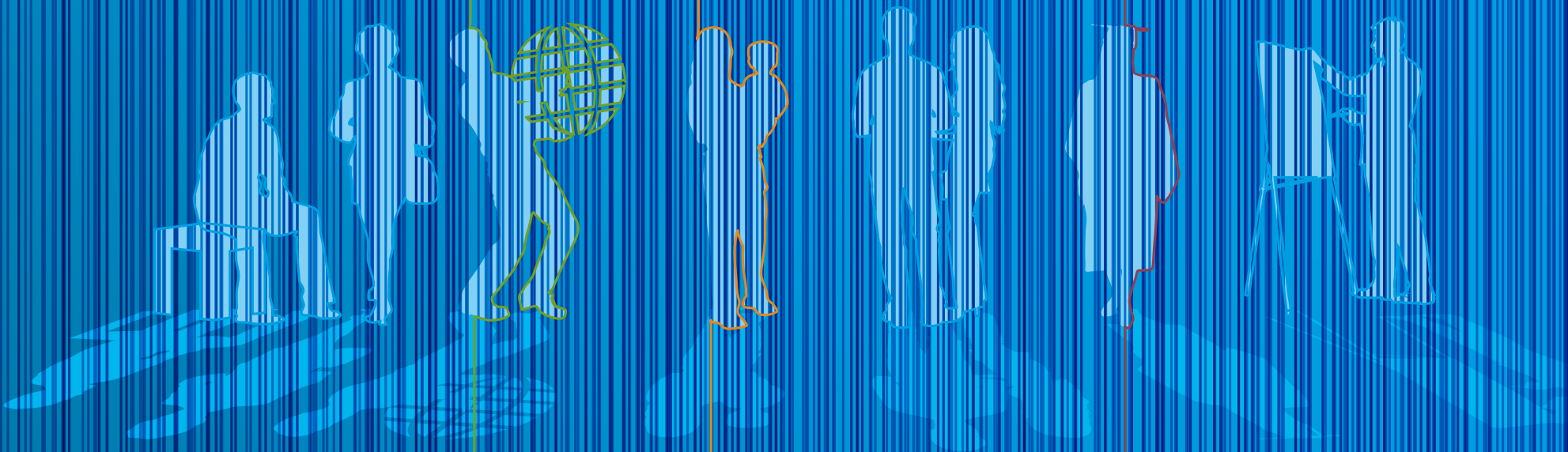


diffusion

create clarity
overcome barriers
be heard



Hochschule
Bonn-Rhein-Sieg
University of Applied Sciences

25 Years
1995-2020

Annual Report 2019

Imprint

PUBLISHED BY:

The President of Hochschule Bonn-Rhein-Sieg, University of Applied Sciences

EDITOR (RESPONSIBLE ACCORDING TO GERMAN PRESS LAW AND THE MEDIA):

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LAYOUT AND DESIGN:

Bosse und Meinhard, Wissen und Kommunikation, Bonn

DRUCK:

Brandt GmbH, Bonn

PRINT RUN/DATE:

700 copies/July 2020

www.h-brs.de | www.trio-medien.de | www.bosse-meinhard.de



Printed on 100% recycled paper according to the standards of the Blue Angel ecolabel.



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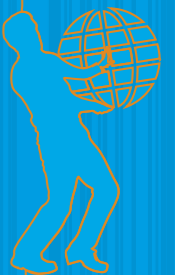
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Greeting

25 years Hochschule Bonn-Rhein-Sieg

30 years of German unity, 25 years of Hochschule Bonn-Rhein-Sieg – the two anniversaries may seem unrelated at first glance but, in fact, have a great deal to do with one other. In June 1991, when the German Bundestag decided after a passionate debate to move large sections of the federal government from Bonn to Berlin, the then German capital and the entire region were facing a major upheaval. A new university of applied sciences was one of the agreements in the Bonn/Berlin Act. The goal was to create new academic training opportunities while also sustainably promoting structural change in the region through practical projects and cooperation with business and industry. Today we can say – this has been an outstanding success!

When the first degree courses started in autumn 1995, a real success story began. Just seven years later, the original target of 2,500 students was exceeded. This trend continued. Today more than 9,000 young people study here! And the university with its campuses in Hennes, Rheinbach and Sankt Augustin continues to grow. It has now expanded its range of courses to include 36 practice-oriented degree programmes, some of which are taught in English. The broad spectrum of subjects ranges from natural sciences and mechanical engineering to computer science and social policy. Both international exchange and partnerships with regional business and industry are emphasised. The university itself is one of the largest employers in the region today.



Hochschule Bonn-Rhein-Sieg has far exceeded the high expectations of its founders. As a strong motor of structural change in the region, it contributes with its own institutes and initiatives to the excellent reputation of both the Bonn/Rhein-Sieg science and research region and North Rhine-Westphalia as a centre of higher education. With 69 universities and other higher education institutes, around 100 research institutes and more than 50 non-university research facilities, our state offers a density of higher education institutions that is unique in Europe. We are just as proud of this as we are of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences. I would like to warmly congratulate you on your anniversary!

Armin Laschet
NRW Minister President

Foreword

The role of science in democracy

This annual report comes at an important time for Hochschule Bonn-Rhein-Sieg. In 2020, we can look back with pride on a quarter century of science at our university of applied sciences. A lot has happened these past 25 years. The university has gone through a series of changes since its birth. Founded in 1995 by the German Bundestag, the German Federal Government and the State of North Rhine-Westphalia, this child of German unity has become a recognised academic institution with an excellent position in research, teaching and knowledge transfer, as well as a regional and international focus. The success of the university shows how wise the political decision was at the time to focus on knowledge at the historic moment of unity and to enrich the diverse university landscape in NRW with an innovation-oriented university.

As a university of applied sciences, H-BRS actively shapes our region and far beyond. Regions are the actual cores of global development – globalisation is nothing more than their competition with each other. In the regions, competencies, innovations and people's lives come together. Science, which like our university works with local actors, simultaneously works in transregional and global contexts. Thus, regional small and medium-sized enterprises are globally networked as important partners of our university. The ability to cooperate with SMEs and in practice with the business world requires the ability to think, research and act in broader, also international contexts.

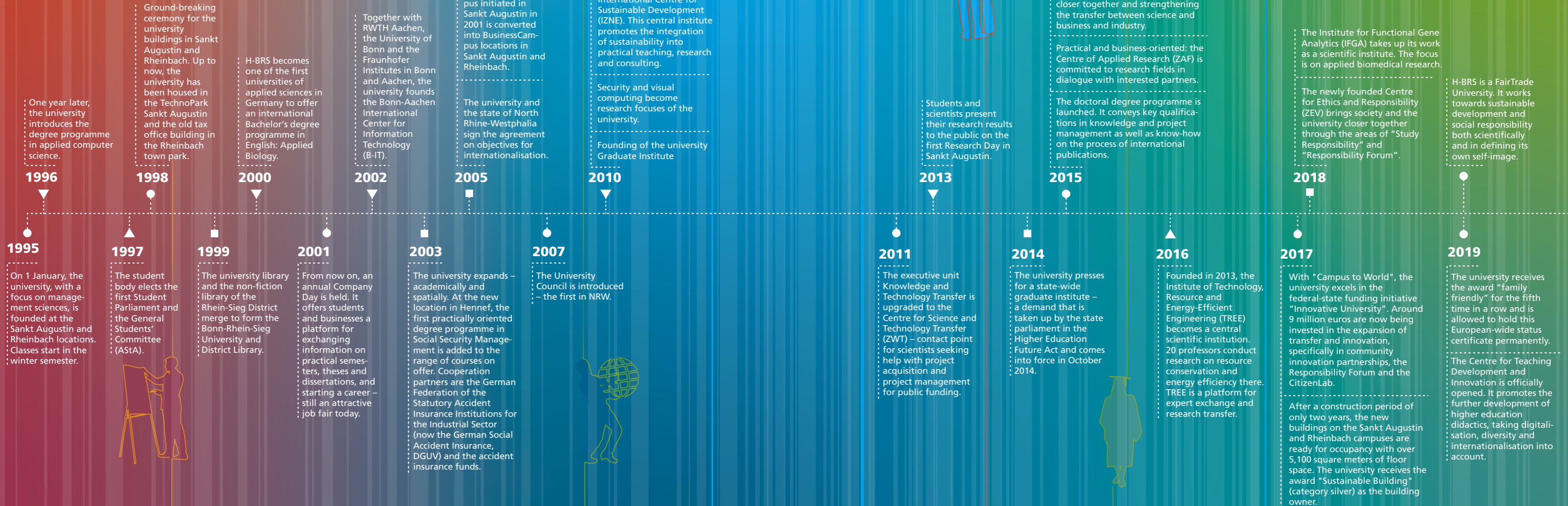
The essence of science is to comprehend things. It is analytical, synthetic, methodical and always curious. Diffusion is the motto of this year's annual report because science is first and foremost a matter of recognising, comprehending and diffusing knowledge. But this also means being heard and making an impact – not only in professional circles, but also in society. Precisely in the context of corona and climate change, we are witnessing the importance of science as an active companion to our democratic society and political



decisions. There is much to be done to shape our reality in a sustainable way and ensure that human dignity is the unalterable basis of our existence. The university, with its many members striving for innovation and commitment, its great partner institutions and loyal friends, is a beacon of hope for a good future.

Prof. Dr Hartmut Ihne
President of H-BRS

25 years Hochschule Bonn-Rhein-Sieg



To compensate, a university

The wish for a university of applied sciences was not new – the Bonn/Berlin Act finally made it possible

The year 1991 marks the beginning. In June the Bundestag decides to move the government to Berlin. A shock for the region, which demands immediate compensation. In order to mitigate the loss, the Berlin/Bonn Act is negotiated. It comes into force in 1994 and provides for extensive compensation measures – including a pledge of 515 million German marks (263 million euros) investment costs for the construction of a new university of applied sciences. The idea is not new. Calls for the establishment of a new institute of higher education in Siegburg to remedy the lack of skilled workers in the region had begun at the end of the 80s.

But the project will only start once the federal funds have been approved. In September 1994, NRW Minister of Science Anke Brunn announces the plans for a new university of applied sciences for the Rhein-Sieg district, and successfully pushes the concept through the Science Council. On 1 January 1995, under Rector Hubert Severin and Chancellor Hans Stender, the university is founded in Rheinbach and Sankt Augustin. Both sides of the Rhine are to benefit from the new scientific institution in the scope of the structural change. The two locations start in 1995 with degree courses in management sciences. This is followed up in Sankt Augustin in 1996 with applied computer science and communication technology, 1997 electrical and mechanical engineering, later expanded to include technical journalism, and in Rheinbach with chemistry and materials science, later expanded to include an English-language degree course in biology. The natural sciences are a special feature and give the university a specific profile even in the early years. In 2003, Hennef is added as a third location with a focus on social policy and social security studies.



University foundation ceremony: Ingrid Matthäus-Maier, Bundestag member and strong supporter of establishing the university, with founding rector Hubert Severin and chancellor Hans Stender



Groundbreaking: NRW Minister of Science Anke Brunn and founding rector Hubert Severin (right)



Distinguished guests at the inauguration of the first building complex in Rheinbach: Federal Minister of Education and Research Edelgard Bulmahn (left) and NRW Minister of Science Gabriele Behler (2nd from right)



study

The answer to all questions ...



... is 42, at least in Douglas Adams' science fiction novel *The Hitchhiker's Guide to the Galaxy*. According to the story, the

calculations of the Deep Thought supercomputer took seven and a half million years to penetrate the underlying question of life, the universe and everything else, and to be able to answer it with just that number.

The answer, however, does not create clarity in the search for the meaning of life. It would also be sad if it were that simple. Even at the university we do not look for easy answers. We seek understanding. We want to create restlessness and dissatisfaction among the students if connections are not really penetrated. The aha effect when it "clicks" is our reward in teaching. At the same time, it is clear that one could think seven million years longer and still not understand everything. Every answer, every bit of understanding we get, raises new questions, and the knowledge of what we do not know is constantly growing.

But what knowledge should teachers impart; what subject matter must students master? Choosing is not easy. What is state of the art today may be outdated tomorrow. As lecturers, we would like to impart content to our students that we ourselves as experts have completely comprehended. We would like to show them techniques that we are enthusiastic about and that we have mastered.

But it is not about us. It is about the students and how we prepare young people in the best possible way to explore topics in the future and answer questions that we are not yet aware of today. And the most important thing is to critically ask whether these are the right questions at all; whether this is what matters. I would therefore like to thank everyone for their commitment and their willingness to constantly engage in new topics, to tackle the important issues of the future, to explore these for themselves and to continue to develop themselves and the university.

