



The **UNESCO-IHE Institute for Water Education** offers post-graduate education in Delft, The Netherlands, and carries out research and capacity building projects all over the world. The mission of UNESCO-IHE is to contribute to the education and training of professionals and to build the capacity of sector organizations, knowledge centers and other institutions active in the fields of water, the environment and infrastructure in developing countries and countries in transition.

UNESCO-IHE has a permanent staff of 180, of which 90 are scientific staff, while about 250 guest-lecturers from academia and industry contribute to the educational programme. Each year 750 participants (incl. about 200 new MSc students per year) from all over the world attend the various regular and short courses at UNESCO-IHE. The institute has an international staff & student community with English as working language.

The **Water Science and Engineering Department** conducts research and provides post-graduate education and training to professionals in the fields of water resources assessment and control, hydraulic engineering, hydrology/hydrogeology, various fields related to aquatic ecosystems and limnology, irrigation and drainage, navigation and hydropower, port and coastal engineering, and floods, droughts and pollution. The department is organized into six scientific chair groups: 1) Hydrology and Water Resources, 2) Hydraulic Engineering & River Basin Development (HERBD), 3) Land and Water Development, 4) Coastal systems, Engineering and Port Development, 5) Aquatic Ecosystems, and 6) Flood Resilience, each headed by a professor.

**The HERBD Chair Group** currently consists of 5 permanent staff members (total 3 FTE) and 10 PhD fellows. The group is active in education, capacity building, advisory services and problem-solving research. A better understanding and the mathematical and numerical description of river processes, hydraulic structure behaviour and optimization of water resources management, is at the heart of the HERBD core. The three main research lines are:

**1. Building with nature.** This research line focuses on innovative ways to solve river training and restoration issues and develop sustainable river basin development strategies, taking into account the short- and long-term natural river response. It is based on the quantitative study of natural river processes at different spatial and temporal scales, including erosion and sedimentation in rivers, reservoirs and catchments; river meandering, braiding and avulsion; bar formation; bank erosion and accretion, considering the interactions between flow, sediment, vegetation and human interventions. The chair group carries out data collection on geomorphology, hydrology and sediment characteristics of river systems in the field, adopting complementary techniques as geo-visualization, and advanced data processing and analysis, normally combined with numerical simulations including sediment transport and morphodynamics.

**2. Sustainable design of hydraulic structures.** This research line focuses on the design of hydraulic structures including dams and pressure tunnels for hydropower generation, focusing on structural issues and environmental impacts. The design of hydraulic structures was often based on empiricism. Nowadays, the optimal design of hydraulic structures is receiving considerable attention, both from a hydraulic and from an economic point of view. This requires knowledge about the impacts of population dynamics, economic development and climate variability on flood management, water resources availability and utilization. The research line includes estimating uncertainties in hydraulic modelling and in the design parameters for structures and assessing threats such as scouring, clogging by floating debris.

**3. River basin planning and operational management.** This research line focuses on the forecast of floods and droughts to support managing river basin water resources. In practice, it uses water resources information to support decision making and optimization. For the optimal management of the water resources and operation of reservoirs, knowledge on the hydrological conditions and predictions is of crucial importance, as it is dealing with forecast uncertainty and verification of forecast results. To increase the reliability of flood forecasting and early warning systems, data-model integration techniques in the operational domain are becoming more and more important.

For the chair group of HERBD we are looking for a

## **Full professor in Hydraulic Engineering & River Basin Development (m/f) - 1.0 FTE**

### **Responsibilities**

The professor in Hydraulic Engineering & River Basin Development will provide overall academic leadership to the chair group in its international education, research and capacity building activities and will act as head of the group. The professor is expected to apply and develop the field of hydraulic engineering and river basin development within the wider technical, social, economic and environmental context in the target countries of UNESCO-IHE. The ambition is that this will result in innovative approaches, beyond the technical and scientific state-of-the-art. A major challenge the professor in HERBD needs to address is the translation of academic research into application in developing countries. The new Chair Professor should be part of a network, both within the Netherlands and internationally, to facilitate acquisition of education, research and capacity building projects. The candidate will:

Provide overall leadership to HERBD Chair Group;

- Initiate and lead strategy and scientific research of the chair group;
- Manage the academic output of the chair group;
- Supervise PhD and MSc research;
- Have a keen interest in developing water science and engineering teaching and research as an interdisciplinary subject across all the departments of UNESCO-IHE;
- Take overall responsibility for the quality and contents of the MSc programme specialisations that are a responsibility of the chair group, and serve as a member of the WSE programme committee;
- Teach in the Water Science and Engineering programmes, and in relevant short courses and trainings offered in the Institute and abroad;
- Develop proposals and procure funding for education, research and capacity building activities as well as advisory services, abroad and in the Netherlands;
- Develop and establish close links with other chair groups in UNESCO-IHE;
- Develop and establish close links with institutions, universities and organisations working in the specified fields both worldwide and in the Netherlands.

## Requirements

- Background in (civil) engineering;
- PhD degree in hydraulic engineering or closely related field;
- Proven leadership and vision in the areas of hydraulic engineering and river basin development;
- Demonstrated sustained ability to attract significant research/project funding from national, EU and/or international sources;
- University teaching and curriculum development experience at postgraduate level;
- Professional experience and affinity with multi-disciplinary engineering projects in developing or transition countries;
- Excellent peer-reviewed publication record with proven impact;
- Participation in teaching, research and/or capacity building projects in developing countries and countries in transition will be an advantage;
- Demonstrated experience in the guidance of MSc and PhD level research;
- Well-established international network within the broad area of hydraulic engineering and river basin development, including academia, research organisations and donor communities;
- Good working contacts within the Dutch research and hydraulic engineering society;
- Excellent written and oral communication skills;
- Excellent English-language skills (written and spoken) and preferably also fluent in Dutch, Spanish or French and/or one other official UN language.

Qualified female applicants are encouraged to apply. A zero appointment (extraordinary professorship) at Delft University of Technology will be established.

## Terms of employment

This position is based in Delft, The Netherlands. A competitive salary is offered depending on qualifications and experience in accordance with the conditions of employment for Dutch Universities. The appointment implies entry into the Netherlands' Civil Service Pension Fund (ABP). Candidates must be prepared to carry out long- and short-term missions abroad.

## Information and application

Additional information can be obtained from Prof Charlotte de Fraiture, Head of the Water Science and Engineering Department (+31 5 215 1734 or [c.defraiture@unesco-ihe.org](mailto:c.defraiture@unesco-ihe.org)).

Applications (in English), should respond specifically to the requirements, and can be sent until **14 October 2016** including curriculum vitae, statement of teaching and research interests, motivation letter and the names and contact details of three contactable referees (*as one PDF file with your family name as the filename*), to UNESCO-IHE, attn. Human Resource Management (E: [vacancies@unesco-ihe.org](mailto:vacancies@unesco-ihe.org)), PO Box 3015, 2601 DA Delft, The Netherlands, stating vacancy-number **16-WSE-06**.

*Reactions from staffing agencies and other 3rd parties are not appreciated.*