

4 credits



30.0 h + 15.0 h

Q2

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| Teacher(s)          | Holeyman Alain ;   |
| Language :          | English  |
| Place of the course | Louvain-la-Neuve   |
| Main themes         | <ul style="list-style-type: none"> <li>The geotechnical design process is put in a professional perspective integrating the following elements : identification of geotechnical issues potentially affecting a project, programming and unfolding of phases of the geotechnical investigation, assessment of geotechnical design parameters from in situ testing, choice of design approaches within the context of normalization, and formulation of a geotechnical report.</li> </ul>  |
| Aims                | <p>Having regard to the Learning Outcome of the program Master Civil Engineering, this course contributes to the development and acquisition of the following Learning Outcomes : LO1.1, LO1.2, LO1.3, LO2.1, LO2.3, LO4.1, LO5.3, LO5.6, and LO6.1.</p> <p>Technical skills :</p> <ul style="list-style-type: none"> <li>Describe the geotechnical challenges of a project accounting for its geological setting</li> <li>Explain the role and importance of codes and regulations in the geotechnical design process</li> <li>Conceive a geotechnical investigation program able to yield pertinent geotechnical design parameters with the view to solve geotechnical problems prompted by the project</li> <li>Develop a conceptual geotechnical model from the results of a geotechnical investigation and represent it</li> </ul> <p>1</p> <ul style="list-style-type: none"> <li>Establish the contents of a geotechnical report suited to a particular project</li> <li>Articulate and defend a monitoring program adding value to the design process</li> </ul> <p>Managerial skills :</p> <ul style="list-style-type: none"> <li>Make decisions and defend them</li> <li>Integrate skills acquired through other geotechnical courses towards problem solving</li> </ul> <p>Relational skills :</p> <ul style="list-style-type: none"> <li>Communicate efficiently with the instructor and fellow students</li> <li>Present an idea/design and defend it</li> </ul> <p>-----</p> <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p> |
| Evaluation methods  | <p>The evaluation includes two settings :</p> <p>Setting 1: case study (30% of final grade)</p> <p>A case study will be used to enable students to propose a geotechnical investigation program and define the contents of a pertinent geotechnical report. That work may be organized in groups, using all available resources. An individual question will be asked during the oral exam.</p> <p>Setting 2: oral exam (70% of final grade)</p> <p>Answer to questions pertaining to theory, application of calculation methods, technological aspects of geotechnical construction methods, on the basis of the debriefing of a closed-book written preparation</p>  |
| Teaching methods    | <p>Lectures and invited conferences on the basis of slides for volume 1.</p> <p>Workshops and/or role play (case study) for volume 2.</p>  |
| Content             | <p>Ch 1 - Role and responsibility of the Geotechnical Engineer within the design, construction and follow-up processes ; from the understanding of the project demands to the production of a geotechnical report, importance of the geologic setting</p> <p>Ch 2 - Classes of geotechnical problems, classes of geotechnical approaches and relevant parameters; Eurocode 7 and National Application Documents ; other regulations</p> <p>Ch 3 - Pertinence, magnitude, and phasing of a geotechnical investigation, Desk studies ; Geophysical surveys, boring and logging</p> <p>Ch 4 - The pressuremeter test : execution, interpretation of results, and application to geotechnical problem solving ; Execution and interpretation of in situ tests: SPT, DPT, VST and DMT</p> <p>Ch 5 - Correlations between the results of laboratory and in situ tests; good practice parameters</p> <p>Ch 6 - Emergence of a conceptual geotechnical model from results of the geotechnical reconnaissance</p> <p>Ch 7 - Contents and use of a geotechnical report</p>   |

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|                             | Ch 8 - Control of geotechnical construction processes and elements, monitoring and follow-up of built projects |
| Inline resources            | Lecture slides, reading material   |
| Other infos                 | One or more invited lectures will be delivered by experts from the geotechnical profession                     |
| Faculty or entity in charge | GC   |

**Programmes containing this learning unit (UE)**

| Program title                                | Acronym | Credits | Prerequisite | Aims  |
|--|---------|---------|--------------|---|
| Master [120] in Civil Engineering            | GCE2M   | 4       |              |  |
| Master [120] in Architecture and Engineering | ARCH2M  | 4       |              |  |