



Five-Day Intensive Saw Sharpening Seminar

Instructed by Mark Harrell, Founder, Bad Axe Tool Works

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, founder of Bad Axe Tool Works & SawSharp Owner.

Mark's five-day course enables tool resellers, entrepreneurs and hobbyist woodworkers at large to maintain, retension, retoothe, 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 backsaw of your choice (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 carcass, 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 backsaw of your choosing (cost for saw included in tuition; base configuration; optional upgrades upcharge).

***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).
- Carcass 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:

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- Is my saw worth saving?
- Nomenclature: heel, toe, spine, toothline, sawback, etch, 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.



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- 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:

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- 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:

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- **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:

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- **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

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- **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.

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



Testimonials:

"Incredible class!

Mark is a masterful teacher and an expert in the science and skills of handsaws. Incredible course outline. It was specific and orderly. It also spoke in terms of what we would achieve. After 40 years in higher education, I can tell you it is a model others ought to follow. With that combination, he has created a most engaging experience. In the military the only grade you get from a class is whether you can do the task or not. So, Colonel Mark makes sure you succeed in sharpening your saws. No one fails. No one is left behind.



He is kind and humorous and makes sure you get the individual attention need. His directions are crisp and clear. The class builds skill-on-skill until you are able to create your own beautiful saw.

One of the best classes ever!"

Dr. David Wantz, Professor of Psychology (emeritus), University of Cincinnati

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"My true "ah-hah" moment came when Mark demonstrated the machine file over a saw I had just worked on by hand. The machine file highlighted my tendency to curve my wrist through the filing motion, and reinforced what I'm looking for when pausing to view each tooth as an individual. This is when I really "got it". That demo was a true teaching moment that allowed me to course-correct and vastly improve my hand filing approach.

Our saws are investments. They aren't throw-away tools, to be replaced when the cut is no longer a breeze. I now have the skills to keep my saws tuned, and know proper cleaning and storing methods to extend the life and value of my investments.

For those of us who enjoy buying vintage tools, this curriculum is invaluable to know what's a good buy versus wall art. I've had immense joy taking what I learned from Mark to assess which of my antique saws to spend time on, fixing some really gnarly teeth, and getting use from a saw that sat in an old bucket for the last 80 years."

Kendra Haberzette, Cincinnati, IN

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“Mark Harrell’s Saw Sharp Advanced Sharpening Class is one of the best investments I have made in my hand tool training and education. Mark is a wonderful instructor. He has an infinite amount of patience making sure you have a clear understanding of all aspects of saw structure and cutting geometry, as well explaining in detail the various attributes that contribute to what is necessary for a saw to deliver its best intended cut outcome.

Once Mark determines you have a clear understanding of this knowledge, he transforms into a tireless and ardent task master, making you apply this newly acquired knowledge.

Yes, you may need to keep repeating a step over and over until you “get-it” and can satisfactorily pass Mark’s inspection before you move to the next step. Mark’s training discipline helps you begin to develop the confidence and muscle-memory skills required to become a competent saw sharpener. This hands-on, mentor-guided training approach is not something you can learn watching countless sharpening videos because you need to “feel” the correct feedback of the file’s sharpening stroke and you will begin to know and feel that difference when pointed out.

You will leave Mark’s sharpening class with the confidence of not being afraid to break out a file and finely tune your saws in your shop as you do with your other hand tools like plane irons and chisels.”

Keith Teruya, McMinnville, OR

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“The advanced training I received from saw sharp exceeded every expectation and I cannot recommend it enough. Not only did I walk away with the confidence to properly maintain all of my saws, but Mark tailored every single aspect of the class to ensure every aspect of saw restoration and use specific to my classes particular uses was covered. The most lasting benefit of the class though, is joining a community of like-minded people to lean on for years to come. Go as soon as you can!!!!”

Matthew Aust

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“Sharp saws, like any other sharp tool, are pure pleasure to use. In his Five-Day Intensive Saw Sharpening Seminar, Mark Harrell taught me how to sharpen and maintain my saws so using them will be a joy from here on out. The two Bad Axe saws I put together in the workshop are a sweet bonus as far as I'm concerned. The workshop would have been worth the money without them. Mark knows how to sharpen saws and I highly recommend his workshops.”

David Neilson



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"When I have a vintage saw that needs any type of restoration or tuning up, I turn to Mark Harrell. To date, I have sent 4 cherished but neglected backsaws in the 150-200 year old range to Mark, each well beyond my ability to restore, and he brought them all back to beautiful working condition—and boy do they work. He has the perfect blend of expertise and delicate yet meticulous attention to detail that these jobs require. I can't recommend his services enough!"

Justin Masone, @jtmasone

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" If you want to learn how to do something correctly, learn from someone who earns their livelihood by what they teach. Mark is the real deal. Mark offers a unique opportunity to learn from him and he was the founder of Bad axe saws." - Failing this opportunity you can also watch a myriad of YouTube videos and hope what they teach may be correct.

Scott Erickson

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