

PhD student position in Experimental Geomechanics



The Department of Civil and Environmental

Engineering works with every aspect of construction in the community – houses to live in, roads to travel on, and water to drink – from planning to maintenance, taking into account the environment, energy and economics. Analysis and problem-solving focus on the ways in which technology, humans and nature interact in society.

The Department has around 130 employees, divided between six research divisions and an administrative team, and is based at the Johanneberg Campus. When it comes to research and education, our Department is at the forefront, and through our work, we contribute to a sustainable built environment.

Information about the research/the project/the division

The current vacancy is within the division of GeoEngineering, which consists of three overlapping research groups: Geomechanics & Geotechnical Engineering, Hydrogeology & Rock Engineering, and Risk Management of Land & Water Resources. The group has unique laboratory facilities to study soft geomaterials in climate-controlled conditions and computational facilities incorporating the latest developments for computational work. We are looking for a doctoral student in the Geomechanics & Geotechnical Engineering group under supervision of Associate Professor Jelke Dijkstra. In our research we study the complex material behaviour arising from the particulate nature of natural soils and the associated coupled processes. Our main focus is on fine grained natural materials, such as soft sensitive clays. On the experimental side, we probe the material behaviour across the scales from small scale (micrometre) to large scale (meters). Subsequently, this information is used to develop novel constitutive models that are implemented in in-house and commercial computational codes. These are used for advanced modelling of geotechnical problems on soft soils, such as embankments, foundations, slopes, deep excavations and ground improvement and compared with field monitoring results.

The current position is an experimental position related to the development of novel element tests at small scale to enable advanced non-intrusive measurement techniques, such as micro-tomography, dielectric spectroscopy, small angle x-ray and neutron scattering. Part of the experiments will be performed in collaboration with Dr Stephen Hall at Lund University using the world-class facilities in the Department of Solid Mechanics and at MAX-lab.

Major responsibilities

The aim of the proposal is to improve our fundamental understanding of fine-grained granular matter, such as quick clay, by experimentally studying the evolution of the structure of these materials on the micro scale for several controlled mechanical loading conditions. The applicant is also expected to contribute to the education at undergraduate or MSc level (up to 20 per cent of working hours).

Your major responsibilities are to pursue your own doctoral studies. You are expected to develop your own scientific concepts and communicate the results of your research verbally and in writing, in English.

Position summary

We are looking for a highly motivated and talented individual with experience/interest in design and development of apparatuses for material testing in a collaborative project between Chalmers and Lund funded by Vetenskapsrådet (<http://www.vr.se/inenglish>).

Full-time temporary employment. The position is limited to a maximum of five years.

Qualifications

To to qualify as a PhD student, you must have a Master's level degree corresponding to at least 240 ECTS credits or a 4-year Bachelor's degree in Civil Engineering, Mechanical Engineering, Aerospace Engineering, Applied Physics or related subject. Additional experience with building equipment and developing control software and/or electronics is an advantage. The applicants are expected to be proficient in English (both verbal and written communication) in order to work efficiently in an English speaking research environment.

Chalmers offers Swedish courses.

Chalmers continuously strives to be an attractive employer. Equality and diversity are substantial foundations in all activities at Chalmers.

Application procedure

The application should be marked with Ref 20140465 and written in English. The application should be sent electronically and be attached as pdf-files, as below:

1. Application: (Please name the document: APPLICATION, Family name, reference number)
 - CV, include complete list of publications,
 - Previous teaching and pedagogical experiences,
 - Other, for example previous employments or leadership qualifications and positions of trust.
 - Two references that we can contact.
2. Personal letter/Qualifications: (Please name the document as: QUALIFICATIONS, family name, ref. number) 1-3 pages where you introduce yourself present your qualifications and describe your future research plans.
 - Previous research fields and main research results.
 - Future goals and research focus. Are there any specific projects and research issues you are primarily interested in?
3. Other:
 - Copies of bachelor or master's thesis.
 - Attested copies of completed education, grades and other certificates.

Please use the button at the foot of the page to reach the application form. The files may be compressed (zipped).

Application deadline: 2015-01-01

For questions, please contact:

Dr. Jelke Dijkstra

E-mail: jelke.dijkstra@chalmers.se

**** 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 conducts research and education in engineering sciences, architecture, technology-related mathematical sciences, natural and nautical sciences, working in close collaboration with industry and society. The strategy for scientific excellence focuses on our eight Areas of Advance; Built Environment, Energy, Information & Communication Technology, Life Science, Materials Science, Nanoscience & Nanotechnology, Production and Transport. The aim is to make an active contribution to a sustainable future using the basic sciences as a foundation and innovation and entrepreneurship as the central driving forces. Chalmers has around 11,000 students and 3,000 employees. New knowledge and improved technology have characterised Chalmers since its foundation in 1829, completely in accordance with the will of William Chalmers and his motto: Avancez!
