



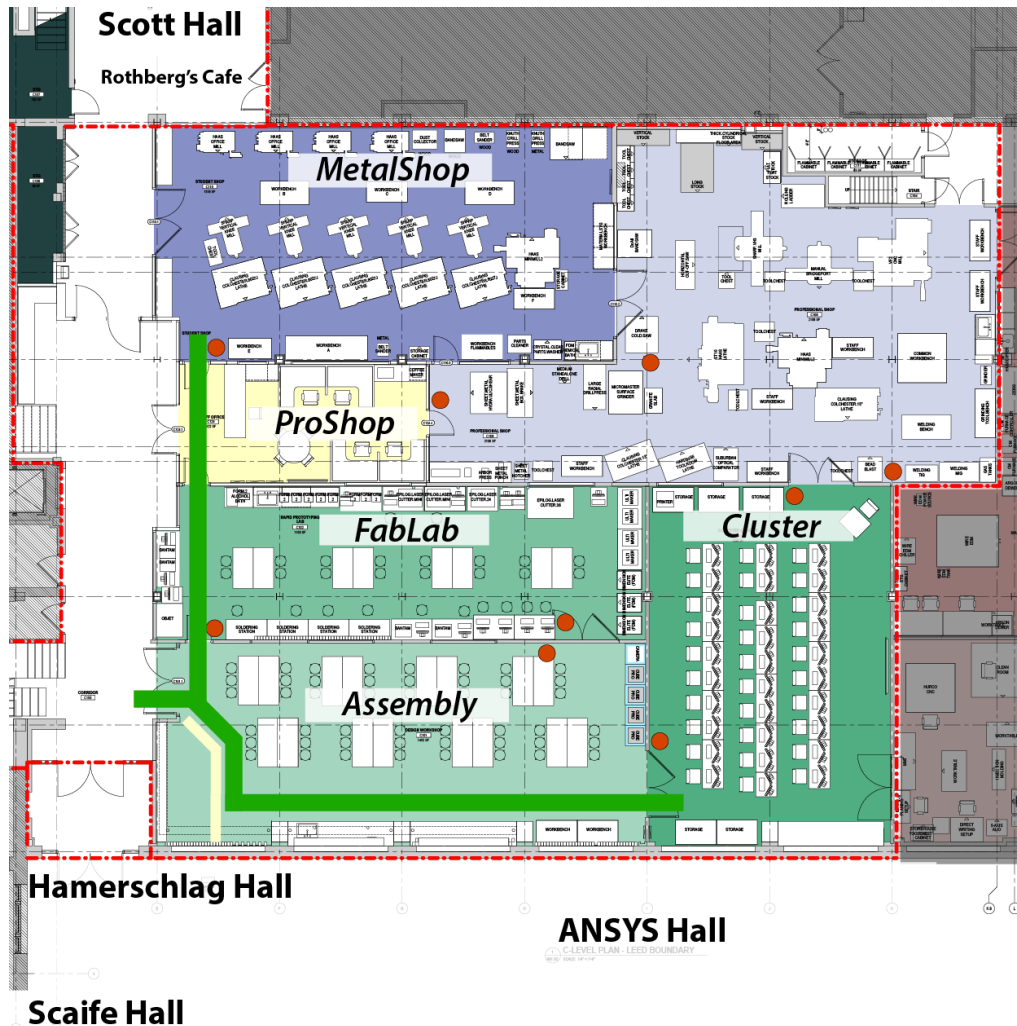
Policies, Procedures, Training, and Access

updated 09/24/2018

Tech Spark makerspace
College of Engineering
Carnegie Mellon University

The CIT Makerspace

Completed Renovation: Hamerschlag Hall “MakerWing” → “Tech Spark”



ANSYS Hall

Ongoing Construction: expand the makerspace facilities



**Carnegie
Mellon
University**

<https://www.cmu.edu/cdfd/ansys/index.html>

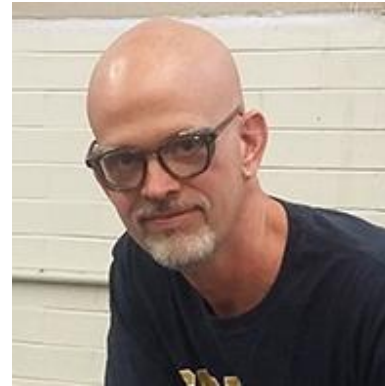
Makerspace Professional TEAM



Diana Haidar, Ph.D.



