



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 :				
Loaning outcomes	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:				
	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.				
reaching methods	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		٩		
Master [120] in Architecture and Engineering	ARCH2M	5		٩		