

About the Machine Shop

The R&ED Machine Shop supports New Mexico Tech's research and development activities by providing specialized machining, fabrication, and experimental design of prototype devices and test fixtures for industrial and military applications. While R&ED's Machine Shop focuses primarily on the needs of academic researchers, its customer base also includes private industry and government agencies, as well as academic and non-academic departments that may not be directly involved in research.

The Machine Shop is managed by two highly skilled machinists with extensive experience in fabricating a wide variety of prototype experimental devices and test fixtures for industrial and military applications. In addition, both machinists are expert welders in constructing a variety of aluminum to stainless steel apparatus according to customer specifications.

The Machine Shop is equipped with both Computer Numerical Control (CNC) and conventional lathes and milling machines, drill presses, a hydraulic press, vertical and horizontal band saws, and a wide variety of tooling and hand tools. The Shop also possesses a variety of measuring and testing equipment (including height gauges, pins, micrometers, calipers, and inside micrometers) with documentation traceable to the U.S. Bureau of Standards. The welding area is equipped with torches, welders (oxyacetylene, arc, TIG and MIG), cutoff saws, and heat-treating furnaces. Ample floor space permits project construction and assembly of large items, and a 12-foot by 12-foot roll-up door provides easy access for pickup and delivery of these items.

Students and faculty can use the Machine Shop's welding and machining equipment and a variety of other tools for a low hourly fee, as long as certain conditions are met. A machine tool operations course (Physics 301L) is also offered regularly through the Shop.

Services available through the R&ED Machine Shop

Machining and Fabrication Services

Examples of the types of machining performed in the shop include apertures of 2 μ m diameter; CNC machining of tuneable microwave filters; machined and welded components for high vacuum, mass spectrometer systems; and fabrication of large, portable antenna mounts.

Machining equipment and tools are available for use by students and faculty for a low hourly fee. However, for the safety of the individual, those who wish to take advantage of this opportunity must be able to demonstrate their knowledge of and operation skill level for the machine(s). In addition, the

individual must provide his or her own perishable tooling (e.g., drill bits, milling cutters, and lathe tool bits) or reimburse the machine shop for the cost of its shop tools.

Machine shop personnel maintain high safety standards. Strict rules and guidelines are in place for the safety of those wishing to utilize these facilities and equipment. The basic safety requirements are as follows:

- * The individual must be able to demonstrate that he or she possesses adequate machine knowledge and skill level; this must be confirmed by qualified Machine Shop personnel.

- * Eye protection (goggles) must be worn

- * Ear protection must be worn when severe noise conditions exist

- * Loose clothing and hair must be secured

- * All jewelry must be removed

Those interested in utilizing these facilities should contact Floyd Hewitt at 835-5543 or via e-mail (redshop@nmt.edu) to schedule an appointment. All jobs require a completed Shop Charge Slip. The form documents the requestor's name and signature, the supervisor's name, the department name, and an authorized account number.

Welding Services

The machine shop performs TIG welding to fabricate small stainless steel and aluminum parts and MIG welding for larger aluminum parts. Mild steel fabrication and repairs on cast iron parts are routine.

Other Services

The Machine Shop can perform small item repairs on office furniture and equipment for on-campus departments. The shop also offers a machine tool operations class designed to teach researchers and students how to fabricate simple devices themselves for use on their research projects. The class is offered each Fall and Spring semester as Physics 301L (see the current catalog for dates and times of this course) and enrollment is limited to six students. Students will be taught how to operate a lathe, a milling machine, and power saws, and will be required to make a scribe and a V block to successfully pass the course.

Cost for Services

R&ED offers quality machining at a lower cost than most of our competitors. Because R&ED operates the Machine Shop as a service organization, we have made it a practice to only recover costs incurred for the completion of projects (i.e., wages, fringe benefits, and materials).

Contact Information for the Machine Shop

Location

Workman Center, Room 121

Hours of Operation

Monday thru Friday

8:00 AM to 5:00 PM

Phone

505-835-5543

Fax

505-835-5649

Email

redshop@nmt.edu