

# Metallurgical Engineering

## Bachelor of Science

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### What is Metallurgical Engineering?

Metallurgical engineers study and produce materials that power our bodies and our world. They transform mineral resources into high-performance alloys, high-purity metals, and new materials used in surgical implants, computer chips, cars, space exploration, and more.

South Dakota School of Mines & Technology offers one of the only metallurgical engineering programs in the country - a unique and “true” metallurgical engineering program with an emphasis on processing and engineering.

### What does a metallurgical engineer do?

Materials and metallurgical engineers transform mineral resources into high-performance alloys, high-purity metals and new materials used in surgical implants, computer chips, superconductors, cars, aircraft, advanced coatings and space. Through testing, they also ensure materials meet performance requirements. Materials and metallurgical engineers also develop sustainable materials and processes for recycling existing materials, investigate material failures, and create testing procedures to ensure materials can withstand extreme environments.

Duties a materials and metallurgical engineer might undertake on the job include:

- Convert raw metal into usable formats
- Design methods for separating metal from the rest of the components
- Design and direct the testing processing procedures
- Monitor how materials perform and evaluate how they deteriorate
- Determine causes of product failure and develop ways to overcome the failure
- Supervise the work of technologists, technicians and other engineers and scientists
- Prepare proposals and budgets, analyze labor costs, write reports and perform other managerial tasks

### Careers

- mineral and mining industries
- material engineering and processing
- steelmaking
- biomedical
- electronics
- automotive companies
- aerospace
- security and anti-counterfeiting technology
- recycling, sustainable design



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