Prof. Dr Iris Groß

Vice President for Teaching, Learning and Further Education

A fundamental component of academic education

H-BRS has set itself the task of integrating the topic of sustainability in teaching. Thus the university plays a pioneering role and networks nationwide

In times of global climate strikes and Industry 4.0, the issue of sustainability is rising more strongly in the public consciousness than ever before. It has long been clear to Hochschule Bonn-Rhein-Sieg that sustainability must be an integral part of teaching. "If we want to achieve changes in the sense of sustainable development through scientific research and innovation, it is essential that the topic of sustainability become a fundamental and integral component of academic education", emphasises Professor Stefanie Meilinger, who teaches and researches in the field of sustainable technologies.

The university's internal commitment is beginning to bear fruit. For the interdisciplinary teaching format "Sustainability and Responsibility Across Departments", the team of four lecturers with Professor Britta Krahn and Dr Thomas Krickhahn (Management Sciences), Professor Klaus Lehmann and Professor Margit Schulze (Natural Sciences) won a fellowship from Lehre hochⁿ – a nationwide network for excellent teaching that awards an annual prize for innovative teaching programmes.

Great interest from students

Bachelor students from the Departments of Management Sciences, Natural Sciences, and Electrical Engineering, Mechanical Engineering and Technical Journalism (EMT) participate in the voluntary supplementary subject. The courses are held alternately by each of the four lecturers. "Around the umbrella themes of sustainability and

responsible action, the focus is specifically on teaching scientific principles and contexts, psychological theories of environmental behaviour and the moral foundations of ethically justified behaviour based on values", explains Krahn.

The course is in high demand among students. "It's a great complementary subject to prepare for integrating sustainability in all areas of life, not just privately but also professionally", says Mareike Ropers, a student of business psychology. She praises the mixture of instructive input, group discussions and the development of students' own preventive ideas for more environmentally-conscious behaviour. "This enabled me to deal intensively with climate change and the CO₂ problem." The voluntary or compulsory elective courses take place on Saturdays, but even so there are waiting lists. "This indicates a fundamental need of our students to have sustainability issues addressed in their studies", says Krahn.

Model: Blaue Schiene

The fact that the concept of sustainability is lived at H-BRS was also demonstrated by the nationwide workshop series "Sustainability Certificates at German Universities", which was last held at H-BRS in September 2019, after meetings at TU Berlin and the University of Tübingen. For two days, scientists discussed in detail the opportunities and challenges of interdisciplinary teaching with a focus on sustainability as well as concrete didactic approaches and methods

for communicating the concept of sustainability. "The aim of the workshop was to create a space in which participants and speakers could present activities and discuss common themes", explains Meilinger, one of the workshop organisers.

One project in the EMT and natural sciences departments that has been dealing with sustainability in teaching and studies for several years is the "Blaue Schiene" ("Blue Track"). Here, students of various Bachelor's degree programmes become familiar with the basics of sustainable technology and chemistry in seminars, lectures and projects. The concept can be implemented flexibly in the departments and serves as a model. Meilinger emphasises, "At many universities, sustainability-related teaching takes place within the framework of certificate programmes. Rarely are the programmes fully integrated into the curricula of the individual disciplines. The university's Blue Track certainly offers something special, as does the range of explicitly sustainability-related degree courses".

 **More information:**
www.h-brs.de/en/izne

Capacity building

H-BRS lecturers can receive further training at the Centre for Teaching Development and Innovation (ZIEL). The topics of the training courses range from neurodidactics, learning apps and e-tools to breathing, speaking and voice training, laboratory didactics, competence-oriented testing and copyright law. There is also a basic workshop for newly appointed employees. The further training is intended to give new impulses for the planning and implementation of courses.



Compass in the digital jungle

New impulses in teaching with the digitalisation strategy and Digital Teaching Compass

H-BRS believes in classroom teaching and personal contact with students. But digital add-ons enrich teaching in the sense of blended learning. The university has committed itself to these goals in its digitalisation strategy for teaching, which was drawn up by the 30-member core team Digitalisation and adopted by the President's Office in June 2019.

Successful examples: In Professor Marco Winzker's Vision Remote Lab, students can conduct laboratory experiments on their home PC. Supplementary instructional videos impart theory. In Andrea Schröder's podcast (audio recording of the course), students can work through civil law issues that are sometimes difficult for non-jurists to comprehend. And for compulsory courses in computer science, Daniel Seibert appoints lecturers who only interact with students digitally via video conferencing.

The digitalisation activities are coordinated by the Centre for Teaching Development and Innovation (ZIEL). The e-Learning Department located in the library is integrated into the ZIEL network and provides the central support

infrastructure. H-BRS also appointed Regina Brautlacht as the first Presidential Commissioner for Global Digital Learning. She is responsible for recruiting and advising teachers who use digital teaching in an international context – for virtual collaboration on student projects or for cross-border teaching projects, for instance.

One concrete digitalisation tool is the Digital Teaching Compass, launched in 2019, initiated by Professor Iris Groß, Vice President for Teaching, Learning and Further Education, and implemented by the e-Learning Department. Via this online platform, teachers (teaching champions) share their experiences, approaches and ideas in digital teaching with other colleagues. "The Digital Teaching Compass enables you to quickly and easily find contacts who can help you and give you tips", explains Groß. The compass is multifunctional. "It acts as a source of ideas and orientation, but it is also a marketing tool that makes the diverse activities and commitment to digital teaching at the university more visible", says Susanne Kundmüller-Bianchini, Head of the e-Learning Department. Another advantage is that the compass provides examples of best practice that can be directly applied in teaching.



Links

www.h-brs.de/en/ziel
www.h-brs.de/kompass-digitale-lehre



Next destination: responsibility

How do companies perceive their social responsibility? Students explore this question on a bicycle tour across NRW

In August 2019, eleven Bachelor students from the Departments of Management Sciences, Natural Sciences, and Social Policy and Social Security Studies covered almost 300 kilometres via bicycle in five days – on the Tour de CSR (Corporate Social Responsibility). Stefan Freitag, lecturer for special tasks and coordinator of the Bachelor of Business Management programme (Sankt Augustin) explains the aim of the tour: "We wanted to meet companies and other important actors such as think tanks, politicians or NGOs in their immediate fields of action and impact, in order to talk to them about CSR". Other cyclists: Professor Norbert Seeger from the Department of Management Sciences and Holger Willing from the Centre for Ethics and Responsibility.

The group visited nine companies. The first stage destination: the Deutsche Post DHL Group in Bonn followed by the Rewe Group downstream in Cologne. The following day, the students visited the auditing and consulting company PricewaterhouseCoopers and the Bundesliga football club Fortuna Düsseldorf in Düsseldorf. Day three began at C&A in Düsseldorf and led towards Essen to the coworking space Impact Hub Ruhr. Then the first mountain stage: from Essen southwards, where the cyclists visited the Barmer health insurance company and the non-profit GmbH Collaborating Centre on

Sustainable Consumption and Production (CSCP) in Wuppertal. The final stage began, after a longer stretch, at Bayer AG in Leverkusen and ended on the Domplatte, the pedestrian area by the cathedral in Cologne.

Insight on site

"The Tour de CSR was a great opportunity to gain insight into the implementation of CSR. It was very interesting to see how differently companies interpret the CSR concept", reports Tanja Naumann, a student of natural sciences. One company stood out positively. "I had the impression that Deutsche Post already makes a considerable contribution to sustainable business and climate neutrality. This is clear through their increased use of electric vehicles and bikes for transport", says Naumann.

The Tour de CSR is a joint project of the Department of Management Sciences and the Centre for Ethics and Responsibility (ZEV). A second round is being planned – when this is possible again.



More information:

<https://www.h-brs.de/tour-de-csr>



From the lecture hall to the world: Professors and students visit companies by bike and talk about corporate responsibility in action

Janet Elfers and Nicole Piassetzki

study sustainable social policy. During their studies, they learn how to research sociological phenomena and be heard on a topic.

Nicole Piassetzki (left):

“During our studies we talked about the topic of guaranteed basic income and about the fact that many people do not accept this support even though they’re entitled to it. I spent my internship semester at the Family Benefits Office of the employment agency to find out why people intentionally or unintentionally live below the poverty line when they don’t have to. A low-threshold discussion is important for this in order to reduce bureaucratic barriers and create clarity in the jungle of paragraphs.”

Janet Elfers:

“During my practical semester at the Catholic Church, I will work with homeless women – an under-represented social group for whom there are hardly any options. Women who live on the streets have a harder time than men. Not only do they face hunger and cold in winter but also robbery, rape and prostitution. They are an invisible target group, and I want to make their voice heard.”

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Open doors

Lecture series benefit students and university

In university teaching, lecture series are an important supplement to regular teaching, as they are not only intended for students of the respective departments but also open to all interested parties without exception. "Public lecture series bring science into society. The discussion takes place with the involvement of civil society and provides us scientists with important insights", says Professor Remi Maier-Rigaud from the Department of Social Policy and Social Security Studies. He is responsible for the inter-semester lecture series "Zwischenrufe zur Sozialpolitik" ("Interjections on Social Policy"), one of four lecture series at Hochschule Bonn-Rhein-Sieg – University of Applied Sciences.

Life questions and career prospects

"You have the opportunity to converse with each other in a lecture series; that's something very central", says journalism professor Katharina Seuser. She is in charge of two lecture series, each of which takes a different direction. "Technik- und Umweltethik" ("Technical and Environmental Ethics") is held annually in the summer semester. In this series, experts from science, media and business discuss with students about technologies and their impact on the environment and the future. "This lecture series for students who deal with technology during their studies supplements knowledge with reflection", explains Seuser. The ethical discourse is at the centre. "The lecture sets the stage for pondering life's questions." In September 2016, the lecture series was awarded the University Innovation Prize, and since 2019, it can also use the UNESCO logo "Education for Sustainable Development".

Her second lecture series "Zukunft in der Technikkommunikation – Medienprofis präsentieren Arbeitsfelder" ("Future in technical communication – media professionals present fields of work"), focuses on career prospects and entry opportunities. "The professionals describe their personal paths in many very different fields of work. Information is paramount; it is knowledge transfer for orientation", explains Seuser.

Finally, lecture series are also important for networking with partners in practice and research and for the visibility of the university. Maier-Rigaud adds, "They offer a good opportunity for prospective students to experience the university's open and lively character."



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Lecture series as life belt



Gert Scobel, TV presenter and Honorary Professor of Interdisciplinarity and Philosophy at H-BRS, sees lecture series as a life belt for a broad-based education. "Most degree courses promote a focused view in a subject area – what is missing is an interdisciplinary approach to volatile problem areas." He held a lecture in the lecture series "Wir müssen reden ... über Ethik in der digitalen Welt" ("We have to talk ... about ethics in the digital world") during summer semester 2019. "The series addressed ethical questions of life that preoccupy us all. There is much to do, and the sooner we discuss these issues together and look for solutions, the better. It seems to me that even a simple format like a lecture series can help."

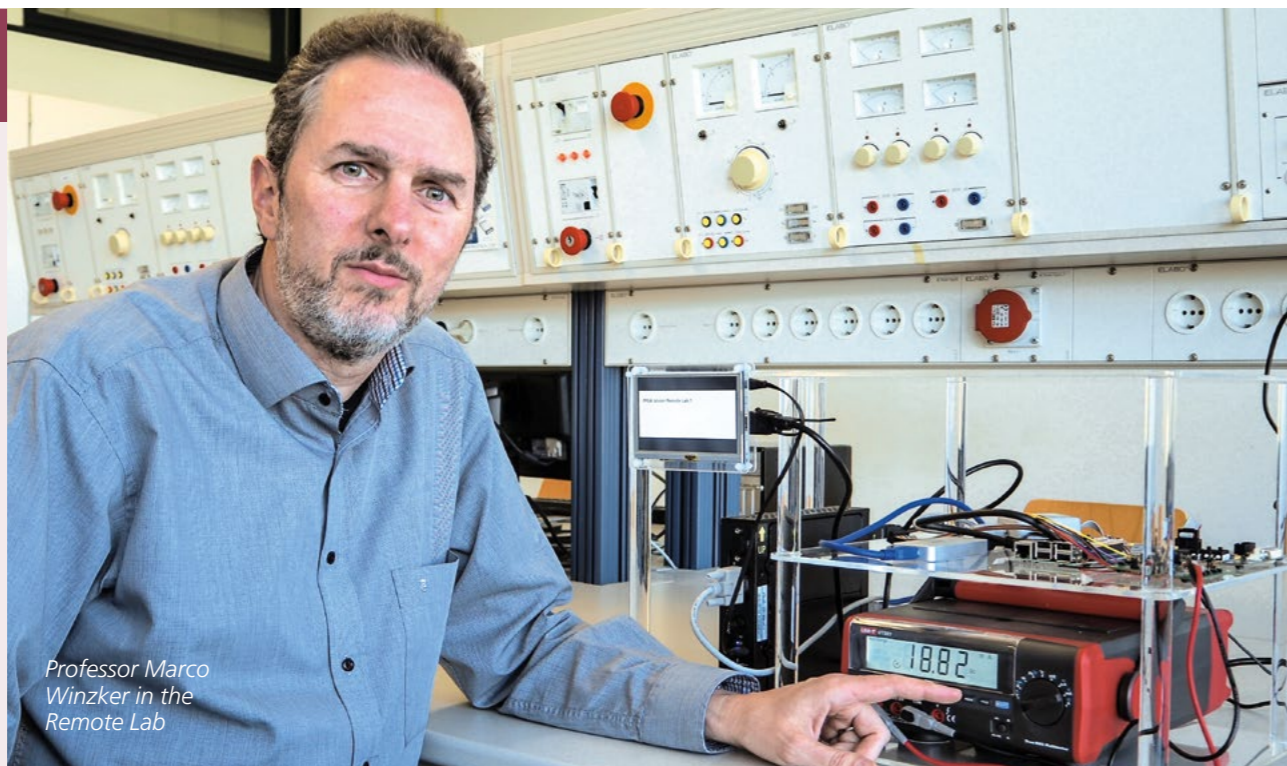


Deutschlandstipendium digital

Applying for a Deutschlandstipendium ("Germany scholarship") is now easier and quicker because H-BRS has digitalised the application process. Students can apply via the university's own student information system SIS. The Germany Scholarship of the Federal Ministry of Education and Research supports particularly talented and committed students at German universities. You will receive 300 euros per month for one year. At H-BRS there are currently 98 recipients.

