IMM2803 MINE SAFETY AND INDUSTRIAL HYGIENE

Credits and contact hours: 10 UC credits / 10 h

Instructor’s name: Marcos Lima Aravena

Course coordinator’s name: José Botin

Textbook: General & Applied Toxicology, BALLANTYNE,B., MARRS,T., TURNER, P., 1995

Course Catalog Description: After completing this course, students will be able to understand the implications of safety legislation, learn techniques of risk assessment and prevention with a focus on mining. Also students will be able to understand the risk associated with industrial hygiene.

Prerequisite Courses: IMM2043 Underground Mining and IMM2053 Metallurgical Processes

Co-requisite Courses: None

Status in the Curriculum: Elective

Course Learning Outcomes:
1. Understand legislative implications for companies in terms of safety, particularly in issues regarding risk prevention.
2. Learn evaluation and risk prevention techniques with focus in the mining field; mine safety legislation; safety impact matrix techniques; theoretical and practical aspects for a mining safety plan.
3. Understand the effect of toxic substances and identify risks related to the presence of chemical agents.
4. Understand risks associated to breathable dust, noise and vibration; control techniques.
5. Identify protection equipment and its use and implementation.

Relation of Course to ABET Criteria:

a. Knowledge of mathematics, science and engineering
b. Design and conduct experiments: analyze and interpret data
c. Design a system, component, or process
d. Multidisciplinary teams
e. Identify, formulate, and solve engineering problems
f. Professional and ethical responsibility
g. Effective communication
Topics covered:

1. Mining safety
   1.1. Risk agents
   1.2. Legal framework in mining
   1.3. Productive organizations and safety; risk prevention.
   1.4. Labor risk evaluation.
   1.5. Safety and health plans.
   1.6. Management systems in mining safety.

2. Industrial hygiene
   2.1. Basics
   2.2. Labor toxicology
   2.3. Chemical agents: Introduction and evaluation criteria.
   2.4. Sampling, analysis and control of chemical agents.
   2.5. Physical agents: Dust.
   2.6. Noise, vibrations and thermal ambient.
   2.7. Individual protection equipment.