GEOMECHANICS

(Civil – 402, 5 credits)

Course program: 08.09.25 – 19.12.25

Theory session: Monday, 11:15 – 14:00, room GR A3 30

Exercises, project session: Thursday, 17:15 – 19:00 room AAC 0 06

Lecturers: **Alessio Ferrari** (AF, main lecturer), **Lyesse Laloui** (LL)

Assistants: Ziad Sahlab (ZS), Mathilde Métral (MM), Alessandro Parziale (AP)

W	Date	Room	Content
9	10.11.25	GR A3 30	**8. In-situ geotechnical testing for material parameters determination** **Lab testing**
	13.11.25	AAC 0 06	**Exercise 6**: Parameters determination based on data from in-situ tests / **Project** – Part 4: FEM model definition
10	17.11.25	GR A3 30	**9. Hydro-mechanical coupling and recommendations for numerical modelling in geotechnics**
	20.11.25	GC B1 10	**Workshop 2: Roger Estephan – Dar-Al-Handasah**
11	24.11.25	GR A3 30	**10. Unsaturated geomaterials mechanics** Basic concepts Hydraulic and mechanical behaviour Effective stress definition for unsaturated geomaterials
	27.11.25	AAC 0 06	**Exercise 7:** Geomechanical characterization of unsaturated geomaterials / **Project** – FEM anaylsis
12	01.12.25	GR A3 30	**11. In-situ stress** **12. Retaining structures in saturated and unsaturated geomaterials**
	04.12.25	GC B3 30	**Workshop 3: Zeynep Karatza - CERN**
13	08.12.25	GR A3 30	**13.Time-dependent behaviour of geomaterials** Real cases and time-dependent phenomena Viscous deformations: basic concepts and experimental evidence Visco-elasto-plastic models
	11.12.25	AAC 0 06	**Exercise 8:** Lateral earth pressure of dry, saturated, and unsaturated soils
14	15.12.25	GR A3 30	**Revision session for exams / project**
	18.12.25	AAC 0 06	**Exercise 9:** Time-dependent behaviour of geomaterials

ECTS credits allocated to this course: 5

Evaluation:

- Final exam (written): 60% of the final mark
- Mid-term exam (written): 20% of the final mark
- Project report: 20% of the final mark

Additional details:

Communication

- This class is on Moodle forum.

Mid-term and Final exam

- A formulary associated with each lecture will be created; a collection of formularies will be provided during the written exam tests.

Continuous assessment

- The project (groups of 3/4 students), has to be submitted by Friday 19th December 2025 on Moodle.

Exercise sessions

- Students should bring their laptops during the exercise sessions.