Digital change in university teaching

Several H-BRS professors actively participated in the programme of the HRK-NEXUS conference "Digital Change in Studies and Teaching". The conference at TU Kaiserslautern focused on the design possibilities and development potential of higher education institutes in the course of digital change. Professor Oliver Ruf gave a talk on the digitalised university from the perspective of a lecturer. Professor Marco Winzker presented "Remote Laboratories in Germany" at a workshop.



Professor Marco Winzker in the Remote Lab

Natural scientists study in an unusual place

The Department of Natural Sciences on a study excursion in Bad Neuenahr-Ahrweiler

The department Electrical Engineering, Mechanical Engineering and Technical Journalism (EMT) led the way, now students of natural sciences have followed suit with the "Study Workshop on the Road". In March 2019, three days of intense collective learning took place at the youth hostel Bad Neuenahr-Ahrweiler with breaks for shared meals. The aim of the somewhat unique learning workshop: optimal preparation for upcoming exams in organic and general chemistry. "21 students from three Bachelor's programmes – Chemistry with Materials Science, Applied Biology and Forensic Sciences – attended the learning workshop", reports Klaus Lehmann, Honorary Professor of Organic Chemistry. Student Lena Blaase and research assistant Daniel Fine joined him on the trip as supervisors.

The days commenced with a short plenary session, then working from 9:00 to 12:30 and from 14:00 to 18:30. "Of course, everyone could organise their own day. And after dinner there was another plenary session, and then we met in the bistro for games and discussions", Lehmann describes the daily routine.

The spring excursion was a complete success for both sides. "It was a beautiful and wonderfully intense time for those of us on the team. In addition to dealing with the subject matter, we were able to systematically take a look at the learning process and learning styles", Lehmann sums up. Changes in perspective became possible. "What does the examiner want to know from me? Why is a task set this way and not another way?"



Good results

The students also gave positive feedback. "I was able to prepare very well for the exam together with my fellow students and thanks to the support of the tutors in a very pleasant and relaxed atmosphere", says Jessica Schneider from the Applied Biology degree programme. Chemistry student Janina Schiller says, "The concentrated learning atmosphere and the opportunity to discuss issues directly with tutors and fellow students helped me to achieve the grade I wanted".

The results of the two exams also demonstrated this: 20 of 21 students passed the exams, eight with good or better results. This is a reason to hold the learning excursion in the Department of Natural Sciences on a regular basis from now on. The second "Study Workshop on the Road" was held at the youth hostel in Bad Münstereifel in March 2020.

250,000 euros for data literacy education

New funding for data literacy projects: After a successful application in 2019, the university will receive 250,000 euros in funding in 2020 from the NRW Ministry of Culture and Science and Stifterverband. Students of all subjects are to learn how to deal with digital analysis and the interpretation of large amounts of data as well as acquire statistical competence. For this purpose, an e-learning teaching and learning concept for ensuring data literacy at H-BRS is being developed in the project "Analysing, Visualising, Interpreting Data" (DAVID).

Internationalisation at home

H-BRS has a broad international base – benefiting both students and lecturers


The university's credo "shaping and living internationality" is reflected in many places. Since 2017, for instance, there has been an "H-BRS International Chair", which is usually filled by a foreign professor for one year. The lecturers, who are always English-speaking, enrich the university's everyday life with an international perspective, which benefits both students and lecturers. "We're proud of the fact that the International Chair has an impact in many respects both inside and outside the university", says Professor Jürgen Bode, Vice President for International Affairs and Diversity. The chair is currently held by Professor Rosemund Boohene (Management Sciences) from the University of Cape Coast in Ghana and Arthur Ngasani from Tanzania (Social Policy and Social Security Studies). The chair was designed so that the holders teach at least ten hours per week.

"This allows the students to deal intensively with internationally influenced content and with English technical language", explains Bode. In addition, the International Chair is intended to help increase the number of foreign students and link the university with institutions from abroad.

Eight international degree programmes

Internationalisation is also a major focus of the study programme. The university now offers eight international degree programmes, two Bachelor's and six Master's degree programmes. All eight are held completely in English. "This makes us stand out. There are not likely many universities of applied sciences of our size that have so many international degree courses. This makes us attractive for students from abroad who can't speak German", says Bode. He also sees a benefit for German students. "They learn to work together in international teams, as many of them will experience later in their careers", he explains.

Guest lectures on a variety of topics round out the H-BRS internationalisation@home. In 2019, 14 lectures by foreign guest scientists were held at the university.

 **More information:**
www.h-brs.de/en/international



research

Appreciation of science



Comprehend – we have heard this word more often recently, namely in relation to the corona crisis. In science, curiosity drives us to acquire knowledge about the world, not superficially, but by trying to cast light on everything from every angle. We want to permeate the world around us, and in doing so we come to know about the world. In times of crisis, it becomes clear how essential it is to comprehend things and what significance research has for our society. It ensures our survival. The study of animal DNA and RNA and their viral infection is not just an academic dexterity exercise. Instead it makes it possible to develop completely new types of vaccines for humans. Research is not a mere playground for bored academics but systemically relevant to the whole of civilisation.

Research can still be fun because without fun there can be no creativity. We see this in the diverse research projects at Hochschule Bonn-Rhein-Sieg. New topics of research are developed and research projects are carried out here with great commitment. Society is always the source of topics in this process. Research requires networking with society outside higher education institutes and universities. This idea is implemented in our Centre of Applied Research where strategic partnerships with industry and non-university research institutes are actively set into practice. To ensure that research is successful in the long term, the training of young scientists is of the utmost importance. The university awards

scholarships to promote its own young scientists, and at the H-BRS Graduate Institute, doctoral students receive further training in scientific work above and beyond the boundaries of their specialist disciplines.

Scientific work, the comprehension of the world around us, is currently experiencing renewed appreciation. Scientists are being listened to more attentively. Millions listen when the Robert Koch Institute explains the latest scientific findings on the coronavirus SARS-CoV-2. Science creates clarity in the fog of targeted misinformation and opinion shaping, thus creating security, especially during insecure times.

Prof. Dr Margit Geißler

Vice President for Research and Young Academics

Better plan A than plan B

The start-up adiutaByte revolutionises route planning for care services and is supported by H-BRS

Where there are problems, there must be solutions. This inspired Philipp Rinner, one of the four founders of the start-up company adiutaByte, three and a half years ago. "He recognised the dire situation – that we have no support systems at all for planners in outpatient care and at the same time an extreme care shortage", says Dr Dustin Feld, also a co-founder of the adiutaByte company. So Rinner started to develop concepts and soon afterwards he teamed up with computer scientists Eric Schricker from H-BRS, Vanessa Wolf and Dustin Feld. The three met during their work at the Fraunhofer SCAI in Sankt Augustin. Together they worked on a solution and founded adiutaByte.

The result was a logistics system that revolutionises route planning in the field of care services. "We made people the focus of attention in our system", explains Feld. In addition to employees and clients, so-called real aspects play a major role. These include factors such as travel time and traffic congestion as well as client wishes, such as a favourite caregiver. "Managers in care services no longer have to waste hours planning the routes out themselves",

he says. People and algorithms are dovetailed. "We combine the best of both worlds: specialised human knowledge – about processes, the participating people and their wishes – combined with algorithmic strength in mathematical optimisation", the website states.

The connection is great

adiutaByte was founded in April 2019. The start-up has six staff members – four founders and two employees. Eric Schricker, who received his Bachelor's degree in computer science at H-BRS, contributed a lot to the development of the system through his Master's thesis "Improvement heuristics for route planning with time frames in online scenarios", which was supervised by the university.

Hochschule Bonn-Rhein-Sieg is supporting the company and not just by providing office space on its Business Campus. It also advises the team on funding opportunities for young companies and involves them in events. "The connection to the university is absolutely fantastic because it can support us in many areas that are often uncharted territory for us as young entrepreneurs", says Schricker happily. The start-up is successful and growing. In addition to care services, the system already offers solutions for pharmaceutical supply services and logistics companies.

 **More information:**
www.adiutabyte.de



The founding team of adiutaByte: Vanessa Wolf, Eric Schricker, Philipp Rinner and Dustin Feld (from left)



Everything regulated - thanks to neural networks

H-BRS develops intelligent process controllers in cooperation with Nolden Regelsysteme


From Lego brick to computer mouse – a great many plastic products are manufactured using injection moulding. During the production process, everything depends on the temperature of the liquid plastic remaining constant. A process control system ensures this. However, classic control systems take a long time to settle at the setpoint value, and this has a negative impact on product quality. Professor Roustiam Chakirov from the Department of Electrical Engineering, Mechanical Engineering and Technical Journalism and his international research team at H-BRS have solved this problem together with the company Nolden Regelsysteme as a cooperation partner – by using artificial neural networks.

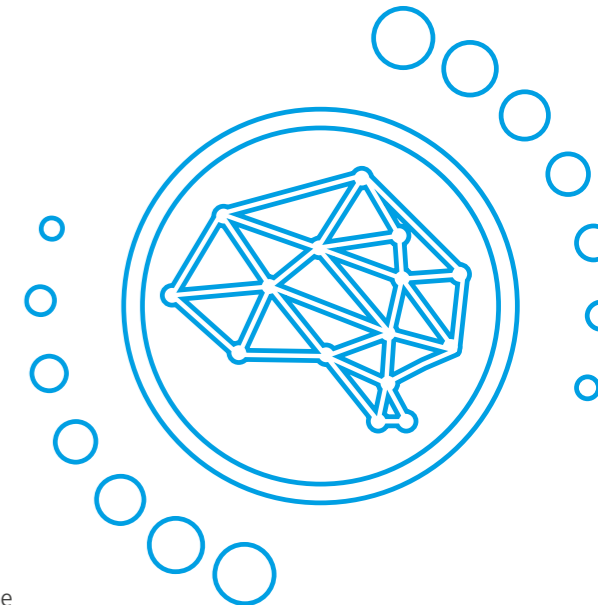
Such data processing structures are modelled on the networked neurons in the human brain. They are considered to be a pioneering form of artificial intelligence. "Each node in the neural network solves just one simple equation", explains Chakirov. For his research project, he and his team have linked neural networks with industrial standard controllers and trained them using simulations, because "neural networks are not actually intelligent at all, but they are capable of learning".

At the testing facility of the SME, Nolden Regelsysteme in Meckenheim, it became clear that the neural heat controllers had learned their lesson. Thanks to the training units, they can demonstrably control the temperature faster and more precisely than conventional control systems. They can also be used more flexibly. The development engineers at Nolden Regelsysteme are graduates of H-BRS.

"Communication works very differently when you already know each other", says Chakirov.

The idea for the joint research project, funded by the Federal Ministry for Economic Affairs and Energy, arose from the university's long-standing cooperation with the Ukrainian Chernihiv National University of Technology. There, Professor Chakirov found two experts with doctorates in control engineering and recruited them for research stays at H-BRS. In two years of intensive research work, the scientists supervised three Master's theses and brought their development to the production stage. Finally, Nolden Regelsysteme and H-BRS applied for a patent for the neural heat controller. Both partners want to continue the successful cooperation. To this end they are networking their innovative control systems with the cloud – the first step towards "Industry 4.0".

