

Description of Duties (Denomination) of the Professorship of Urban Water Management and Resource Management

at the Faculty of Engineering

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1. University of Duisburg-Essen (UDE): Open-Minded Thinking

We are a young, innovative university in the heart of the Ruhr metropolitan region. Distinguished in research and teaching, we think in terms of possibilities rather than limitations and develop ideas for the future. We embrace diversity, foster potential and are committed to genuine educational equity.



Duisburg Campus

The University of Duisburg-Essen (UDE) is located in the heart of the Ruhr metropolitan region and is one of Germany's largest and most research-intensive universities. Its broad range of disciplines extends from the humanities, social sciences and educational sciences through economics and business to engineering, the natural sciences, computer science and medicine.

UDE takes responsibility for the future. Its values – openness and internationality, diversity, equal opportunities and sustainability – shape the way it acts, conducts research, teaches and learns.

UDE's research profile is characterised by the strategic identification, consistent support and systematic development of forward-looking ideas – in basic research, applied research and knowledge transfer alike. This is also reflected in its many in-house and affiliated institutes.

The cornerstones of UDE's research portfolio are its university-wide research profile focus areas, which are shaped and further developed by numerous researchers from twelve faculties and fourteen cross-faculty Central Scientific Institutions. Collaborative research projects have a place here alongside excellent individual research.

With innovative and digitally supported teaching and learning concepts, UDE enables research-based learning from the very beginning. UDE offers its approximately 38,000 students from 130 countries a wide range of degree programmes, including teacher education.

UDE is regarded throughout Germany as a model for how educational equity can be implemented at a research-intensive university. Numerous measures and projects support promising young talent. UDE sees itself as a vibrant place of diversity and openness where students, researchers and staff can develop their potential and commitment to achievement.

UDE has a strategic partnership with Ruhr University Bochum and TU Dortmund University: the University Alliance Ruhr. The three universities cooperate closely in research and teaching in order to achieve excellence together. With more than 110,000 students and almost 14,000 researchers, the UA Ruhr is one of Germany's largest and strongest academic hubs. Under the umbrella of the Research Alliance Ruhr, they jointly expand internationally leading research on pressing questions for the future.

In addition, UDE maintains partnerships with more than 100 universities around the world and is a founding member of the European university network AURORA, which offers cross-border degree programmes.

More information: <https://www.uni-due.de/de/universitaet/>

UDE as an Employer

Quality Seal of the German Association of University Professors and Lecturers (DHV)

Since August 2014 (re-audited in 2017 and 2022), UDE has held the quality seal of the German Association of University Professors and Lecturers (DHV) for fair and transparent appointment negotiations.

More information: <https://www.uni-due.de/verwaltung/berufungsmanagement/>

Compatibility of Work and Family Life

The systematic promotion and improvement of the compatibility of family* with academic work, employment and study has been firmly established at UDE since 2010 through its successful participation in the “audit familiengerechte hochschule” (family-friendly university audit). In 2022, UDE joined the association *Familie in der Hochschule e.V.* and established the internal UDE *Family* Network*. Since 2024, UDE has participated in the *NRW state programme “Reconciling Work & Care”*.

UDE’s Diversity Support Center provides assistance through its Family Service. Its services include, among other things, personal support with caregiving matters, its own childminding places, flexible childcare in cases of short-term need, and a holiday programme.

More information: <https://www.uni-due.de/diversity/>

Onboarding and Dual Career

The Onboarding Office provides advice when starting at UDE and connects new staff with the university’s other advisory services. It also offers a Dual Career Service that supports not only the new appointee’s own career, but also that of their partner.

More information: <https://www.uni-due.de/verwaltung/dualcareerservice/>

Coaching and Professional Development

UDE sees itself as a university of potential and is committed to enabling all members of the university to contribute and develop their skills and talents. Among other things, it offers a broad range of leadership development and executive coaching programmes.

More information: <https://www.uni-due.de/pe/personalentwicklung>

Health Promotion

Occupational health management promotes a healthy and pleasant working environment as well as a culture of trust and cooperation. UDE employees have access, among other things, to a wide range of in-person and online health-promotion services, extensive sports and fitness activities offered by University Sports, and balanced cafeteria options supporting healthy eating on campus.

