

CIVIL-444

Energy geostructures

Laloui Lyesse

Cursus	Sem.	Type
Civil Engineering	MA2, MA4	Opt.
Energy minor	E	Opt.
Mechanical engineering	MA2, MA4	Opt.
Mechanics		Opt.

Language of teaching	English
Credits	4
Session	Summer
Semester	Spring
Exam	Written
Workload	120h
Weeks	14
Hours	3 weekly
Lecture	2 weekly
Exercises	1 weekly
Number of positions	

Summary

Energy geostructures are an innovative technology that couple the structural role of foundations and the heating/cooling role of geothermal heat exchangers. The goal of the course is to provide a comprehensive understanding of the structural, geotechnical and energy behaviour.

Assessment methods

Evaluation:

- Written exam (theoretical questions and exercises): 60% of the final mark
- 5 assigned exercises: 10% of the final mark
- Design project: 30% of the final mark (20% Design project Report, 10% Design project presentation), group work

Resources**Bibliography**

Laloui, Lyesse, and Alessandro F. Rotta Loria. Analysis and Design of Energy Geostructures, 1st Edition: Theoretical Essentials and Practical Application. Academic Press, ISBN:9780128206232

Laloui, Lyesse, and Alice Di Donna, eds. Energy geostructures: innovation in underground engineering. Wiley-ISTE, 250 pages, ISTE Ltd. and John Wiley and Sons, Hoboken, NJ, ISBN: 9781848215726

Laloui, Lyesse, and Alice Di Donna, eds. Géostructures énergétiques. Hermes science Publications, 250 pages, ISBN: 978-2-7462-4577-8.

Ressources en bibliothèque

- Laloui, Lyesse, and Alessandro F. Rotta Loria. Analysis and Design of Energy Geostructures
- Laloui, Lyesse, and Alice Di Donna, eds. Géostructures énergétiques
- Laloui, Lyesse, and Alice Di Donna, eds. Energy geostructures: innovation in underground engineering.

Moodle Link

- <https://go.epfl.ch/CIVIL-444>

Prerequisite for