

Mining provides the **mineral and energy resources** for society, including coal, metallic ores, bauxite, phosphates, and salt, as well as the basic building products such as gravel, limestone, and stone that are essential to the nation's highways, power plants, bridges, and building foundations. Mining engineers are seeking ways to **extract essential raw materials** without causing undue disturbance to the environment, as well as to prevent pollution and reclaim land mined in the past.

## Career Opportunities

Mining engineers are employed in every U.S. state and throughout the world. Wherever productive mineral deposits are found - in remote outposts or close to metropolitan areas - mining engineers can find a use for their special skills. Not all mining engineers work in mines or even for mining companies. Some choose to work for manufacturers of mining equipment in design, applications, or marketing. Some work as planning specialists at corporate headquarters. Others work for state or federal agencies involved with inspection and enforcement of mining regulations. Mining engineers also find careers with large financial planning and engineering firms.



*"Mining engineering has had a profound impact on my life. From conferences in Seattle, Las Vegas, Fort Worth, and Denver where I can enjoy interaction with members from all parts of the industry to discussions with the professors and fellow students that extend far beyond the classroom, the opportunities here are plentiful. In considering the experiences I have had, success seems impossible to miss."*  
- Kevin Cloud

## The Academic Program

As a student in the Mining Engineering program you learn about the geology of mineral deposits and how this affects the mining process, and about the methods and equipment used in mining both underground and on the surface. You are introduced to the regulations and environmental issues involved in mining, and to the many techniques used to ensure the safety of people employed in and about the mine. You learn how to find ways to increase an operation's performance, and gain experience in mine design and planning.

Penn State's Mining Engineering program is accredited by the Engineering Accreditation Commission of ABET. [www.abet.org](http://www.abet.org)

Program requirements include courses in the following areas:

- Physics (*mechanics, electricity and magnetism, fluids and thermal physics*)
- Energy and mineral engineering (*thermodynamics, fluid mechanics*)
- Geosciences (*earth materials, field geology*)
- Mining engineering (*rock mechanics, mineral property evaluation, mine ventilation, mine design*)
- Senior mining engineering project

A minimum of 131 credits is required for the B.S. in Mining Engineering.

An internship with an energy-related company or government agency is strongly recommended. Many of these companies also recruit full-time employees from among our students.



## Research

Research areas include analysis of mine safety and health performance and influencing factors, optimization of drilling and blasting, mine planning and reclamation, mining and sustainability, tunneling and underground construction, reducing seismic vibration from blasting, mechanical excavation and rock fragmentation, and design of innovative mining systems.

*“The Leone Family Department of Energy and Mineral Engineering has been the community that I have invested myself in during my collegiate education and the return has been incredible. Faculty, staff, and students there made a difference in my education that has me ready to compete in global market.”*  
— Tom Rauch



## Scholarships

The Mining Engineering program has dedicated scholarship funds, which are awarded on the basis of academic achievement and merit. Students are also eligible for numerous scholarships through the University and the College of Earth and Mineral Sciences.



### For More Information:

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