

Tool Requirements

Sample Only for Reference

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 your 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
<ul style="list-style-type: none"> • Tape Measure - Standard (16'-25') • Tape Measure - Metric • 6" Hook Rule (Standard) • 12" Combination Square • 4" Sliding Square • Construction Calculator (Handles fractional calculations & board/foot conversion) • Chisel Set (Minimum 1/4", 1/2", 3/4", 1") • Card Scraper Set • Counter Sink Drills • Centering (Vix) Bit Set • Block Plane • Screwdriver Set • Utility Knife • Cordless Drill/Driver (Minimum 14V) • #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") • Pencil Scribe • Tool Apron • Eye, Ear, and Respiratory Protection • Pencils, markers (Sharpie), and notebook. 	<ul style="list-style-type: none"> • Drill Bit Set (Brad point) • Burnisher (for card scraper) • Fractional Calipers • Metric Hook Rule • Japanese Handsaw • Tool box or bag for transporting tools. 	<ul style="list-style-type: none"> 6" Combination Square Drill Bit Set (Twist) Water stone (4000/8000) Water stone Flattening Stone Plane (#4 Smooth, or #5 Jack) Flush Cut Saw Curved Card Scraper Set Sliding Bevel Gauge Pliers (Vise grip, needle nose) Putty Knife – Medium Hard Nail sets (sm, med, lg #1, 2, 3) Dead Blow Hammer

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, but don't get anything larger than 25'. One standard version we like very much 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 \$12.76, or at other online retailers. For the metric tape, we highly recommend the Fastcap True32, which is part of the Woodcraft tool bundle, because it has markings every 32 mm, which is very handy for what we do, but any metric version will work.

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 \$22 (p/n CD604R-6), but Lee Valley also makes a very nice one for \$14.90 (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 a 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 45° lines and verifying a 45° 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, \$90-\$110) and the Starrett 4" double square (p/n 13A, \$65), 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 Starrett, their Pinnacle 12" combination square (p/n 149872) would be a good substitute at \$44.99 before discount, as well as their 4" double square (p/n 04P56) at \$34.99 before discount. Lee valley also offers a nice 4" double square (p/n 24N08.01) for \$36.50 or a 6" version (p/n 24N08.02) for \$38.50.

Construction Calculator – Allows quick calculations of mixed fractions to reduce errors. The one we recommend is the Model 8525 ProjectCalc Plus by Calculated Industries and is sold by several companies including Amazon for \$29.95. It is one of the cheaper models, but also does a number of automatic conversions, such as board/ft calculations, which we do a lot during the program. Some other calculators do not do fractions smaller than 1/16th of an inch. If you are going to get another brand of calculator, it must be able to handle fractions down to 1/64th of an inch and optionally do board/foot conversion.

Chisel Set – Every student should have a good set of basic chisels as we use them in many different situations. 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 \$49.99 before discount. Woodcraft also carries an upgraded set of 4 chisels from Crown (p/n 129290) for \$96.99 before discount, that has better steel, allowing them to stay sharp longer. Lee Valley also sells a very nice set of 5 chisels that also includes a 3/8" one for \$69.50 (p/n 44S01.20). 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 set of five chisels (p/n C-BS-NR) retails for \$275. 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 \$17.99 (p/n 02Z10) before discount, or at Lee Valley (p/n 97K50.02) for \$9.50 each. At a minimum, we require each student to have at least one straight card scraper and optionally one or two curved versions; Woodcraft sells a curved starter set (p/n 147419) for \$17.99 before discount. 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 \$29.50 (p/n 50J04.20). At a minimum, each student should have a #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 \$29.99 (p/n 146721) and Lee Valley for \$19.50 (p/n 04J04.20).

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, bronze body, (p/n LN102), \$115.00 **or** cast iron body, (p/n LN102I), \$95.00
Veritas Standard Block Plane, O1 blade, Lee Valley (p/n 05P22.61), \$145.00
Veritas Apron Plane, O1 blade, Lee Valley (p/n 05P27.01), \$85.00
WoodRiver Low Angle, adjustable mouth (p/n 151125), \$89.99

Lie Nielson is recognized as one of the highest quality plane makers in the world; you can't go wrong with any of their planes; the two Lie Nielson low angle No. 102 planes are equally good, there is just a cosmetic difference. Both are small, 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. Ordering through the school, you can receive a 10% discount off the above prices. Veritas offers a line of planes that are nearly the quality of the Lie Nielson planes, but cost less, although we can't get a discount. They can be ordered from Lee Valley. The smaller apron plane is highly recommended, but the standard size block plane works well also.

Another option for the budget conscious is Woodcraft's new line of low cost WoodRiver planes which are made overseas, but have gotten good reviews. They are offering a low angle, adjustable mouth block plane (p/n 149381) for \$89.99 before the 10% discount we receive from Woodcraft. This is significantly cheaper than the equivalent size Lie Nielson or Veritas block planes, and it has the addition of an adjustable mouth. If you already own a block plane, or are considering a plane not on this list, please call us first to discuss it's suitability.

Screwdriver Set - A set of hand screw drivers comes in very handy in the shop. 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 \$18.50 (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 sold by Woodcraft for \$14.99 (p/n 150315).

