

## Metals 100 Certification Class

Introduction to the Tinkermill Metalcraft and Jewelry Shop  
Safety and General information

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Welcome to the Metal craft and Jewelry shop!! We are glad you are here! The following will outline the first part of class.

**INTRO's**---Let's get acquainted.

Brief history of the shop

Instructor Background

**ATTENDANCE:** Please remember to sign in. (both sheets)

### **AGENDA:**

- Understand the shop's operation within Tinkermill and rules of the shop (pg1-2)
  - Review Personal Safety (pg2-3)
  - Certification- What does it mean/do for you? (pg3)
  - Shop orientation (pg3)
  - Materials (pg4)
  - Shutting down the shop (pg4)
  - Resources (pg5)
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## **Operating within Tinkermill:**

- **Funding:** This shop, and all shops within Tinkermill are funded through classes, donations (money or tools/supplies) and material purchase by members or public. Your membership dues keep the lights on and the tax man happy. Operated by Volunteers.
- **Priority Use of Space:**
  - Scheduled Classes
  - Intended Use of the shop (what it was designed for)
  - Members
  - Unintended use of shop (other than what it was designed for)
  - Non-members
- **Captain's Job:**
  - Facilitator- helping you to find resources
  - Tool acquisition, replenish consumable supplies
  - General Shop organization and maintenance
  - Certifications to promote safe, responsible and independent use of the shop
  - Shop Representation at the Tinkermill Administration Meetings (once a month, all are welcome)

- **Scale:**
    - Our tools are appropriate for smaller items, lunchbox and smaller.
  - **Expectations:**
    - No food or open drinks on or near the benches.
    - Do not operate machinery or work in the shop if you are impaired by substances.
    - Always clean up. If I can tell you have been here, it is NOT clean enough.
    - Put stuff where it belongs versus where you found it.
    - Respectful use of space, tools and time in the shop.
    - Report any broken tools and all accidents—any concerns, suggestions, equipment failure, supply needs or safety issues. (my info is at the beginning and end of this document. You can also slack the #metalcraft channel)
    - Listen to your better self, use common sense: If it “feels wrong, STOP, ASK, LOOK IT UP, Find another way.
    - Please do not use tools for purposes which they were not intended.
    - Be Aware of your surroundings.
    - There are three shops that work with metal at Tinkermill: This shop, machine shop and the Blacksmith and Welding out back. This shop is a NON-FERROUS metal shop. NO STEEL work material!
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## **Personal Safety- General** (Certain equipment may have additional safety requirements)

\*This 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 hair or clothing, **hot flames, molten metal, explosive gases, heavy objects** to crush unsuspecting toes and fingers, and **oxygen depriving nasty fumes....**to name just a few. \*

Please adhere to the following at all times in the shop.

- **Safety glasses** will be worn *at all times* in the shop.
- You may need **hearing protection** in some cases (power tools or percussion tools)
- You should wear a **N95 dust mask** anytime you are sanding, enameling, or working with fumes
- You should wear a **respirator** in the event of casting or working with resins.
- There are many reasons to wear the different types of **protective gloves** we have in the shop.
- **Apparel:** No long or loose sleeves, scarves, dangling jewelry, boleros, ties, nooses..etc.
  - *Acid pickle is used in soldering processes and can damage clothing and cause skin irritation if left unchecked.*
  - Recommended shop attire: Leather work boots (or other hard natural closed toe shoe) Long pants, ¾ sleeve, hair tied back at all times, and a shop apron.
- **NO OPEN TOED SHOES, or TENNIS SHOES.**

- Ergonomics: listen to your body and give it what it needs. Make sure you have adequate light, vision enhancement, seat height, take breaks and stretch.
  - Consider how you hold your tools and work piece
  - Review unfamiliar processes, materials or tools. Ask advice.
  - Environmental Awareness: Tinkermill is an all ages, all walks of life kind of place. Frequently classes happen at the same time and congest areas that force traffic through the shop, be aware of what is happening around you and what you are doing that may affect others.
  - Clean up spills/accidents immediately.
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## **Certifications:** What does it do for you?

