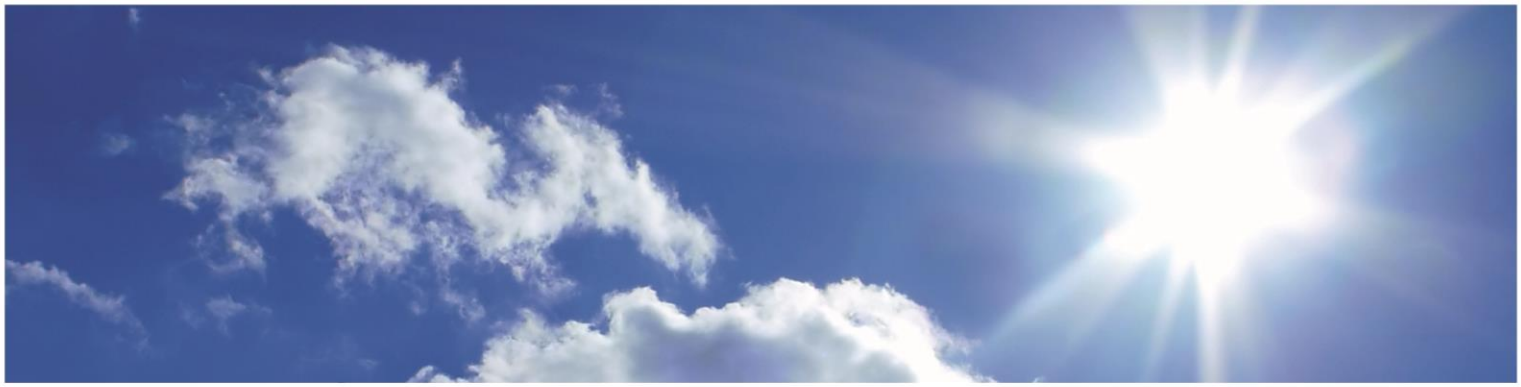


UNIVERSITÄT DUISBURG ESSEN

Offen im Denken

UNIVERSITY OF DUISBURG-ESSEN:
A POWERFUL PARTNER IN RESEARCH AND EDUCATION

Information for Applicants

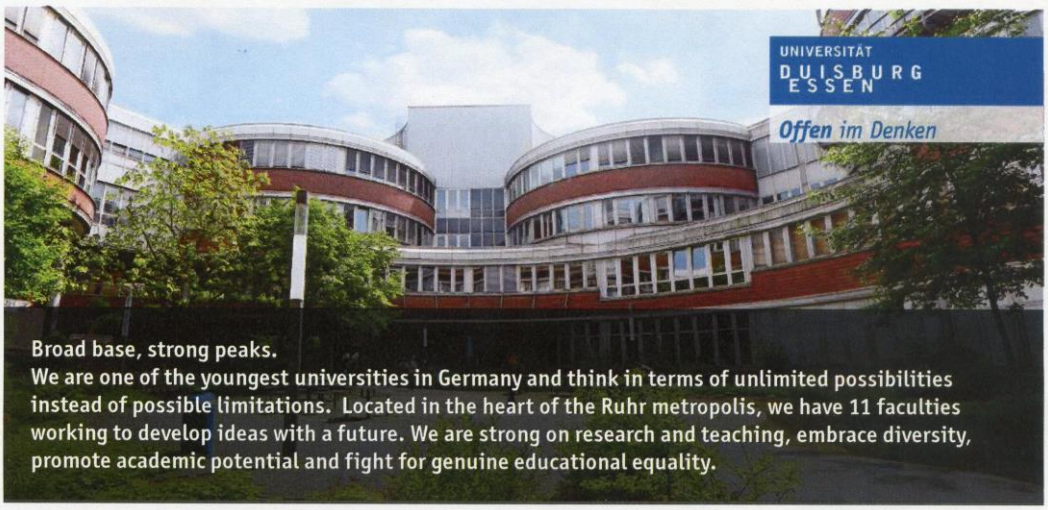
W3 Professorship

„Electrical Energy Systems “

Faculty of

Engineering

I. THE UNIVERSITY OF DUISBURG-ESSEN



University of Duisburg-Essen

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.

Top positions

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 13th place among the best 150 universities worldwide younger than 50 years old.

Main research areas

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.

Partnerships & coalitions

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.

Learn more:
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. DEPARTMENT ELECTRICAL ENGINEERING AND INFORMATION TECHNOLOGY

From classical electrical engineering to nano engineering

More than 1,600 students are enrolled in the electrical engineering and information technology department. The attractive range of subjects covers the “classical” topics of electrical engineering and information technology, the international study programme “International Studies in Engineering” and enables interdisciplinary studies in “Nano Engineering” and “Medical Engineering”. With the conversion from diploma degree courses to consecutive Bachelor’s and Master’s degree studies the department is ideally prepared for the future in the field of education and promotion of young researchers. The fact that the department’s courses are also attractive for women is proven by the above-average proportion of female students, which at the moment is at more than 18 % (in the new study programme medical engineering it is at 48 %). Contrary to general trends the number of freshmen has risen in the current semester as a result of active advertising in schools.