 **More information:**
www.h-brs.de/emt/regelsysteme-auf-der-basis-neuronaler-netzwerke



New method for treating drinking water

Effectively reducing contaminant levels

Advanced chemical analysis makes them visible – the residues of harmful substances in drinking water. Although they are present in such small quantities that they are not harmful to health, the purification process can still be improved. Professor Steffen Witzleben and his team in the Department of Natural Sciences are investigating a new treatment method for this purpose in the ReDeX research project, which has been running since September 2019.

Mechanical, chemical, biological – these are the three classic purification stages of a sewage treatment plant as we know them from textbooks. A fourth purification step that is now widely employed in water management is the oxidation process. This is used in swimming pools, for example.

However, many oxidants are unable to break down so-called persistent contaminants or xenobiotics. These include drug residues and pesticides. Some residues of these substances return to the water cycle via treated municipal and industrial wastewater and thus find their way into the drinking water supply.

A classic case of applied research

The scientists in the ReDeX project are investigating how these contaminant residues in drinking water can be avoided in the future. "Xenobiotics can be broken down through electrochemical reduction. This means that we destroy harmful substances through reactions at an electrode. The reductive treatment method is well known in research. We want to find out how to apply it to the water system", explains Witzleben.

The research project, which will run until August 2022, is funded by the Federal Ministry of Education and Research. Cooperation partner is the company Innovatec from Rheinbach, which has been dedicated to the development and production of ozone generators for decades. These are increasingly being used in hospitals to combat germs, viruses and mould. According to Witzleben, the cooperation creates an important synergy effect: "If our research

project is successful, the reductive treatment method can be applied not only in sewage treatment plants but also in hospital water systems, for instance. The drugs administered there lead to a high concentration of xenobiotics. A plant installed on site could efficiently remove these contaminants from the water".



More information:

www.h-brs.de/de/entwicklung-einer-reduktiven-behandlungsmethode-zur-entfernung-von-desinfektionsnebenprodukten-und

Quality assurance of biopolymers

Biopolymers – these are macromolecular substances that are synthesised in the cells of a living organism. They are used in many medical and industrial applications, but strict regulations require time and cost-intensive quality controls. In order to make these more effective, a project funded by the German Federal Ministry of Education and Research and led by Professor Margit Schulze is working on the development of a new analytical method. The goal is to establish a platform that provides holistic evidence of different biopolymer structures.



Water analysis in the lab with an ion chromatograph

Prof. Dr Christine Syrek

is an economist and received an innovation award for her research on work stress

“Distraction and repression are of little use – unfinished must-do tasks on the job are always pushing themselves into our consciousness and robbing us of sleep. We automatically start to brood, because the brain does not want to forget the questions and tries to solve problems. If we develop creative solutions in the process, this is positive. If not, we are literally taking the stress of work with us to bed. It’s helpful to write a list at the end of the day or week of what still needs to be done and how these issues should be addressed. A plan creates clarity. It brings cognitive relief because the brain knows what to do next. Then I don’t have to keep the to-do list cognitively present all the time and the inner tension eases. Nothing more stands in the way of a relaxing weekend.”

diffusion

create clarity, overcome barriers, be heard



On a first name basis with the boss

How start-ups communicate when recruiting staff

The start-up industry is growing. But to survive in the scene long term, more than just a good product idea is necessary. Without clever people, business doesn't work. But how do start-ups communicate in times of skilled labour shortage – how can they attract personnel? Researchers at the Institute for Media Research and Development (IMEA) have investigated this question.

Table football in the bright open-plan office and colleagues drinking mate-tea – pictures like these define our idea of everyday work in a start-up. But is the start-up scene in this country gaining new team members with such images? The research project "Start-ups as Employers: A Study on the Personnel Recruitment Communication of Start-ups", carried out by Professor Andreas Schümchen and Patrycja Muc, research assistant and doctoral student at IMEA, comes to a different conclusion.

Clever heads sought: Start-ups compete with established companies



An attractive location is important

For their study, the researchers analysed job-related websites of 93 companies – mostly under "Career" or "Jobs". "The clichéd images of everyday start-up life are not confirmed", explains the media scientist. Although potential applicants are treated on a first-name basis in around 80% of cases, only around a quarter of the start-ups address issues such as round-the-clock food and beverages at the workplace. Flat hierarchies are only mentioned by just under a fifth of the companies. To appeal to potential skilled workers from abroad, a good half of the start-ups surveyed also offer their job-related pages in English. The demand for skilled workers is greater than ever before, so it is hardly surprising that start-ups – especially in the IT sector – are also looking for suitable employees abroad, says Schümchen. "What is interesting is the emphasis on the location. We've noticed that an attractive presentation of the company's location plays a major role in the communication for personnel recruitment – and we aren't just talking about metropolises, but also about cities like Augsburg or Bochum."

The results can be refined. Soon Schümchen and his team want to take a closer look at the applicants' responses to the communication in the start-up recruitment process. Are employees' expectations of the company fulfilled? What can be improved? The knowledge gained from this will later be passed on to the scene via workshops.

Dynamic freshness

The app FreshIndex calculates the actual shelf life of food – universities, organisations and companies test it in practice

Food is often edible well beyond the best before date. Nevertheless, in Europe alone, unspoiled but "expired" food worth over a billion euros a year ends up in the trash. The app FreshIndex, developed by the start-up company tsenso, the software house arconsis and other participating partners is designed to prevent this in the future. The app calculates a dynamic best before date that reflects the actual freshness and shelf life. To this end, it not only takes into account data on the transport and cold chain of the product, but also allows users to enter information on personal storage conditions. "Many customers were surprised how much the shelf life depends on their transport and the temperature of their refrigerator", reports Stephanie Vonholdt, who is working on her doctorate at H-BRS. In four selected Metro wholesale stores, she and the project partners interviewed 140 customers who were allowed to test the app. "The customers were open-minded and very interested in getting more precise information about shelf life", she says. The interviewees gave valuable suggestions for the further development of FreshIndex, such as a freshness alarm or recipe tips. The scientifically based app convinced the test customers of its value.

Stephanie Vonholdt came to the university for the FreshIndex project where she is being supported during her doctorate on food practices at the Graduate Institute. She is supervised by Gunnar Stevens, Professor of Consumer Informatics at H-BRS and at the University of Siegen. In this interdisciplinary field of research, the aim is to use qualitative surveys to explore the needs of app users in order to tailor applications to these needs.



Funding and consortium

The Federal Ministry of Education and Research funded the two-year "FreshIndex" project with about one million euros. The start-up company tsenso carried out the data analysis and led the project consortium, consisting of the partners arconsis (cloud and app), bwcon (network management), GS1 Germany (identification), Hochschule Bonn-Rhein-Sieg (consumer acceptance), METRO (wholesale) and the University of Bonn (hygiene/measurement data).

In the follow-up project FreshAnalytics, Professor Stevens' research group is working together with companies, organisations, the University of Siegen and the Technical University of Deggendorf on the further development of the app. Together, they want to develop a sensor that measures the temperature inside the shopping bag during transport and thus tracks the cold chain back to the customer's refrigerator. The app is to be networked with the temperature sensors via the Internet of Things. Vonholdt and Stevens will investigate whether such smart technologies will be in demand in the future.

 **More information:**
<https://freshindex.org/en/>



Tech blog for and about women

Women are still under-represented in technical professions. The blog "gender2technik" wants to counteract this. Since its relaunch in 2019, women are often the focus of the articles, photos and videos. "We present role models and show how an engineering profession can be combined with a fulfilling family life", says initiator Professor Susanne Keil. This should encourage women to pursue their technical interests. One of the motivations for revising the blog was the realisation that only three to nine per cent of the readers of technical journals are female.

Architecture journalism at IMEA

The Institute for Media Research and Development (IMEA) conducts research on architecture journalism. Scientists and students investigate issues, such as how relevant the topics of architecture and urban planning are for media companies and how to make reporting more attractive and more relevant to everyday life. The research field was created from a two-

Conversing with artificial intelligence



The avatar Nietz-Bot is the virtual contact for visitors to the Deutsches Museum Bonn. He explains to them how artificial intelligence works as part of the game "FOX AI". In this computer game, museum visitors are supposed to train the artificial intelligence of a fox so that the fox learns to overcome barriers in order to get back to its den. Nietz-Bot provides hints and answers questions via a chat window. In this way, players can understand that artificial intelligence does not act independently, but can only do what humans teach it to do. The computer game and installation were developed by Professor Oliver Ruf and his team, supported by the initiative "Science in Dialogue".

year cooperation between the institute and the NRW Chamber of Architects. Together, the partners organised two specialist conferences at which journalists, architects, politicians, communication and media scientists, and other interested parties discussed "Architecture and Media".

Pioneering work in AR research

How can the information conveyed by augmented reality (AR) glasses be made more effective through multisensory feedback? Professor Ernst Kruijff and his team, along with scientists from Japan and the USA, are investigating this question in a project funded by the German Research Foundation. AR glasses work by projecting interactive three-dimensional content into the real environment of their user. Since the field of vision is very narrow, they should not overwhelm users with visual stimuli, but instead clearly highlight important information. For this purpose, the project team is developing a new AR system that provides tactile and auditory feedback in addition to visual input.



Expanding the experience of virtual reality: Haptic stimuli complement visual stimuli, as in the experimental setup in the FaceHaptics project

Fit for the job market

Outcome index for medical rehabilitation

Only those who are healthy can work. In cases of limited or endangered earning capacity, usually only a rehabilitation stay of several weeks helps. But how efficient – and sustainable – is medical rehabilitation here in Germany? Researchers from the Department of Social Policy and Social Security Studies are looking into these questions in their second study on the quality of the success of rehabilitation measures (Reha-QM-Outcome Study II).

According to current forecasts, the need for rehabilitation measures is growing. The reason for this is the increasing demands of everyday working life. Many employees are already feeling the effects of the current shortage of skilled workers. If positions are not filled, the workload increases. If there is a lack of junior staff, it is more difficult to retire earlier. High-quality medical rehabilitation can help to guarantee the long-term earning capacity of employees.

Professor Edwin Toepler and his team are investigating where the probability of therapeutic success is highest. "We want to find out how best to measure the long-term effectiveness of rehab stays. For this purpose, we're compiling an outcome index that will serve as a control element in the future when making decisions on facility occupation", explains the social scientist. In addition to Hochschule Bonn-Rhein-Sieg, the German Pension Insurance Companies of Baden-Württemberg, Northern Bavaria and Brunswick-Hannover, the Institute for Rehabilitation Research at the University of Ulm and the Society for Quality in Health Care are also involved in the project, which has been running since 2018.

The Social and Occupational Medicine Academy of Baden-Württemberg (SAMA) is the project sponsor.

Reintegration depends on many factors

Research is based on surveys of the insured, data from the pension insurance scheme and the quality indicators of the participating hospitals. Of particular relevance is the question of how rehabilitation influences quality of life and reintegration into the labour market. After rehabilitation, do patients earn less, the same or more than before?

Since the research project has a broader regional focus than a previous study – besides Baden-Württemberg, the regions of Eastern Lower Saxony and Northern Bavaria are also being investigated – the question of reintegration is of particular interest. As Toepler explains: "We need to question the influence of the respective labour market on the outcome index of the hospitals. Just because the unemployment rate in Baden-Württemberg is lower than in Eastern Lower Saxony does not mean that the clinic in Lower Saxony is doing a worse job. But we are confident that we will be able to determine the index fairly with the help of statistical adjustment".

The interview on this year's theme

In discussion: Norbert Röttgen, Member of the German Bundestag and Chair of the Foreign Affairs Committee, with Hartmut Ihne, University President



diffusion

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Must science become more political?

Politics and science follow their own agendas. How can they communicate better with each other in the future? How can coexistence become cooperation? Norbert Röttgen, Member of the German Bundestag and Chair of the Foreign Affairs Committee, and Hartmut Ihne, University President, argue from the perspective of politics and science respectively.



? The corona crisis has thrown the entire country into a state of emergency. How do you assess the situation with regard to higher education?

Prof. Dr Hartmut Ihne: The crisis represents an immense challenge for institutes of higher education. First of all, scientists are trying to find answers – medical, economic, socio-political. We are also redefining the social role of science. “Unite behind the science” is the slogan of Fridays for Future. On top of that, we have to keep the university running in the face of great change. In the crisis, we managed a rapid switchover to e-learning opportunities. All of this is a major task for a complex, quasi-parliamentary organisation like a university of applied sciences.

Norbert Röttgen: From a political perspective, one aspect deserves close attention. As early as mid-January, scientific journals were reporting on the possible dimensions of the crisis. In mid-January already! And when this scientific knowledge

was made available to laypersons shortly thereafter, it was largely ignored politically. I think both sides are called to step up. Why does science not raise audible and effective alarm, and when it does, why does politics not succeed in listening attentively to scientists? We urgently need to deal with this.

