

## Research Strategy for the University of Duisburg-Essen

*Over the 19 years since it was founded, the University of Duisburg-Essen (UDE) has developed into one of the most dynamic and most successful research universities in Germany. As the 'best young university in Germany', it is among the Top 20 Young Universities worldwide (THE Rankings 2021). Rooted in one of Europe's largest metropolitan areas, UDE will continue to unfold its huge potential on the global stage alongside its partners across the world and as part of the University Alliance Ruhr (UA Ruhr). As a testimony to its slogan 'Open-Minded', UDE will boldly yet responsibly develop solutions for the social challenges of the future. For this purpose, UDE has established the following **six guiding principles**, which will play a key role in shaping the University's research strategy in the years to come.*

### Guiding principle 1: UDE stands for academic excellence

Excellence in research and teaching forms the basis for the numerous achievements that UDE has recorded since being founded in 2003. UDE's research strategy both systematically promotes outstanding individual achievements and actively supports excellent teams working in coordinated national and international cooperative research projects. In order for research to advance even further, it will remain necessary to provide room for individual knowledge gain as well as for opening up new fields of research while also ensuring the sustainability of academic research. To make this possible, a modern infrastructure, additional attractive research buildings and smart investments in emerging technologies are particularly necessary just as lasting and adequate funding for staff.

The successful acquisition of external funding will continue to be a decisive factor in ensuring a university's national and international competitiveness. UDE accepts this challenge and has earned itself a very strong position within the highly competitive academic system in recent years (see the DFG Funding Atlas 2021).

All in all, UDE received €150 million in external funding in 2020, which corresponds to an increase of almost 42% compared to 2015. Impressive increases can also be observed with regard to cooperative research projects funded by the German Research Foundation (DFG) for which UDE staff act as (joint) spokespersons: nine collaborative research centres, seven research training groups and six research units are currently making significant contributions to UDE's strength in research (as of January 2022). Successful applications for substantial grants from funding programmes offered by the federal and state governments as well as the European Union are added to this.

The close cooperation with our partner universities within the University Alliance Ruhr (Ruhr University Bochum and TU Dortmund University), which was established in 2007, has proven to be a recipe for success. With the Research Alliance Ruhr, which is funded by the state government in the context of the Ruhr Conference, the Rhine-Ruhr region is moving away from its heavy industry past and developing into an academic hub with a bright future and a berth for international research of the highest level. UDE sees this positive dynamic as a responsibility and an incentive to continue recruiting the brightest minds and supporting the best ideas in research.

## Guiding principle 2: UDE's profile sets it apart

UDE's research profile is distinguished by the strategic identification, consistent promotion and systematic advancement of promising, innovative ideas in fundamental research, applied research and knowledge transfer into industry and society. At UDE, research is currently

- shaping the University's international profile by means of five **strategic research areas** to which members from across the University contribute
- consolidated to yield strength in interdisciplinary research in 13 **inter-faculty research centres**
- cultivated at eleven **faculties**, both in specific research priority areas and in strong individual research.

The **strategic research areas** are each sustained by a group of scholars renowned in their respective field of research at both national and international level. They are distinguished by their extensive interdisciplinary networks and have clear profiles with regard to the promotion of early career researchers, research-based teaching, and in the field of knowledge transfer. Through their research, they contribute to developing solutions for essential social challenges in an internationally prominent way.

The strategic research areas currently in place at UDE focus on the following research areas:

- Biomedical Sciences (in cooperation with University Medicine Essen)
- Nanoscience
- Urban Systems
- Transformation of Contemporary Societies
- Water Research

To ensure pro-competitive dynamics, the strategic research areas are evaluated as part of a competitive assessment process every six years. They receive additional funding from the University budget.

In order to systematically promote innovative research areas, UDE is aiming to establish **emerging research areas**. These represent dynamic collaborative research groups with particularly high potential to develop into future University-wide strategic research areas.

The **inter-faculty research centres** serve as incubators and catalysts for specific fields of research in which at least two UDE faculties are involved. With their own research coordinators, these research groups collaborate with regional, national and international partner institutions. The inter-faculty research centres are also subject to a six-year evaluation cycle.

