

Course guide

330468 - MISU - Underground Mining

Last modified: 27/05/2024

Unit in charge: Manresa School of Engineering
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering.

Degree: BACHELOR'S DEGREE IN MINERAL RESOURCE ENGINEERING AND MINERAL RECYCLING (Syllabus 2021). (Compulsory subject).
BACHELOR'S DEGREE IN ENVIRONMENTAL ENGINEERING / BACHELOR'S DEGREE IN MINERAL RESOURCE ENGINEERING AND MINERAL RECYCLING (Syllabus 2024). (Compulsory subject).
BACHELOR'S DEGREE IN MINERAL RESOURCE ENGINEERING AND MINERAL RECYCLING / BACHELOR'S DEGREE IN ENVIRONMENTAL ENGINEERING (Syllabus 2024). (Compulsory subject).

Academic year: 2024 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: Bascompta Massanès, Marc

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Transversal:

07 AAT N3. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

Identify the different designs, planning and management of mineral extraction in subway mines according to the type of deposits.

STUDY LOAD

Type	Hours	Percentage
Self study	90,0	60.00
Hours medium group	60,0	40.00

Total learning time: 150 h

CONTENTS

Introduction to underground mining

Description:

Involvement of the different stages in a mining operation, as well as factors such as occupational risk prevention, environment, rock mechanics or mineral processing.

Full-or-part-time: 3h

Theory classes: 2h

Self study : 1h

Underground equipment

Description:

Description of machines and equipment used in underground mining. Classification according to their purpose (load, haul and dump).

Full-or-part-time: 18h

Theory classes: 10h

Self study : 8h

Underground mining methods

Description:

Description of the different subway mining methods according to the type of deposit (room and pillar, longwall, shrinkage, sublevel, cut-and-fill, block and panel caving).

Specific objectives:

At the end of this section, the student must acquire the necessary knowledge to identify, according to the type of deposit, the possible methods of extraction and to evaluate the advantages and disadvantages of each one of them in terms of stability, quality and economy of the exploitation.

Full-or-part-time: 20h

Theory classes: 12h

Self study : 8h

Design and planning

Description:

Dimensioning of the mining operation considering the work rate and ore body grade.

Full-or-part-time: 13h

Theory classes: 8h

Self study : 5h

Extraction, loading, transportation and infrastructure in underground mining

Description:

Description of the extraction cycle of an underground mine and the different systems for loading, hauling and dumping the material excavated inside the mine and the process of extracting the material to the surface.

Full-or-part-time: 14h

Theory classes: 6h

Self study : 8h

Mine elements

Description:

Description of the transport and extraction shafts, as well as their elements. Electrical system, compressed air, hydraulic systems, water evacuation and supply, mine maintenance.

Full-or-part-time: 15h

Theory classes: 10h

Self study : 5h

Support methods

Description:

Most used methods in underground mining support depending on the geological and technical characteristics of the exploitation.

Full-or-part-time: 10h

Theory classes: 4h

Self study : 6h

Costs and production control

Description:

Introduction of the economic concepts involved in underground mining.

Full-or-part-time: 9h

Theory classes: 4h

Self study : 5h

ACTIVITIES

Individual evaluation test 1

Full-or-part-time: 12h

Theory classes: 2h

Self study: 10h



Individual evaluation test 2

Full-or-part-time: 12h

Theory classes: 2h

Self study: 10h

Individual evaluation test 3

Full-or-part-time: 15h

Self study: 15h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:

- De la Vergne, Jack. Hard rock miner's handbook [on line]. Ed. 5. Edmonton: Stantec Consulting, cop. 2008 [Consultation: 07/06/2024]. Available on: http://www.stantec.com/content/dam/stantec/files/PDFAssets/2014/Hard%20Rock%20Miner%27s%20Handbook%20Edition%205_3.pdf. ISBN 0968700616.
- López Jimeno, Carlos; López Jimeno, Carlos; Alonso Rodríguez, Ángel. Ingeo túneles. Madrid: Carlos López Jimeno, 1998-2009. ISBN 849614013X.
- Hoek, Evert; Brown, Edwin T. Underground excavations in rock. Revised. London: Institution of Mining and Metallurgy, 1990. ISBN 0419160302.
- Hartman, Howard L; Britton, Scott G. SME mining engineering handbook. 2nd ed. Littleton, Col.: Society for Mining, Metallurgy and Exploration, 1992. ISBN 0873351002.