Ryan Bates



Ed Wojciechowski



Nikhil Shinde



Larry Hayhurst



John Fulmer



Tom Rusu



Jim Dillinger

Safety Policies & Priorities

Student and professional TEAM are in charge of safety

- first responders trained in First Aid, CPR, AED
- TEAM has the right to correct unsafe actions by anyone at any time
 - a) polite correction, safety issue fixed (equipment cleanliness is crucial to safety)
 - b) 1st strike, 2 week time-out
 - c) 2nd strike, 4 week time-out
 - d) 3rd strike, permanent ban

Our safety priorities

- 1) user and people around them
- 2) equipment and tools
- 3) project

Open to current CMU students, faculty, and staff (no alumni or relatives at this time)

- 1) courses
- 2) research
- 3) student orgs
- 4) personal (subject to availability)

User Guidelines

Equipment is available during TEAM open hours (Training Engineers And Makers)

FabLab – 3D printers, laser cutters-engravers, electronics stations

MetalShop – manual and CNC machining equipment

Communal areas are accessible 24/7

Cluster – computers & project storage

Assembly – meeting area

All tools stay in the space and are returned after each use

- ensures resources are always available

Walkway stays clear of chairs and bags

- easy to exit in an emergency

Charge for the resources consumed

- course/research/student org/personal
- monthly invoice – oracle # or plaid cash

Food is prohibited

- eat in Scott Hall's Rothberg Café

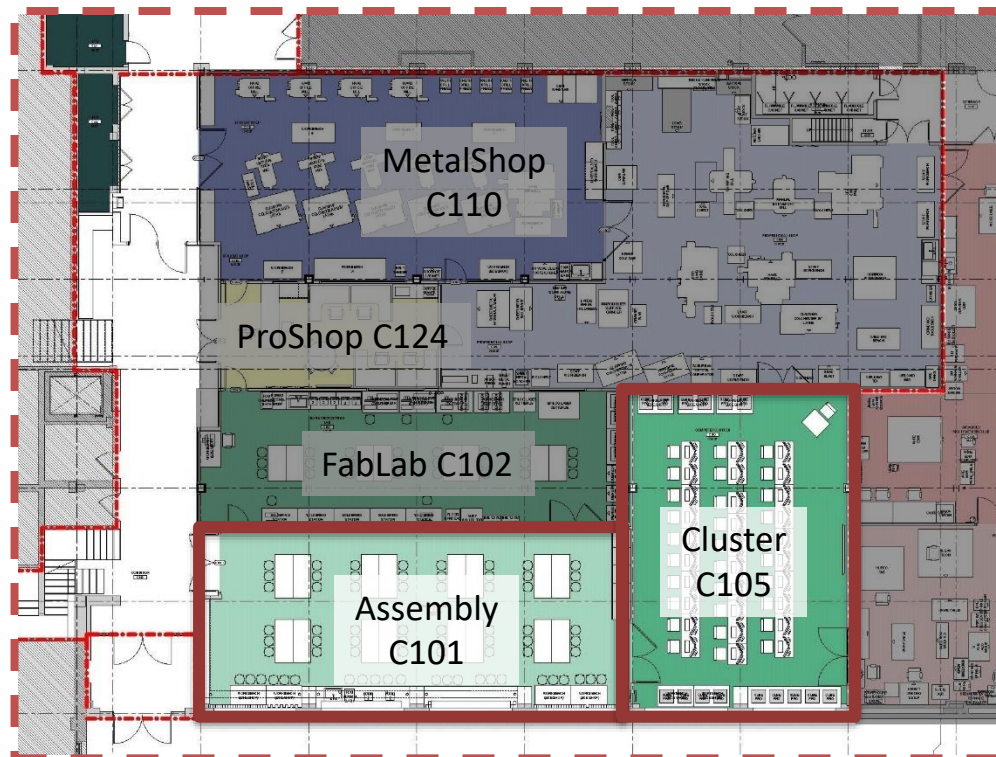


The CIT Makerspace

Communal areas are accessible 24/7

Cluster – computers & project storage

Assembly – meeting area



Project Storage Policies

- 1) the crates are owned by the makerspace
- 2) you can only store items in your group's officially assigned crate
- 3) the crates must stay in the makerspace but you can take your project components anywhere
- 4) when you're leaving, even if only for a quick break, you need to return the crate to its assigned location
- 5) all stored objects must stay within the crate volume, parts poking out will be confiscated
- 6) your group is responsible for emptying the crates at the end of the semester (return them to the same condition they were received)