To ensure the transfer of research and technology to industry and society, UDE has 11 affiliated institutes in addition to the research units mentioned above. They deal with application-oriented research tasks, such as translating research findings into marketable solutions in terms of processes and products, or validating scientific models. In this way, UDE actively contributes to the Ruhr area's transformation into a modern, innovative and research-driven economic region.

The faculties, inter-faculty research centres, strategic research areas and affiliated institutes are crucial for the further advancement of UDE's research profile. Supreme individual achievements and excellent national and international cooperative research projects shape UDE's future. In order to achieve this, the continuous support (institutional and otherwise), of outstanding researchers at every stage of their career is necessary. Additionally, targeted incentives need to be offered, as well as accessible opportunities to exchange ideas. The same applies to recruiting leading researchers from abroad and expanding international cooperation. Professional, dynamic and intelligent research management is essential and provides important strategic impulses for further raising UDE's profile. It is defined by transparent competitive evaluation processes in regard to research quality, excellence and innovative potential.

In light of its strongly performing research structures, UDE has been preparing for the Excellence Strategy 2026 through a wide variety of measures and as part of a University-wide strategy definition process since 2018. Alongside an ideas competition to identify promising topics for clusters, this includes, in particular, extensive support for excellent research teams with diversity and internationality profiles specific to UDE and the further development of the strategic partnership within the UA Ruhr. This partnership has reached new heights with the establishment of the Research Alliance Ruhr and provides a solid foundation that promises good success for applications within the Excellence Strategy from the federal and state governments and numerous other renowned funding lines.

# RESEARCH AT UDE

## STRATEGIC RESEARCH AREAS



## INTER-FACULTY RESEARCH CENTRES

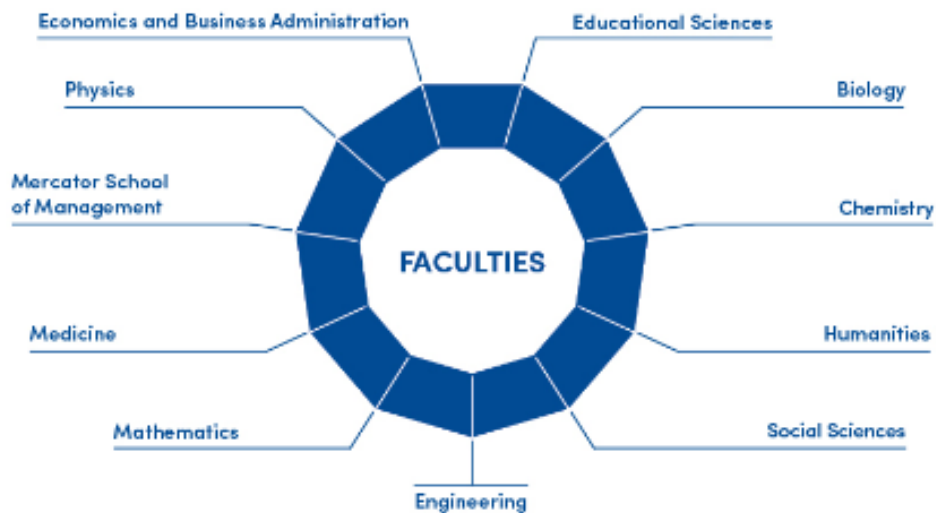


Figure 1: UDE's research structure

### **Guiding principle 3: UDE supports researchers at all stages of their career**

UDE has set itself the task of identifying talented researchers as early as possible and systematically encouraging and preparing them for a successful career in academia and high-profile positions in industry and society. In addition to research-based teaching, the early integration of students into excellent research projects and structured doctoral programmes, such as DFG research training groups and International Max Planck Research Schools, are essential elements in achieving this.

The Graduate Center Plus (GC Plus), which is part of the Science Support Centre (SSC), has overseen the coordination of promotion activities for early career researchers at UDE since 2017. Here, early career researchers are provided with both comprehensive support when preparing applications for external funding and professional consultation and coaching services regarding their career-related issues. An extensive transferable skill training programme for research, academic management and research communication is also offered. The GC Plus is part of the Research Academy Ruhr (RAR), the UA Ruhr's joint platform for the promotion of early career researchers. Offering services across the universities involved and having introduced shared quality standards, the RAR has gained a reputation throughout Germany as a landmark project for developing networked support services for researchers in the early stages of their career.

