

Tormach Training Workshops
Workshop 4: Student Thesis

1. Prerequisite

- a. Session 4.1
 - i. Complete the [Session 4.1 Prerequisite Quiz](#)

2. Purpose

- a. Learning how to design for machining
- b. Learn about common mistakes that cause machine crashes
- c. Safety discussion
- d. Design and machine a part of your choice

3. Session 4.1 (Classroom)(Time: 1 Hour)

- a. Questions or issues from Workshop 3
- b. Review Session 4.1 Prerequisite Quiz
- c. Discuss guidelines for choosing a student thesis project
(some of these may vary depending on student skill level)
 - i. Material choice - aluminum is preferred
 - ii. Design - either your own design or a downloaded 3D model. Modifications may be necessary if the model was drawn to be 3D printed. A simple design is ok but it should require more than just drilling a few holes to complete the part.
 - iii. CAM - Fusion 360 should be used to verify tool paths, tool lengths, clearance, etc...
 - iv. Machining - the part should be held in the vise with hard/soft jaws, or clamped to a fixture plate. 4th axis machining is a separate workshop.

4. Session 4.2 (Machine)(Time: relative)

- a. Extra classroom time may be needed to verify toolpaths or post the program.
- b. Extra machining sessions may need to be scheduled depending on part complexity.
- c. Discuss [Time Scheduling Rules](#) for authorized users

Required Items for Workshop 4

Workshop 4 kit - bill of materials		
Qty	Description	Link/Reference
2	Stock material	Provided by student
1	1/16 2fl ball end mill	https://onlinecarbide.com/1-16-2fl-reg-ball/

Documents to print and hand out:

1. Workshop 4 syllabus (Training Workshops)
2. Session 4.1 Prerequisite Quiz ANSWERS

Wild Apricot Event Description

Title

Tormach Workshop #4 (Student Thesis)

Cost

See course outline

Tags, Location, Date/Time

(same as Workshop 1)

Description

This is the last of four workshops required to be a qualified Tormach user. Class size is limited to 1 person.

Participants completing this workshop will keep their finished project in addition to receiving a new endmill.

Prerequisites

1. Successful completion of Workshops 1 through 3
2. Complete the [Session 4.1 Prerequisite Quiz](#) before the first class

Workshop 4 syllabus

For this workshop, you will choose your own project and do the design, CAM, and machining. You will receive one-on-one guidance as necessary through this process.

After completing this workshop, you will be authorized to use the machine. Whether that is unsupervised or with a Tormach Advisor present will be determined on an individual basis depending on skill level.

This session will be taught by Kyle Hossler.