STRETCHLEARN · WORKBOOK

Macro Photography — Workbook

This workbook turns the course into repeatable practice for the small world. Each section maps to a course module: you will pin down your gear and magnification, drill depth of field and focus stacking, build and diffuse your lighting, and run real field and studio sessions. Fill the templates as you go so that within a few outings you have a tested, repeatable macro system and a growing record of what works at each magnification and in each light.

Understanding Magnification and Gear

Establish your real magnification, working distance, and a stable camera setup so every later session starts from a known baseline.

Worksheet: My Macro Gear and Magnification Audit

Fill this in for the lens or close-up gear you actually own. Measure magnification with the ruler test from the course rather than guessing, and note working distance so you know what subjects are realistic.

Camera body and sensor size (full-frame / APS-C / M43)

Macro path (dedicated lens / extension tubes / diopter / reversed lens)

Lens or attachment used

Max magnification measured (mm of ruler filling the frame edge to edge)

Reproduction ratio reached (e.g. 1:2, 1:1, 2:1)

Working distance at max magnification (cm)

Effective aperture loss to expect at 1:1 (about 2 stops)

Subjects this setup suits (coins / flowers / insects)

Exercise: Ruler Magnification Test

Tape a millimeter ruler to a table, light it evenly, and photograph it at your lens's closest focus, parallel to the sensor. Read off the result and answer below.

- How many millimeters of ruler fill the frame edge to edge?
- What reproduction ratio does that represent for your sensor (frame width divided by mm captured)?
- How far is the front of the lens from the ruler (your working distance)?

• What is the largest realistic subject this magnification fills the frame with?

Checklist: Macro Stability Setup Check

[ ] Tripod or copy stand sturdy and locked
[ ] Focus rail attached, or in-camera focus bracketing located in the menu
[ ] Remote release, self-timer, or phone trigger ready (no finger on shutter)
[ ] Mirror lock-up or electronic first-curtain shutter enabled
[ ] In-body and lens stabilization off when locked on a tripod
[ ] Manual focus selected, with focus magnification and peaking enabled
[ ] Shooting RAW at base ISO (100 or 200) for static work
[ ] Sensor and front element checked clean (spots show badly in macro)

Conquering Depth of Field and Focus Stacking

Learn the aperture and diffraction limits of your gear, then capture and blend a clean focus stack from start to finish.

Exercise: Aperture and Diffraction Sweep

Lock the camera on a tripod over a flat, detailed subject (a coin or printed text) at high magnification. Shoot the same frame at each aperture, then compare at 100 percent to find your real sharpness limit.

• At f/5.6 to f/8: how sharp is the fine detail, and how thin is the in-focus zone?

• At f/11: how much more depth do you gain, and is diffraction softening visible yet?

• At f/16 to f/22: how much softer is the whole frame from diffraction?

• Which marked aperture is your sharpest usable setting, and why is stacking the better path to depth?

Worksheet: Focus Stack Capture Plan

Plan a stack before you shoot it. Fill this for one subject so the sequence is consistent and well covered, then record what you actually did.

Subject and magnification

Aperture (sharp range, e.g. f/8) and ISO

Light source and fixed flash power / shutter

Stepping method (rail / focus ring / in-camera bracketing)

Focus step size

Number of frames planned

Nearest point of focus (front of subject)

Farthest point of focus (back of subject)

Exercise: Blend and Diagnose a Stack

Blend your captured sequence in Helicon Focus, Zerene Stacker, or Photoshop Auto-Blend, then inspect at 100 percent and answer honestly.

• Which rendering method or blend gave the cleanest result on your subject?

• Where do you see halos, doubled antennae or legs, or soft bands?

• Was any soft band caused by a focus gap (steps too large) you must fix by shooting denser next time?

• What did the retouching brush (pulling from a single source frame) fix that the automatic blend missed?

Checklist: Focus Stack Capture Discipline

[ ] Subject is dead still (pinned, chilled, indoors, or wind-blocked)
[ ] Aperture in the sharp range (around f/8), not stopped down hard
[ ] Exposure, aperture, and white balance locked identical for every frame
[ ] Focus steps overlap, with no gaps between sharp zones
[ ] Smaller steps used at higher magnification
[ ] Frame count covers nose-to-tail of the subject
[ ] Camera moved by rail (or focus shifted by bracketing), not refocused by hand mid-rail
[ ] Whole sequence reviewed for any frame the subject moved in

Lighting the Small World

Build and test a diffused lighting rig and learn to control background and natural light for a clean, professional render.

Worksheet: My Macro Lighting Rig

Record the lighting setup you will reuse, so you can rebuild it in seconds. Note the diffusion, since that matters more than the flash unit itself.

