



9145

INTRODUCTION TO
MINING ENGINEERING (9)

15S/15E/15M

10S/10E/10M

9145 INTRODUCTION TO MINING ENGINEERING (9) 15S/15E/15M AND 10S/10E/10M

Course Description

In this optional course, students are introduced to the mining industry and the role of the mining engineering technician. Students explore the following topics:

- mine safety
- the origins of the universe, solar system, and planet earth
- the structure of planet earth
- formation and classification of rocks
- surveying
- staking mineral rights claims
- surface and underground mining methods
- fundamental employability skills

Goal 1: Describe and apply appropriate **health and safety** practices.

GLO 1.1: Describe and apply appropriate **health and safety** practices.

- SLO 9.1.1.1 Demonstrate an understanding of hazards in the mining industry.
- SLO 9.1.1.2 Discuss and demonstrate safe work practices.
- SLO 9.1.1.3 Demonstrate an understanding of air quality hazards.
- SLO 9.1.1.4 Discuss and demonstrate safe work practices related to air quality.
- SLO 9.1.1.5 Create and maintain a safe and organized work environment.
- SLO 9.1.1.6 Discuss procedures for reporting hazards.

GLO 1.2: Demonstrate an awareness of safety as it pertains to the **Trade Safety Awareness Manual**.

No applicable SLOs.

Goal 2: Demonstrate the identification, selection, use, and maintenance of **tools, equipment, materials, and consumables.**

GLO 2.1: Demonstrate the identification, selection, use, and maintenance of **tools, equipment, materials, and consumables.**

SLO 9.2.1.1 Demonstrate the identification, selection, use, and maintenance of tools, equipment, materials, and consumables.

Goal 3: Demonstrate an understanding of the theories related to the **origins of the universe, solar system, and planet earth.**

GLO 3.1: Demonstrate an understanding of the theories related to the origins of planet earth, particularly with respect to geology.

SLO 9.3.1.1 Demonstrate an awareness of the theories related to the origins of the universe, solar system, and planet earth.

Goal 4: Demonstrate the ability to provide basic descriptions of the **layered structure of planet earth, the dynamic processes that affect it, and the evidence** that supports our current understanding.

GLO 4.1: Demonstrate the ability to provide basic descriptions of the **layered structure of the earth, the dynamic processes that affect it, and the evidence** that supports our current understanding.

SLO 9.4.1.1 Illustrate by use of a diagram an understanding of the structure of planet earth.

Goal 5: Identify the environment that allows for the formation of **minerals** that are important to the mining sector, as well as the basic characteristics of those minerals.

GLO 5.1: Demonstrate a basic understanding of the formation of **minerals**, and the ability to identify common minerals and their characteristics.

No applicable SLOs.

Goal 6: Demonstrate an understanding of the formation of **rocks** and how their formation is related to their characteristics and identification.

GLO 6.1: Demonstrate an understanding of the environment that allows for the formation of common **rocks**, and relate their characteristics to their identification.

SLO 9.6.1.1 Describe in basic terms the formation of igneous, metamorphic, and sedimentary rocks.

SLO 9.6.1.2 Identify some igneous, metamorphic, and sedimentary rocks.

Goal 7: Use various **surveying** techniques to describe and map potential ore bodies in a field setting.

GLO 7.1: Use various **surveying** techniques in land surveying.

SLO 9.7.1.1 Demonstrate an awareness of surveying.

SLO 9.7.1.2 Discuss the role of surveying in mining.

SLO 9.7.1.3 Measure, using the Pythagorean theorem, a large right-angle shape.

SLO 9.7.1.4 Use a grid system to produce a contour plan of a given area.

GLO 7.2: Use various surveying techniques in **hydrographic surveying**.

No applicable SLOs.

GLO 7.3: Use various surveying techniques in **mine surveying**.

No applicable SLOs.

Goal 8: Demonstrate an understanding of **exploration, development, and production** of mineral resources from a position of environmental stewardship and sustainability.

GLO 8.1: Demonstrate an understanding of common **exploration** techniques, with attention to the principles of **sustainable practices**.

