METALS 100 Certification Class

Introduction to the TinkerMill Jewelry and Metal Craft Shop - Safety and General Information

Welcome

Attendance / Intros

AGENDA:

1. Understand shop's operation within TinkerMill and the rules of the shop
2. Review personal safety
3. Certifications - What does that do for you?
4. Shop orientation
5. Shutting down the shop - Check list
6. Identify types and forms of materials suitable for this shop
7. Resources and opportunities

Brief History

My background

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1. Understand shop's operation within TinkerMill and the rules of the shop

- Funded through memberships, classes, donations (money or tools/supplies), materials purchase. All volunteer.
- **Priority use of the space**: Scheduled classes, Intended use of shop, Members, Unintended use of space, Non-members
- **Captain's job**:
  - Facilitator - help you find resources
  - Tool acquisition, supplies replenishment
  - General shop organization and maintenance
  - Certifications to promote safe, independent use of the shop
  - Shop representation at TinkerMill administration meetings
- **Materials: Ferrous vs Nonferrous metals**
  - **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. Even a small amount of moisture rusts steel tools surprisingly easily and makes them unusable for metal-smithing.
- **Scale:** tools appropriate to "smaller" items. Home decor object size or smaller.
- **Expectations:**
  - No food. No open drinks. Do not use the bench if you have been drinking or are otherwise impaired.
  - Clean up. If we can tell you've been here, it is not clean enough
  - Where stuff belongs vs where you found it
  - **Fumes**: danger to you and to others - use the vent hood - get to fresh air
  - Respectful of people, time, tools
  - **Report broken tools and all accidents**, suggest new tools, shop procedures, safety issues, supply needs, equipment failure (Use the bench log)
  - **Be honest: listen to your better self**
    - Experience: Do you need a refresher on certain equipment; It may be free to monitor a certification class you have already taken

- Common sense: If it “feels wrong,” Stop. Ask. Look it up. Find another way.
- Don’t use tools for purposes for which they were not intended.

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2. Personal safety - general (Certain equipment may have additional requirements)

The shop has things that can hurt you: **sharp pointy things** that pierce and slice fingers, **spinning flesh removers** and powerful **wheels that can mangle human parts** otherwise covered by clothing and hair, **hot flames, molten metal, explosive gases, oxygen-depriving nasty fumes** ….. OK?

- **Safety glasses, hearing protection, dust mask, respirator, gloves**
- Apparel: Tie back hair, no long, loose sleeves, scarves, dangling jewelry. Note: Acid pickle is used in the soldering process and spatters can damage clothing and cause skin irritation. Long pants recommended
- No open-toe shoes
- **Ergonomics**: Visor, lighting, seat height, stay alert - take breaks, stretch
- Consider how you are gripping your tools/materials, what will happen if it slips away from you
- Study up on unfamiliar tools, materials, processes. Get advice.
- Environmental awareness: Be aware of what is happening in surrounding space as well as in the shop space (dogs, kids, inconstancy, fumes, fire, smoke, sharp sounds, wet slippery floors, etc.)

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3. Certifications - What does that do for you?

- Teaches basic best practices - Good for the shop, proper tool use, and reduces chances of injury
- Improves tool efficiency and consistant reliability
- Provides hands-on practice in a safe environment (monitored)
- Assures independent tool users have demonstrated how to operate the tools safely by completing a sampler or project
- Certifications can be a prerequisite for other classes
- Tools at the TinkerMill Jewelry and Metal Craft bench are organized into groups - each group requiring separate certification
- See the certification map (https://www.gliffy.com/go/publish/image/9750485/L.png) which includes the following classes (*some are currently under development):

- Metals 100, 101, 102: Basic hand tools; Powered tools: Flexshaft, Drill, Buffer
- Metals 200, 201, *202, *203: Torch use - Single fuel (201), Dual fuel, Molten Metal
- Metals 300/301-303: Tools for chemical and electrical surface treatments e.g., etching, and applying color and patinas
- Metals 400/401: Kiln safety and use
- Metals 500/501: Lapidary (Stone shaping and cabbing)
- Metals 600/601: Metal Lathe

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4. Shop orientation

- Organization: by color or “bin”
  Green - Hand tools, neither powered nor fueled
  Yellow - Flex shaft, drill, or rolling mill, or other identified tools that require metal materials be annealed
  Red - Requires a special certification or training. Could also be personal equipment requiring permission
- **Switches and electric outlets**
- **Washing station**
- **First aid supplies**
- **Fire extinguisher**
- **Exits**
- **Clean-up supplies**

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5. 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)

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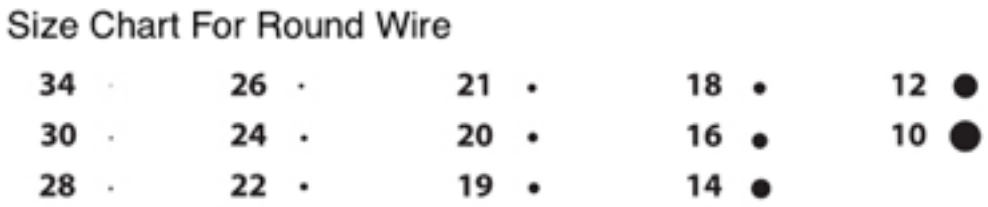
6. Identify types and forms of materials suitable for this shop

- **Kinds**: Precious metal vs Base metals vs Ferrous metal, Titanium
- Forms: Sheet, Wire, Tube, Grain, Leaf, Foil
- Solder: Silver solder (Hard, Medium, Easy), vs electrical solder or plumber's solder
- Sizes: AWG vs inch vs metric



- **Annealing: Hardness matters** - (Covered further in METALS 201)
  - Molecular structures relax (soften) with heat
  - Stages of hot metal
  - When annealing is needed
  - Work hardening happens

7. Shop Resources and Opportunities

- **Shop Captain:** Lynne Davis - lynne.davis@tinkermill.org
- **Meetup calendar** (meetup.com/LongmontHackerSpace/events/)
  - Project classes (Lots of stand-alone project classes that do not necessarily provide certifications - ask if unsure)
  - Technique classes (Stand-alone, does not necessarily provide certifications)
  - Demos
- **Get paid to teach or co-teach a class**
- **Email notification** of Meetups (opt-in)
- **Member portal** (future: tinkermill.wildapricot.org)
  - TM expertise, get help
- **Chatroom (Slack Forum)** + Slack app: (tinkermill.slack.com) Channel: #metal-craft, #meet-up-ideas
- **Wiki** (http://wiki.tinkermill.org/doku.php?id=references_and_resources)
  - Extensive bookmarks for sources of tools, materials, technique, expertise, software, charts, local organizations
- **Open Studio -** Open to all - members and non members ($5)
  - Sundays 12:30-2:30
  - Knowledgable member(s) on hand to provide guidance, feedback
  - Limited materials for purchase (wire and some sheet) or bring your own
  - Bring your own project design, a project from magazine or web download
  - Bring jewelry or metal crafts you have done elsewhere. They may quicken the certification process. (instructor's discretion)
  - Meet people, form groups, share ideas, lessons learned, and successes!
  - Books and magazines for inspiration and binder full of reference materials (charts, tables, etc.) (under bench)