

## **Information for Applicants**

### **W3 Professorship**

### **„Manufacturing Technology“**

**Faculty of**

**Engineering**

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## I. THE UNIVERSITY OF DUISBURG-ESSEN

### **Broad base, strong peaks**

*Open minded! We are one of the youngest universities in Germany and think in terms of possibilities instead of limits. In the heart of the Ruhr metropolis, we develop ideas with a future at eleven faculties. We are strong in research and teaching, live diversity, promote potentials and are committed to an educational justice worthy of the name.*

#### University of Duisburg-Essen

The University of Duisburg-Essen (UDE) - one of the youngest and largest universities in Germany - is located in the middle of the Ruhr Metropolitan Region. Its broad spectrum of subjects ranges from humanities, social sciences and education to economics, engineering, natural sciences and medicine. Since its foundation in 2003, the UDE has developed into a globally recognized research university. This is documented by the international top positions it has achieved in the meantime. In a comparison of the best universities founded after the turn of the millennium, the UDE ranks fourth worldwide. In the Times Higher Education (THE) Young University Ranking, it ranks 19th among the top 250 international universities that are less than 50 years old. The UDE is also far ahead when it comes to citations of scientific publications: It ranks fifth nationwide and 97th in the THE World University Ranking in an international university comparison.

#### Profile focus

The UDE's range of services is broad and includes, among other things, the interdisciplinary profile focuses on nanosciences, biomedical sciences, urban systems and the transformation of contemporary societies. Another central field of research is lifelong educational and socialization processes.

#### Digitally supported teaching and learning concepts

Through innovative and digitally supported teaching and learning concepts, the UDE is an attractive place for research-based teaching. It offers its more than 42,000 students from over 130 nations almost 250 courses of study, 127 of which are teacher training courses.

#### Educational justice

The UDE is regarded as a nationwide model of how educational justice can be implemented at a university. Numerous measures and projects promote young talents with prospects. The UDE sees itself as a lively place of diversity and openness, where students, researchers and employees can develop their potential and willingness to perform. The aim is to achieve a broadly anchored, resource-saving development.

#### Partnerships & cooperations

The UDE has a strategic partnership with the Ruhr University Bochum and the Technical University Dortmund under the umbrella of the University Alliance Ruhr (UA Ruhr). They cooperate closely in research and teaching and are also jointly present on three continents with their own branch offices. In addition, the UDE maintains partnerships with over 100 universities around the world.

Further information can be found at: <http://udue.de/bewerberinformationen>

## II. THE FACULTY OF ENGINEERING SCIENCES

FACULTY OF ENGINEERING.  
ALL ENGINEERING DISCIPLINES UNDER ONE ROOF.

The Faculty of Engineering Sciences at the University of Duisburg-Essen provides a unique profile. Nowhere else in Germany are engineering sciences so close as at the University of Duisburg-Essen. Four departments teach and research Civil Engineering, Electrical Engineering and Information Technology, Computer Science and Applied Cognitive Science and Mechanical and Process Engineering, including Industrial Engineering, under one roof. As a result, the faculty has an integrated spectrum of engineering disciplines that is unique in Germany and meets all requirements for modern, innovative, and interdisciplinary university education and research in the field of engineering sciences.

With about 11.300 students – about 40% of them from other countries – the faculty is a strong partner for the regional and cross-regional industry. Graduates of our study programmes enjoy a high reputation due to their broad professional competence as well as due to the special interdisciplinary and international orientation of our study programmes. Classical study courses such as mechanical engineering, electrical engineering, materials technology, civil engineering and informatics are complemented by modern interdisciplinary study courses such as nano engineering, applied cognitive and media science, medical engineering or industrial engineering. In addition, social skills are addressed that are particularly trained through teamwork and interaction with international students. Our integrated international bachelor's and master's degree programme "International Studies in Engineering (ISE)" with 50% English lectures which is attractive due to its global character and versatility not only for international students but also for German speaking students.

We have developed a sustainable support system for our first-year students that ensures a seamless transition from school to university education. They have the opportunity to learn the contents of their studies in small groups within the first three semesters, enabling them to quickly complete the demanding engineering study at a high level. In addition, there are intensive laboratory experiments that convey how to use the technologies of the future right from the start. The conversion of diploma degree programmes into consecutive bachelor's and master's degree programmes was completed in the winter semester 2007/2008, while maintaining the internationally respected quality of the German diploma degree.

With an investment volume of more than 60 million Euro for equipment infrastructure the Faculty of Engineering has excellent opportunities to develop cutting-edge technologies and conduct basic research. With seven concluded and one running DFG-Collaborative Research Centers as well as six DFG funded research units the faculty is the best address for research in the fields of nanotechnology and material sciences. Beside of that the topics

- Nanotechnology,
- Combustion Science,
- Mechatronics,
- Communication Systems,
- Microelectronics and Medical Technology,
- Information Technology,
- Product Engineering and Materials Technology,
- Civil Engineering,
- Computational and Cognitive Sciences,
- Industrial Engineering,
- Logistics

are the focus of research activities.

By focusing on these areas, the faculty has achieved a high international reputation, which is documented by numerous research projects. In addition, there are the affiliated institutes and other associated Institutes:

- Development Centre for Ship Technology and Transport Systems (DST),
- Institute for Mobile and Satellite Communication (IMST),
- Institute for Energy and Environmental Technology (IUTA),
- IWW Water Center (IWW),
- Center for Fuel Cell Technology (ZBT),
- Fraunhofer Institute for Microelectronic Circuits and Systems (Fraunhofer IMS),
- Gas-und Wärme-Institut (GWI),
- Center of Rotating Equipment (CoRE),

which collaborate closely with the faculty and have an annual total revenue of more than 35 million Euro. The Faculty and the affiliated and associated institutes have proven to be excellent partners for complex technological solutions and for the recruitment of excellently trained engineers.

