Course guide
330417 - DETC - Design and Excavation of Tunnels

Last modified: 04/05/2023

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

Degree: BACHELOR'S DEGREE IN MINING ENGINEERING (Syllabus 2016). (Compulsory subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Parcerisa Duocastella, David - Yubero De Mateo, Maria Teresa

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. (ENG) Tècniques de perforació aplicades a obres subterrànies i superficials. Tècniques de mostreig.
2. (ENG) Assaigs geotècnics. Estudis geotècnics aplicats a la mineria, construcció i obra civil. Disseny i execució d'obres subterrànies. Tècniques de sosteniment aplicades a obres subterrànies.

Transversal:
3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

.

STUDY LOAD

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

Total learning time: 150 h

CONTENTS

title english

Description:
content english

Full-or-part-time: 7h
Practical classes: 2h
Self study : 5h

title english

Description:
content english

Full-or-part-time: 32h
Practical classes: 4h
Laboratory classes: 8h
Self study : 20h

title english

Description:
content english

Full-or-part-time: 25h
Practical classes: 6h
Laboratory classes: 4h
Self study : 15h

title english

Description:
content english

Full-or-part-time: 26h
Practical classes: 6h
Laboratory classes: 5h
Self study : 15h

title english

Description:
content english

Full-or-part-time: 36h
Practical classes: 12h
Laboratory classes: 4h
Self study : 20h

title english

Description:
content english

Full-or-part-time: 25h
Practical classes: 6h
Laboratory classes: 4h
Self study : 15h

ACTIVITIES

name english

Full-or-part-time: 16h
Laboratory classes: 8h
Self study: 8h

name english

Full-or-part-time: 10h
Laboratory classes: 6h
Self study: 4h

name english

Full-or-part-time: 9h
Laboratory classes: 4h
Self study: 5h

name english

Full-or-part-time: 5h
Laboratory classes: 2h
Self study: 3h

name english

Full-or-part-time: 16h
Practical classes: 4h
Self study: 12h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:

- Chapman, D.; Metje, N.; Stärk, A. Introduction to tunnel construction. London: Spon Press, 2010. ISBN 9780415468428.
- Gonzalez Vallejo, Luís I., i altres. Ingeniería geológica [on line]. Madrid: Prentice-Hall, 2002 [Consultation: 02/06/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=1237. ISBN 8420531049.
- Hoek, E.; Brown, E. T. Excavaciones subterráneas en roca. Mexico D.F: McGraw-Hill, 1985. ISBN 9684516975.
- Hoek, Evert. "Big tunnels in bad rock". ASCE Journal of Geotechnical and Geoenvironmental Engineering [on line]. September 2001, vol. 127, no. 9, p. 726-740 [Consultation: 17/12/2020]. Available on: https://www.rocscience.com/assets/resources/learning/hoek/Big-Tunnels-in-Bad-Rock-2000.PDF.- Gonzalez de Vallejo, L. I., dir. Manual de campo para la descripción y caracterización de macizos rocosos en afloramientos [on line]. Madrid: Instituto Tecnológico Geominero, 2007 [Consultation: 29/07/2022]. Available on: https://search-ebscohost-com.recursos.biblioteca.upc.edu/login.aspx?direct=true&AuthType=ip,uid&db=nlebk&AN=865640&site=ehost-live&ebv=EB&ppid=pp_Cover. ISBN 8478407081.
- Lopez Jimeno, C., ed. Manual de túneles y obras subterráneas. Madrid: E.T.S.I. Minas - Universidad Politécnica de Madrid, 2011. ISBN 9788496140370.

Complementary:

- Carranza-Torres, C.; Fairhurst, C. "Application of the convergence-confinement method of tunnel design to rock masses that satisfy the Hoek-Brown failure criterion". Tunnelling and underground space technology [on line]. April-June 2000, vol. 15, no. 2, p. 187-213 [Consultation: 10/06/2022]. Available on: https://www-sciencedirect-com.recursos.biblioteca.upc.edu/science/article/pii/S0886779800000468.- Palmstrom, Arild. "Measurements of and correlations between block size and rock quality designation (RQD)". Tunnelling and underground space technology [on line]. July 2005, vol. 20, no. 4, p. 362-377 [Consultation: 10/06/2022]. Available on: https://www-sciencedirect-com.recursos.biblioteca.upc.edu/science/article/pii/S088677980500009X.- Sánchez, M. A.; Foyo, A.; Tomillo, C.; Iriarte, E. "Geological risk assessment of the area surrounding Altamira Cave: A proposed Natural Risk Index and Safety Factor for protection of prehistoric caves". Engineering geology [on line]. November 2007, vol. 94, no. 3-4, p. 180-200 [Consultation: 23/06/2021]. Available on: https://doi.org/10.1016/j.enggeo.2007.08.004.