More information: <https://www.uni-due.de/pe/gesundheitsmanagement>

2. Faculty of Engineering

ALL RELEVANT ENGINEERING DISCIPLINES UNDER ONE ROOF

The Faculty of Engineering at the University of Duisburg-Essen has a unique profile: nowhere else in Germany are the engineering disciplines brought together so closely as at the University of Duisburg-Essen. Three departments teach and conduct research under one roof: Civil Engineering, Electrical Engineering and Information Technology, and Mechanical and Process Engineering including Industrial Engineering. In addition, the cross-departmental MObility TransformatiON Institute (MOTION) was established, in which chairs from all departments conduct research and teaching in the fields of mobility, automotive engineering and automotive business. As a result, the Faculty offers a nationally unique integrated spectrum of engineering disciplines that meets every requirement for modern, innovative and interdisciplinary university education and research in engineering.

As one of the largest faculties, with more than half of its students coming from an international background, it is a strong and sought-after partner for industry in the region and beyond. Graduates of our degree programmes are highly regarded both for their broad professional expertise and for the distinctive interdisciplinary and international orientation of our programmes. Traditional degree programmes such as Mechanical Engineering, Electrical Engineering and Civil Engineering are complemented by state-of-the-art interdisciplinary programmes such as Nanoengineering, Medical Engineering and Industrial Engineering. Students also develop strong social skills through teamwork and interaction with international students. Particularly noteworthy is our integrated international Bachelor's/Master's programme "International Studies in Engineering (ISE)", in which 50% of courses are taught in English and which, thanks to its global orientation and versatility, is highly popular with both international and German-speaking students.

For our first-year students, we have developed a sustainable support system that ensures a seamless transition from school to university education. During their first three semesters, first-year students have the opportunity to consolidate course content in small groups accompanying the lectures, enabling them to progress efficiently through the demanding engineering programme at a high academic level. Intensive laboratory classes additionally provide hands-on experience with the technologies of the future from the very beginning.

In research, the Faculty of Engineering has excellent opportunities to develop cutting-edge technologies and conduct basic research, supported by more than EUR 60 million invested in equipment infrastructure. With six completed and four ongoing DFG Collaborative Research Centres, three ongoing DFG Research Training Groups and six research groups, the Faculty is one of the leading institutions in Germany and internationally in nanotechnology and materials science. Research also focuses on the following areas:

- Energy and Environmental Process Engineering,
- Combustion Research,
- Mechatronics,
- Automotive Engineering and Business,
- Communications Engineering,
- Microelectronics and Medical Engineering,
- Information Technology,

- Product Engineering and Materials Engineering,
- Civil Engineering,
- Industrial Engineering,
- Logistics

are key areas of research.

By concentrating on these fields, the Faculty has achieved a strong international reputation, reflected in numerous research projects. In addition, there are the university's in-house and affiliated institutes:

- "Development Centre for Ship Technology and Transport Systems (DST)",
- "Institute for Mobile and Satellite Communications (IMST)",
- "Institute of Energy and Environmental Technology (IUTA)",
- "Rhine-Westphalian Institute for Water Research (IWW)",
- "Centre for Fuel Cell Technology (ZBT)",

as well as institutes closely associated with the university:

- "Gas and Heat Institute (GWI)",
- "Center of Rotating Equipment (CoRE)",
- "Fraunhofer Institute for Microelectronic Circuits and Systems (IMS)"

which work closely with the Faculty and together carry out more than EUR 35 million in research each year. In all previous collaborations with industry and other research institutions, the Faculty and its affiliated institutes have proven to be outstanding partners for complex technological solutions and for recruiting excellently trained engineers in this field.

To promote cooperation between departments and subject areas and to increase external visibility, the Faculty has established three thematic research focus areas:

- Energy and Resource Engineering,
- Tailored Materials,
- Human-Centered Cyber-Physical Systems.

3. Department of Civil Engineering

With only 13 professorships, the Department of Civil Engineering is a relatively small unit compared with other German universities. Nevertheless, with around 2,000 civil engineering students, it is a very large teaching unit for the discipline compared with other German universities.