Ihne: Science and politics each have their own agenda. So far we have not been able to synchronise them productively. How can the gap be bridged? In order to improve communication, we must ask ourselves what each person’s task is and how the other ticks. Science is a methodical process that tries to be as neutral as possible with regard to interests. Scientists make the truth of their sentences and sentence systems dependent on whether they (a) can be logically deconstructed without contradiction and – in the empirical sciences – whether they (b) can be proven and repeated in experiments. Democratic politics, on the other hand, makes the truth of its propositions dependent on whether they find majority approval. This means that my political idea is ‘ineffective’ as long as I cannot get a parliamentary majority. So there are different theories of truth in both worlds. In democratic politics the majority principle, in science the principle of logic and verifiability through experiment. This is already a huge epistemological, i.e. fundamental, difference.

Röttgen: This is true, but I feel that the problem goes deeper. There is a sense of self-sufficiency on both sides that cannot solely be explained by the different nature of the respective worlds. In the current case of the corona pandemic, a scientist

who empirically discovers the truth, then closes the case and does not sound the alarm early can only be explained by self-sufficiency or complacency. If this mere coexistence of politics and science can already be observed in obvious disaster scenarios, then I ask myself what the costs of this communication breakdown are in other, less urgent cases.

? But scientists are currently very active in the debate and policymakers are acting on the basis of scientific evidence. Isn’t the hour of science at hand?

Röttgen: The hour of science is at hand in forward-looking advice, education and, if necessary, warning. Science must take social responsibility before the crisis. A banal comparison – the hour of the car mechanic doesn’t just strike when the car breaks down but before the journey begins. In this respect it is clear. Now that the catastrophe is here, we are experiencing the public role of scientists. By the way, I’m observing a trend in this case that we must counteract. Politics must not be handed over to science. We must prevent hiding democratic responsibility behind virologists and biologists. This means that even during a disaster, scientific knowledge should not replace democratic responsibility and decision-making competence. That is and remains the task of politics.

Ihne: What does uniting behind ‘science’ actually mean? At the beginning of the corona pandemic, we could observe what a one-sided and thus possibly problematic direction this could take.



Because the problem was initially perceived as a health problem, the virologists were heard. But science also includes economists, psychologists, computer scientists, social scientists and many others. Each discipline contributes its perspective to the overall picture. How much collateral damage can I allow through a lockdown? Where and when do I have to gradually reopen the country before social and economic structures are so broken that a take-off is no longer possible? At the latest with the lockdown, it became clear that not only medical care but the entire socio-economic system contributes to supporting life. This includes functioning institutions, companies,



*In discussion during the pandemic:
Social distancing and via video link
to the interviewer*

organisations, jobs. Society as we know it is, on the whole, a life-sustaining system and serves to protect us humans. Without institutions, without economy, without jobs, we could not survive. The health care system is only a part of this overall system. However, politics must have the holistic protection of life and its fundamental conditions in mind if it really wants to protect us. It is unethical not to consider all relevant aspects when making political decisions.

Röttgen: Of course, science is plural, diverse, contentious. Not recognising this is problematic. When weighing political decisions, it is important to create transparency and make conflicting aspects visible. This can only be achieved in a discourse in which everyone participates: scientists, the responsible politicians and the public. Maintaining this discourse in the course of the crisis is a very important stabilisation measure.

What lessons should we learn from the current situation? Should the discourse be more institutionalised than it has been thus far?

Ihne: A wise person once said: "When you have an announcement, you have to find the place with the right acoustics". In science we step out of the ivory tower, we can make an impact, but we have to choose the place with the right acoustics. What are these places where we want to diffuse knowledge – are they specialist conferences or talk shows? Is it parliament? As a scientist, I would like to see much more discursive parliaments. Scientists can get involved in a discursive, active parliament. That is where our present and future questions belong. Today, debates are usually feeble, already negotiated in committees, receive little public attention. Although we have many expert commissions, are they really heard? It is a question of finding a common language; that is

extremely difficult.

Röttgen: I agree with you, Mr Ihne. Parliament must make its contribution to the discourse by holding debates there, the outcomes of which are not already clear from the outset but rather also determined in the course of the debate as argued. We parliamentarians can confidently make parliament a place of decision-making when it comes to fundamentally setting the course. I regard this as a very important reform.

But we are viewing the topic from different angles. It is also quite clear that science must become more political by assuming clearer responsibility for the impact of its findings. For this reason, it must come to terms with the particularities of politics and its slowness and recognise that politics is also about majority and power and that it is not a pure knowledge process.

How can this succeed?

Röttgen: Science requires a shift in consciousness. That depends on individuals, not on structures. Individuals who strive for more public impact for their cause and are not simply satisfied with discovering the truth.

In government, we need a kind of federal audit office for dangerous global developments. An independent institution that doesn't just indicate that the child has fallen into the well, but which instead draws attention to developments that may lead to the child falling into the well soon. It must be able to make itself heard institutionally. One might think that this is the responsibility of the ministries, but all of the experience in the past ten years has shown that the ministries cannot handle this task. No government foresaw the financial market crisis, the euro crisis, the refugee crisis or now the pandemic.

More public interference – how does this fit in with the self-imposed task and self-evaluation of science, Mr Ihne?

Ihne: Scientific success parameters are measured in publications and citations. A discussion with parliament or a newspaper interview does not count, even if we reach many millions of people in this way. Science wants to be neutral and methodologically clear. But that is not enough. We also have an obligation to society. Science is publicly funded and has the complexity decoding tools that enable us to make it possible to recognise connections. That literally calls for science to commit to

taking on this social responsibility – as you have just said, Mr Röttgen – to redefine it.

We need to open up more. Just as parliament must reclaim its role and reconfigure itself in the 21st century, so must science reconfigure its communication, and it must do so in a language that people understand. We cannot just leave that to journalists. We must ourselves clarify what the relevance of knowledge is.

Röttgen: So we can conclude that to the many potential opportunities offered by this crisis, we can add the social recognition of science.

This interview was held on 23 March 2020.



Norbert Röttgen

Since 2014, Norbert Röttgen has been Chair of the Foreign Affairs Committee of the German Bundestag, in which he has been a member since 1994. The now highly respected foreign policy expert was Federal Minister for the Environment, Nature Conservation and Nuclear Safety from 2009 to 2012. Röttgen is linked to Hochschule Bonn-Rhein-Sieg – University of Applied Sciences through his constituency Rhein-Sieg District II.

Against poverty and loneliness

With the Hennefer start-up Obstkämpchen e. V., alumnus Christopher Kossack and Carina Raddatz are combatting an acute problem – poverty in old age. Their project is being heard, even by the German chancellor.

It all started in the city centre of Cologne when Carina Raddatz watched a senior citizen collecting returnable deposit bottles. Moved and shaken by this image, she took a closer look at the issue of poverty in old age and found out that in Cologne alone, more than 14,000 elderly people are dependent on financial help from the state. The elderly affected often cannot enjoy a carefree life or a healthy diet.

She wanted to make a difference, overcome the problem. Together with school friend and entrepreneur Christopher Kossack, who studied management sciences at H-BRS, she considered what could be done. “I’ve always been a friend of starting something myself and taking things into my own hands”, Kossack says. So in the summer of 2017, the two of them founded the social start-up Obstkämpchen e. V. in Hennef. The idea was that volunteers would provide people affected by age-related poverty with bags full of fruit, vegetables and other healthy foods once or twice a month – free of charge and anonymously – to support them in enjoying a healthy and balanced diet. But the project also counteracts loneliness. “The senior citizens don’t just care about food. More than anything else, they’re seeking interpersonal contact”, says Kossack.

Award from Merkel

Thus far, the young company has been financed exclusively through donations and membership fees. The founders are also helped by the “Startsocial” initiative award, a nationwide competition for the promotion of social and voluntary commitment, which is under the patronage of German Chancellor Angela Merkel. “Out of 300

applicants, only seven were awarded the federal prize, including us”, reports Kossack. In June 2019, Merkel personally presented them with a cheque for 5,000 euros in Berlin.

Since then, the company has been attracting the interest of people from all over Germany and is currently in a phase of transition. Soon, a non-profit limited liability company (GmbH) is to be founded alongside the association in order to support senior citizens throughout Germany who are affected by age-related poverty.



We’re right at the forefront

E-learning is more important than ever due to the risk of infection with the coronavirus. Many universities now have to learn how to diffuse knowledge to their students via screen. H-BRS is making progress.

Lonely campus, empty lecture halls, seminars via video conference – the picture at German universities in 2020 is the same in many places. Now it is clear to everyone that e-learning and virtual teaching are central components of studies, especially in the time of corona. Marco Winzker, Professor of Digital Technology and member of the Board of Directors of the Centre for Teaching Development and Innovation (ZIEL), has been working on the opportunities and advantages inherent in e-learning for seven years. “The topic developed slowly overall, but currently we’re experiencing an incredible surge.”

For Hochschule Bonn-Rhein-Sieg, online teaching is not new territory. In fact, the university’s many years of work have made it a pioneer in this field. “We have a very good basic infrastructure for e-learning and can advise other universities with our knowledge. We’re right at the forefront”, says Winzker. H-BRS is the national leader, especially in the area of remote (online) laboratories. Not all German universities have reached this stage yet – many lecturers still have to overcome the digitalisation barrier and learn how to diffuse knowledge

to students via electronic courses. But the mutual support among the universities is great. “The Hochschulforum Digitalisierung (HFD) offers a lot of information and networking, including a contact point for those who need to catch up”, reports Winzker.

There will be a digitalisation surge

How teaching in higher education will change once normality is restored at some point is a matter of concern to many. Winzker prophesies: “There will be a digitalisation surge, a knowledge surge and a renewal surge, the whole situation provides a lot of impulses. But it remains to be seen whether in the end there will be a rapid and sustainable change in trend or whether e-learning will be cut back sharply again.”



A task for science communication

Many people regard artificial intelligence with great scepticism. What triggers reservations and fears, and how can science get through to people? Oliver Ruf, Professor of Communication Science and Media Practice, answers.

❓ Why does the topic of artificial intelligence draw scepticism?

The relationship between human and machine plays a major role. Ever since technologies suspected of taking over tasks intrinsically ascribed to humans have existed, there has been a fear of losing something and the feeling of an existential threat. The image we have of artificial intelligence in society today is interculturally differentiated. Behind it, however, there is usually a certain phantasm of machines as is presented to us by cinematic fiction in particular. This means that our image of AI is still shaped by fiction and media. And we always have the fear that at any moment a kind of terminator could come through the door who wants to kill all people and has no interest in humanity, but instead follows its own will to exist. This idea is still present in many minds, although it is incredibly far away from the possibilities of artificial intelligence. But because such a representation works, especially in cinematic narration, we have the impression that it might be possible after all – a feeling of uncanniness remains.

❓ How can science contribute to overcoming such barriers?

We urgently need science communication that, on the one hand, understands what is being done technically and technologically and, on the other hand, is able to communicate these topics to a broad public in an understandable way so that reservations, fears and imaginings can be reduced or mitigated. This communication must be able to visualise, verbalise, realistically represent and comprehend AI without neglecting critical reflection. I'm convinced that this cannot be the task of the disciplines that develop these technologies. Rather, we need a separate discipline for it – in any case, media cultural studies, in the best case, philosophy.



Create clarity

To stop climate change, innovative and sustainable technologies must penetrate the markets. What are the challenges?