In order to promote cooperation between the departments and institutes and to increase visibility the faculty has established four research profiles, which are “Tailored Materials”, “Human-Centered Cyber-Physical Systems”, “Smart Engineering” and “Energy and Resource Engineering”.

### **III. THE DEPARTMENT FOR MECHANICAL AND PROCESS ENGINEERING**

The profile of the Faculty of Engineering (FIW) at the University of Duisburg-Essen is unique: at no other university in Germany you will find engineering sciences working so closely together. Four departments including seven teaching units teach and research under one roof. The resulting synergy effects are extensive, and there is a wide range of interdisciplinary subjects. The faculty boasts nine main areas of research and teaching that are unmatched anywhere else in Germany.

## IV. REQUIREMENTS FOR THE PROFESSORSHIP “Manufacturing Technology”

The position holder is to represent manufacturing technology comprehensively with a focus on additive manufacturing processes in mechanical engineering in the Mechanical Engineering teaching unit of the Faculty of Engineering in research and teaching.

In the area of additive manufacturing technology, several of the following focal points are to be addressed: e.g., materials engineering fundamentals of manufacturing processes, simulative modelling and digitization of methods and processes, approaches to sensor- or model-based quality assurance, machine and process engineering innovations, and control and monitoring of manufacturing processes. Experience with different basic materials (plastics, metals) of additive manufacturing technology is an advantage.

### 1. Research

The job holder ideally has broad experience in the field of additive manufacturing technology and can place this in the context of industrial production and engineering work. Relevant experience in the industrial sector or application-oriented research institutions in a responsible position is particularly desirable. Experience in industrial research or in corresponding cooperations for the technological implementation of research results with industrial partners must be demonstrated. Experience and success in obtaining competitive third-party funding are desirable.

Publications in peer-reviewed / high-quality journals or corresponding patent applications are expected.

The willingness to cooperate intensively within the Faculty of Engineering and with other faculties is desired. An openness to cooperation, collaboration and commitment is expected, especially with the Institute for Produkt Engineering. The research focus "Smart Engineering" is to be considered particularly relevant as a connector.

Furthermore, the willingness to acquire, initiate and implement (inter-departmental) third-party funding projects as well as the establishment and cultivation of international contacts is required.

In addition, it is desirable that there is a contextual proximity or orientation to at least one or more of the faculty's main research areas:

- (1) Tailored Materials
- (2) Human-Centered Cyber Physical Systems
- (3) Smart Engineering
- (4) Energy and Resource Engineering

### 2. Teaching

The position holder is expected to contribute to teaching in the German-language and international Bachelor's and Master's degree programmes of the Department of Mechanical and Process Engineering.

In addition to the basic courses in the field of manufacturing technology, advanced content of additive processes and engineering methods are to be taught. In parallel to lectures and supervised theses, practice-oriented formats such as student projects should also be offered as part of the teaching. Experience from industrial practice in production engineering is seen as a desirable enrichment in this context.

Cooperation in the further development of the degree programmes as well as in the self-administration committees of the university is required.

### **3. Obligations**

The teaching load of the position is 9 hours per week, 45 minutes each.

## **V. STAFFING AND FACILITIES**

Details will be determined within the negotiations for the filling of the position.

## **VI. LEGAL FRAMEWORK**

With the passing of the Higher Education in North Rhine-Westphalia Act (HG) dated 31.10.2006 (amended 05.12.2017), the university system was radically restructured as of 1.1.2007.

Operating under German law, the universities are defined legally as public corporations supported by the State of North Rhine-Westphalia. State finance is based on the tasks of the universities, agreed goals and performance delivered. The universities have a global budget and are not subject to the instructions of the North Rhine-Westphalian Ministry of Innovation, Science, Research and Technology.

Legal status of Professors

Assuming legal prerequisites are met, professors in Germany are usually employed on a civil-servant basis (= full tenure). However, employment on the basis of a contract under private law is also possible.

For further information (laws, directives, etc.), please visit:

<https://www.uni-due.de/verwaltung/recht>.

## **VII. SALARY**

As of January, 1, 2005, the C salary system that used to apply in Germany to all newly appointed professors made way for a performance-oriented salary system. As such, the new salary system is part of a recent condition-of-service reform. The formerly standard seniority grades were replaced by a W salary system (W stands for the German "Wissenschaft", meaning "Science"). The salary consists of a basic salary (W2 or W3) and "performance bonuses". From 1 January 2005, the W salary system applies to all newly recruited professors and to those who change to the W salary system. W3 is planned for the professorship offered here.

Performance-related salary components can be awarded on the occasion of appointment and tenure negotiations ("appointment and tenure bonuses"), for special achievements in research, teaching, art, further training and promotion of young scientists ("special performance bonuses") and for carrying out functional or special responsibilities within the framework of university self-management or university administration ("functional performance bonuses"). Under certain circumstances, so-called research and teaching allowances may be paid out of funds provided by private third parties.

Within the framework of appointment negotiations, any temporary appointment-related performance bonuses are linked to an individual goal agreement.

The remuneration in case of appointments will be negotiated individually with the Rector of the University of Duisburg-Essen.

Information on the legal basis for the W salary systems can be found in on the internet at the following addresses:

<https://www.finanzverwaltung.nrw.de/de/beamtinnen-und-beamte>  
<https://www.hochschulverband.de/435.html#>

## **Appendix: POSITION OPENING**