New England School of
Architectural
Woodworking

Tool Requirements 2019

Although our shop is equipped with a wide variety of portable power and hand tools, there are not enough for simultaneous use by all students. To promote maximum efficiency and encourage personal responsibility, we require each student to obtain and maintain a set of basic tools. We also recommend the purchase of a portable tool box or bag to transport these tools to and from class each day or to store them in our locked tool closet.

Below are three lists of tools: required, highly recommended, and optional. You must obtain the required tools prior to the start of class or, at the very latest, by the end of the first week of class. You can purchase any of the highly recommended or optional tools that are listed on the tool order form prior to class, or you can wait until we have a discussion of them in class before purchasing. There is a detailed description of many of the tools and recommended sources at the end of this document.

In many cases, specific tools and sources are suggested. If you already own a similar tool, or would like to purchase a brand not on the list, either give us a call prior to the start of classes to discuss its suitability or wait to discuss it with the instructor the first week of class. You should expect to incur between $300-$850 on tools depending on what you already own, and the quality of the tools you purchase.

Most of the tools on the required list can be obtained from either Woodcraft (www.woodcraft.com) or Lee Valley (www.leevalley.com), as well as other sources online. Our local Woodcraft store offers a 10% discount for our students on individual tools and supplies during the school year with a student ID. We have also worked out a special offer with them for a bundled set of the required tools for a 15% discount (see tool order form for details).

REQUIRED	HIGHLY RECOMMENDED	OPTIONAL
• Tape Measure - Standard (12'-16') • Tape Measure - Metric • 6" Hook Rule (Standard) • 12" Combination Square • 4" Sliding Square • Construction Calculator (Handles fractional calculations & board/foot conversion) • Chisel Set (Minimum ¼", ½", ¾", 1") • Card Scraper Set • Counter Sink Drills • Centering (Vix) Bit Set • Veneer Hand Saw • Block Plane • Screwdriver Set • Utility Knife • Burnisher (for card scraper) • Metal Mill File (10") • Cordless Drill/Driver • #1 and #2 Phillips and square tip screw bits and magnet tip holder • Honing guide (for sharpening) • Float glass (3" x 12" x 1/4") • Tool Apron • Respirator (Dual cartridge, OSHA rated for paint/organic vapors.) • Eye and Ear Protection • Pencils, markers (Sharpie), and notebook.	• Drill Bit Set (Brad point) • Drill Bit Set (Twist) • Metric Hook Rule • Dead Blow Mallet • Utility Chisel • Tool box or bag for transporting tools.	• 6" Combination Square • Fractional Calipers • Japanese Handsaw • Upgraded Honing Guide • Water stone (4000/8000) • Plane (#4 Smooth, or #5 Jack) • Flush Cut Saw • Curved Card Scraper Set • Pliers (Vise grip, needle nose)

Tool Descriptions and Sources

Required Tools

Tape Measure - This is one of our most important tools, so get the best one you can find. We require both a standard (imperial) and a metric version. For the standard one, a 16' is recommended, any larger is awkward for cabinetmaking. One standard version we very highly recommend is a 16' made by Tajima (p/n G-16BW). You can sometimes find it in a local hardware store, or order it from Amazon for $15.99, or at other online retailers. For the metric tape, we highly recommend the Fastcap True32, because it has markings every 32 mm, which is very handy for what we do, but any metric version will work. You can also choose to go with a combination tape measure that has both inches and metric, such as the Tajima G-16MBW, or others.

Hook Rule – Another very important measuring tool; only 6" long with a hook at the end allowing precise measurements on smaller stock. We require every student to have a standard (imperial) version, and highly recommend a metric version. Starrett makes one of the better standard versions which can be bought at a discount as part of the Woodcraft tool bundle for about $33 (p/n CD604R-6), but Lee Valley also makes a very nice one for $21.50 (p/n 24N08.10). The best ones have 1/8" and 1/16" divisions on one side, and 1/32" and 1/64" on the other side. Woodcraft has a more inexpensive version that has 1/32" and 1/64" on one side and metric on the other, which we recommend for use as an optional metric rule only. Using it as a standard ruler can be difficult because it only has 1/32" and 1/64" markings.

