
Tormach: Intro Class

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Contributors

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Purpose

A two hour class to help participants understand the abilities of the Tormach as well as the additional requirements needed to use it. It will be divided into two sections, the first being a classroom setting followed by some demonstrations on the machine.

Class Information

- Ideal size: 8 students
- Cost: \$10
- Time: 2 hours

Class Schedule

Classroom Instruction (1 hour)

- Tormach 1min get excited <https://www.youtube.com/watch?v=l02nCqjBYnI>
 - **Computer numerical control (CNC)** is the [automation](#) of [machine tools](#) by means of computers executing pre-programmed sequences of machine control commands.^[1] This is in contrast to machines that are manually controlled by [hand wheels](#) or levers, or mechanically automated by [cams](#) alone.
 - In modern CNC systems, the design of a mechanical part and its manufacturing program is highly automated. The part's mechanical dimensions are defined using [computer-aided design](#) (CAD) software, and then translated into manufacturing directives by [computer-aided manufacturing](#) (CAM) software. The resulting directives are transformed (by "post processor"
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software) into the specific commands necessary for a particular machine to produce the component, and then loaded into the CNC machine.

- Capabilities of the machine
 - Cutting steel, iron, stainless, and even tougher nickel based alloys. (Note at the moment we are only allowing aluminum on the machine, but we are planning to allow other metals, possibly on an individual basis, determined by skill? Not sure.
- Resources
 - <https://www.tormach.com/tormach-product-videos.html>
 - <http://www.nyccnc.com/>
- Feeds and Speeds
 - Chipload <https://www.youtube.com/watch?v=d6tyyBxWAAU>
 - Cover basics of feeds and speeds.
 - https://docs.google.com/spreadsheets/d/168mOC67az_Kea-8rqZHomYmvxA-BC0DyQiYTpXndg3b0/edit?usp=sharing
- Machine Access Requirements
 - Metal Shop Safety
 - Shopbot (Recommended but not required)
 - This intro course (\$10)
 - No access to machine
 - 1 on 1 Course (\$40)
 - Authorized to practice the part taught in 1 on 1.
 - Exam (First free, \$5 after)
 - Pass fail based on safe use of machine
 - Once passed, authorized to use the machine (not the same as being a successful machinist)
- Other Machine Policies
 - Bits supplied
 - 1/8,
 - Broken bits etc.
 - Report broken bits. We plan to provide replacement bits, but if you break a lot, then we might ask you to chip in or start providing your own.

- Scheduling / good citizen.
 - Using a google calendar. Please make sure you always add yourself to the calendar. This can be helpful as well to help us know who is using the machine and how often it's being used.

Machine Demonstration (1 hour)

- Power on machine
- Jogging the machine
- Changing tools
- Facing and squaring stock
- Conversational
 - Pocket
 - Drill
- Possibly run a program?