

# Woodturning — Workbook

This workbook accompanies the Woodturning course and gives you a hands-on record of your progress from lathe setup through your first finished bowl. Work through each section alongside the matching course module — fill in the worksheets at the bench, complete the exercises with real wood in hand, and use the checklists before and after every turning session.

## Lathe Setup and Safe Foundations

Confirm your lathe is configured correctly and your safety habits are locked in before turning a single chip.

### Checklist: Pre-Session Safety Checklist

- Face shield on and seated correctly on forehead before switching lathe on
- P100 or N95 respirator fitted and seal-checked
- No loose sleeves, gloves, or dangling items on my person
- Lathe unplugged during all mounting and adjustment steps
- Headstock spindle and tailstock quill checked for play (no movement under hand pressure)
- Drive spur seated fully with all four spurs equal depth
- Blank rotated by hand through full revolution — clears bed, banjo, and tool rest
- Speed set to minimum before plugging in
- Tool-rest post and banjo locks both confirmed tight
- First-aid kit and fire extinguisher accessible in the shop

### Worksheet: Lathe Specification Sheet

Record your lathe's key specs once so you always have the right numbers for blank sizing, speed selection, and accessory purchases.

Lathe make and model

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Swing over bed (inches)

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Distance between centres (inches)

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Headstock spindle thread size (e.g. 1" x 8 TPI)

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Speed range (min RPM to max RPM)

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Variable speed or step pulleys?

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Chuck brand and jaw sizes I own

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Faceplate diameter(s) I own

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Motor horsepower

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Year purchased / source

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### Exercise: Speed Calculation Practice

Use the formula  $\text{Start RPM} = 6,000 / \text{blank diameter (inches)}$  to calculate safe starting speeds for each blank below. Fill in the Calculated RPM column, then circle the nearest step on your lathe's speed range.

- Calculate start RPM for a 2" pen blank, a 5" spindle blank, and a 9" bowl blank using the formula in the lesson.

- Stand beside (not in front of) your lathe and switch it on at minimum speed with no blank mounted — observe and describe how the vibration feels in the bed at minimum vs maximum speed.

- Mount a scrap cylinder blank between centres, set the calculated speed for its diameter, and make three roughing passes with the roughing gouge. Note which adjustments you had to make to stop vibration.

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## Wood Blanks and Material Preparation

Build the habit of evaluating blanks before mounting them and recording what worked and what didn't for future blank selection.

### Worksheet: Blank Evaluation Log

Complete one row for every blank you assess, whether you use it or reject it. Over time this log becomes your personal blank-quality reference.

Date

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Species

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Source (supplier / found / milled)

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Intended project (spindle / bowl / pen)

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Dimensions (L x W x H or diameter)

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Moisture content (% if measured)

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Defects noted (checks, knots, bark inclusions)

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Tap test result (solid / hollow sound)

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Accept or reject — reason

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Outcome after turning (if used)

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### Exercise: Grain Direction Identification

Gather three small offcuts — one with straight face grain, one with end grain exposed, and one with wild or figured grain. Examine each and answer the questions below before mounting any of them.

- For each of the three offcuts, sketch the grain direction on the end and face. Label which end would face the headstock in a spindle setup.
- Mount each offcut between centres and make one light gouge pass. Record which grain orientation gave the cleanest cut and which caused tear-out.
- Identify two defects in any blank you own that would make it unsafe to turn at speed above 1,500 RPM — describe each defect and explain why it is a hazard.

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### Checklist: Blank Preparation Before Mounting

- Checked blank for embedded metal with a magnet or wand
- Tapped blank on all faces — no hollow or punky sections
- Inspected end grain for radial cracks — none exceed 1" depth
- Moisture content measured or estimated — acceptable for intended turn
- Centres marked accurately on both ends (spindle) or faceplate face flattened (bowl)
- Pilot holes drilled for faceplate screws — depth at least 1.5× screw diameter
- Faceplate or drive spur seated — no rocking or partial contact
- Blank rotated by hand to confirm clearance before powering on

## Core Turning Techniques — Spindle and Faceplate

Document your tool-handling practice sessions and diagnose your own catches and tear-out so you improve faster.

### Exercise: Controlled Catch Analysis

Every woodturner catches. The goal is to understand why each catch happened so you don't repeat it. After any session where you experience a catch or unexpected grab, complete this analysis.

