



**MASTER SAW SHARPENING & MAINTENANCE SKILLS: BUILD YOUR OWN BAD AXE
WITH MARK HARRELL.
October 5-9, 2020**

Please note: There is a \$300 material fee payable to Mark when you are here for this class. Please bring a check with you to pay Mark directly.

Let's demystify saw sharpening and master the skills required to restore your vintage saw collection with confidence, and build your own Bad Axe with Mark Harrell, owner of Bad Axe Tool Works.

Mark's five-day course enables tool resellers, entrepreneurs and hobbyist woodworkers at large to maintain, retention, retoothing, hammer-set, and sharpen-to-joint hand, panel, frame and backsaws across a variety of pitches. The course culminates in a graduation exercise in which the student builds his/her own Bad Axe Precision Carcase Saw (included in course tuition).*

Instructional methods center on historical techniques and best practices employed by craftsmen from over three centuries of western traditional sawmaking. During this class, you will learn how to:

- Assess, evaluate, restore and maintain an array of vintage backsaws and handsaws.
- Build your own inexpensive saw sharpening vise and maintenance system.
- Hammer-set and sharpen-to-joint carcase, tenon, panel and handsaws across a variety of pitches.
- Re-shape an asymmetrical toothline with differently-sized files to achieve consistent rake, bevel and symmetry.
- Maximize a saw's performance based on a thorough understanding of how plate gauge, pitch and sawtooth geometry work together for a desired cutting effect in both softwoods and hardwoods.
- **Graduation exercise:** build your own Bad Axe 14" (35.5 cm) Precision Carcase Saw.

*Note: all files, vises and sharpening equipment will be provided on-site. Students may keep the files and 4 training plates provided by the instructor to take home for continued practice.

What to Bring

Student Equipment List (bring):

- Safety goggles and dust mask.
- Bifocals as required to see up close (must be able to wear with goggles).
- Carcase backsaw filed 13 – 14 ppi.
- Tenon backsaw filed 11-12 ppi.
- Panel Saw filed 8-9 ppi x-cut.
- Handsaw filed 5 ½ ppi or 6 ppi rip.
- Note: Bring vintage saws in reasonable shape. No restoration projects.

Optional Equipment (bring if you have it):

- Digital calipers
- Saw file handles
- 6" or small metric ruler
- Tenon Nut screwdriver
- Try square
- Can of compressed air
- Wood treatment of choice
- Metal treatment of choice

Curriculum & Schedule

Day One:

Mastering Tools of the Trade, Nomenclature, and Common Practices:

AM

- Is my saw worth saving?
- Nomenclature: heel, toe, spine, toothline, sawback, etc, open/closed handles.
- Saw Accessory Use and Design: bench hooks and saw benches.
- Sawing technique.
- Cordless resawing with kerfing planes & frame saws.
- Sawbuilding demonstration.
- How to make your own saw maintenance & sharpening system.

PM

- Complete disassembly of a backsaw (including removing the back) & reassembly.
- How to release a frozen fastener set.
- Clean without ruining the etch.
- Using needle and taper saw files.
- Adopt proper filing safety practices.
- Sawtooth geometry and how to manipulate it.
- Advantages of hammer sets over plier sets.
- **Practical Exercise: Hammer-set and joint a toothline.**



Day Two:

AM

- Understanding the 8 ppi x-cut panel saw.
- Sharpening Dry-Fire:
 - Stance and placement.
 - Rip, hybrid and crosscut.
 - Visual cues when sharpening.

- Understanding filing facets.
- File stroke patterns.
- Maintaining consistent symmetry.
- Hybrid-Filing principles.
- Filing pattern: brush, sharpen, brush.
- Sharpen an 8 ppi toothline.

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- **Demonstration & practical exercise: Hammer-smith a kinked and/or bowed sawplate.**
- 8 ppi sharpening review & 1-on-1 instruction.
- Sharpen your own 8 ppi hand or panel saw.



Day Three:

AM

- **Understanding how plate gauge and pitch work together to deliver the action you want for hardwoods and softwoods.**
- 6 ppi Rip-filed Handsaw Overview.
- Dry-fire the 6 ppi toothline.
- Sharpen a 6 ppi rip toothline.

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- **Demonstration & practical exercise: Setting & Stoning the toothline for final optimized kerf based on associated plate gauge, ppi and wood species.**
- Sharpen your own 5 ½ ppi or 6 ppi Handsaw.
- 6 ppi rip sharpening Review & 1-on-1.
- Sharpen your own 5 ½ or 6 ppi Handsaw.



Day Four:

AM

- **Crowding the toothline to mitigate big-tooth/little-tooth syndrome in an asymmetrical toothline.**
- Understanding the 11 ppi tenon saw (overview).
- Dry-Fire the 11 ppi toothline.
- Sharpen an 11 ppi toothline

PM

- **Demonstration & Practical Exercise: Manipulating rake and bevel to optimize softwoods and various hardwood species.**
- 11 ppi tenon saw review & 1-on-1.
- Test: Sharpen your own 5 ½ or 6 ppi Handsaw.



Day Five:

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- Understanding the 14 ppi carcass saw (overview).
- Dry-Fire the 14 ppi toothline.
- Carcass Saw Sharpening & 1-on-1.

PM

- **Graduation Exercise: Build, sharpen and test-cut your own Bad Axe 14 ppi carcass saw using all tools and practices covered throughout the seminar.**
- End of Seminar Review
- **Graduation and Closing**