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 (minimum 14v) - The school *does not provide* cordless drills or drivers for student's 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 one when you need it and it's charged. If you already own one, bring it with you, 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.

Screw Driving Bits - For use in your cordless drill/driver. Any set that includes multiple #1 and #2 philips and square drive screws along with a magnetic tip holder is acceptable, preferably with a carrying case. These can be purchased at nearly any hardware store or home center such as Home Depot or Lowe's.

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 \$13.99 (p/n 03A21) which works well with the sharpening jig you will be building during class.

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 \$7 on the tool order form.

Pencil Scribes - Used to scribe cabinets to uneven surfaces and is used frequently during cabinet installation. These inexpensive tools (\$3-\$5) can be obtained at local hardware stores. A very functional version is made by General Tools (p/n 843-1) and can be obtained at most hardware stores and at many places online. It can also be purchased through NESAW.

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.

Eye, Ear, and Respiratory Protection - NESAW provides each student with basic particulate disposable dust masks and one pair of safety glasses (if needed). Students must provide their own hearing protection, although the school has foam earplugs and earmuff style hearing protection available if you forget or lose yours; these options are not provided on a daily basis for the entire year, only on an occasional basis. One very nice option is the Surefire EP3 Sonic Defenders available for \$13.95/pr. at <http://www.surefire.com/EP3-Sonic-Defenders>. If you would like different types of protection, it's up to each student to provide an alternative. We will discuss options during the first week of class.

Highly Recommended Tools

Brad Point Bit Set - A basic set brad point drill bits come in very handy for a wide variety of tasks. While the school has a basic selection of bits, they tend to get easily lost, so having your own set guarantees they'll be there and sharp when you need them. They are available at a number of retailers, but Woodcraft offers a set of 7 brad point bits (1/8" to 1/2") for \$20.99 (p/n 146645) before discount.

Burnishing Tool - This tool is used to sharpen card scrapers. While the school has a burnishing tool, it is best to have your own so it's available when you need it. A very versatile one is the Veritas Tri-Burnisher sold by Lee Valley (p/n 05K32.01) for \$32.50, or by Woodcraft (p/n 816465) for \$32.99 before discount.

Fractional Calipers - Calipers are very useful in the shop for measure the exact thickness of wood or joinery as well as the depth of holes, grooves, or mortises amongst other things. The best version for woodworkers is one that reads in fractions as well as decimal. A great solution is the fractional calipers offered by Lee Valley (p/n 88N72.10) for \$36.50 or their digital version (p/n 88N90.46) for \$26.50, which reads in both decimal and fractional inches as well as metric and can convert between all three. However, any version that reads in fractions works just as well.

Japanese Handsaw – While we primarily use power tools for cutting, however 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 with replaceable blades. Tajima makes a very nice saw that breaks down easily and has a handy carrying case and comes with two general purpose blades with the option of buying other types of blades. It is the Tajima JPR-SET Rapid Pull Saw Set with 15 TPI and 18 TPI blades. It can be purchased at a number of places online, including Amazon at <http://www.amazon.com/Tajima-JPR-SET-Rapid-Pull-Blades/dp/B0008KLNSA>. Lee Valley also sells a number of very good saws as do other vendors. If you are interested in another type of saw, or already own one, please call to discuss if it is appropriate or not.

Portable Tool Box or Bag - We do 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

Brad Point Bit Set - A basic set brad point drill bits come in handy for a wide variety of tasks. While the school has a basic selection of bits, they tend to get easily lost, so having your own set guarantees they'll be there when you need them. You can get a basic set of twist drills in a handy plastic carrying case that goes up to 3/8" or 1/2" at almost any hardware store, home center, or any number of places online. Woodcraft offers a set of 13 twist bits w/case (1/16" to 1/4") for \$24.99 (p/n 06J23).

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. The school has this type of stone available in the classroom, but if you want to be able to sharpen at home or at other busy times during class, it is highly recommended that you purchase one for yourself. Norton makes a very good one that can be purchased at many stores online or at Woodcraft for \$80.99 (p/n 818264) before discount. If you purchase this, it is also highly recommended that you purchase a flattening or truing stone to flatten your waterstone. Woodcraft sells one for \$27.99 (p/n 833914) before discount. Waterstones become unusable without a way to flatten them. Again, the school has one available for in class use, but if you are planning on sharpening at home, this is a must.

Honing Guide (Upgraded) - This is a higher end honing guide; the Veritas Mk.II honing guide that Lee Valley sells for \$64.50 (p/n 05M09.01). This honing guide has a bit more stability and flexibility and is very helpful when sharpening the Veritas Apron Plane blade. 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.

Flush Cut Saw - A saw with a flexible blade and special teeth - and used to cut flush to the surface of wood without marring it. Works well for cutting dowels, plugs, and other protrusions. Lee Valley sells a very nice Veritas double sided version (p/n 05K36.01) for \$24.95; Woodcraft sells the same saw (p/n 825539) for \$23.99 before discount.

Sliding Bevel Gauge - A handy tool for laying out and transferring angles. There are a number of options on the market, and almost any of them will work fine. However, we recommend the higher quality one by Lee Valley for \$22.50 (p/n 60N20.10).

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.