

CIVIL-428

**Engineering geology for geo-energy**

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

Language of teaching	English
Credits	3
Session	Summer
Semester	Spring
Exam	During the semester
Workload	90h
Weeks	14
<b>Hours</b>	<b>3 weekly</b>
Courses	2 weekly
Exercises	1 weekly
<b>Number of positions</b>	

**Summary**

Objective is to provide an understanding of the problems in geo-energy projects. Underground as storage medium for carbon dioxide and radioactive waste and as energy source like deep geothermal systems.

**Content****Keywords**

structural geology, tectonics, natural and induced seismicity, stress measurements, borehole stability, hydraulic fracturing, deep geological disposal for radioactive wastes, deep geothermal systems, CO2 sequestration

**Learning Prerequisites****Required courses**

Soil mechanics, Geomechanics, Rock mechanics

**Learning Outcomes**

By the end of the course, the student must be able to:

- Construct a coherent geological model with the available data.
- Anticipate the rock mass and hydraulic perturbations for any subsurface projects (i.e. deep geothermal, CO2 storage, construction of deep geological disposal for radioactive waste).
- Design the rock mass and hydraulic perturbations for any subsurface projects (i.e. deep geothermal, CO2 sequestration, construction of deep geological disposal for radioactive waste).
- Use correctly the acquired data in the project for building a coherent interpretation.

**Transversal skills**

- Access and evaluate appropriate sources of information.
- Continue to work through difficulties or initial failure to find optimal solutions.
- Demonstrate the capacity for critical thinking

**Expected student activities**

attendance at lectures, completing exercises, reading selected scientific publications and doing a personal work

### Assessment methods

During the semester, written control and personal work.

### Resources

#### Ressources en bibliothèque

- [Elements of crustal geomechanics / Cornet F.H.](#)

#### Notes/Handbook

- Elements of crustal geomechanics / Cornet F.H.

### Prerequisite for

"Le contenu de cette fiche de cours est susceptible d'être modifié en raison du covid-19"