UCLouvain

lgciv2071

2023

Geotechnics

5.00 credits	30.0 h + 30.0 h	Q1

Teacher(s)	Rattez Hadrien ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	Basic concepts of soil classification, effective stress, compressibility, shear strength, laboratory and site investigation, design of shallow and deep foundations, as taught in the courses LGCIV1031 and LGCIV1072.
Main themes	The objectives of the course are: • To strengthen the knowledge of geotechnical engineering through discussion of advanced concepts: lateral actions, soil-structure interaction, soil anisotropy and heterogeneity. • To explain the design principles of geotechnical elements of a construction project: walls, sheet pile walls, piles, soil improvement methods. • To familiarize the student with the significance of certain elements on the stability of constructions: groundwater, drainage, monitoring.
Learning outcomes	**At the end of this learning unit, the student is able to :** **Contribution of the course to the program objectives (N°)** AA1.2, AA1.3, AA2.1, AA2.2, AA4.1, AA5.1, AA5.2, AA5.3, AA6.1 **Specific learning outcomes of the course** At the end of the course, students will be capable of: 1 • Describing the execution methods for the installation of walls. • Designing a retaining wall. • Describing soil improvement methods. • Modelling an element of a geotechnical project (numerical approach). • Calculating deformation and loading of structures interacting with soil. • Identifying potentially dangerous situations in presence of groundwater. • Describing the behaviour of soft soils, calcareous sands, unsaturated soils.
Evaluation methods	Continuous assessment and final oral exam
Teaching methods	Ex-cathedra teaching through the course resources for volume 1. Supervised exercise sessions in classroom for volume 2.
Content	• Retaining walls. • Walls and sheet-pile walls. • Soil improvement. • Constitutive laws of soil behaviour. • Introduction to numerical methods (finite elements). • Foundation mats and slabs. • Horizontal loading on geotechnical elements. • Rock mechanics • Tunnels
Inline resources	Available on Moodle.
Bibliography	Supports du cours et documentation sur Moodle.
Faculty or entity in charge	GC

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Civil Engineering	GCE2M	5		🔍
Master [120] in Architecture and Engineering	ARCH2M	5		🔍