

Faculty of Applied Sciences



AMCO2174 Geotechnic

[30h+15h exercises] 4 credits

This course is taught in the 1st semester

Teacher(s): Alain Holeyman, Jean-François Thimus
Language: French
Level: Second cycle

Aims

Give to the students the expertise of knowledge seen in cursus AUCE 1171, 1172 and 1173

Main themes

Provide engineering students advanced design methods to solve geotechnical problems connected with civil engineering projects.

Knowledge:

- Soil-structure interaction under static conditions
- Advanced analysis of slope stability, design of foundations and soil retaining structures
- Foundation and soil improvement technologies

Know-how:

- Integrate basic engineering disciplines (soil mechanics, constitutive modeling, statics of structures) to analyze interactive stability of soil and structures
- Assess feasibility and select best available design method to study foundation problems, select appropriate design parameters and most appropriate technology to solve a foundation problem

Content and teaching methods

- Soil-structure interaction as an advanced method to design spread footings, piled rafts, piles under horizontal loading, diaphragm walls; interest and limitation of finite elements software
- Groundwater flow analysis under complex conditions: anisotropy, heterogeneity, free surface groundwater flow, seepage forces, piping, transient conditions, interpretation of pumping tests results
- Ultimate states design and soil plasticity
- Foundation technology, temporary and permanent soil improvement techniques
- Advanced analysis of slope stability: discussion of drained vs. undrained conditions and parameters, connection with laboratory triaxial and other shear testing, advanced slice methods (complete Bishop, Janbu, Morgenstern & Price), use specific software

Lectures are delivered in auditoria. Exercises are administered under a seminar format to solve case studies. Use of the Plaxis® Finite Element and Geo-Slope ® softwares is introduced.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prequesit : AUCE 2173, Statics

Other credits in programs

GC22	Deuxième année du programme conduisant au grade d'ingénieur civil des constructions	(4 credits)
GC23	Troisième année du programme conduisant au grade d'ingénieur civil des constructions	(4 credits)