The CIT Makerspace

TEAM open hours F2018:

hand/power tools

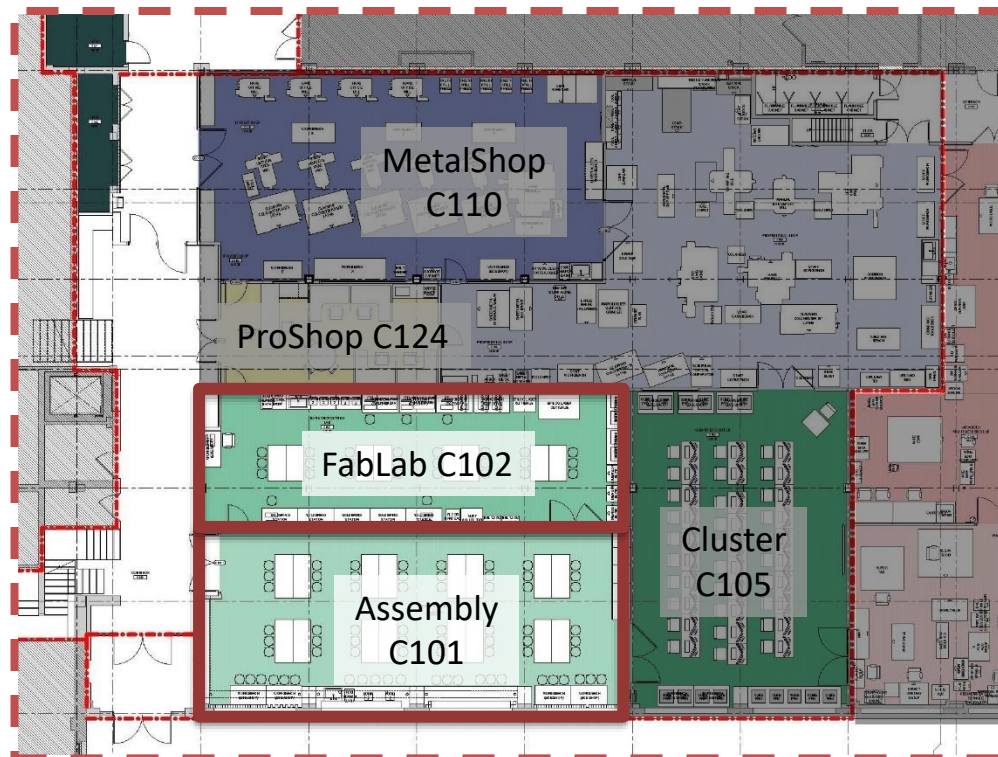
3D printing

laser cutting

electronics and soldering

9:30am - 11:59pm Mon-Thurs

9:30am - 9:00pm Fri-Sun



The CIT Makerspace

Equipment:

hand/power tools

3D printing

laser cutting

electronics and soldering

Required Training

EHS Hand/Power Tool Certificate

Optional Training

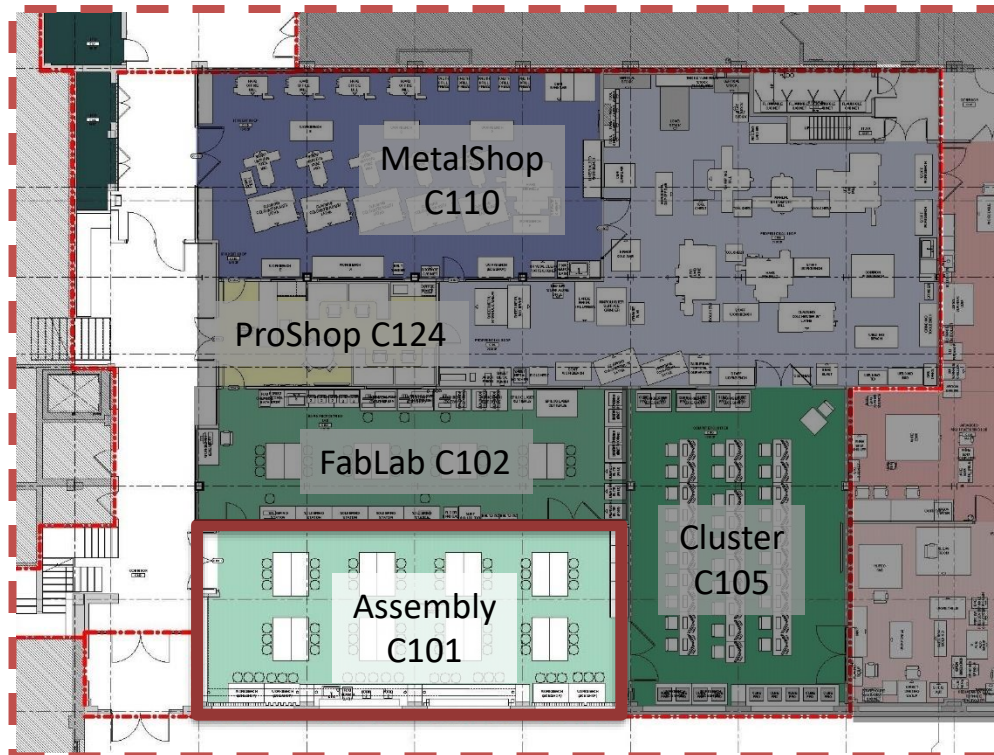
24-104 Intro to Modern Making

Access

checkout from TEAM to use within space
wear proper PPE

Material Use

bring your own plastic or wood, no metal



The CIT Makerspace

Equipment:

