Making haulage and equipment, construction are connected to 50% of all fatalities in mining and Safety is important: More than 16% of all problems to these practice.

Mining Engineers will apply this course in day-to-day engineering practice. The Mining PE exam dedicates 16% of all problems to these subjects. Safety is important: More than 50% of all fatalities in mining and construction are connected to haulage and equipment.

Classic topics: Streamlined

- Water: Pumping and Pipelines
- Haulage: Trucks, Belts, Rail, Hoists
- Power: AC and DC Electric, Compressed Air

New Areas: Today's Mining Engineers must be knowledgeable in:

- Digital Technologies: Automated and Autonomous Operation, Virtual and Augmented Reality (VR and AR)
- Equipment Maintenance
- Equipment Safety

ASSESSMENT

- Open-ended questions to stimulate class discussion using “assess” and “advance” strategies.
- Homework problems, reading assignments, short answer quizzes
- Presentations using rubrics
- Lab reports using rubrics and/or peer feedback.
- Written mid-term and final exams

All About Frogs
Field Exercise at Edgar Mine: Analyze the Geometry of a Rail Switch

Class-Level Student Learning Outcomes
1. Identify components of a rail switch and geometry.
2. Analyze the geometry and select the correct frog for a given turn radius.
4. Tasks and Questions
   a) Inspect the switch.
   b) Determine the frog number.
   c) What is the radius of the curve? Note: challenging to figure out.
   d) Was the frog spotted correctly?
   e) Does the frog match the turn?
5. All: Summarize, compare and conclude.
6. Summative Assessments:
   Class preparation, student engagement, post quiz, written lab report

Jürgen Brune, Professor of Practice, Mining Engineering

Dr.-Ing. Jürgen Brune teaches Mine Ventilation, Mine Plant Design and Coal Mine Design at the Colorado School of Mines. His research is focused on mine fire and explosion prevention and mine safety. Brune grew up in Germany where he received his doctorate in 1994. He worked for 29 years in the mining industry and government before joining Mines in 2012.