

Assistant/Associate Professor of Geotechnical Field Testing and Monitoring

Department/faculty: Faculty Civil Engineering and Geosciences

Level: Doctorate

Working hours: 36-40 hours weekly

Contract: Tenure Track

Salary: 3821 - 5922 euros monthly (full-time basis)

Job description

Would you like to be our new Assistant or Associate Professor of Geotechnical Field Testing and Monitoring, with a focus on soil-structure interaction and the application of new sensing techniques and analysis methods?

Increasing climate stresses and expanding use of the shallow subsurface are posing new challenges related to the performance of geo-structures including those for land protection, transport infrastructure, offshore facilities and (renewable) energy production. Understanding the interplay between environmental pressures, construction activities, infrastructure use, loading from external sources (e.g. vessels and cranes) and the mechanical behaviour of soils is of crucial relevance to address these challenges and to reduce the risk of unsustainable development.

The position is proposed to improve our understanding of the fundamental mechanical behaviour of geotechnical structures undergoing ageing and cyclic loads, and to provide new solutions to the present and future challenges of the built environment, with an emphasis on hydraulic structures such as locks, quay walls, retaining structures and dams. The aim is to develop new monitoring and analysis strategies to better assess and design geotechnical structures and infrastructure subjected to increasing anthropogenic and environmental (e.g. wind, wave, hydraulic, thermal, seismic) loadings, and to study the impact of soil-fluid-structure interaction processes. Emerging sensor and imaging technologies, as well as advanced data analysis, offer the opportunity to develop a new generation of experimental techniques for geotechnical testing in the field.

To achieve these goals, you will need to foster a close collaboration between the Section of Geo-Engineering (within the Department of Geoscience & Engineering, GSE) and the Department of Hydraulic Engineering. The department of GSE is making a major investment in testing facilities for geotechnical engineering and staff: in 2020 it appointed a new assistant professor focussing on soil element multi-physics testing and, in 2022, it will appoint a new assistant or associate professor focussing on physical modelling in the laboratory. The advertised position concerns the monitoring, testing and analysis of soil structures in the field and, in this respect, there are a number of major ongoing projects within Geo-Engineering. These include many activities at the Port of Rotterdam - for example, the InPAD project investigating the axial capacity of instrumented piles - and the quay wall test in Overamstel, Amsterdam.

The position requires proven research qualities in combination with the capacity to reach out to the construction industry and the wider geotechnical engineering community. You are expected to attract research funding from a multitude of sources. Therefore you are comfortable finding new connections and communicating easily with external parties, colleagues and students.

Education is a key responsibility of the successful candidate and you are expected to actively contribute to the education portfolio of the section, department and faculty at all academic levels (BSc, MSc and PhD). This includes: initiating, organizing and contributing to the development and teaching of graduate courses in our new MSc track in Geotechnical Engineering within the MSc programme of Civil Engineering; preparing and assessing assignments and exam papers; and supervision of BSc and MSc student dissertations. Another key responsibility is contributing to the organizational and administrative activities and committees specifically related to education within the department and faculty.

Requirements

You should have a PhD in Geotechnical Engineering or another related discipline, with a strong expertise in soil mechanics and soil-structure interaction. You should also have experience in data collection and interpretation from field experiments. A proven track record in data science methods is an advantage.

You should demonstrate outstanding research potential and have published in peer-reviewed, international scientific journals. You should enjoy pioneering and exploring new paths.

You should have a clear vision on modern education in engineering. You can inspire students and develop their passion for and knowledge of geotechnical engineering.

You need to demonstrate that you have the potential to initiate, acquire, execute and coordinate research projects.

You should be a real team builder and have good communication skills in English. In order to develop close working relationships with the Dutch industry it is essential that you can speak Dutch, or are willing to learn Dutch within the first two years.

Conditions of employment

A tenure-track position is offered for six years. In the fifth year we'll decide if you will be offered a permanent faculty position, based on performance indicators agreed upon at the start of the appointment. We expect that you have the potential to grow towards an Associate Professor and/or Full Professor role in the future.

Inspiring, excellent education is our central aim. We expect you to obtain a University Teaching Qualification (UTQ) within three years if you have less than five years of teaching experience. This is provided by the TU Delft UTQ programme. TU Delft sets high standards for the English competency of the teaching staff. The TU Delft offers training to improve English competency. If you do not speak Dutch, we offer courses to learn the Dutch language within three years.

Salary and benefits are in accordance with the Collective Labour Agreement for Dutch Universities (Salary indication: 3.821 – 5.943 euros monthly). The TU Delft offers a customisable compensation package, a discount on health insurance and sport memberships, and a monthly work costs contribution. Flexible work schedules can be arranged.

For international applicants we offer the Coming to Delft Service and Partner Career Advice to assist you with your relocation. An International Children's Centre offers childcare and there is an international primary school.

Faculty of Civil Engineering and Geosciences

The Faculty of Civil Engineering & Geosciences (CEG) is committed to outstanding international research and education in the field of civil engineering, applied earth sciences, traffic and transport, water technology, and delta technology. Our research feeds into our educational programmes and covers societal challenges such as climate change, energy transition, resource depletion, urbanisation and the availability of clean water, conducted in close cooperation with a wide range of research institutions. CEG is convinced that Open Science helps to achieve our goals and supports its scientists in integrating Open Science in their research practice. The Faculty of CEG comprises 28 research groups in the following seven departments: Materials Mechanics Management & Design, Engineering Structures, Geoscience & Engineering, Geoscience & Remote Sensing, Transport & Planning, Hydraulic Engineering and Water Management.

The Department of Geoscience & Engineering encompasses 5 sections: Applied Geology, Applied Geophysics & Petrophysics, Geo-Engineering, Resource Engineering, and Reservoir Engineering. Within the Department there is considerable scope and encouragement for inter-disciplinary research.

The advertised position resides in the Section of Geo-Engineering which has 13 full-time and 6 part-time academic staff, and 30 PhD and post-doctoral researchers. Areas of expertise include soil mechanics, dykes and embankments, foundation engineering, underground space technology, engineering geology, and geo-environmental engineering. There are extensive experimental laboratory facilities, including large-scale soil-structure interaction testing facilities and a geotechnical centrifuge. The section has close links with the onshore and offshore industries and with the Dutch research institute Deltares.

The advertised position will have a focus on increasing interdisciplinary research between the Section of Geo-Engineering and the Section of Ports and Waterways within the Department of Hydraulic Engineering. While formally embedded in the Geo-Engineering Section, the position will in practice have an overlap between the two sections. There will be a specific

focus on geotechnical aspects of hydraulic structures in ports and waterways, such as quay walls. The research is closely related to the interest of parties like Port of Rotterdam and SmartPort, but other stakeholders are likely to become involved.

Information and application

For more information about this vacancy, you can contact Prof. Dr. M. A. Hicks, head of the Section of Geo-Engineering via m.a.hicks@tudelft.nl or tel: +31152787433. Or you can contact Prof. dr. ir. T. J. Heimovaara, head of the Department of Geoscience and Engineering, t.j.heimovaara@tudelft.nl, tel: +31152781969.

Are you interested in this vacancy? Please apply before **11 April 2022** via the application button at [Click](#) and upload:

- your letter of motivation
- CV including contact information of two persons who can provide references
- a personal teaching & research statement (max 3 pages)
- a publications list
- an abstract of your MSc and PhD thesis
- two selected publications

Please note: If your MSc diploma and transcript are not in Dutch, English, French or German and you will be the selected candidate, the TU Delft will ask you to deliver a certified translation in case you will be appointed.

TU Delft creates equal opportunities and encourages women to apply.