Adjustable Squares – These are a must for precision layout. There are two types of adjustable squares; combo and double squares. Both types of squares have the ability to layout square lines and verify squareness; the combo square has the additional capability of laying out 45º lines and verifying a 45º angle. At a minimum, we require students to purchase a 12" combination square and a 4" double square. Instead of the 4" double square, you could also purchase a 4" or 6" combination square; both of which are offered by Starrett and available online at a number of vendors. The squares that you can buy at your local hardware store or home center are typically not accurate enough for our needs. Therefore, we recommend the Starrett 12" combo square (p/n C11H-12-4R, $110) and the Starrett 4" double square (p/n 13A, $84.50), both of which can be purchased at a discount through Woodcraft. Woodcraft also offers a couple of more inexpensive options for both squares if you are on a budget. While not as high quality as Starret, their Pinnacle 12" combination square (p/n 149872) would be a good substitute at $71.99 before discount, as well as their 4" double square (p/n 04P56) at $37.99 before discount. Lee Valley also offers a nice 4" double square (p/n 24N08.01) for $42.50 or a 6" version (p/n 24N08.02) for $47.00.

Construction Calculator – Allows quick calculations of mixed fractions to reduce errors. It is important to get one that does board/foot conversions. One relatively inexpensive calculator that works well is the Calculated Industries 4019 Materials Estimating Calculator which sells for about $25 at Amazon as well as other online stores and some hardware stores and home centers. Some other calculators do not do fractions smaller than 1/16th of an inch. If you are going to get another brand, it must be able to handle fractions down to 1/64th of an inch and do board/foot conversion. Another solution if you have an iPhone is to get the Construction Master 5 application from the iTunes store for $19.99; it works very well, it's what I use and I highly recommend it. It may be available for Android as well, but I haven't checked.

Chisel Set – Every student should have a good set of basic chisels as we use them often. We recommend a set that includes ¼", ½", ¾", and 1" at a minimum. Woodcraft has come out with a new line of chisels under their WoodRiver brand that is good quality for a budget price; a 6 piece set (p/n 151268) is $89.99 before discount. Woodcraft also carries an upgraded set of 4 chisels from Stanley (p/n 152818) for $129.99 before discount, that has better steel, allowing them to stay sharp longer. Another step up is a 4 piece set from Sorby (p/n 07F20; $180) that brings the quality up another notch. Lee Valley also sells a good bargain set of 7 chisels from Narex for $83 (p/n 10S09.77) that was rated as best value by Fine Woodworking magazine. There are many other good chisels on the market; If you are considering one of these sets, please call and discuss before purchasing. If you are looking for top of the line quality, the Lie-Nielsen bevel edge chisels sell for $55-$70 each and were rated best overall by Fine Woodworking. NESAW students can get a 10% discount from Lie-Nielsen, so please contact us if you are interested in purchasing this set.

Card Scraper - An indispensable tool for smoothing wood. You will learn how to both sharpen and effectively use this tool during your time at NESAW. There are many options in the marketplace. One we recommend is the Bahco 2 piece set sold at Woodcraft for $19.99 (p/n 02Z10) before discount, or at other vendors. Almost any standard sized, straight scraper will do, but look for a high quality one if possible.

Countersink Drill Bits - Countersinks are used to pre-drill recessed holes for screws in wood, and are used almost daily. Woodcraft sells a five piece set for $29.99 (p/n 830846) before discount, and Lee Valley sells a five piece set for $29.90 (p/n 50J04.20). At a minimum, each student should have a #4, #6, #8, and #10 countersink.

Centering Bit Set - Commonly known by the brand name Vix, these bits allow easy centering of holes when drilling for hardware such as hinges and drawer slides. A set of three sizes (#4, #6, #8) is recommended and can be had at a number of stores including Woodcraft for $31.99 (p/n 146721).

Block Plane – A workhorse tool around the shop, so it pays to get a good one that will cut smoothly and hold up under heavy use. Cheap block planes are a waste of money. Below are the options that we recommend (prices are before any discounts):

Lie Nielson No. 102 low angle block plane, bronze body, (p/n LN102), $115.00 before discount, Optional replacement blade for Lie-Nielson ($30) or the Veritas Apron Plane, O1 blade, Lee Valley (p/n 05P27.01), $95.00

Lie Nielson is recognized as one of the highest quality plane makers in the world. The No. 102 is a small low angle, palm sized lightweight planes that can fit into your apron; there are other, larger, more expensive block planes by Lie Nielson that can be obtained online. If ordering this plane, it is highly recommended to order a replacement blade that can be sharpened to a higher angle, effectively giving you both a high and low angle block plane which is very handy. Ordering through the school, you can receive a 10% discount on all Lie-Nielson products. **This is by far our preferred block plane choice.**