**Tenure track (TT) professorships** are a particularly successful model at UDE and have become standard procedure in recent years, especially when it comes to filling junior professor positions. A TT professorship is one for which UDE commits to subsequently providing a permanent professorship within its regular budget following a successful evaluation after six years. UDE strives to offer long-term prospects to academically independent early career researchers (e.g. ERC grant holders, independent junior research group leaders as part of the Emmy Noether Programme or NRW's *Rückkehrprogramm* (returning scholars programme) or individuals in similar positions). UDE has set itself the goal of further increasing its appeal as a base for gifted international researchers through measures like these.

**Equitable opportunities and diversity** are firmly embedded in UDE's guiding principles and, consequently, they are fundamental components of UDE's research strategy. UDE realised early on that equal opportunities and diversity are necessary prerequisites for creativity, problem-solving capability, innovation, attractiveness as an employer and societal acceptance also and especially in academia. This is explicitly stipulated in both UDE's diversity strategy and its future equality concept. UDE is committed to further paving the way for more equitable opportunities. To achieve this, the University will continue promoting accessible career paths for young female researchers, increasing the proportion of women in first-time appointments to professorships (e.g. by continuing to participate in the *Professorinnenprogramm*, a programme for the promotion of female professors from the Federal Ministry of Education and Research) and driving the advancement of a modern, family-friendly campus culture. UDE also proves its acute awareness of aspects of diversity through the transparency and reliability that characterises its professorial appointment processes and, of course, all other recruitment processes as well.

#### **Guiding principle 4: UDE manages research professionally**

University management in general and the Vice-Rectorate for Research, Career Development and Science Transfer in particular are strongly committed to the planning and shaping of UDE's research profile. For this purpose, University management works jointly with University committees and UDE's central services, the managers of the strategic research areas and inter-faculty research centres, and the deans of research in the faculties. Research management serves to support both coordinated programmes and individual activities during the application process and while working on the relevant projects.

At an overarching level, UDE's University Board receives advice and support from the following committees and services regarding core issues in research management:

- Commission for Research, Career Development and Science Transfer: The commission comprises members from different disciplines and status groups and supports the University Board and the Senate with regard to fundamental issues of research. It evaluates and gives recommendations regarding the priorities and structure of research at UDE. The commission also monitors funding programmes for early career researchers and within the UA Ruhr, and assists in developing and ensuring measures to enhance quality in research.
- Research Board: Appointed by the University Board, the Research Board consists of scholars renowned for their expertise. It addresses current strategic, research-related challenges UDE is facing.
- Science Support Centre (SSC): Belonging to the Vice-Rectorate for Research, Career Development and Science Transfer, the SSC is the central service unit for research funding and research management at UDE. With its branches for research funding, early career researchers (GC Plus) and research transfer (GUIDE), the SSC provides support to the faculties, inter-faculty research centres and strategic research areas. In addition, it prepares strategic plans and proposals for decisions for University management. At the operational level, the SSC is located at the intersection between research, the relevant administration units (e.g. Finance and Budget, University Development Planning, Legal Affairs) and the University Board.

In order to achieve its objectives, UDE has implemented a **professional quality management** system. This includes, in particular, regular target and performance agreements, external evaluation and accreditation processes. To take the relevant culture of each discipline into consideration, UDE makes use of a combination of quantitative key data and qualitative reviews from experts in its standardised assessment processes. Like the faculties, administration departments and the central operational units, the strategic research areas and inter-faculty research centres are also subject to quality management processes. Due to their special role in shaping UDE's profile, these units have to be measured against exacting standards, in particular with regard to their achievements in research. On this basis, UDE derives regular status reports regarding its current research performance and receives impulses for developing promising future prospects.

