

METALS 101 - Hand Tool Certification Certification Class

Welcome

Attendance / Intros

Prerequisite: Metals 100

Required for: Metals 102 and many other classes

GOALS:

- 1. Identify the basic hand tools for 101 certification**
 - 2. Learn how to use the tools**
 - 3. Practice using tools and materials**
 - 4. Learn procedure for shutting down the shop**
 - 5. Complete the Certification sampler or project and checklist**
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METALS: 101 - Hand Tool Certification

1. Identify the basic hand tools we have and what they do

The following are the tools that can be used on unheated metal sheet, wire and tubing with non-powered hand tools using traditional skills:

- **Gripping/securing:** bench pin, vise, pin vise, pliers, clamps, adhesive, 3rd-hand
- **Cutting/removing metal:** jewelers' saw, hole punches, shears, snips, disc cutter, files, sand paper
- **Shaping and forming metal:** hammers, pliers, mandrels, jumpring maker, stakes, anvils, bench blocks, dapping punches/blocks
- **Surface treating:** hammer texturing, chasing, stamps, abrasives, files (also Coloration, patina, etching, embossing - not covered here)
- **Fabrication:** Riveting hammer, tap & die, pliers and mandrels (for hinges, clasps, wire wrapping, wire weaving, ear wires, jump rings, chains, etc.)
- **Measuring, marking and aligning:** center punch, scribe, jeweler's rule, calipers, dividers, templates, try-square, wire/sheet gauge
- **Finishing:** sanding sticks, polishing cloths, Preservative wax or spray, Steel wool, Brass brush

2. How to use the tools

- Jeweler's saw
- Hole punch
- Files
- Sanding media
- Hammers
- Ring mandrel, bench block, anvil
- Dapping punch
- Disc cutter
- Pliers
- Aviation shear
- Calipers, Wire gauge, Jewelers' rule
- Bench pin, Vise
- Stamps and punches
- Jumpring/coil maker

IMPORTANT

- Annealing is a heat process to soften metal that has become hardened to make it pliable for forming and prevent it from becoming brittle.
- Annealing your materials may be required even when using hand tools (METALS 201 will certify you to use the torch for this.)
 - Rule of thumb: Anneal when using any sheet of 20 gauge or heavier or wire heavier than 14 gauge and if work-hardened (especially important for disc cutter, bench shear and rolling mill.)
- **Do not use steel for your work material.** Doing so will mar tools which then transfers marks to new pieces.
- **Avoid exposing steel tools to moisture.** Dry pieces thoroughly before using steel tools on them. Moisture rusts steel tools surprisingly easily and makes them unusable for metal-smithing.

3. Practice using tools and materials: Complete the sampler/project and checklist

Materials:

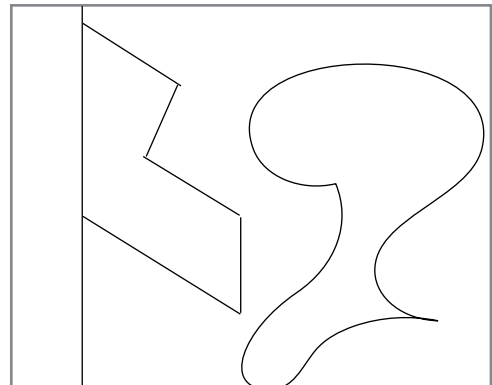
Wire: Silver, Copper, Brass in various lengths and gauges
 Sheet: Brass 4" x 5"
 Other: Materials from the "bin" as desired

SAMPLER INSTRUCTIONS:

Following these instructions is not mandatory but they are structured to cover the use of most of the Metals 101 required tools. This is not to judge quality, just knowledge of best practice and evidence of the safe attempt. Refer to the checklist for the required tools to work into your sampler. Be creative! Improvise!