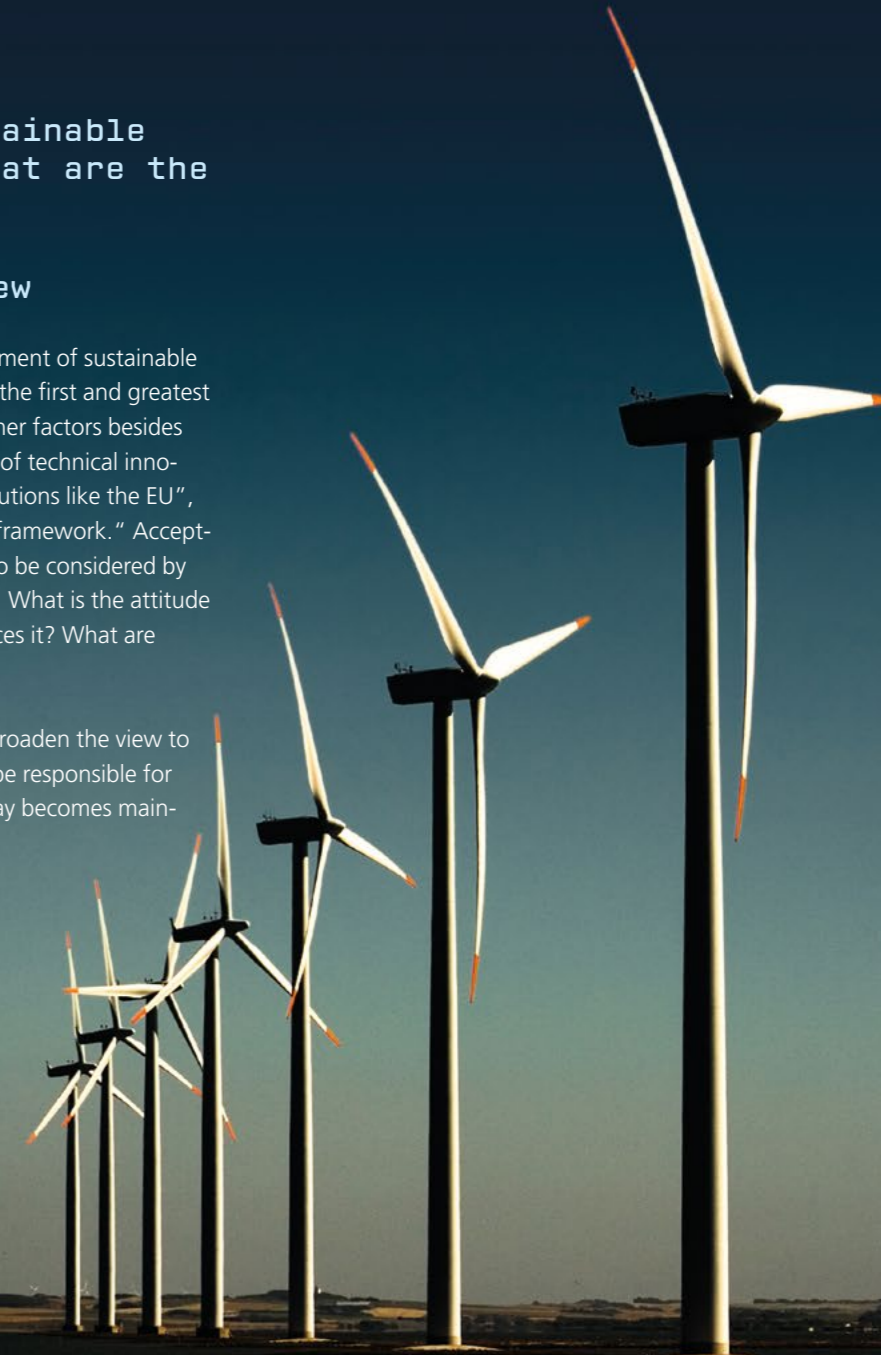
Sustainable, innovative technology is becoming increasingly important in view of climate change. And demand is growing for technologies – for environmentally-friendly power generation, for hybrid and electric cars for more climate-friendly mobility, and for smart home systems for saving energy in your own four walls. The challenge here is to ensure that new technologies do not have a negative impact on the environment and society as a whole.

“Researchers and developers must be aware of the effects in their entirety”, says Stefanie Meilinger, Professor of Sustainable Technologies. It is not enough to focus on a single environmental impact. “Take ‘Dieselgate’, for instance. People had focused strongly on the CO2 problem. At times, however, nitrogen emissions were completely neglected”, she criticises. She says it is important to raise awareness of the overall context. That is why Meilinger and her colleagues always make sure that they raise students’ awareness of the interactions between technological, ecological and social change, rather than just imparting technical know-how.

Broaden the view

Excessive costs in the development of sustainable technology are often cited as the first and greatest obstacle. “However, many other factors besides cost play a role in the success of technical innovations, such as political institutions like the EU”, says Meilinger. “They set the framework.” Acceptance issues would also have to be considered by engineers and manufacturers. What is the attitude of a society and what influences it? What are successful innovation paths?

The most important thing: “Broaden the view to include all factors that could be responsible for whether a technology pathway becomes mainstream”.



It's what we do together that counts



Life at our university has many facets. Students come for a few semesters, acquire new knowledge, graduate – and leave the university again. Professors and (guest) scientists teach and research – sometimes only for a short time, often for many years. Employees in the administration, library, central facilities and institutes contribute to a lively university through very different tasks.

Not all of this is equally visible, and yet all actors and activities are part of a prosperous, varied and harmonious life at the university.

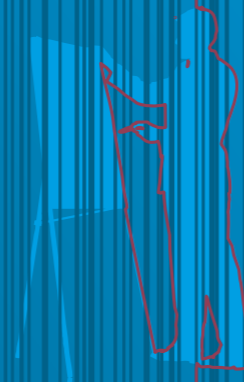
Visible in 2019 were the additional seminar rooms at Sankt Augustin and Rheinbach, the launch of the Innovation Campus Bonn, the project "Healthy University" with its diverse activities, the Study Information Days, the summer festival and the Christmas campus, the activities of the student initiative "Green Campus", events of the Children's University, the Company Day, the graduation party and the scholarship celebration – to name just a few highlights. More in the background, but no less important, is the daily business. In numerous discussions, the aim is to be heard, overcome barriers and, in the end, create clarity about which new topics are developing, legitimate interests being taken into account and projects being initiated or implemented.

Examples include the many measures taken towards digitalisation, e.g. the various administrative processes and teaching, the appointment of numerous professors and honorary professors, the establishment of an occupational safety, health and environmental protection management system, the semester discussions with students, the deliberations and resolutions of the committees.

Sustainability continues to be a defining element in all areas. In 2019, for instance, we switched over our energy supply to 100% green electricity, thereby saving around 26.3 tonnes of CO₂. In addition, the university was awarded the title of FairTrade University.

However, there is no doubt that there is still much that could be optimised to make life at the university even better. It's what we do together that counts!

Angela Fischer
Chancellor



Preserving biodiversity

International Centre for Sustainable Development participates in project on biodiversity research

The diversity of our ecosystem is threatened. Insect loss, in particular, is a central topic. What can we do about it? The research project “Diversity of Insects in Nature Protected Areas” (DINA) aims to find answers to these and other pressing questions. The International Centre for Sustainable Development (IZNE) of Hochschule Bonn-Rhein-Sieg is one of the eight project partners. Others include the Special Botany Work Group of Justus Liebig University of Giessen and the Entomological Association Krefeld. The Nature and Biodiversity Conservation Union (NABU) leads the project.

How can nature be saved from further impoverishment? This is the question that concerns IZNE Director Wiltrud Terlau. For this reason, the professor is involved as a board member in the Bonn biodiversity network BION. Partners for the DINA research project, which has been running since May 2019, come from this network.

Pioneering project in applied biodiversity research

As an interdisciplinary research project, DINA investigates how agricultural land use in the vicinity of nature reserves affects the biodiversity there. More specifically, it examines the impact on insects in 21 selected nature reserves nationwide. The Federal Ministry of Education and Research is funding the project with over 4 million euros. So-called Malaysian traps set up in the nature reserves catch insects, which are then examined. The traps are usually set and checked by volunteers. “An interdisciplinary approach and strong cooperation with the non-academic partners are



essential for the success of the project. We can learn a lot from and with each other”, emphasises Terlau.

The IZNE identifies all relevant interest groups – such as farmers and local residents – to search jointly for solutions to preserve biodiversity. This is to be achieved by means of qualitative and quantitative studies. Later the participants are to be heard in so-called social labs. The project serves as a fact-finding mission. “The focus of the species protection debate must be on facts and not emotions, otherwise we won’t get anywhere”, says scientific project collaborator Angela Turck commenting on the political implications. Concrete recommendations for action should be derived from the research results. DINA runs until April 2022 – enough time, not only to introduce scientific findings into the species protection debate but also to translate them into action.



In the vicinity of nature reserves (map above), researchers in the DINA project investigate the effects of agricultural land use on insects

Hands-on diversity management

“Respect!” initiative receives the 2019 Rhein-Sieg District Integration Prize

Globalisation and demographic change are transforming our society. Hochschule Bonn-Rhein-Sieg is also becoming more and more diverse. Students have different family or religious backgrounds, for instance, and not everyone goes straight from school to university. For Professor Annette Menke, Presidential Commissioner for Diversity, dealing well with the heterogeneous lives of students is a matter close to the heart. “We want to make a good study career possible for everyone, regardless of the background they come to us from. Our diversity management is geared towards living and studying conditions. It should be measurable and lead to success. We want to be perceived as a diversity-sensitive university.”

The Rhein-Sieg district has not only noticed but also honoured the university’s commitment. The district awarded it the first integration prize in the category of preventive measures for the initiative “Respect! Time for Diversity, Time for Sustainability”, which has been running since 2016. With public events and workshops on developing intercultural competence, the initiative supports understanding and mutual appreciation and thus strengthens cooperation in everyday university life. “The Integration Prize expresses the fact that the social transfer of our work is noticeable in the region and that the university plays an important role as a local actor”, says Sarah Friedrichs, the project coordinator.



One of eight winning pictures: Photo competition on the topic Respect! at the university – view all pictures here: www.h-brs.de/news/respect-photo-competition-winners

Sustainably integrating diversity into the university structure

Diversity should permeate the university at all levels. This is why the university decided to undergo the Diversity Audit of the Donors’ Association as early as 2018. The audit supports the development of a university’s own diversity strategy. It includes five externally moderated internal university workshops. The process lasts two years and integrates university management, lecturers, students and employees in science and administration with the aim of making diversity a matter of course throughout the university. Menke says, “In the end, everyone at the university must understand that diversity is something that has to do with him or herself – despite all differences”.

ALUMNA IN THE SPOTLIGHT

Finding your own niche

Alumna Lana Djurkin-König is responsible for regional security and corporate business resilience at Ernst & Young GSA

The specialities of the large corporation Ernst & Young – tax consultancy, auditing and management consultancy – hardly evoke any associations with crisis management. However, security issues and resilience play a major role at the company. A globally operating network such as Ernst & Young must be well advised and adequately prepared for problems such as pandemics, crime and terrorism. Associate Director Lana Djurkin-König, who completed her MBA in CSR & NGO Management at Hochschule Bonn-Rhein-Sieg in 2014, has been responsible for these tasks for the DACH region (Germany, Austria, Switzerland) since 2017.

From NATO mission to H-BRS

Born in Croatia, Djurkin-König gained special experience in crisis management even before her studies. As an international terrorism expert, she was active in NATO's international ISAF mission in Afghanistan. During her time in Afghanistan, Djurkin-König, who by this time had already completed both a Master's degree in politics and one in law, worked closely with the international NGO scene. Here she discovered that the topic of security also plays a major role outside the military. This reinforced her desire for a career change – the move from the military sector to the civilian economy. In order to prepare for this career step as thoroughly as possible, the ambitious young woman decided to complete a third Master's degree in the English language post-graduate course CSR & NGO Management. "Studying at Hochschule



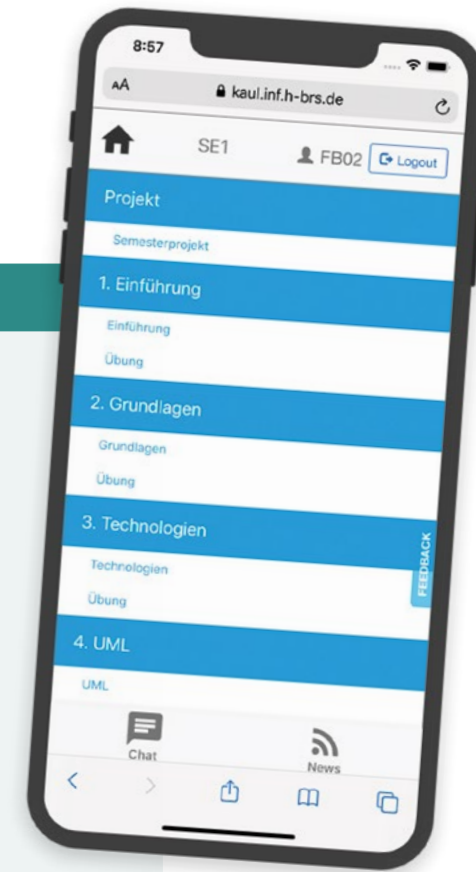
Bonn-Rhein-Sieg has improved my knowledge in the corporate field immensely. The MBA programme enabled me to develop my leadership skills and work as a project coordinator for the 'Teaching for Development' project alongside my studies", says the alumna.

She learned a lot from this qualification project for Ghanaian university teachers as well. She especially appreciated the interaction with her boss, Professor Jürgen Bode. "Study and work experience – this combination was the basis for my career in corporate security. And, also important, at university I made friends for life", says Djurkin-König.