Aware of its responsibility as an institution, UDE sets strict standards regarding **honesty in research** and **responsible cooperation and interaction in research**. It advocates the principles of good research practice and academic integrity, thus ensuring the proper handling of research findings and the credibility of the research conducted by its scholars. The principles of good research practice, which are based on the DFG code of conduct, form

an important basis for this. With regard to the handling of research data, UDE is committed to the FAIR principles and has established the Research Data Services as a central service for UDE researchers of all faculties and at all career stages to embed this topic within the University structures. At the same time, UDE emphatically supports the **national research data infrastructure** (NFDI), by both organising its own applications and contributing to others. Furthermore, UDE is actively involved in establishing a powerful research information system (FIS) as part of the CRIS.NRW state-wide initiative.

With its **Transfer and Cooperation Strategy**, UDE follows the principle of openness (open access, open data, open source and open science) to enable free, direct access to research results and findings and to ensure the transparency and availability for subsequent use of research findings from all disciplines.

At UDE, research management is considered a task to be fulfilled jointly by the entire University. Therefore, University management is characterised by an interplay of research driven by the individual units and strategic prioritisation that creates synergies. In addition to regular reflection upon UDE's current research strategy, this also includes University-wide discourses on current research issues in topic-driven working groups (e.g. on governance, appointments, funding).

These forces that reinforce and regulate one another are to be efficiently further developed over the next few years. To do so, a broad research spectrum must be promoted to make room for creative new ideas and disruptive innovations; at the same time, potential for innovation must be identified and sustainably expanded to form a basis for world-leading research.



## **Guiding principle 5: UDE conducts research that benefits society**

UDE responds to the major contemporary social, ecological, economic and technological challenges and transformations with interdisciplinary and transdisciplinary thinking and practices. It assumes the responsibility of providing orientational knowledge, teaching problem-solving skills and commercialising or making practical use of research findings where it is sensible and feasible to do so. The unintended consequences and side effects of academic research transfer must also be systematically reflected upon. In this context, research forms the basis of the University's impact portfolio and is the foundation for **transfer and cooperation**. This requires UDE to provide a framework for partnerships with industry, social institutions, the public and the academic world with a **holistic strategy** and treat collaboration with **external partners** as an integral component of the University's research and teaching operations.

UDE sees itself as a driving force of innovation and a cradle of the lively and stimulating **start-up culture** in the Ruhr metropolitan area and in NRW. Since 2019, UDE's new Centre for Start-Ups and Innopreneurship at the University of Duisburg-Essen (GUIDE) has served as a central point of contact for those interested in starting a company, thus actively advancing the transfer of knowledge into industry with the founders as intermediaries. Especially biomedical sciences, medical technology, artificial intelligence, smart devices, logistics and urban development are **research areas with great start-up potential** particular to UDE. UDE aims to become established as a driver of business development in the Rhine-Ruhr area and activate networks of partners for this purpose. In this context, the existing cooperation with the start-up centres of UDE's partner universities within the UA Ruhr is to be extended and consolidated over the coming years. In accordance with UDE's Transfer and Cooperation Strategy, research-based technology transfer is also to be expanded at the European level. This will be based, among other things, on start-up activities alongside UDE's European partner universities, which are still to be established or to be intensified.

**Research communication** is also an important aspect in UDE assuming its social responsibility. By informing the public about the significance of its research findings for academia, society, politics and industry transparently and in a manner that suits the target audience, UDE puts its strength in research at the service of the common good. UDE seeks dialogues with interested members of the public, for example in the form of appealing events, and supports its researchers in introducing their findings into current discourses in society. As UDE's successful communication during the coronavirus pandemic has shown, the University is thus able to demonstrate the impact of its slogan 'Open-Minded' to the general public.