hand/power tools

3D printing

laser cutting

electronics and soldering

Optional Training

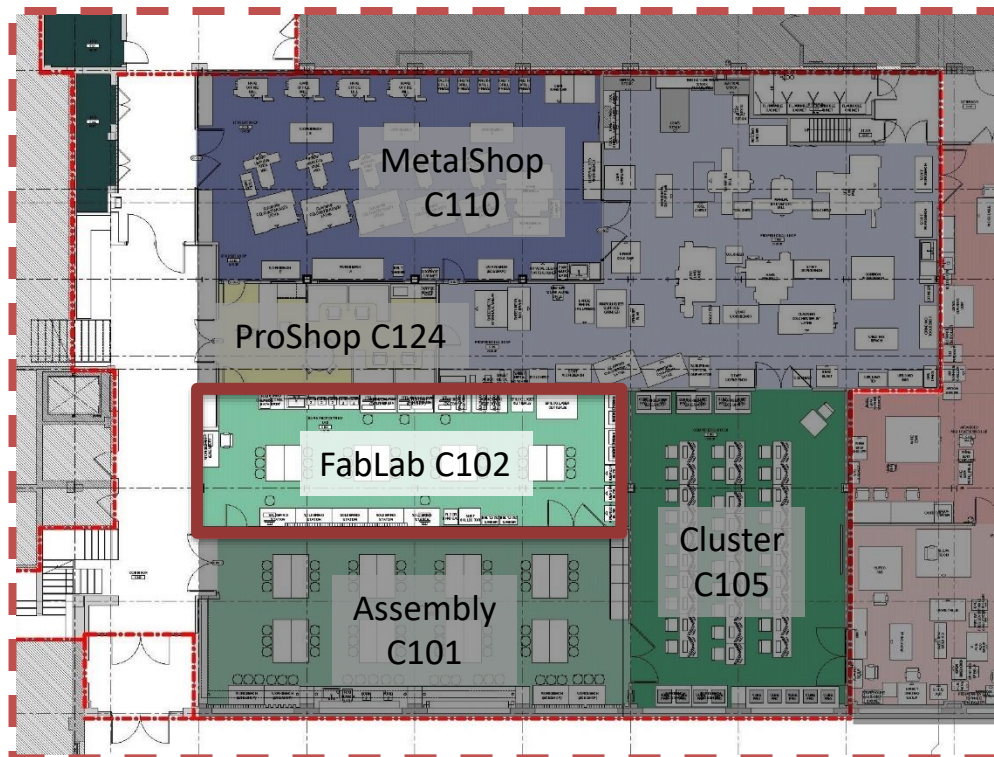
24-104 Intro to Modern Making

Access

Ultimakers are the only self service request print service from TEAM

Material Use

material consumption charged to course/research/student org/personal
\$0.30/g



Formlabs Inc



Ultimaker

The CIT Makerspace

Equipment:

hand/power tools

3D printing

laser cutting

electronics and soldering

Required Training

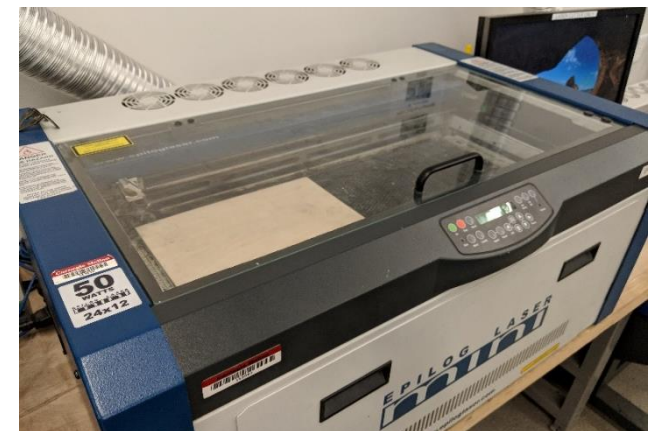
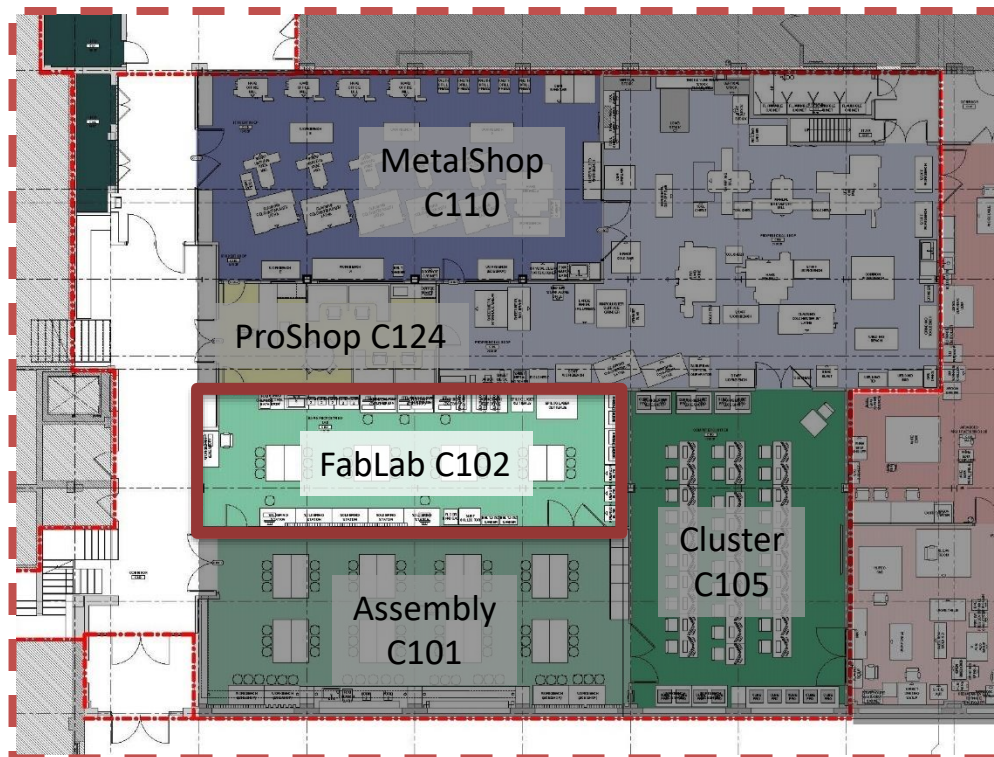
one class { 24-101 ME Fundamentals (as of Fall 2018)
24-104 Intro to Modern Making
24-370 Engineering Design I
24-672 DIY Design and Fabrication
+ one quiz EHS Fire Extinguisher Part1 Certificate

Access

computer login restricted to those trained

Material Use

bring your own, see posted approved list
cannot use those on posted prohibited list



Epilog

Defining Fire

- The laser beam cuts by locally burning and melting material
- Fire is defined as a spreading flame



CO₂ fire extinguishers are quickly identified by their wide nozzles

CO₂ Fire Extinguishers

**** laser machines must always be consciously attended ****



The CIT Makerspace

Equipment:

hand/power tools

3D printing

laser cutting

electronics and soldering

Required Training

EHS Soldering Safety Certificate

Optional Training

24-104 Intro to Modern Making

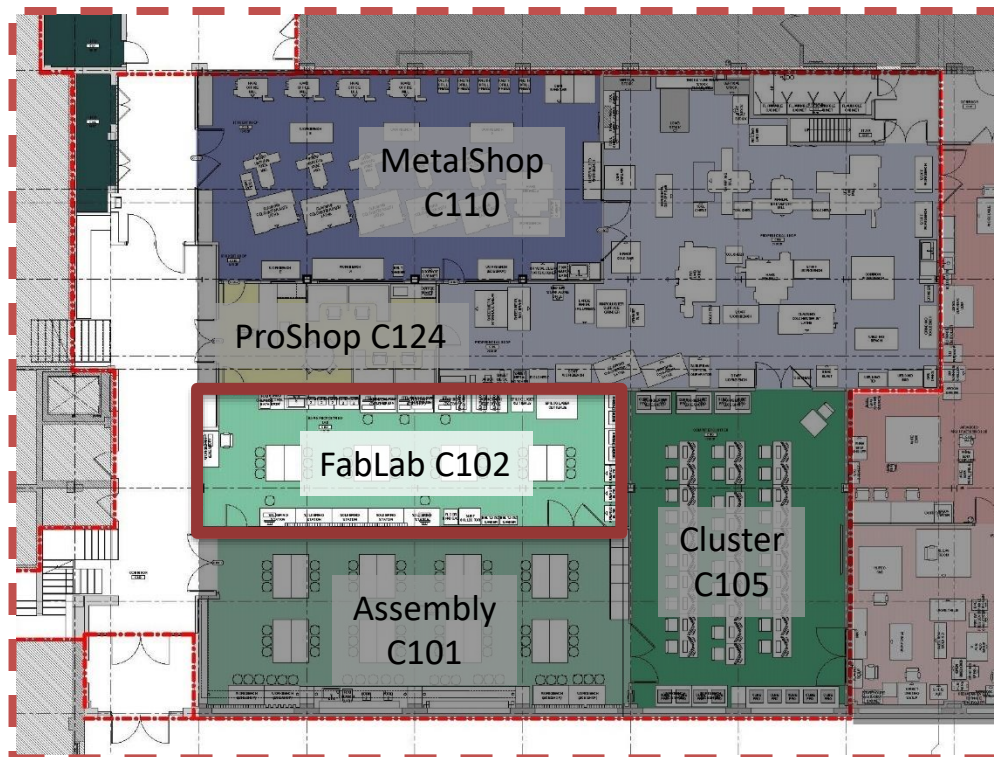
24-354 Gadgetry, Sensors, Actuators

Access

openly available to use within space

Material Use

bring your own material



The CIT Makerspace

TEAM open hours F2018:

light machining

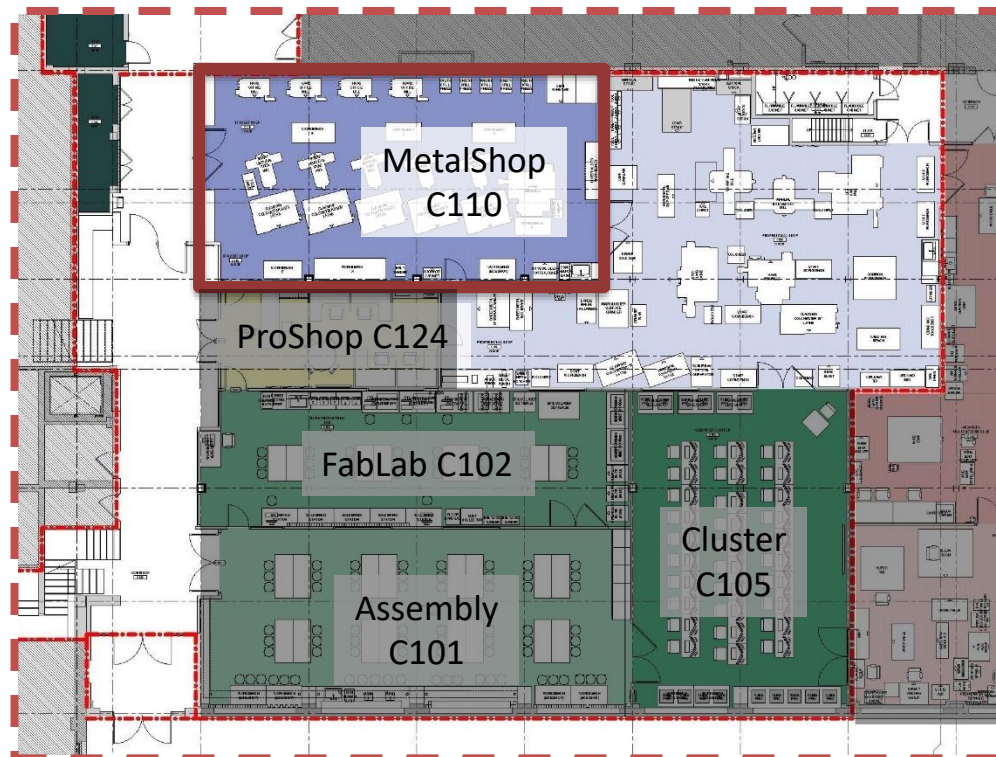
manual mills

CNC mills

9:30am - 10:30pm Mon-Thurs

9:30am - 9:00pm Fri

9:30am - 3:30pm Sat (mini2)