She took on her first high-profile position while still a student – setting up the Global Security Situation Center in the Corporate Security Department for Deutsche Post Group DHL. After her Master's degree, Djurkin-König worked for DHL for several years before joining Ernst & Young. The alumna advises students, "Start working alongside your studies at an early stage and gain experience. The most important thing is to find your own niche and make yourself special".

Institute IT Service established

Since January 2018, the Institute of IT Service has been responsible for the administration of IT throughout the university as well as all communication and collaboration platforms. Special project teams are responsible for the scientific development of the network, the software and all systems in order to simplify the use of databases and software for lecturers and students. The newly founded institute also offers students of computer science space for their own research for final theses and doctoral projects, which in turn contribute to the structural development of the institute.



Iman Awaad

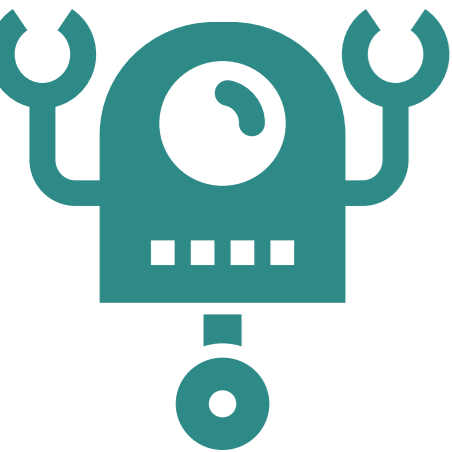
is supervised as a doctoral student in computer science at H-BRS and ensures that robots overcome barriers.

“Robots are supposed to make life easier for us in the household – difficult when the domestic environment is constantly changing. Imagine you want a glass of milk brought to you. If there are no glasses because they’re all in the dishwasher, the robot encounters insurmountable barriers. My goal is to make robots more creative in their task implementation. Like humans, they should be able to adapt to changing conditions. It’s difficult to impart knowledge to robots. You try to model a complex world with the very simple representations used in automated planning. With so-called Semantic Web technology, I want to make the environment more readable for robots. I can program a substitute decision mechanism, for instance. Then, incomplete information no longer throws the robot off track. Instead the robot can independently work out an alternative solution. If there are no more glasses in the cupboard, it will take a cup.”

diffusion

create clarity, overcome barriers, be heard





Double for the b-it-bots

German Champion and World Champion – these two titles were secured by the b-it-bots in 2019. The H-BRS RoboCup team was already able to win the RoboCup German Open in Magdeburg against the hosts. The b-it-bots continued their success at the World Championship in Sydney where they once again relegated the team from Magdeburg to second place. The team achieved both titles in the @work league, in which the robots have to solve logistical tasks on their own, such as gripping, transporting and setting down objects undamaged. The b-it-bots are students of the Department of Computer Science. They were supervised by computer science professors Paul Plöger and Gerhard Kraetzschmar. Gerhard Kraetzschmar passed away in July 2019, and the department and the b-it-bots remember him with respect and friendship.

Young students in the Department of Natural Sciences

Studying as a pupil already – since winter semester 2019/20, this is possible in the Department of Natural Sciences, too. Up to five particularly talented and motivated pupils from the Emil Fischer Secondary School in Euskirchen are given this opportunity every year. The “young students” can participate in lectures as well as take examinations. All ECTS credits earned within the framework of this programme can be credited to later studies at H-BRS. Modules fully completed by the young students are also recognised at other universities.

First lecture slam

The presentation should be entertaining and no more than ten minutes long – these are the guidelines for a slam. Ten H-BRS lecturers met this challenge at the first Lecture Slam. Their declared goal is to give the audience a clear understanding of the content of scientific teaching through examples and everyday references. The audience decides who best succeeds in doing so – and Professor Paul Melcher was chosen as the winner. He slammed about Barlow's formula for pressure vessels in apparatus engineering, which he explained clearly through the example of a torn bratwurst skin. Initiator of the Lecture Slam – and participant herself – is Professor Irene Rothe.

Developers with VR-glasses

Showroom presents visual computing technology for SMEs

An architect guides a client through a computer-generated design of a house. A company trains employees virtually how to operate machines with high risk of injury. These are just two examples of how SMEs can effectively use modern visualisation technology. This is why Hochschule Bonn-Rhein-Sieg has a showroom for visualisation.

In two rooms, the university presents hands-on high-tech on large-format LED displays or with the help of VR glasses. “The showroom is intended to be a place for information and advice”, says Anja Schlochtermeyer from the university's Centre for Science and Technology Transfer. She is the coordinator of the “Campus to World” project, through which the financing was realised. Since its opening, several projects from the university's Institute of Visual Computing (IVC) have been on permanent display in the showroom. Among them is a multi-touch wall. On this 5 x 1.5 meter display, several viewers can mark up and comment on a picture. During the architecture demonstration, visitors wearing VR glasses wander through a virtual room. Or they can experience a program that visually displays abstract data, such as the purchasing behaviour of people who shop online. “But we don't just demonstrate applications that we've developed here, we also offer to customise them to the needs of companies”, says Schlochtermeyer. The IVC, headed by Professor André Hinkenjann, is adapting the software for this purpose.



High-tech not just for large companies

Companies were invited to a workshop in November 2019 to learn about the advantages of virtual reality (VR) and augmented reality (AR). This includes location-independent working, for instance. Using VR glasses, several developers can work on a design on the computer or on the mobile phone display, even though they are working from different locations. “Many large companies use this technology, but it has not yet arrived at SMEs”, says Schlochtermeyer. With the help of the showroom at the university, this could change.

Showroom visualisation: VR landscape overcoming fear of high-rise building edges, test setup large-format LED display



More information:

www.h-brs.de/showroom-visualisierung-0

Fair coffee not just on Clean Monday

FairTrade University and Green Office – sustainable living is a reality at H-BRS



More and more universities are focusing on the topic of sustainability. But what exactly does this mean? At Hochschule Bonn-Rhein-Sieg, sustainability has long been a component of university development. From ecological construction measures to fair trade coffee in the cafeteria – concrete measures prove that the university is serious. In 2019, it was able to record two highlights on this topic: the award of the title **FairTrade-University** and the opening of the Green Office.

“Science, sustainability and social responsibility” is the title of the current university development plan. The fact that students also take these obligations seriously during daily university life can be seen from the origins of the FairTrade University Award. “The impetus came from the students. They were of the opinion that we as a university are so strongly committed to sustainability that we deserved an award for this”, reports Professor Maik Rieve-Nagel. The jurist accompanied the process at the university and heads the steering committee that coordinates all aspects surrounding FairTrade University.

Commitment far above target

In a practical project she checked with students which campaign criteria the university must fulfil as a FairTrade University. Universities with fewer than 10,000 students should, among other things, offer at least two fair trade products at five points of sale and organise two public events per semester on the subject. It quickly became clear that Hochschule Bonn-Rhein-Sieg already fulfilled some of the criteria. As Rieve-Nagel explains: “In our

cafeterias alone, we offer more than 20 different fair trade products. And with public events on the subject, we are far above target – with the Language Centre’s CSR Trade Fair or the events of the “Respect!” initiative, for instance. When we realised how much we were actually doing, we agreed that we wanted to officially become a FairTrade University”. Everything else was more or less a formality. In May 2019, FairTrade Germany officially awarded this status to the university.

The association does not just award universities for their commitment – sustainable communities can also become so-called FairTrade towns. The two university locations Sankt Augustin and Rheinbach hold this title. Closer cooperation between the university and the municipalities is planned, and the university is already associated with the Fairtrade Town Rheinbach. Kristina Klecko, FairTrade Universities and Fairtrade Towns Advisor at Fairtrade Germany, is particularly pleased about this. “It’s great that the spokesperson of FairTrade Town Rheinbach is also involved in the steering committee along with university members and representatives of university catering services. Together they implement concrete projects on fair trade, organise campaigns and events on campus and thus actively help to shape the university and the community.”

Students found Green Office

Mareike Ropers and Hendrik Walkenhorst also wanted to take an active role in shaping their own university. The students are among the five founding members of the Green Office. “We’ve been interested in sustainability for a long time and wanted to start a student initiative. Through the International Centre for Sustainable Development (IZNE), we learned about the possibility of establishing a university Green Office. We were immediately inspired by the idea”, says Ropers. After taking an online course from the Green Office Movement, the students drew up a business plan that convinced the persons responsible at the university. The Green Office was founded in the summer of 2019, with the IZNE as its main supporter. The core team consists of twelve volunteer students.

“Our actions aim at raising awareness of our own responsibility towards fellow human beings and the environment”, explains Walkenhorst. Among other things, the Green Office organises a Clean Monday once a month on which cigarette butts and other rubbish on campus is collected. The university’s own clothing exchange is also a great success. Further projects, such as a repair café, are in planning. Anyone can take part. The activity can be credited towards the sustainability certificate, which is awarded to committed students by the IZNE and the university’s Institute for Social Innovations.



Contact:

www.h-brs.de/fairtrade-university
www.h-brs.de/en/greenoffice

With certificate: In May 2019 the university was officially awarded FairTrade University status by Fairtrade Germany

Making research visible

Banner campaign with doctoral students



The right to award doctorates at universities of applied sciences is hotly debated throughout Germany. NRW's new higher education law stipulates, among other things, that the Graduate Institute NRW is to be developed into a doctoral college. High visibility of the topic is crucial for the political process.

The doctoral students at Hochschule Bonn-Rhein-Sieg can no longer be overlooked. "In research, I'm a tough guy; I reconstruct bones." Sayings like this one, which introduces the doctoral student Patrick Ottensmeyer and his research project on the treatment of large human bone defects, can be read on oversized banners decorating the university campuses of Sankt Augustin and Rheinbach. Other doctoral students also draw attention to their research projects with creative slogans. "There are still students who don't know that you can earn a doctorate with us. We want to change that with the posters. But we also want our guests to see that we have a lot of brilliant minds here", explains Dr Barbara Hillen, scientific advisor at the university's own Graduate Institute. She developed the campaign in cooperation with the university communications department. "Doctoral students should also learn to explain highly complex interrelationships in an



More information:
www.h-brs.de/news/promotion-fuer-die-promovierenden-der-h-brs

www.h-brs.de/en/gj/our-phd-students

understandable way and demonstrate their relevance to application", says Hillen.

Response to the posters is positive. "Our doctoral candidates are increasingly being approached by students about their PhD dissertations. It's nice to see that the campaign awakens interest in our research", says Professor Rainer Herpers, head of the university's Graduate Institute. Fortunately, the topic is finally gaining political momentum as a result of the new higher education law.

Daily academic life needs to be learned

Doctoral students are supported on their path to science by corresponding qualification modules at the university's Graduate Institute. These range from soft skills to information about the pitfalls of daily academic life, such as so-called predatory publishing. This is an inferior form of publishing service that is offered without quality checks for publication fees under the pretext of open access. "We also attach great importance to the discussion of ethical questions in research. What is permitted in the name of research? Where are the limits?", explains Herpers. Such discussions are particularly useful at the annual PhD Day. "During the day, there's a good working atmosphere to provide specialist input, and in the evening, the doctoral students can network. It's an event from which everyone benefits", says Herpers.

collaborate

Paving the way – into the region and the world



Part of Hochschule Bonn-Rhein-Sieg's self-image has always been to strengthen regional structural change – by training future professionals and decision-makers for a global labour market, through internationally networked research, and through its "third mission", with which it assumes responsibility for the economy and society in a wide range of cooperation projects. Thus in 2019, we entered into an expanded strategic cooperation with authorities and companies. In the flourishing Center of Applied Research, the first effects of joint work are noticeable and pave the way to a Science Campus. In the "Campus to World" project, the transfer takes on a variety of forms. The showrooms are well received by industry partners and civil society. The CitizenLab offerings reach a broad public, and the Responsibility Forum has established itself as a platform for dialogue. Last but not least, H-BRS also provides tailor-made solutions for rural areas.

In its international profile, H-BRS is taking on a new challenge of immense importance: cooperation with China. The region has evolved from a developing country to a technological leader in important future-oriented industries. Know-how transfer is increasingly taking place in both directions, and cooperation on equal terms is becoming more and more important in science and business. In their decades of professional activity, our graduates will be allowed and obliged to work with China and with Chinese people – we want to prepare them for this. On a trip to South China, the President's Office was impressed by the innovative power and speed. But there is still a lack of thoroughness and orientation towards Western needs and values. We can contribute these and are therefore highly welcomed by our partners. The question is not whether we cooperate, but in what way we make cooperation fruitful for ourselves and our society.