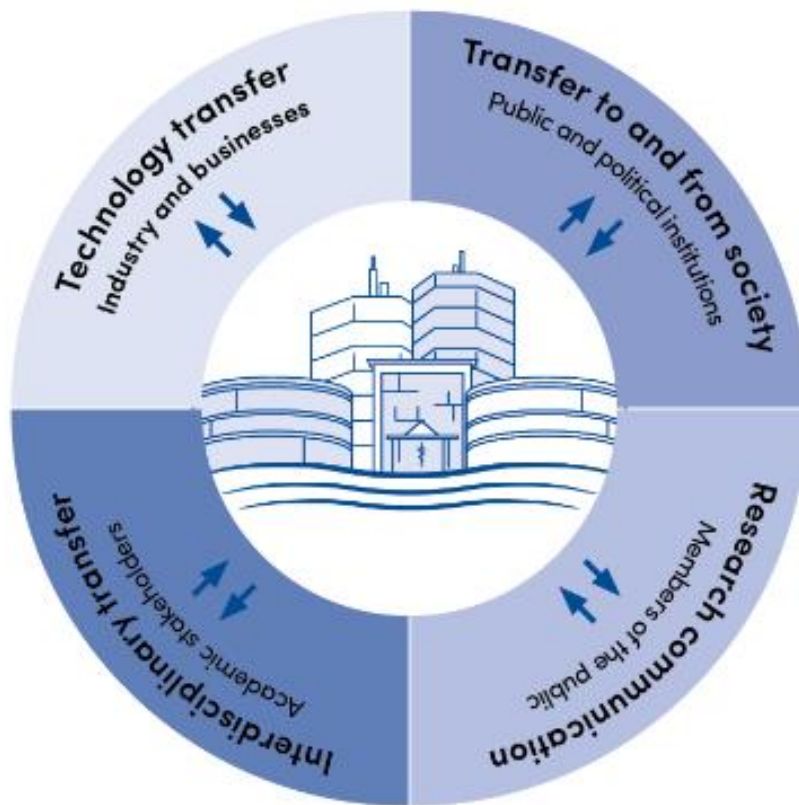


Figure 2: UDE's fields of action relating to knowledge, research and technology transfer

### **Guiding principle 6: UDE is a networked, international operator**

In order to invigorate the great potential within the academic region around the Ruhr river, UDE, Ruhr University Bochum and TU Dortmund University joined forces in the University Alliance Ruhr (UA Ruhr) in 2007. With around 120,000 students, approximately 10,000 early career researchers and almost 1,300 professors, the UA Ruhr is one of the largest and best performing academic research locations in Germany. The achievements of these joint efforts are manifest in strategic research areas extending across the institutions involved, emerging competence fields as well as in numerous collaborative research centres, research training groups and clusters of excellence.

In 2021, the North Rhine-Westphalian government agreed to provide support for establishing four joint research centres and a college in order to further raise the UA Ruhr's profile at an international level. These will ensure ideal conditions for excellent interdisciplinary teams to conduct further research into the pressing issues of the future. The research of the Research Alliance Ruhr, which was set up for this purpose, will focus on the following fields: One Health – from Molecules to Systems, Chemical Sciences and Sustainability, Trustworthy Data Science and Security and Future Energy Materials and Systems. To this is added a College for Social Sciences and Humanities that is open to research into various topics and which will be embedded in the Institute for Advanced Study in the Humanities (KWI).

In the upcoming years, the Research Alliance Ruhr will act as a catalyst that will help even further unfold the shared academic environment's potential for excellent research, outstanding support for early career researchers and international esteem.

UDE's intense cooperative efforts in research also go beyond the sphere of the UA Ruhr. It closely collaborates in both research and teaching with more than 100 other universities and higher education institutions around the world. Involvement in numerous cooperative research projects with academic institutions of international renown that stretch across regions and borders is also proof of UDE's strength in networking and research.

With prominent positions in international university rankings, strategic appointments and cooperation across borders throughout the University, UDE has laid the foundations for further expanding the international outlook of its research. UDE will also uphold its efforts to expand its international network in future. The Aurora network, which was established in 2016, is one important element in this process. It serves to enhance opportunities for exchanging ideas, especially among researchers in the qualification stages of their careers, and advance the establishment of research cooperation structures across Europe that deal with the important challenges facing societies and community engagement. International research training groups, European cooperative research projects, ERC grants and the recruitment and support of leading international researchers, for example, through the corresponding programmes from the Alexander von Humboldt Foundation are also central elements in increasing UDE's visibility in the global research community.

**Published by the Board of the University of Duisburg-Essen**

<https://www.uni-due.de/en/index.php>

UDE's Research Strategy was approved by the Board of the University of Duisburg-Essen on 25 March 2022. This strategy was brought before the University Board following consultations among the Commission for Research, Career Development and Science Transfer (10 January 2022), the Senate (4 February 2022) and the University Council (24 March 2022).