- Teaches best practices- shop protocol, proper tool use and reduce chance of injury
  - Provides hands on practice in a safe monitored environment
  - Through completion of a sampler project students will earn independent use of the hand tools in the shop setting by demonstrating safe and proper use of tools.
  - This certification is a pre-requisite for most other classes in the shop. Some of the other certifications will be very useful for most technique classes.
  - Tools at the Tinkermill Metalcraft and Jewelry shop are organized into groups- each one requiring a separate certification. (You can find the certification map on our wiki or on the wall in the shop) NOTE: it is currently undergoing a review and revamp.
    - Metals 100 series: Basic hand and powered tools
    - Metals 200 series: Fuels and torches
    - Metals 300 series: Technique classes
    - Metals 400 series: Kiln safety and use
    - Metals 500 series: Lapidary
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## **Shop Orientation:**

### **Our shop is organized by color, denoting the three areas of certification.**

- Green: Hand and bench tools (all non-powered tools)
- Yellow: Powered tools
- Red: Requires special certification or training. Usually fire/fueled tools. This includes the Rolling mill as most materials will need to be annealed before going into the rolling mill.

### **There are things that you should know their location:**

- Switches and electric outlets
- Washing stations
- First Aid Supplies
- Fire extinguishers
- Exits
- Clean up supplies (actual cleaning and neutralizing agents)

**Materials:** Identify types and forms of materials suitable for this shop

- Kinds: Precious metals, and base metals. NON-FERROUS metals only. NO STEEL
  - Platinum and Titanium are very hard materials and not suitable for this shop
- Forms: Sheet, Wire, Tube, Grain, Leaf, Foil
- Solder: Silver Solder (Hard, Medium, Easy) Covered more in Metals 201
- Sizes: Gauge, inch, metric, weights

NOTE: some materials will become work hardened during fabrication and will need to be annealed (molecularly relaxed) or softened to continue working the metal. This concept will be covered further in Metals 201.

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**Shutting down the shop:** In the event you are the last one to leave, or the only one using the shop. Here is the closing procedure:

- Turn off or unplug things:
  - Ventilation hood (make sure glass is not using it)
  - Pickle pot (Turn off AND unplug)
  - Any Powered tools (except the Flex shafts)
  - Lights over the bench and Solder station
  - Cover solder bricks if they are cool enough to touch
  - Return tools to their proper places
  - Sweep off work surfaces, and the floor if you made a mess
  - Look around for anything alarming, email or slack me directly and let me know.
  - Sign out on the Log book-make any comments etc.
  - Take all of your things with you. (We do not have lockers or storage)
- If you are the only one in the building follow the Tinkermill shut down procedure before exiting the building.

**Opening the shop is the previous in reverse: Make sure to sign in on the log each time you use the shop!**

## Resources and Opportunities:

- Shop Captain: Crystal Hinds- [crystal.hinds@tinkermill.org](mailto:crystal.hinds@tinkermill.org)
- Meetup Calendar ([meetup.com/LongmontHackerSpace/events](http://meetup.com/LongmontHackerSpace/events))
  - Project/Technique classes (lots of project or technique classes that do not necessarily require or provide certifications)
- Like Teaching? Get paid to teach or co-teach classes
- Slack Forum: ([tinkermill.slack.com](http://tinkermill.slack.com)) Channel: #metalcraft, #general
- Wiki: [http://wiki.tinkermill.org/index.php/Jewelry\\_and\\_Metalcraft](http://wiki.tinkermill.org/index.php/Jewelry_and_Metalcraft)
  - Extensive bookmarks for sources of tools, materials, techniques, software, charts and local organizations
- Open Studio- Open to all- members and non-members (\$5)
  - Sundays 12:30-2:30
  - Knowledgeable member(s) on hand to provide guidance or feedback
  - Limited materials for purchase, or bring your own
  - Bring your own project design, or inspiration from your world
  - Meet people, form groups, share ideas, successes and lessons learned.
- Reference Material and Library (located under bench)
  - Inspiration magazines
  - Technique Books and videos
  - Expert information on metalcraft subjects
  - The complete Metalsmith (Tim McCreight)
- Materials and Tools:
  - [Rio Grande.com](http://RioGrande.com)
  - [OttoFrei.com](http://OttoFrei.com)
  - [Thunderbird Supply.com](http://ThunderbirdSupply.com)
  - [Halsteadbead.com](http://Halsteadbead.com)
  - Western Aluminum (Boulder)
  - Atlas Metal (Denver)
  - Alrico Aluminim (Thornton)
  - [Stuhler.com](http://Stuhler.com)
- Connect to the larger community:
  - Tinkermill slack
  - Colorado Metalsmith Association ([coloradometalsmith.org](http://coloradometalsmith.org))
  - Sisterhood of metalsmiths (facebook group)