- **Geology/Geochemistry Program**
- **Geophysics Program**
- **Hydrology Program**
- **Selected equipment available elsewhere on campus**

**Geology/Geochemistry Program:**

- **Argon Lab** -- The Geochronology Research Laboratory includes a rare gas mass spectrometer attached to automated resistance furnace and carbon dioxide laser extraction lines.
- **Electron Microprobe** -- CAMECA SX-100 microprobe with 3 wavelength-dispersive spectrometers.
- Facility for analysis of crystallographic preferred orientations of minerals in rocks -- Starkey X-ray texture camera, image analysis system for processing X-ray data, and universal stage.
- **Fission Track Lab** -- Complete FT dating facilities are available at New Mexico Tech. Samples are dated using the external detector method.
- Fluid Inclusion Laboratory -- two stages for standard thermometric analyses: infrared microscope for opaque minerals; high-temperature stage; facility for extracting fluids for microanalysis.
- **Geomicrobiology Laboratory** -- a facility for geological and microbiological staining, culture preparation for field and lab, and various incubators for growth and storage.
- **GPS** - real time kinematic receiver.
- **Paleomagnetic/Rock Magnetic Equipment** -- spinner magnetometer interfaced with microcomputer; alternating field demagnetizer; thermal demagnetizer.
- Polishing and Thin Section Lab -- saws for cutting and polishing rock wafers.
- **Quadrupole Mass Spectrometer Facility** -- for analyzing volatiles in inclusions.
- **SED Lab** -- Nikon scope with UV-fluorescence unit for observation of diagenetic and porosity textures; MAAS/Nuclide model ELM-3 Luminoscope for cathodoluminescence examination; micro-drilling apparatus equipped with miniature vacuum.
- **Stable Isotope Laboratory** -- Finnegan MAT mass spectrometer and vacuum extraction lines for analysis of O, H, C, and S isotopes.

**Geophysics Program:**

- **Digital Seismic/Geophysical Networks** -- New Mexico Tech operates digital seismic networks in New Mexico and, along with the Geology/Geochemistry program, an interdisciplinary volcano observatory on Mount Erebus, Antarctica. The Erebus network incorporates dual-frequency GPS, broadband seismometry, infrasound, infrared, and gas sensors.

- **Computer Facilities** -- The Geophysics and Hydrology Programs jointly maintain Sun,
Alphaserver, PC and Macintosh computer systems with associated peripheral equipment and services (printers, plotters, scanners, multiple terabytes of backed-up RAID disk space) for both research and teaching. The network is professionally maintained by department staff and features a full suite of graphics and geophysical software tools, including industry standard 3-D seismic processing, imaging, and interpretation software (Landmark).

- Infrasound and Image Processing Laboratory (under development) -- More than one hundred calibrated infrasound sensitive transducers are being built, and an infrasound calibration test chamber is under construction. In addition, short-period seismometers, digital telemetry hardware, optical infrared thermometers, tiltmeters, and a half dozen Chaparral Physics microphones have been/are being acquired. High resolution video cameras and Macintosh computers with imaging processing and geo-registration/photogrammetry software will also be available.
  - Portable Seismological Instrumentation -- In collaboration with the on-campus IRIS PASSCAL Instrument Center, the program has access to state-of-the-art seismological recording equipment, including broadband and short-period seismometers and multichannel shallow exploration systems. The program also owns a "Betsy" shotgun seismic source and minivibrator for shallow seismic exploration.

- Shallow Characterization Facility -- features proton-precession and cesium magnetometers, gravity meters, D.C. resistivity exploration equipment, and a multi-frequency (50, 100 and 200 MHz) ground penetrating radar system.
  - Rock Physics Laboratory -- a facility for measuring rock and sediment/elastic properties of marine and fault-zone samples, as well as conducting triaxial rock deformation experiments.

Hydrology Program:

- Chemical Transport Laboratory -- hood; distillation facilities; balances; ovens; furnace; viscometers; interfacial tension meters; columns for colloid, bacteria, and multiphase fluid transport studies; pumps; spectrophotometer; data acquisition systems.
  - Computer Facilities -- The Geophysics and Hydrology Programs jointly maintain Sun, Alphaserver, PC and Macintosh computer systems with associated peripheral equipment and services (printers, plotters, scanners, over 2 terabytes of RAID disk space) for both research and teaching.
  - Controlled Environment Laboratory -- bacteria culture, storage and preparation equipment; autoclave; centrifuges; constant-temperature shaker and centrifuge.
  - Field Equipment -- access to large drilling rigs; field trucks; soil sampling equipment; pumps; velocity meters; automatic recorders; data loggers; neutron probes; TDR instruments; mechanical and electronic meteorological instrumentation; EM38, EM31, and EM34.
  - Instrument Laboratory -- two HP capillary gas chromatographs with four detectors; four high-pressure liquid chromatographs with computerized data acquisition systems; sample storage and preparation facilities.
  - Isotope Laboratory -- equipment for the preparation of 36Cl samples for acceleration analyses.
- Remote Sensing Laboratory -- FieldSpec Pro FR Spectroradiometers (350-2500 nm), Middleton EQ 16-E Pyrano-albedometer, two Precision infrared radiometers (PIR).
- Sevilleta Field Site -- north of Socorro for studying soil-water movement in the vadose and saturated zones. Includes pumping and injection wells, monitoring wells, neutron moisture logging, tensimeters, stage recorders, and weather stations.
- Soil-Water Laboratory -- permeameters; moisture-retention apparatus; particle size distribution equipment; centrifuge; ovens; balances; TDR instrument; data acquisition system.
- Teaching Laboratory -- Darcy, sorption, and dispersion columns; sand box models; electrical analogs; fluid mechanics experiments.
- Video and Image Analysis Laboratory -- micromodels; II component and S-VHS video tape recorders; V-LAN based video editor; high resolution video cameras; programmable film cameras; two Zeiss stereoscope and Axio host epifluorescence microscopes; IT151 high-resolution image processing on a SUN 4-330 computer with NOESU morphology software.
- Water Chemistry Laboratory -- hood; wet chemical analysis and sample preparation apparatus; columns for chemical transport studies.

Additional Selected equipment available elsewhere on campus:

- 6100 Scanning Electron Microscope, fitted with a Noran Energy Dispersive X-ray Analyzer
- Amray 1200B Scanning Electron Microscope
- JEOL 100C Scanning Transmission Electron Microscope (STEM)
- Philips EM 430 transmission electron microscope