The CIT Makerspace

Equipment:

drill presses
band saws
belt sanders

Required Training

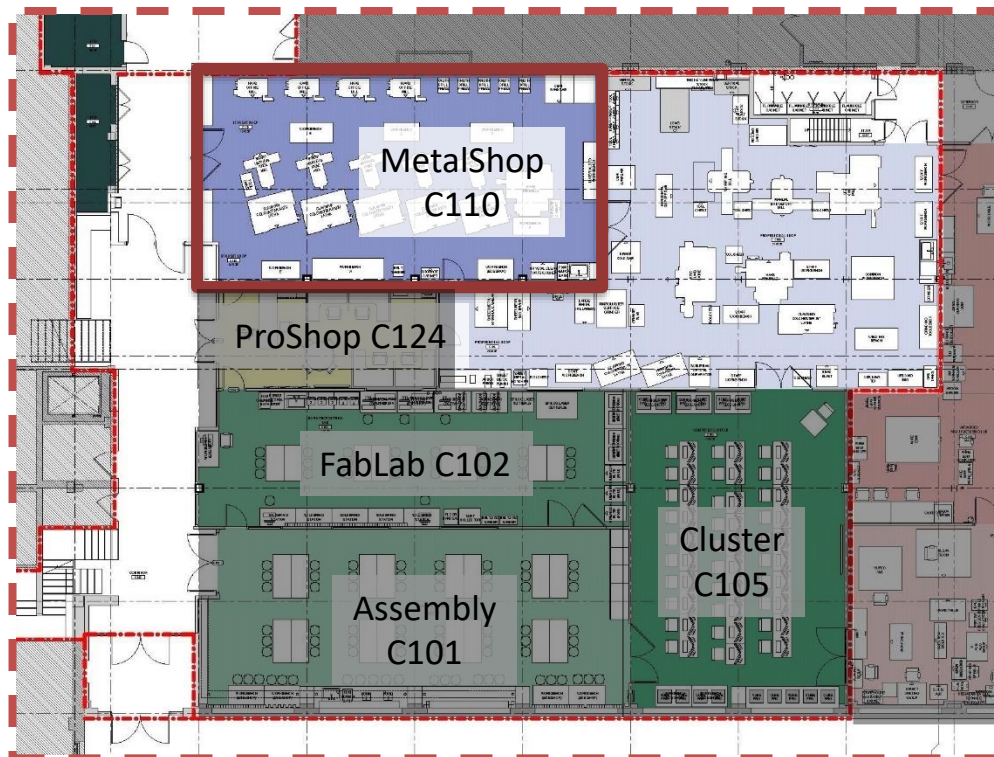
two { EHS Hand/Power Tool Certificate
quizzes { EHS Student Shop Safety Certificate

Access

wear proper PPE

Material Use

bring your own plastic or metal, no wood



The CIT Makerspace

Equipment:

lathes

knee mills

Required Training

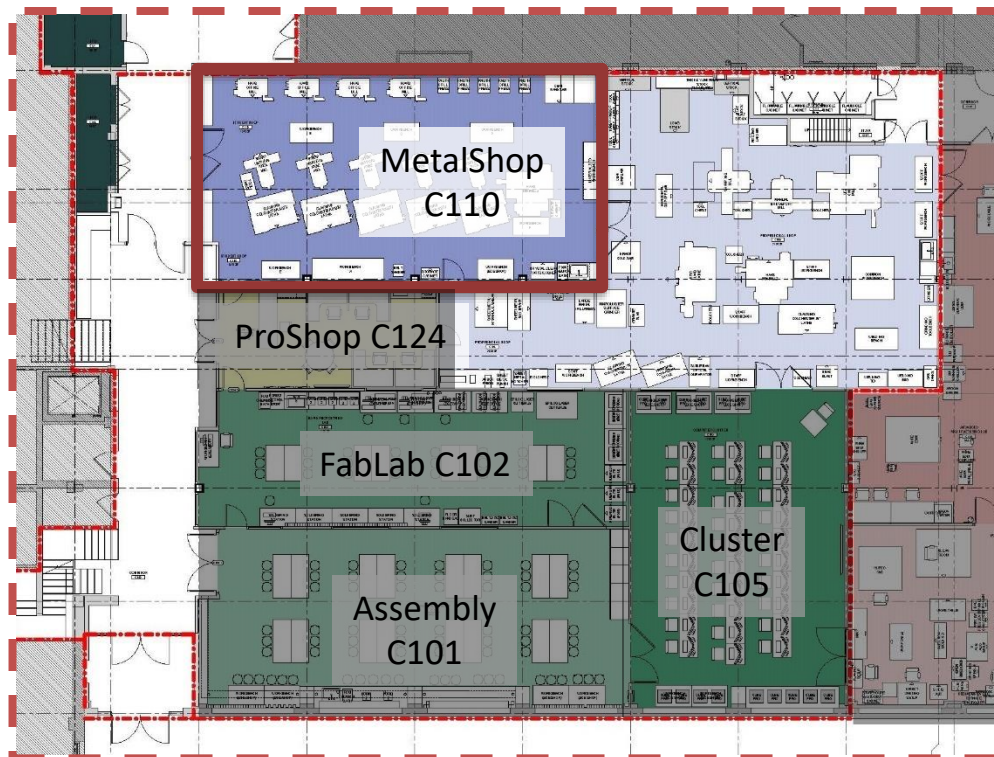
one
class { 24-200 Machine Shop Practice
24-203 Intro to Manual & CNC Machining
+
two
quizzes { EHS Hand/Power Tool Certificate
EHS Student Shop Safety Certificate

