Mining and Geological Engineers

SOC: 17-2151 • Career Profile Report

■ Key Facts

$101,020	7,000	+1.0%
Median Salary	Employment	Growth Rate

■ Requirements & Salary Range

Education: Bachelor's degree

■ Automation Risk Assessment

Low Risk - 17.0% probability of being automated in the next 10-20 years.

This job is relatively safe from automation due to its creative, social, or complex problem-solving requirements.

■■ Work-Life Balance

6.0/10 - Good work-life balance

■ Personality Fit (RIASEC)

Higher scores indicate better personality fit for this career type.

Realistic	8.2/10	**Investigative**	8.8/10
Artistic	6.4/10	**Social**	5.2/10
Enterprising	5.8/10	**Conventional**	6.6/10

■ Top Skills Required

Analytical skills, Decision-making skills, Logical-thinking skills, Math skills, Problem-solving skills, Writing skills

✓ Strengths

- High Demand
- Flexible Work
- Continuous Learning

■ Challenges

- Burnout Risk
- Rapid Technological Change

■ What They Do

Mining and Geological Engineers typically perform the following tasks: • Prepare technical reports for use by mining, engineering, and management personnel. • Inspect mining areas for unsafe structures, equipment, and working conditions. • Select or develop mineral location, extraction, and production methods, based on factors such as safety, cost, and deposit characteristics. • Select locations and plan underground or surface mining operations, specifying processes, labor usage, and equipment that will result in safe, economical, and environmentally sound extraction of minerals and ores. • Prepare schedules, reports, and estimates of the costs involved in developing and operating mines. • Monitor mine production rates to assess operational effectiveness. • Supervise, train, and evaluate technicians, technologists, survey personnel, engineers, scientists or other mine personnel. • Examine maps, deposits, drilling locations, or mines to determine the location, size, accessibility, contents, value, and potential profitability of mineral, oil, and gas deposits. • Design, implement, and monitor the development of mines, facilities, systems, or equipment. • Test air to detect toxic gases and recommend measures to remove them, such as installation of ventilation shafts. • Implement and coordinate mine safety programs, including the design and maintenance of protective and rescue equipment and safety devices. • Devise solutions to problems of land reclamation and water and air pollution, such as methods of storing excavated soil and returning exhausted mine sites to natural states. • Lay out, direct, and supervise mine construction operations, such as the construction of shafts and tunnels. • Design, develop, and implement computer applications for use in mining operations such as mine design, modeling, or mapping or for monitoring mine conditions. • Select or devise materials-handling methods and equipment to transport ore, waste materials, and mineral products efficiently and economically. • Evaluate data to develop new mining products, equipment, or processes. • Design mining and mineral treatment equipment and machinery in collaboration with other engineering specialists. • Conduct or direct mining experiments to test or prove research findings. • Use drone technology for aerial surveys and inspections of mining sites to enhance safety and efficiency.