Veritas offers a line of lower-cost planes that are nearly the quality of the Lie Nielson planes, although we can't get a discount. They can be ordered from Lee Valley directly or from NESAW on the tool order form. The Veritas apron plane is a low angle plane that is sized similar to the Lie-Nielsen plane; small and lightweight to fit easily in an apron. There's also a larger Veritas low angle block plane with an optional 50º replacement blade that turns it into a standard block plane (like having two planes in one). You can order the optional replacement blade under the optional tools on the tool order form. If you already own one, or are considering a plane not on this list, please call us first to discuss its suitability. (*Note: if purchasing the Veritas apron plane, please consider purchasing the Veritas Mk.II Honing Guide to facilitate sharpening because of the unique shape of its blade.)*

Burnishing Tool - This tool is used to sharpen card scrapers. A good version is the Wood River burnishing tool sold by Woodcraft (p/n 153980) for $21.99 before discount. However, any burnisher made for sharpening card scrapers will work fine.

Veneer Hand Saw - Used to cut veneer to create a seam suitable for joining. The type of saw we recommend is the Two Cherries saw sold by Woodcraft (p/n 147415) for $23.99 before discount.

Screwdriver Set - NESAW provides a set of basic screwdrivers in the shop, but if you have your own, there's more likely to be one handy when you need it. A set that includes a #1 and #2 philips, slotted, and square drive is the best. A very handy option is the autoloader screwdriver sold by Lee Valley for $19.95 (p/n 88K18.50). It includes all of the above bits in one screwdriver and very quickly allows you to change bits without the risk of losing the other ones. **Highly recommended**. Another similar option is the Pic Quic Screwdriver Set sold by Woodcraft for $12.99 (p/n 853151) which is on the tool order form.

Utility Knife - This is a standard utility knife with spare blades. We recommended the folding kind so the blade is not exposed when not being used. These can be gotten for under $10 at most hardware stores or home centers.

Cordless Drill/Driver (12V - 18V) - The school *does not provide* cordless drills or drivers for student use. Since this is probably the most used portable power tool in the shop, we require that each student have their own to guarantee you have a charged drill one when you need it. If you already own one, bring it with you and if not, we'll discuss options the first week of class; there may be an opportunity to purchase a tool at a discount through the school depending on how many students need one. You might want to wait until we discuss options before purchasing. If you have one that you want to purchase prior to the start of school, give us a call to discuss if the one you are considering is appropriate. **We highly recommend purchasing a two tool set including both a drill and an impact driver; common brands are Makita, Ridgid, and DeWalt, but there are other suitable ones on the market)**

Screw Driving Bits - For use in your cordless drill/driver. Look for a set that includes **multiple #1 and #2 philips and square drive** bits along with a magnetic tip holder, preferably with a carrying case. These can be purchased at nearly any hardware store or home center. Make sure to get plenty of spare driver bits, particularly the #2 square drive bits.

Honing Guide - Used for holding plane blades and chisels at the proper angle for sharpening. A low cost option is the basic honing guide sold by Woodcraft for $16.99 (p/n 03A21) which works well with the sharpening jig you will be building during class. We require everyone to have one of these. For an optional higher end version, and especially if you are purchasing the Veritas Apron Plane, you can purchase the Veritas MK.II Honing Guide from Lee Valley or Woodcraft; see Optional Tools for details.

Float Glass - Float glass is an exceptionally flat form of glass made by floating molten glass on a bed of molten metal. We use it for sharpening plane blades and chisels using sandpaper, followed by honing on a water stone. Each student should have a piece of 1/4" float glass 9" wide x 12" long. These can be obtained through the school for $10 on the tool order form.

Metal Mill File - Sometimes called a Mill-Bastard file and is used during the sharpening process for card scrapers. These can be obtained at any hardware store or home center or ordered from NESAW on the tool order form for $10; 10" is a good size, but longer ones would also work.

Pocket Screw Driver Bit (6") - Specialized 6" square driver bit used to drive pocket screws with a cordless driver. Available at a number of retailers including Woodcraft for $5.99 (p/n 145371) before discount.

Tool Apron - Some style of lightweight tool apron with a number of small pockets is recommended so that your basic measuring and marking tools are always at hand.

Respirator - A dual cartridge respirator that is OSHA rated for multi-gas/vapor/paint is required when spraying in the spray booth and each student must have their own. Many vendors make the required type of respirator, such as 3M's 6000 series respirator with the 6006 multi-gas/vapor cartridge. If you already have a suitable respirator, then bring it with you to class, otherwise, wait and we'll talk about the requirements before we start spraying and talk about possible options.