Light type (speedlight + diffuser / ring / twin / continuous LED)

Diffuser material and size

Diffuser distance from subject

Flash mode (TTL for field / manual for studio and stacking)

Baseline settings (ISO, aperture, shutter near sync)

Flash power level (if manual)

Light direction / angle to subject

White balance set to source (custom Kelvin or gray card)

Exercise: Bare-vs-Diffused Flash Comparison

Photograph one shiny subject (a beetle, a wet berry, or a metal bead) twice: once with bare flash, once through your diffuser held close. Compare the highlights.

• How blown and hard are the specular highlights with bare flash versus diffused?

• How much softer and rounder do the highlights become with the diffuser close and large?

• Did wrapping the diffuser around the subject reduce harsh black shadows?

• What change to diffuser size or distance softened the light further?

Exercise: Background Control Study

Without moving the camera much, photograph the same subject against three backgrounds and evaluate which reads as most professional.

• Against a cluttered near background: how distracting is the result?

• Against distant foliage: how smooth does the blur become?

• With a colored card a hand's width behind: how clean and controlled is the wash?

• Could you get a pure black background with flash by letting the distant background go unlit?

Checklist: Diffused Lighting Setup Check

[ ] Flash is diffused, never bare at the subject
[ ] Diffuser positioned large and close to wrap the light
[ ] Manual flash power set for repeatable studio / stacking light
[ ] ISO low (100-200) and aperture in the sharp range
[ ] Shutter at or near flash sync speed
[ ] Reflector or second light filling the shadow side
[ ] Background distant or controlled with a clean backdrop
[ ] White balance matched to the light source

Subjects, Fieldcraft, and Finishing

Run real field and studio sessions ethically and finish your frames with restrained, professional editing.

Worksheet: Field Session Log

Complete before and during an outing. Dawn in calm air is the prime window; record conditions and what you found so you learn your local subjects.

Date, time, and location

Weather, wind, and temperature

Subjects found and where (flower heads, leaf undersides, webs)

Working-distance lens used and why

Approach notes (what spooked subjects, what worked)

Single insurance frame taken before closing in (yes/no)

Ethics notes (no harm, habitat undisturbed, staging disclosed)

Best subject and conditions to revisit

Exercise: Approach-Without-Spooking Drill

On a cool morning, find a resting insect and practice the course's approach. Record how close you got and what affected the subject.

• Did moving slowly and smoothly let you get closer than a fast approach?

• What happened when your shadow fell across the subject, and how did you avoid it?

• How did a longer working-distance lens (or stepping back) help keep the subject calm?

• How close did you get before the insect moved, and what would you change next time?

Worksheet: Macro Edit Recipe

Record the restrained develop steps you apply to a macro frame or stack so your edits stay consistent and natural, not over-cooked.

White balance approach (gray card / custom Kelvin / as-shot)

Highlight recovery amount (for shiny carapace / bright petal)

Shadow lift amount (dark side detail)

Contrast and clarity / texture settings

Capture and output sharpening amount

Luminance noise reduction amount

Background cleanup / dodge-and-burn notes

Crop and aspect ratio (preserving resolution)

Checklist: Finishing and Output Check

[ ] White balance neutral and colors accurate
[ ] Highlights recovered and shadow detail visible
[ ] Detail crisp but not crunchy or haloed
[ ] Sharpening restrained; fine detail not over-amplified
[ ] Dust spots and stray debris cleaned
[ ] Background tidied believably, not artificially perfect
[ ] Stack halos and doubled edges retouched from a clean source frame
[ ] Compared against an intentionally over-cooked version to confirm restraint

Your Action Plan

1. Run the ruler test to measure your true magnification and working distance, and complete the gear audit.
2. Build a stable setup (tripod, rail or in-camera bracketing, remote release, mirror lock-up) and confirm it on a coin test.
3. Shoot the aperture-and-diffraction sweep to find your sharpest usable aperture and prove why stacking beats stopping down.
4. Capture a focus stack of a static subject at f/8 with overlapping steps using the capture plan.
5. Blend the stack in Helicon Focus, Zerene Stacker, or Photoshop, then diagnose and retouch halos and gaps.
6. Build a diffused lighting rig and run the bare-vs-diffused comparison on a shiny subject.
7. Practice background control until you can place a clean wash behind any subject on demand.
8. Go out at dawn for a field session, complete the field log, and practice the approach-without-spooking drill ethically.
9. Set up a controlled home studio and shoot a flower or water-drop subject with full wind and light control.
10. Finish your best frames with the restrained edit recipe and compare against an over-cooked version to lock in your standard.