PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE
COLLEGE OF ENGINEERING
DEPARTMENT OF MINING ENGINEERING
ABET COURSE SYLLABI

IMM2521 MINING TECHNOLOGIES

Credits and contact hours:	10 UC credits / 10 hours (3 h. Lectures; 1.5h. site visit and 5.5h. Independent learning experiences)
Instructor's name:	José Botín
Course coordinator's name	José Botín
Textbook:	Sustainable Management of Mining Operations, Botin, J.A., 2009.
Course Catalog Description:	In this course students will extend and complement the knowledge in mining technologies and systems taught in IMM 2013 (Open pit mining), IMM2043 (Underground Mining) and other basic mining courses, with focus on tailings disposal systems, mine backfill, mine materials handling and new mining technologies.
Prerequisite Courses:	IMM2043: Underground mining
Co-requisite Courses:	None
Status in the Curriculum:	Required
Course Learning Outcomes:	Evaluate and design best technology alternatives applied to mining unit operations, with focus in material handling systems in open pit and underground mines.
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 h. Broad education necessary for global, economic, environmental and societal context i. Recognition of the need for, and an ability to engage in life-long learning j. Knowledge of contemporary issues k. Techniques, skills, and modern tools for engineering practice.

Topics covered:

1. Fundamental Concepts
1.1. The importance of mineral raw materials
1.2. Mining technology: Basic definitions and lifecycle
1.3. Basic technologies in mining
1.4. The concepts of Social License and Corporate Social Responsibility

2. Special Mining Methods
2.1. Definition and concepts
2.2. Mechanical tunneling Systems
2.3. Strip mining systems
2.4. Ornamental rock mining
2.5. Chemical mining
2.6. Underwater mining

3. Mine rock waste handling systems (waste dumps)
3.1. Basic concepts and objectives
3.2. Location and selection
3.3. Construction methods
3.4. Operation systems
3.5. Ground Control
3.6. Reclamation and rehabilitation

4. Tailings disposal systems
4.1. Basic concepts and objectives
4.2. Design basics
4.3. Stability control
4.4. Dewatering techniques
4.5. Seepage control
4.6. Water recovery techniques
4.7. Restoration and rehabilitation

5. Mine Backfilling systems
5.1. Basic concepts
5.2. Mining methods using backfill
5.3. Hydraulic backfill types and classification
5.4. Backfill mechanical properties
5.5. Backfill system design
5.6. Safety and environmental aspects