

Information for Applicants

W2 Professorship „Structural Dynamics“

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 unlimited possibilities instead of possible limitations.*

*Located in the heart of the Ruhr metropolis, we have 11 faculties working to develop ideas
with a future. We are strong on research and teaching, embrace diversity, promote academic
potential and fight for genuine educational equality.*

Located in the heart of the Ruhr metropolis, the University of Duisburg-Essen (UDE) is one of the youngest and largest universities in Germany. The courses range from the humanities and social sciences over economics and business studies all the way to the engineering sciences and natural sciences (including medicine). It's also wellknown in the international scientific community.

This is reflected by the top positions the UDE has recently achieved in international rankings. In a global comparison of the performance of the best universities founded since the turn of the millennium, the UDE came in third. In the Times Higher Education Ranking, it holds down 19th place among the best 150 universities worldwide younger than 50 years old.

The research carried out at the UDE covers a broad spectrum including four cross-departmental main research areas: nanosciences, biomedical sciences, urban systems and transformation of contemporary societies. More than 43,000 students from over 130 countries are enrolled at the UDE in a total of over 230 courses of study. An important objective of the UDE's diversity management program is to offer equal opportunities to young people from non-academic backgrounds.

As an academic global player, the UDE cultivates partnerships with more than 100 universities all over the world. It is a member of the University Alliance Ruhr (UA Ruhr), a strategic coalition formed by the three universities in the Ruhr area. The UA Ruhr operates liaison offices in North America, Russia, and Latin America.

More information:

https://www.uni-due.de/imperia/md/content/dokumente/ppt/ppt_praesentation_ude_en.pdf

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 11.600 students – about one third 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 complimented 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 “STRUCTURAL DYNAMICS”

The holder of the position is responsible at the Department of Mechanical and Process Engineering of the Faculty of Engineering for the research and teaching in the area of structural dynamics as well as adjoining topics. The Professorship is associated to the Chair for Mechanics and Robotics.

The Department seeks with the filling of this position the intensification of interdisciplinary cooperation between the field of Mechanics and the Chairs “Dynamics and Control”, “Mechatronics”, “Turbomachinery”, and “Ship Technology, Marine Technology and Transport Systems”.

1. Research

In research, future-oriented topics such as fluid-structure interactions, hydro- and aeroelasticity, coupled multibody and FEM problems, nonlinear vibrations, and dynamics of complex materials, with applications in ship systems, turbomachinery, civil engineering, energy harvesting and/or wind turbines, up to neuromuscular systems are of particular interest. The professorship fits due to its interdisciplinarity in all four key research topics of the Faculty of Engineering:

- (1) Tailored Materials: with potential topics such as Smart Materials, material damping, health monitoring, material optimization for reduction of ship vibrations, new material surfaces for reduction of slip-stick vibrations in endoprosthesis, and others.
- (2) Human-Centered Cyber Physical Systems: with potential topics such as nonlinear oscillations in neuromotorics, stability criteria in haptic feedback systems, and others.
- (3) Smart Engineering: with potential topics such as vibroacoustics, mechatronic vibration balancing in machines, high dynamics robots, and others.
- (4) Energy and Resource Engineering: with potential topics such as rotor dynamics in turbomachinery, dynamics of wind turbines, energy harvesters, and others.

2. Teaching

The teaching responsibilities include on the one hand the basic courses “Mechanics” (in English) within the international studies in engineering (ISE) of the Faculty as well as “Strukturdynamik” (in German) of the Department of Mechanical and Process Engineering, and on the other hand specialized lectures on applied structural dynamics such as rotor dynamics, FEM of large structures, modelling of large welded structures, or fluid-structure interaction. The Faculty is also open for new directions in the area of structural dynamics.

3. Obligations

The number of teaching hours comprises 9 weekly units à 45 minutes per semester.

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

We are one of the youngest universities in Germany and think in terms of unlimited possibilities instead of possible limitations. Located in the heart of the Ruhr metropolis, our 11 faculties develop ideas with a future. We are strong on research and teaching, embrace diversity, promote academic potential and commit ourselves to educational equality.

The Faculty of Engineering at the University of Duisburg-Essen intends to fill the following professorial chair as soon as possible:

University Professor in Structural Dynamics (Salary Scale W 2 LBesO W)

The Faculty of Engineering Sciences with its four departments of Civil Engineering, Electrical Engineering and Information Technology, Computer Science and Applied Cognitive Sciences, and Mechanical and Process Engineering conducts basic and applied research at a high, internationally recognized level. With approx. 80 chairs and over 10,000 students, the faculty is one of the largest in Germany.

Applicants for this position must have an excellent international scientific record both in fundamental and applied (industrial) research as well as excellent didactic skills, and must be able to represent the field of structural dynamics both on the theoretical and experimental level.

Topics of particular interest in research are fluid-structure interactions, hydro- and aeroelasticity, coupled multibody and FEM problems, nonlinear vibrations, and dynamics of complex materials, with applications in ship systems, turbomachinery, civil engineering, energy harvesting and/or wind turbines, up to neuromuscular systems. Of particular emphasis is here the internationality of research.

The teaching responsibilities include on the one hand the basic courses "Mechanics" (in English) within the international studies in engineering (ISE) of the Faculty as well as "Strukturdynamik" (in German) of the Department of Mechanical and Process Engineering, and on the other hand specialized lectures on applied structural dynamics such as rotor dynamics, FEM of large structures, modelling of large welded structures, or fluid-structure interaction. The Faculty is also open for new directions in the area of structural dynamics.

Current publications in peer-reviewed international journals as well as experiences in the acquisition of competitive third-party funding projects, ideally in the area of publicly funded agencies such as the German Research Foundation are expected.

The University of Duisburg-Essen highlights the quality of its teaching. Please conceptualize your didactic teaching vision, also with regard to the special profile of the University of Duisburg-Essen.

The hiring requirements comply with § 36 of the Higher Education Act of North Rhine-Westphalia (Hochschulgesetz NRW).

The University of Duisburg-Essen aims to increase the diversity of its members and considers their competences in relation to, e.g., their age or origin (s. <http://www.uni-due.de/diversity>). It aims to increase the number of women on its academic staff and therefore emphatically encourages women with pertinent qualifications to apply. Women with equal qualifications will be preferred in accordance with state equality laws. Applications of qualified disabled persons in the legal sense of § 2 para. 3 SGB IX are also welcome.

Applications with the usual documents (CV, list of publications, documentation of academic and professional development, copies of relevant certificates, an exposé of the applicant's research profile with reference to its relevance for the University of Duisburg-Essen, lists of successful external grant applications, experience in academic administration and courses taught, plus a teaching concept) should be sent no later than August 26th 2019 to the **Dean of the Faculty of Engineering of the University of Duisburg-Essen, Herrn Univ.-Prof. Dr.-Ing. Dieter Schramm, Forsthausweg 2, 47057 Duisburg, Germany.**

For further information on this position, the University of Duisburg-Essen and the Faculty of Engineering can be found at <https://www.uni-due.de/iw/de/stellen.shtml>