- Describe exactly what happened in the moment before the catch: which tool, which cut direction, where on the blank, what speed.
- Identify the most likely cause from this list and explain why it applies: (a) tool presented above centre height, (b) bevel not rubbing before cutting edge engaged, (c) cutting uphill against the grain, (d) tool rest too far from blank, (e) speed too low for the cut.
- Write one specific technique adjustment you will make in the next session to prevent the same catch — be concrete (e.g., 'lower the rest 3 mm' rather than 'be more careful').

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### Worksheet: Project Skills Tracker

Score yourself 1–5 on each skill after completing the associated project. Use this to see where to focus practice in your next session.

Session date

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Project (pen / bowl / spindle exercise)

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Roughing to cylinder — smoothness of traverse (1–5)

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Bevel contact — clean cut sound vs scraping sound (1–5)

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Bead cutting — crisp shoulders, no tearout (1–5)

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Cove cutting — no ridges at the bottom of the cove (1–5)

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Bowl hollowing — even wall thickness (1–5)

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Biggest improvement this session

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Skill to focus on next session

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### Checklist: After Each Turning Session

- All tools wiped clean of resin and moisture before storage
- Tool edges checked — any with rolled or nicked edge set aside for sharpening
- Tool rest wiped down and lightly waxed
- Shavings swept or vacuumed from lathe bed and motor vents
- Used sanding-oil rags spread flat or submerged in water — not crumpled in the bin
- Any green-wood rough blanks weighed and weight recorded for drying progress
- Face shield wiped clean and stored face-down to protect visor
- Lathe speed returned to minimum before unplugging

## Sanding, Finishing, and Project Completion

Track your finish decisions and quality outcomes across projects to build a personal reference for future work.

### Exercise: Finish Selection Decision Tree

Before applying any finish, work through this exercise to confirm your choice is appropriate for the project's intended use.

- State the project (bowl, pen, spindle, other), its intended use (food contact, display, daily handling, outdoor), and the wood species — then select a finish from the lesson's guide and write the reason in one sentence.
- Apply your chosen finish to a test scrap of the same species before committing to the actual project. Compare the test piece finish under raking light to the bare sanded surface — describe what changed (colour, depth, sheen level).
- After the finish is fully cured on the test piece, score it with your fingernail and note how well it adheres. If it lifts, identify which of the common causes applies: contamination, insufficient cure time, or incompatible sealer coat.

### Worksheet: Finished Piece Record

Log every completed piece. This becomes your portfolio reference and lets you trace quality back to specific material and technique choices.

Piece number

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Completion date

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Project type (bowl / pen / spindle / other)

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Species and blank source

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Dimensions of finished piece

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Finish used

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Number of finish coats

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Cure time before use

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Raking light test result (pass / issues noted)

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Photo reference filename

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Would you change anything — note for next piece

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### Checklist: Capstone Bowl Completion Checklist

- Outside profile flows from foot to rim with no flat spots or abrupt transitions
- Interior hollowed to within 1" wall thickness (or target specification)
- Foot turned concave across face — bowl sits on outer rim circle without rocking
- All faceplate screw holes turned away on the foot
- Full grit sequence completed lathe-side: 120, 180, 240, 320, 400
- Hand sanding in grain direction completed after lathe sanding
- Raking light test passed — no visible tool marks or circular sanding scratches
- At least 3 coats of chosen finish applied and fully cured
- Species, date, and initials marked on foot
- Piece photographed from top, side, and foot angles

### Your Action Plan

1. Complete the lathe specification worksheet in Section 1 before your first turning session — knowing your machine's numbers removes guesswork
2. Perform the pre-session safety checklist every single session for the first 20 hours until it becomes automatic
3. Buy or cut 6 practice spindle blanks (2" × 2" × 12", any straight-grained hardwood) dedicated to tool-handling practice only — not projects
4. Turn one full cylinder to round using only the roughing gouge, then cut three beads and two coves on the same blank before starting any project
5. Complete the blank evaluation log for every blank you assess for the first three months — pattern recognition for quality develops faster with written records
6. Turn a pen as your first completed project: small scale, fast results, and mandrel turning teaches bevel control and speed selection better than any drill
7. Rough-turn a green bowl blank within the first four weeks: experience the difference in cutting resistance and shaving character between wet and dry wood
8. After completing your first bowl, do the controlled catch analysis exercise even if you had no catches — analyse the cuts where you felt uncertainty instead
9. Apply the finish to a test scrap of the same species before committing to any final project piece — one scrap saves one ruined bowl
10. Sign, photograph, and log every finished piece from the very first one — this habit compounds

over a turning career