The Department of Civil Engineering has continuously developed its teaching and research profile and adapted it to the constantly changing requirements of research and practice. Its subject areas cover the entire spectrum of civil engineering. This ranges from fundamental fields such as engineering mathematics, mechanics and computational mechanics through geotechnical engineering, structural analysis and materials science to more application-oriented research areas such as concrete structures, steel and lightweight structures, and construction operations and management. Infrastructure issues, particularly in urban areas, are addressed by Hydraulic Engineering and Water Resources Management, Urban Water and Waste Management, and Mobility and Urban Planning. The portfolio is complemented by teaching in transport infrastructure planning and building construction.

Key research areas include new intelligent materials and building systems, energy and resource optimisation, urban planning and development, and water-related infrastructure and utility engineering. Digitalisation and sustainability, as well as the broad application of AI-based technologies, are themes that run through the activities of all subject areas. The Department works closely with leading companies in the construction industry, other businesses, water associations and public authorities. Another focus is education in technology-didactic methods.

Civil Engineering studies in the Department of Civil Engineering within the Faculty of Engineering are based on internationally accredited Bachelor of Science and Master of Science programmes and are characterised by modularisation, internationalisation and the integration of environmental and economic content from the early stages of study. The seven-semester Bachelor's degree programme in Civil Engineering provides the basis for four optional specialisations in the three-semester Master of Science programme:

- Structural Engineering,
- Infrastructure and Environment,
- Construction Management and Business Administration,
- and Materials Science and Applied Mechanics.

The Department of Civil Engineering provides service teaching for teacher education and construction technology programmes. In addition, within the Faculty of Engineering it contributes to the Master of Science programmes in ISE, Water Science, and Management and Technology of Water and Wastewater.

Key trends in civil engineering, as in other fields, include structural changes driven by digitalization and the growing importance of information technologies. These areas are to be developed further in a structured manner over the coming years.

One additional focus in the coming years, for example, is the further expansion of the so-called Institute for Digitalisation and the Digitalisation Laboratory. In addition to digitalisation itself, construction robotics and the automation of construction production are also fields of development. This area of teaching is likewise to be newly established and further developed.

Research and teaching content in information technology is also to be expanded further. This includes topics such as working with databases, geographic information systems (GIS), big-data methods, machine-learning methods, and related approaches.

In international teaching, there are collaborations in double-degree programmes with universities in China, Japan, Malaysia and Indonesia.

The involvement of industry representatives from major German companies in the Ruhr region through the “Civil Engineering Advisory Board” ensures that university teaching and research remain closely aligned with labour-market needs. In environmental and infrastructure research, the Faculty develops innovative concepts for the urban water cycle, components for blue-green infrastructure, and digital decision-support systems based on measurement concepts and, where appropriate, AI-supported online methods or forecasts. In the water and environmental field, there is a long-standing cooperation in research and teaching with regional water associations. The Department of Civil Engineering has a broad range of teaching and research priorities, with externally funded research playing an important role.

In the environmental field, the Department of Civil Engineering has a particularly close connection with the Center for Water and Environmental Research (ZWU) at UDE. ZWU is a Central Scientific Institution that brings together water and environmental research both across faculties at UDE and across the region. ZWU’s objective is to advance modern and innovative water research that links global changes and challenges – such as population growth and urbanisation, climate change and environmental degradation, resource scarcity and sustainable energy supply – with water quantity and water quality, and investigates their impacts on the environment and people. ZWU focuses on interdisciplinary water research with broad expertise in aquatic ecology, aquatic ecosystem research, biodiversity, phycology, environmental toxicology and chemistry, drinking-water treatment and distribution (analysis, assessment and technologies, including membrane research), hydrogeology, water resources and urban water management, hydrology, hydraulic engineering, water resources management, and water governance with economic and legal expertise.

These activities are also characterised by intensive involvement of stakeholders from outside the university. These include commercial and municipal representatives, statutory water associations, water suppliers, and specialist authorities of the State of North Rhine-Westphalia. This proximity to practitioners is unique in Germany. With its members at UDE and neighbouring locations, ZWU is now the largest interdisciplinary centre in North Rhine-Westphalia in terms of the disciplines involved, the number of water researchers and the amount of funding secured.

ZWU coordinates UDE’s university-wide research profile focus area “Water Research” and was most recently responsible for UDE’s proposal in the Excellence competition.

