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Arkitektur och Samhällsbyggnadsteknik, Doktorand inom Modelling Erosion in Sensitive Clay Slopes

PhD student position in Modelling Erosion in Sensitive Clay Slopes

We are looking for a PhD candidate fascinated in modelling erosion processes in sensitive clay slopes. The highly sensitive clays, called quick clays, can change from solid to liquid with small environmental perturbations. We want to be able to understand how a changing environment will accelerate the erosion thus affecting the stability of sensitive clay slopes, probably triggering catastrophic failures. We offer access to unique experimental data and computational tools developed by our research team for addressing a timely societally relevant problem.

Project overview

The aim is to unravel the role of toe erosion in triggering landslides in sensitive clays. The focus will be on developing computational models that will quantify the erosion mechanisms, precursors and the time to failure. This will be achieved by combining advanced constitutive models that capture the rate-dependent (creep and porewater pressure) response of sensitive clays with erosion models enabling system-level studies.

Research environment

Geotechnics research at the [Department of Architecture and Civil Engineering](#) focuses on the characterisation and modelling of complex geomaterials, particularly natural clays. Our work bridges fundamental understanding with advanced modelling and testing capabilities, applied to real-world engineering challenges.

We are internationally recognised for our expertise in experimental testing and numerical modelling of natural clays at both laboratory and field scale. We are active members of the **ALERT Geomaterials** network and other international committees. Our diverse and international team of over 15 full-time researchers offers a stimulating and supportive environment to learn and grow.

Your profile

Required qualifications:

- Undergraduate degree in Civil Engineering or a related topic, with strong emphasis on Hydraulics and Geomechanics
- Genuine interest in modelling erosion processes in sensitive clay slopes and willingness to work with simulations at boundary value level to enable system-level analyses
- Fluency in spoken and written English which is our working language
- Willingness to learn Swedish, as necessary for providing teaching support at undergraduate level
- Experience in programming

Merits:

- Experience in modelling erosion problems
- Understanding of critical state soil mechanics, elasto-plastic and elasto-viscoplastic models
- Experience in numerical analyses (using finite elements) of geotechnical problems, in particular coupled flow-deformation analyses and/or modelling erosion processes

Main responsibilities

- Conduct independent research and research training (80%)
- Support education and other departmental activities (20%)
- Engage in potential international collaborations and secondments
- Participate in PhD, pedagogical, and language courses (e.g. through Nordic Five Tech or ALERT Geomaterials)

Contract terms

The position is a four-year appointment, with the possibility of extension up to five years through teaching (maximum 20%).

What we offer

- Fully funded PhD position from the start
- Starting salary of 34,550 SEK/month (valid from 25 May 2025)

We offer a unique opportunity for a highly motivated PhD candidate to join a team at the forefront of modelling erosion of natural clay slopes. Based in a beautiful Nordic city with close access to nature, you will enjoy a competitive salary, full social benefits, and work-life balance.

As part of our research group, you will benefit from:

- A collaborative research environment
- Strong ties to both academia and industry
- Access to advanced experimental and computational facilities
- Data from natural slopes on the West Coast of Sweden

You will also have opportunities to build your career through teaching, supervision, proposal writing, and engagement with industry and public agencies.

If Swedish is not your native language, Chalmers offers Swedish courses to help you settle in.

Discover more

Find more general information about doctoral studies at Chalmers [here](#).

How to apply

The application should be written in English be attached as PDF-files, as below. Maximum size for each file is 40 MB. Please note that the system does not support Zip files.

CV: (Please name the document: CV, Family name)

- CV
- Other, for example previous employments or leadership qualifications and positions of trust.

Personal letter: (Please name the document as: Personal letter, Family name)

1-3 pages where you:

- Introduce yourself
- Describe your previous experience of relevance for the position (e.g. education, thesis work and, if applicable, any other research activities)
- Describe your future goals and future research focus

Other documents:

- Copies of bachelor and/or master's thesis.
- Attested copies and transcripts of completed education, grades and other certificates.

Use the button at the foot of the page to reach the application form.

Please note: The applicant is responsible for ensuring that the application is complete. Incomplete applications and applications sent by email will not be considered.

Application deadline: 15 August, 2025

For questions please contact:

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**** Chalmers declines to consider all offers of further announcement publishing or other types of support for the recruiting process in connection with this position. ****

Chalmers University of Technology in Gothenburg conducts research and education in technology and natural sciences at a high international level. The university has 3100 employees and 10,000 students, and offers education in engineering, science, shipping and architecture. With scientific excellence as a basis, Chalmers promotes knowledge and technical solutions for a sustainable world. Through global commitment and entrepreneurship, we foster an innovative spirit, in close collaboration with wider society. Chalmers was founded in 1829 and has the same motto today as it did then: Avancez – forward.
