

PhD position – Teaching assistant in Geomechanics

The Civil Engineering department at UCLouvain has a position combining research (50%) aimed at a PhD with teaching assistance and guidance of students at undergraduate level (50%). The duration is six years conditional upon positive intermediate evaluation. The PhD research will be in the field of volcanic flank instability.

The PhD project will be supervised by Hadrien Rattiez in the Institute of Mechanics, Materials and Civil Engineering (hadrien.rattiez@uclouvain.be) and Pierre Delmelle in the Earth and Life Institute (pierre.delmelle@uclouvain.be).

PhD project

Flank instability and lateral collapses are recurrent processes during the structural evolution of volcanoes. Flank collapses can yield landslides with prodigious volumes and as such they pose significant natural hazards to both life and infrastructure. These events differ from other landslides on mountains in that the rocks that collapse are generally highly fractured or in granular form at the start, are often clay-rich, and may contain large amounts of water. The mechanisms controlling the nucleation and propagation of these volcanic landslides are not yet fully understood. Many physical processes, including hydrothermal rock alteration, dykes' intrusions or pore water pressure variations play a key but still unconstrained role in promoting failure. The objective of the PhD research will be to quantify the role of the different mechanisms by conducting mechanical and microstructural tests in the laboratory which will feed into the development of a numerical model that can reproduce field observations.

Teaching

The teaching activities take place in French and consist in practical exercises, laboratories and projects in soil mechanics. The successful candidate should speak French or demonstrate his/her willingness to learn it within one year after the date of appointment.

Candidate profile

In order to be admitted to the PhD, the candidate should hold a master's degree in engineering (e.g. civil, hydraulic, environmental, mechanical, ...) corresponding to a total of 300 ECTS. He/she should have a strong background in soil mechanics and be interested in experimental testing and/or numerical modelling. Curiosity and willingness to learn and to develop new ideas are essential to accomplish the project successfully.

Contact and application

Interested candidates should send an application (including a CV, a cover letter describing interests and qualifications related to the PhD Thesis and two reference Professors, all compiled in a single PDF file) to Hadrien Rattiez at UCLouvain (Hadrien.rattiez@uclouvain.be)

The deadline for application is April 1st, 2021 and the successful applicant is due to start September 1st, 2021.