Specializing in the manufacture of experimental research and prototype apparatuses, the Physics Instrument Shop is fully equipped to handle most machining, inspection, fabrication, and assembly tasks.

Our highly skilled Instrument Makers have extensive experience machining all conventional materials, exotic alloys, rare-earth metals, plastics, composites, and some ceramics.

Please submit a Work Request for new jobs. If you have questions about a job please contact machineshop@uw.edu.
Design

Equipped with the latest CAD/CAM software, the Physics Machine Shop can reverse engineer and design from sample parts or rudimentary instructions.

Using SolidWorks and Unigraphics, Instrument Makers often design devices from hand-drawn sketches and recommend the proper engineering and materials for the application.

Machining

The Physics Machine Shop is a full equipped machine shop complete with turning, milling, grinding, EDM, and honing capabilities.

Processes

- Wire and Die-Sinker EDM
- (Electro-Discharge Machining)
- CNC milling
- CNC turning
- Surface grinding

Capable of

- Holes down to 0.002"
- Slots down to 0.005"
- Threads up to 120 pitch
- True 4-axis milling
- CNC lathe with live tooling

Capacity

- 10-ton crane
- Milling capacity up to 82" x 33" x 29.5"
- Turning capacity up to 21" swing x 60" long
- Surface grinding capacity up to 6" x 18"

Fabrication

Fabrication of ultra-high vacuum systems to large steel assemblies is easily accomplished by the Physics Machine Shop.

Processes

- Oxygen/Acetylene
- MIG
- TIG
- Spot
- Plasma cutting
• Brazing
• Soldering

Heat Treating
• Box furnace
• Tube furnace
• Oil quenching
• Water quenching

Fine Detail Welding
• Edge welds to 0.003”
• Butt welds to 0.005”

Inspection
In addition to general inspection equipment, the Physics Machine Shop has several precision measuring devices and surfaces.

Equipment
• Brown & Sharp Coordinate Measuring Machine
• Optical Gauging Company Optical Measuring Scope
• Helium Leak Detector
• Laboratory-grade granite surface plates
• Standard Gauge Blocks and measuring equipment

Coordinate Measuring Machine Specifications
Volume – 25.6” x 23.6” x 19.7”
Accuracy
  - Repeatability – B89 0.00014”
  - Volumetric – 0.0004” / 15.75”

Optical Measuring Scope Specifications
Volume – 8” x 6” x 8”
Accuracy – 0.00015” / 8”
Magnification – 53x to 270x power

Helium Leak Detector
Accuracy – 1x10-9 std. cc/sec

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