Access

wear proper PPE

Material Use

bring your own plastic or metal, no wood



The CIT Makerspace

Equipment:

CNC mills

Required Training

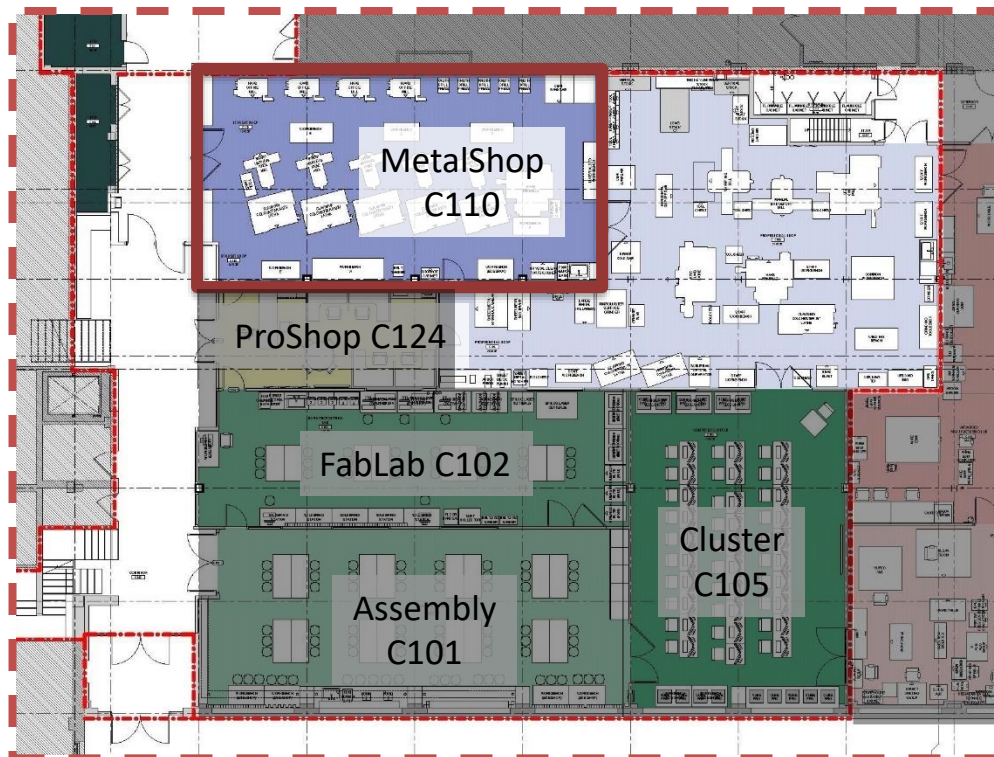
one class { 24-300 Fundamentals of CNC Machining
24-203 Intro to Manual & CNC Machining
+
two quizzes { EHS Hand/Power Tool Certificate
EHS Student Shop Safety Certificate

Access

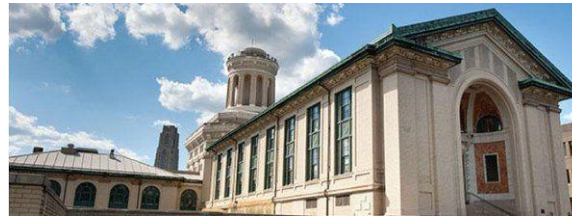
wear proper PPE

Material Use

bring your own plastic or metal, no wood

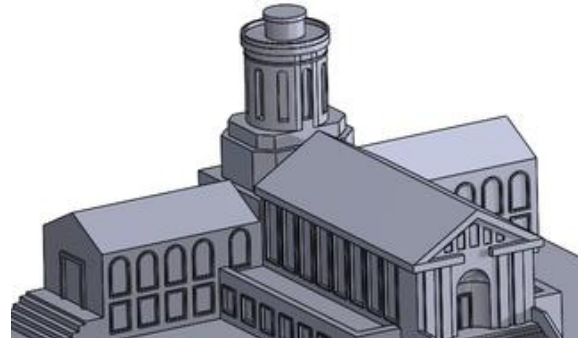


Idea



@CMU_ECE

CAD



Eric Myers

Fabrication:

- 1) define application
- 2) select method & material
- 3) assembly and testing



Next Manufacturing



Tech Spark makerspace



@CMU_ECE