The work in the department of Electrical Engineering and Information Technology is shared by 17 professors at 14 chairs – highly motivated scientists, most of whom have only been appointed in the last 10 years, the average age is correspondingly low. Solidly financed and excellently equipped, the department covers all aspects of electrical engineering and information technology, from electrical power engineering to communications technology, microelectronics, medical technology and nanotechnology.

The participation in collaborative research centers and a research training group as well as numerous DFG and EU funded projects and a wide range of industrial cooperative projects demonstrate the extensive research activities in the department. This is accomplished by outstanding facilities such as the Center for Semiconductor Technology and Optoelectronics (nearly 500 m^2 clean room), the high-voltage laboratory or the fire detection laboratory.

Particularly noteworthy is the cooperation with other research institutes, such as the Fraunhofer Institute for Microelectronic Circuits and Systems or the internationally renowned Institute for Mobile and Satellite Communication. A lively exchange of knowledge about projects, bachelor and master theses as well as about lecturers from these institutes takes place. The head of the Fraunhofer Institute and three department heads of this institute hold professorships at the university. Intensive cooperation with the Forschungszentrum Jülich is established by two joint professorships.

The department of Electrical Engineering and Information Technology at the University of Duisburg-Essen is excellently positioned considering both, the increasing competition among universities with regard to qualified education of

students and future cooperation with national and international partners from science and industry.

Chair of Electrical Power Systems (new name: Electrical Energy Systems)

The Chair of Electrical Power Systems deals with systemic topics in the field of electrical energy systems. The topics include power flow computations, control and operation of large electrical energy grids as well as decentralized systems, especially with regard to the integration of renewable energies (particularly wind energy).

In addition to numerous industrial cooperative projects, especially with grid operators and manufacturers of wind turbines, the institute was involved in important projects, such as “Pegase” (EU) and “E-DeMa” (BMBF, BMWi), as well as in a large number of smaller projects, mainly funded by the state of North-Rhine Westphalia. The chair holder is co-initiator of the DFG Priority Programme “Hybrid and multimodal energy systems: System theoretical methods for the transformation and operation of complex networks”.

The research work focuses on the simulation of energy grids, the analysis of disturbances in grids, the integration of renewable energies into the grid and innovative grid control technologies. For this purpose, the institute is equipped with various program packages for grid simulations in static and dynamic grid states as well as measuring systems for power quality analysis.

Practical applications include improvements of the integration of wind turbines, wind parks and photovoltaic systems and the optimization of the control of these types of power generation. The systemic aspects of the integration of power electronic devices (HVDC, STATCOM) complete the spectrum of research topics.

IV. REQUIREMENTS FOR THE PROFESSORSHIP

The professorship for electrical energy systems is to succeed the successful activities of the professorship electrical power systems. The activities of the chair are embedded in the faculty research profile “Energy and Resource Engineering”.

1. Research

Research will focus on future-oriented topics in the field of electrical energy systems. We are looking for a person that is internationally recognized in several of the following research areas:

- Integration of renewable energy sources into the power system
- Grid conform control of renewable energy-generation units connected through converter interfaces to the power system
- Grid conform control of HVDC links
- Modern methods in power system analysis, optimization and security assessment
- Power system operation and control
- Modelling, simulation and analysis of power system transients
- Technologies for energy conversion for energy systems

The holder of the position is expected to continue to publish in international peer reviewed journals and to acquire third-party funded research projects. Collaboration with other chairs and institutes involved in the faculty research profile “Energy and Resource Engineering” is expected.

2. Teaching

It is expected that the holder of the position takes over the previous lectures of the chair in the field of electrical power engineering. The compulsory courses in the various study programmes (Bachelor’s and Master’s degrees in Electrical Engineering and Information Technology, Bachelor’s degrees in Industrial Engineering, Online Master Electrical Engineering and Information Technology) are:

- Electrical Power Systems
- Power System Analysis
- Non-Stationary Processes in Power Systems
- Power System Operation and Control
- Thermodynamics and Power Plants

V. STAFFING AND FACILITIES

The professorship is equipped with the necessary software tools as well as measuring equipment and laboratories for the topics dealt with so far. These include a wind turbine test stand, an HVDC model and a three-phase analogue grid model (used for teaching). The current equipment will be available to the holder of the position.
Support in respect to measurements can be provided by the chair of Energy transport in the neighbourhood, which deals with more technological aspects in the field of electrical energy transmission and distribution.

In addition to the professorship, three scientific positions (one A14, two E13), two technicians (E12 and E11) as well as half a secretarial position (E6) are associated to the chair.

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#