actually uses (not only studio headphones). Confirm the placement, depth, and tone still read, and note anything that collapses or weakens.

• What survived the move from reference headphones to consumer earbuds, and what flattened out?

• Did height-placed elements still read as overhead, or did they become vague?

• What did you adjust so the spatial intent survives on everyday headphones?

Worksheet: VR / 360 Audio Layer Plan

For a 360 video or VR scene, sort every sound into the rotating ambisonic field or the fixed head-locked stereo layer before you author it.

Project name and target platform (e.g. YouTube 360, VR headset)

Ambisonic order chosen (first-order four-channel / higher-order)

Diegetic world sounds for the ambisonic field (characters, environment, effects)

Non-diegetic sounds for head-locked stereo (music, narration, UI)

Encoder / spatial workstation tool used (Meta XR Audio / dearVR / Reaper / Pro Tools)

Channel order and spatial metadata required by the platform

Head-locked stereo track included? (Y/N)

Checklist: Binaural and VR Checklist

[ ] Binaural distance modes set: vocal forward, instruments mid, ambience far
[ ] Distance changes confirmed to affect only the binaural render
[ ] Binaural render translation-checked on consumer earbuds
[ ] Important content placed so it survives, not lost to extreme height
[ ] VR world sounds in the ambisonic field, score and narration head-locked
[ ] Platform channel order and spatial metadata applied for delivery

Mastering, Delivery, and Quality Control

Level to immersive loudness, record and validate a compliant ADM BWF master, and confirm the mix survives every fold-down.

Exercise: Level to the Apple Music Spatial Target

Play your full Atmos mix through the Renderer and read its integrated loudness metering. Adjust the overall level to land near minus 18 LUFS integrated with true peak at or below minus 1 dBTP, using gentle level control rather than heavy limiting.

• What integrated LUFS did the Renderer report before and after leveling?

• How did you reach the target without over-limiting, and did the depth and space stay intact?

• Did resisting brickwall limiting preserve the front-to-back dimension you built?

Exercise: Print and Check the ADM BWF Master

Arm the Dolby Atmos Renderer to record, play the full mix start to finish in real time to capture the bed, objects, and automation into an ADM BWF, then verify the file specs (48 kHz, 24-bit, 7.1.2 bed plus objects).

• Did the Renderer capture the whole performance, including your automated moves, into the single ADM BWF?

• Are the sample rate, bit depth, and bed configuration correct for ingest?

• Did you archive the ADM BWF as the canonical master that all other versions render from?

Worksheet: Delivery and Loudness Plan

Plan the finishing and delivery stage for one immersive mix before you export, matching the loudness and master format to the destination.

Destination (Apple Music Spatial / other streaming / VR / video)

Target integrated loudness (LUFS)

True peak ceiling (dBTP)

Measured integrated LUFS before leveling

Gain applied to reach target

Master format (ADM BWF: 48 kHz / 24-bit / 7.1.2 bed + objects)

Additional renders needed (binaural stereo WAV or AAC?)

ADM BWF archived as source master? (Y/N)

Checklist: Validation and Final QC Checklist

[ ] Integrated loudness near minus 18 LUFS, true peak at or below minus 1 dBTP
[ ] No brickwall limiting collapsing the immersive dynamics
[ ] ADM BWF master printed through the Renderer at 48 kHz / 24-bit
[ ] Binaural fold-down checked on at least two headphones including consumer earbuds
[ ] Stereo fold-down checked: nothing important vanishes or shifts level
[ ] Mono fold-down checked: key elements survive even in mono
[ ] Loudness re-confirmed after any tweaks, ADM BWF archived as source master

Your Action Plan

1. Install Logic Pro (or connect your DAW to the standalone Dolby Atmos Renderer) and set a project to Dolby Atmos at 48 kHz
2. Set the Renderer monitoring to 7.1.4 speakers or binaural headphones and confirm its meters move on playback
3. Route reverbs, pads, and ambient material to the 7.1.2 bed and listen to the foundation alone
4. Pull the lead vocal out as a 3D object, place it front and center at ear level, and add main instruments as objects
5. Practice the five spatial controls on one object: X width, Y front-back, Z height, size, and snap
6. Automate one deliberate move on a single moment while keeping the rest of the mix stable
7. Set binaural distance modes (vocal Off or Near, instruments Mid, ambience Far) and audition the headphone render
8. Translation-check the binaural render on the consumer earbuds your audience actually uses
9. Level the mix to roughly minus 18 LUFS integrated with peaks under minus 1 dBTP using gentle level control
10. Print an ADM BWF master through the Renderer, check it across binaural, stereo, and mono fold-downs, and archive it as the source master