SLO 9.8.1.1 Demonstrate an awareness of mineral exploration.

SLO 9.8.1.2 Demonstrate an awareness of staking mining claims.

GLO 8.2: Demonstrate an understanding of mine **development** with an emphasis on **environmental responsibility**.

SLO 9.8.2.1 Describe the various surface and underground mining methods.

GLO 8.3: Demonstrate an understanding of **mine production** and its place within the overall **life cycle** of a mine operation.

No applicable SLOs.

Goal 9: Demonstrate an understanding of the processes used in **accessing, recovering, transporting, and processing ore**.

GLO 9.1: Demonstrate an understanding of the processes used in **accessing, recovering, transporting, and processing ore**.

No applicable SLOs.

Goal 10: Describe and demonstrate the transferable **cross-curricular** knowledge and skills relevant to mining engineering technology.

GLO 10.1: Read, interpret, and communicate information relevant to mining engineering technology.

No applicable SLOs.

GLO 10.2: Apply the knowledge and skills from **mathematics** relevant to mining engineering technology.

No applicable SLOs.

GLO 10.3: Apply the knowledge and skills from **the sciences** relevant to mining engineering technology.

No applicable SLOs.

GLO 10.4: Apply the knowledge and skills from **information and communication technology** (ICT) relevant to mining engineering technology.

No applicable SLOs.

Goal 11: Demonstrate an awareness of **sustainability principles** as they influence mining engineering technology.

GLO 11.1: Describe the mining industry's **sustainability practices** and impact on the environment.

SLO 9.11.1.1 Demonstrate an awareness of the mining industry's sustainability practices and impact on the environment.

GLO 11.2: Describe the impact of **human well-being as a sustainability priority** among those employed in the mining sector and the individuals and communities affected by mining practices.

No applicable SLOs.

GLO 11.3: Describe **sustainable business practices** within the mining industry.

No applicable SLOs.

Goal 12: Demonstrate an awareness of the **ethical and legal standards** as they pertain to the mining industry.

GLO 12.1: Demonstrate an awareness of the **ethical and legal standards** that pertain to the mining industry.

No applicable SLOs.

Goal 13: Demonstrate fundamental **employability skills**.

GLO 13.1: Demonstrate **fundamental employability skills**.

SLO 9.13.1.1 Demonstrate regular and punctual attendance.

SLO 9.13.1.2 Demonstrate the ability to communicate respectfully and effectively with teachers, supervisors, co-workers, and students.

SLO 9.13.1.3 Demonstrate accountability by taking responsibility for their actions.

SLO 9.13.1.4 Demonstrate adaptability, initiative, and effort.

SLO 9.13.1.5 Demonstrate teamwork skills.

SLO 9.13.1.6 Demonstrate the ability to stay on task and effectively use time in class and work environments.

SLO 9.13.1.7 Demonstrate the responsible use of wireless communication devices.

GLO 13.2: Demonstrate an awareness of **cultural proficiency** and its importance in the workplace.

No applicable SLOs.

GLO 13.3: Demonstrate an understanding of the **business operation** of a mine complex.

No applicable SLOs.

GLO 13.4: Demonstrate **critical thinking skills**.

No applicable SLOs.

Goal 14: Demonstrate an understanding of the **mining industry**.

GLO 14.1: Demonstrate an understanding of the scope of the mining industry as it functions in Canada today in an international context.

No applicable SLOs.

GLO 14.2: Demonstrate an understanding of the **educational and career opportunities**, as well as **industry, professional, and trade associations**, related to mining engineering technology.

SLO 9.14.2.1 Demonstrate an awareness of the scope of careers and post-secondary opportunities in mining.

GLO 14.3: Demonstrate an understanding of **working conditions** in mining.

No applicable SLOs.

Goal 15: Demonstrate an awareness of the **evolution, technological progression**, and **emerging trends** in mining.

GLO 15.1: Describe the **history, technological progression**, and **emerging trends** in mining.

No applicable SLOs.