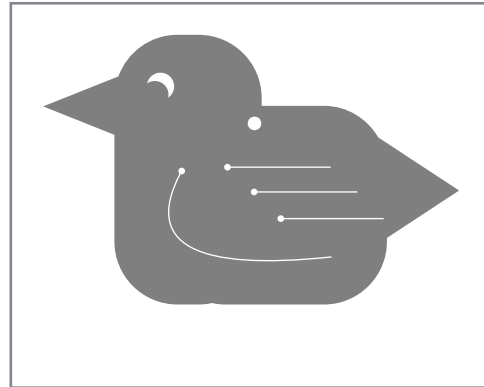
Jeweler's saw practice:

1. Check the metal type and size (gauge) of the materials. Can they be worked at this shop?
2. Measure and mark the 4x5 sheet into 4 sections - each being 2" x 2.5".
3. Use the 3-in-1 to cut the sheet along your marks.
4. Prepare the use jeweler's saw. Using this guide as a suggestion, draw lines on one 2 x 2.5" piece and practice using the saw by cutting along your lines.



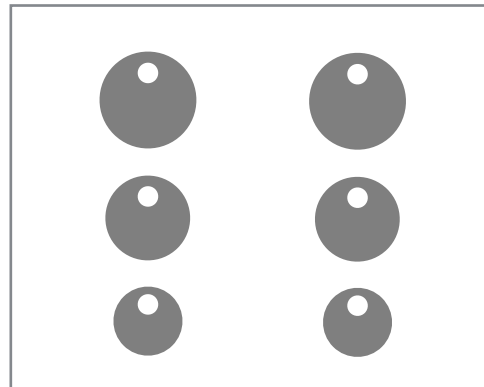
Pendant:

1. Trace the outline shape for the pendant on one of the pieces and cut it out.
2. File rough edges of the pendant to final shape, then sand edges smooth.
3. Punch holes, pierce wings
4. Stamp, texture and embellish as desired
5. Dome with dapping punch if desired
6. Punch hole for bale ring
7. Jump ring for bale



Earrings:

1. Disc cutter to make discs of different sizes
2. Texture, stamp, embellish as desired
3. Punch holes
4. Dome with dapping punch
5. Make jump rings, connect discs
6. Make ear wire



Ring - Coil style:

(Note: Instructions will be different if you are doing the *Cool Stackable Rings* class instead of this ring.)

1. Use jeweler's rule to determine the length of wire needed for your ring size. Be sure to add 3 times the diameter of wire you will be using and the length of any overlap you wish to have.
2. Measure and cut the wire.
3. File ends round and smooth. Straighten the wire if needed using bench block and non marring hammer. Sand the length of wire as desired.
4. Apply a light texture, if desired, and flatten the ends using a forming hammer.
5. Use the ring mandrel and non marring mallet to form the ring to size.
6. Apply more texture as desired to the ring while on the ring mandrel.



Certification checklist:

Answer the following (may be done orally):

| | |
|--|--|
| | Name three ways to ensure your safety when using hand tools. |
| | Name three ways to avoid unnecessary damage to tools. |
| | Which hammers can be used for striking steel tools? |

Demonstrate the use of the tools that are **bolded** below (required).

Check off any other tools you used for your certification project/sampler.
(You don't have to use them all, but you should know where to find them.)

| | <i>Measuring/ marking</i> | <i>Cutting</i> | <i>Surface finishing</i> | <i>Forming</i> | <i>Gripping</i> |
|--|-------------------------------|---|------------------------------|---------------------------|------------------|
| | Gauge wheel | Jeweler's saw installation & use | Files | Dapping block | Bench pin |
| | Jeweler's rule | Disc cutter | Stamps | Pliers | Vise |
| | Scribe | Hole punch | Hammer - texture | Hammer - forming | Clamps |
| | | 3-in-1 | Sanding sticks | Mandrel | Ring clamp |
| | | Aviation shears | | Anvil, Bench block | |
| | Other? | | | | |
| | | | | | |

4. Shutting down the shop if you are the last one leaving

Check list:

- **Turn off/unplug stuff:**
 - Ventilation hood (if no one else in the space needs it)
 - Pickle pot
 - Machine buffer, Flex-shaft, Dremel, Belt sander
 - Lights at bench and over solder station
- Cover solder bricks if cool enough to touch
- Stow tools and equipment, supplies
- Sweep off benches and maybe the floor, if you messed it up
- Look around for anything alarming - Tell someone if repairs or adjustments may be needed (Email shop captain or a board member and record it in the bench log.)
- Take your stuff with you (we don't have lockers.)

5. Instructor will review your checklist and sampler/project for completion of requirements.

Be sure to sign the certification log.

You may want to keep this handout for your reference.