4. Call for Applications

We are seeking an engineer in the field of Urban Water Management and Resource Management, or a natural scientist with a strong research focus shaped by engineering.

The W3 Professorship of “Urban Water Management and Resource Management” is based in the Department of Civil Engineering within the Faculty of Engineering. It forms a strategic interface between the engineering disciplines and the interdisciplinary, cross-faculty areas of UDE’s research profile focus “Water Research”. These activities are coordinated at the University of Duisburg-Essen by the Center for Water and Environmental Research (ZWU).

Highly visible research and development in the field of urban water management is required and should be demonstrated through relevant publications, projects and successful acquisition of third-party funding. Expertise in urban water management is required, with a focus on wastewater treatment plants and combined-sewer and stormwater treatment facilities. Excellent teaching ability is also required.

Close integration with the research activities of the Department of Civil Engineering within the research profile focus areas of the University of Duisburg-Essen is desired. Active participation in and further development of the interdisciplinary and cross-faculty areas of the “Water Research” profile focus at the University of Duisburg-Essen and within UA Ruhr (Research Center One Health Ruhr) are also desired.

Experience is desired in developing digital, resilient and adaptive infrastructure and operational concepts using data- and AI-based methods, as well as experience with innovative concepts for treating and reducing pollutant loads in receiving waters caused by stormwater and combined-sewer discharges. Experience in closing material cycles in urban water management, with a focus on wastewater and sewage sludge as resources, is also desired.

A willingness to cooperate and transfer knowledge, for example with municipalities, regional practice partners in the water sector and industry, is of particular importance.

Specific teaching experience is desired, for example in the further development and implementation of modern teaching concepts, particularly using digital methods (such as AI-supported applications, integration of language models and data-driven analyses in teaching); in addressing specific engineering problems and implementing solutions in practice using technical standards and regulations; in advanced courses, for example on specialized software applications for urban water management engineering practice; and in active participation in international English-language degree programmes.

5. Legal Framework

Universities are state-funded legal entities under public law. State funding is based on their responsibilities, the obligations agreed in higher-education contracts and the services they provide. They operate with a global budget and are not subject to directives from the Ministry of Culture and Science of the State of North Rhine-Westphalia.

Provided that the statutory requirements are met, professors are generally employed as civil servants for life. Professors may also be employed under private-law employment contracts.

When filling a junior professorship, it must be noted that persons who, on the basis of a habilitation or by other means, already meet the appointment requirements for a university professorship may not be considered.

Further information:

- Contacts
www.uni-due.de/verwaltung/organisation/peo_professoren.php
- Appointment Regulations
www.uni-due.de/imperia/md/content/zentralverwaltung/bereinigte_sammlung/2-10-mai12.pdf
- Information on the appointment and recruitment procedure
www.uni-due.de/verwaltung/berufungsmanagement/

6. Salary

The State W Remuneration Regulations govern the official remuneration of university professors and comprise salary grades W1, W2 and W3.

For W2 and W3, the basic salary may be increased by allowances (performance-related pay). These performance-related salary components may be awarded

- in connection with appointment and retention negotiations (appointment and retention performance bonuses),
- for special achievements in research, teaching, the arts, continuing education and the promotion of early-career researchers (special performance bonuses), and
- for performing functions or special duties within university self-governance or university management (functional performance bonuses)

Research and teaching allowances may also be paid from private third-party funds under certain circumstances.

Temporary performance bonuses awarded in the context of appointment and retention negotiations are linked to the conclusion of target and performance agreements.

As part of appointment negotiations, appointment performance bonuses are negotiated individually with the Rector of the University of Duisburg-Essen.

The current salary tables (North Rhine-Westphalia) for salary grades W1, W2 and W3 can be found at:

- https://www.finanzenverwaltung.nrw.de/sites/default/files/asset/document/grundgehaelter_a_b_r_und_w.pdf

Information and legal provisions on W remuneration (North Rhine-Westphalia) can be found online at:

- www.uni-due.de/verwaltung/organisation/peo_links.php
- <https://www.hochschulverband.de/leistungen/wiss-nachwuchs/faq-karriere/besoldung>

Further information can be found in the Regulations on Performance-Related Pay at:

- www.uni-due.de/imperia/md/content/zentralverwaltung/bereinigte_sammlung/3_60.pdf