Eye, Ear, and Respiratory Protection - NESAW provides students with basic particulate disposable dust masks and one pair of safety glasses (if needed). Students must provide their own hearing protection; we do have foam earplugs and earmuff style hearing protection available if you forget yours, but these options are meant only for occasional use. One nice option is the Surefire EP4 Sonic Defenders available for about $14.00/pr. at http://www.surefire.com/EP3-Sonic-Defenders. They are also available on Amazon. If you would like different types of protection, it's up to you to provide an alternative. We will discuss options during the first week of class.

Highly Recommended Tools

Brad Point Drill Bit Set - Comes in very handy for a wide variety of tasks. While we have a basic selection of bits, they tend to get easily lost; having your own set guarantees they'll be therewhen you need them. They are available at a number of retailers, but Woodcraft offers a set of 7 (1/8" to 1/2") for $29.99 (p/n 154242) before discount. **Very highly recommended.**

Twist Drill Bit Set - Another handy item, although the school's basic selection of these bits often go missing as well. Sets with a case are available at nearly any hardware store, home center, or online retailer; make sure to get a set that goes up to 1/2".

Dead Blow Mallet - Used during assembly to "help" parts go together. Woodcraft sells one (p/n 15F18) for $25.99 before discount, but it can also be obtained from any number of other retailers. We have a selection of mallets at the school you can use, so get one of these if you want your own personal one.

Utility Chisel - There are many times when you will need a chisel to do things like scrape glue or other tasks that are very hard on your expensive chisels. We highly recommended that you purchase a cheap 1/2" or 3/4" chisel from the hardware store or home center to use as your utility or "beater" chisel.

Portable Tool Box or Bag - We provide a locked storage area for students to leave their tools at school each day, but unless they are in some sort of tool box or bag, they can get mixed up with other student's tools. If you choose to transport your tools to and from school each day, you'll need something to carry them in.

Optional Tools

Fractional Calipers - Calipers measure the exact thickness of wood or joinery as well as the depth of holes, grooves, or mortises. The best version for woodworkers is one that reads in fractions as well as decimals, like the fractional calipers offered by Lee Valley (p/n 88N72.10) for $42 or their digital version (p/n 88N90.46) for $31.50, which reads in both decimal and fractional inches as well as metric and can convert between all three. Any version that reads in fractions works just as well.

Japanese Handsaw – While we primarily use power tools for cutting, there are times when it's necessary to perform some hand cutting. There are a number of moderately priced options on the market. We generally recommend a japanese saw with a flexible back as a general purpose saw, ideally one with replaceable blades. Tajima makes a very nice saw that breaks down easily, has a handy carrying case, and comes with two general purpose blades with the option to buy other types of blades. It is the Tajima JPR-SET Rapid Pull Saw Set with 15 TPI and 18 TPI blade and can be purchased at a number of places, including Amazon at http://www.amazon.com/Tajima-JPR-SET-Rapid-Pull-Blades/dp/B0008KLNSA. Lee Valley also sells very good saws as do other vendors. If you are interested in another type of saw, or already own one, please call to discuss its suitability.

Waterstone 4000/8000 - This combination waterstone, with 4000 grit on one side and 8000 grit on the other is used for final honing of the edge of plane blades and chisels. We have this type of stone available in the classroom, but if you want to be able to sharpen at home or at busy times during class, we highly recommend that you purchase one for yourself. Norton makes a very good one that can be purchased at many stores online or at Woodcraft for $91.00 (p/n 818264) before discount.

Honing Guide (Upgraded) - This is a higher end honing guide; the Veritas Mk.II honing guide that Lee Valley sells for $124.00 (p/n 05M09.20) or at Woodcraft (p/n 160876) for $124.00 before discount. This honing guide has a bit more stability and flexibility and is very helpful when sharpening the Veritas Apron Plane blade and works great for sharpening chisels. This can be purchased using the tool order form, or you can wait until after the sharpening session in class to decide if you need it or not.

Hand Plane (#4 or #5) - These larger planes work well for smoothing and flattening larger surfaces. While we don't do this often in the shop, it does happen frequently enough that it pays to own a plane of this size. We will talk about this tool during class and can talk about sources and options at that time. If you already own a plane of this type, bring it with you to class and we can evaluate it for use in class.