Prof. Dr Jürgen Bode

Vice President for International Affairs and Diversity

Dr Udo Scheuer

Vice President for Regional Development and Innovation

Unique science hub

The Innovation Campus Bonn is a new type of science centre with a focus on sustainability research



The leadership team of the Innovation Campus Bonn: Professor Jakob Rhyner, Scientific Director, and Sandra Gilgan, Managing Director

Hochschule Bonn-Rhein-Sieg has been focusing its attention on the topic of sustainability in all its facets for some time now. With the creation of the Innovation Campus Bonn (ICB) in June 2019, the foundation stone was laid for the city of Bonn itself to become one of the world's leading locations for sustainability research. The ICB is a research centre that aims to bundle the expertise in sustainability research already available in the region and, with new building blocks, to form a unique science hub.

The ICB is supported by the Bonn Alliance for Sustainability Research, founded at the UN Climate Change Conference 2017 and comprised of six scientific institutes and higher education institutes: the Bonn International Center for Conversion (BICC), the German Development Institute (DIE), the United Nations University – Institute for Environment and Human Security (UNU-EHS), the Center for Development Research at the University of Bonn (ZEF) and Hochschule Bonn-Rhein-Sieg University of Applied Sciences with its International Centre for Sustainable Development (IZNE).

Three research focuses

Special feature of the ICB is the interdisciplinary cooperation. "The Innovation Campus Bonn is a platform for macrosocial work on a sustainable future. Actors from various backgrounds are invited to use their perspectives and their expert knowledge to work together on their ideas on sustainability issues.", says the Bonn Alliance for Sustainability Research website. University President Hartmut Ihne and Professor Katja Bender, Director of the IZNE, represent H-BRS on the Bonn Alliance Council and thus cooperate on strategically shaping the work of the Innovation Campus Bonn.

The ICB's initial three research focuses are digitalisation and artificial intelligence, mobility and migration, and bioeconomy. "The ICB deals with important challenges of our present and future – from the upheavals of digitalisation, poverty reduction, social security and health to the pressing issues of the global climate", summarises Ihne.

 **More information:**
www.bonnalliance-icb.de/en/

A traffic light for Africa

SME Index for 34 African countries supports the decisions of German investors

Morocco, South Africa and Egypt are the most attractive countries in Africa for foreign investors. This is the result of the Africa SME Index that the BRS Institute for International Studies at Hochschule Bonn-Rhein-Sieg (BRS IIS) has published together with africon GmbH, the German Association of Small and Medium-Sized Enterprises (BVMW) and Nexis International. The study is intended to help German companies successfully gain a foothold in selected countries on the continent. To this end, it uses a traffic light system to divide the countries examined into promising and less recommendable targets.


"Despite all current risks and problems, Africa is a continent that will shape the future of humanity", says Professor Jürgen Bode, Director of BRS IIS and Vice President for Internationalisation and Diversity at the university. The World Bank estimates that Africa is home to about half of the ten fastest growing economies. "For this reason, Africa has been at the top of the agenda of international organisations and industrialised countries such as China and Japan for some time now", Bode says.

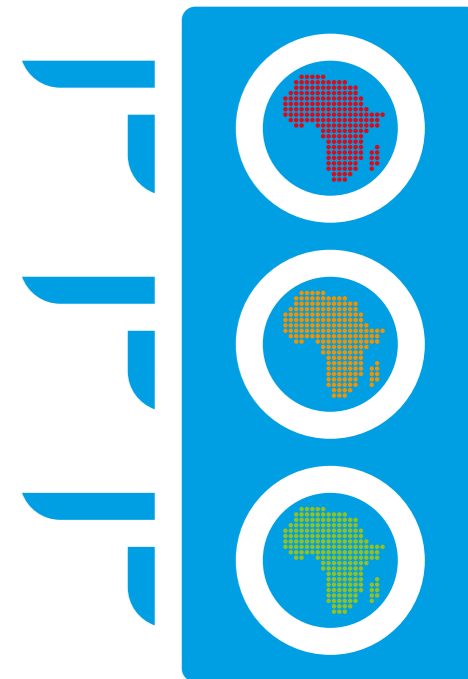
Orientation for market entry

German companies on the other hand are not among the pioneers. This could perhaps change with better orientation. The Africa SME Index presents a rating for 34 African countries. It records 55 factors for each of them, which are again combined into 16 indicators specifically relevant to SMEs and then condensed into three key indicators. Finally, each country is given an overall key figure, which is assigned to the categories Top Performer or Business

Opportunities (green and light green), Development Potential (yellow) or Difficult States (red) and thus to a traffic light colour.

During the presentation of the Index at the Road Show "Erfolgreich nach Afrika" ("Successful to Africa") of the German Association of Small and Medium-Sized Enterprises in Korntal near Stuttgart, participants reacted extremely positively to the new orientation aid. "If we had had the Africa SME Index two years ago", says Steven Denk, project manager at WestfalenWIND GmbH, for instance, "our market entry would have been easier". The study is available free of charge; interested parties can support the project as sponsors.

 **More information:**
www.brs-iis.de/angebote/mittelstands-index-afrika



New partnerships in China

In order to be able to benefit from Chinese high-tech expertise, a four-member delegation from Hochschule Bonn-Rhein-Sieg, headed by Professor Jürgen Bode, Vice President for Internationalisation and Diversity, travelled to universities, companies and institutions in Shenzhen and Guangzhou. There the delegation established contacts to identify suitable partners for future cooperation. In addition to stronger collaboration in research and transfer, exchange opportunities for students and other university members are to be created. The university decides which Chinese institutions are eligible for cooperation in the fields of robotics, artificial intelligence, energy efficiency and resource conservation, depending on their compatibility with European values.

Strong start

coSTARK brings students together in international coaching tandems

When it comes to questions of career entry, foreign students are at a disadvantage compared to German students. "They have language barriers, are unfamiliar with the culture and the labour market and are not very well networked", says Dr Agnes Derjanecz, Project Manager International Career at the Centre for Science and Technology Transfer (ZWT). For this reason, Hochschule Bonn-Rhein-Sieg offers a supplementary coaching programme for this group. coSTARK is a so-called peer coaching project, in which each participant is assigned a student coach who is specially trained for this purpose.

The coaches are Master's students in the field of business psychology. They were trained as systemic coaches for the first time in winter semester 2018/19 by Professor Patrizia Ianiro-Dahm from the Department of Management Sciences. These eleven students met five times each in the summer semester with another eleven students from nine nations. They advised them on job and career-related issues or supported them during the application process. The important thing for those seeking advice was the atmosphere of trust. "I could speak freely about what is good and what is not good. It was easy for me because I knew that everything would stay in this small room", says Hamza Smaiti, a student from Morocco.

Opportunity to meet

The coaches benefit from the programme too, which has already produced two Master's theses and a Bachelor's thesis. "I really liked the idea that we were allowed to put what we had learned into practice on our own

responsibility and get in contact with our foreign fellow students", says coSTARK coach Merle Bernhard. The aspect of encounter also plays a major role. In the "Higher Education Report 2020" published by the Donors' Association and McKinsey, more than two-thirds of those surveyed stated that they "never" or "rarely" had contact with foreign fellow students. coSTARK is therefore a personal gain for the participants.

In summer semester 2019, 14 additional Master's students were trained for a second cycle in winter semester 2019/20. This means that the project has now been firmly integrated into the teaching programme and the advisory services will continue to be offered on a permanent basis.



 **More information:**
www.h-brs.de/en/coSTARK_ENG

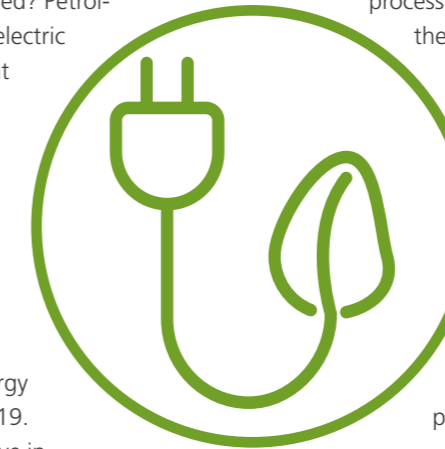
Together for a clean future

Higher education and industry research better energy efficiency of vehicles

When it comes to environmentally-friendly mobility, many questions remain unanswered. Hydrogen is the cleanest fuel – but how can it be stored without posing a danger due to the high pressure required? Petrol-driven cars require a gearbox, electric cars do not necessarily. So what will the energy-efficient drivetrain of the future look like? Researchers at the Institute of Technology, Resource and Energy-Efficient Engineering (TREE) are dealing with these questions. And because the possible answers can also be used by industry, the TREE Energy Lab was launched in spring 2019. The companies GKN Automotive in Lohmar and GKN Sinter Metals, Radevormwald have invested around 200,000 euros here for research into foreseeable technical challenges.

More efficient driving means protecting the climate

The TREE Energy-Lab consists of four independent sub-laboratories. The Powder Fabrication Lab deals with components that are built up in layers of metal powder using laser technology. This process has many advantages over the conventional melting of metal. It is easier to incorporate cavities and may therefore find applications in vehicle construction, for instance. At the Mobility Lab, researchers are working on energy-efficient passenger transport. For



this purpose, innovative vehicle and drive concepts are being investigated and user data and driving profiles are increasingly being incorporated into the development process. Hydrogen as a fuel is the object of research in the third sub-laboratory, the Hydrogen Lab. Although hydrogen is readily available, it is highly explosive. New forms of storage, in combination with metals, for instance, could lead to novel applications.

In their work, all three laboratories make use of the possibilities of the fourth, the Simulation Lab. Here, technical systems can be simulated on the computer, and optimised components can be formed and tested using 3D printing processes and state-of-the-art equipment.

The research partners also focus on the training of young engineers during their work. "Together, we are creating a modern research environment for the students with short communication paths to industry", says Michael Engelmann of GKN Automotive. "The system of encouragement and demand ("fördern und fordern") works well", adds Professor Dirk Reith, one of the TREE directors. There are already joint theses with GKN and ideas for publicly-funded projects. PhD projects for engineers and computer scientists are planned.

 **More information:**
www.h-brs.de/en/tre3l-tree-energy-lab

More sustainable mobility thanks to hydrogen

H-BRS would like to promote discussion on hydrogen as a sustainable energy for automobility. For this reason it is participating in the project cluster "Model Region Hydrogen Region" alongside scientific institutes, cities and companies. The partners are developing an overall concept for the regional and efficient production, distribution and use of hydrogen and thus making it marketable. At H-BRS, Professor Stefanie Meilinger is participating in the project with a potential analysis for the regenerative production of hydrogen. A further research question is whether the existing natural gas network can also be used to distribute hydrogen.

Sascha Czornohus

heads the Centre for Science and Technology Transfer

“My team and I support the transfer activities of the university by exploring cooperation opportunities for our researchers with industry and society through exchange, information and advice. We want to position the university as an innovative cooperation partner in the region and beyond. To this end, we are working on expanding our pathway relationships in order to create clarity and transparency about what H-BRS contributes to social progress. We are in constant dialogue with stakeholders and are expanding our network. Everyone is invited to take a look at the university – to delve into it.”

diffusion

create clarity, overcome barriers, be heard



Transfer made in Germany

Jordanian universities would like offices modelled on those of the H-BRS Centre for Science and Technology Transfer



Successful: The Centre for Science and Technology Transfer supports networking between university, economy and society

Research should promote innovation, initiate development and bring benefits to society and industry. This attitude is a matter of course at a German university of applied sciences. The situation is quite different in other countries. "In the Jordanian higher education system, only isolated contacts to regional industry exist", says Professor Rainer Herpers, Co-Director of the Institute of Visual Computing at Hochschule Bonn-Rhein-Sieg. Conversely, Jordanian industry has little access to and knowledge of the topics and content being developed and studied at higher education institutions.

German blueprint for Jordan

The cooperation project "Building Innovation Infrastructure via Technology Transfer Offices Conducted in Jordan Higher Education Institutions", or BITTCOIN-Jo for short, aims to change this. 70,000 euros from the European Union will be allocated to Hochschule Bonn-Rhein-Sieg for this project over the next three years alone. It is being carried out by

Jordan's Yarmouk University in cooperation with twelve academic and industrial partners. As one of four European universities, H-BRS shares its experience in establishing and successfully operating technology transfer offices (TTOs). The aim of this joint work is to set up offices along the same lines at four Jordanian universities. A possible model for this is the Centre for Science and Technology Transfer (ZWT) at H-BRS as it has developed from a small office to a powerful institution over the last 20 years.

In September 2019, the project partners met in Sankt Augustin to become acquainted with the workings of ZWT. The programme also included interactive workshops on the transfer of European models to the Jordanian framework and a presentation by the Centre for Entrepreneurship, Innovation and SMEs (CENTIM) at the Rheinbach campus. "The Jordanian partners were particularly interested in the promotion of entrepreneurial activity at the universities", says Herpers, "in order to make a long-term contribution to the regional and supraregional development of the Jordanian economy". The result of the meeting was a first model for a Jordanian TTO based on the German model. This was further elaborated at the follow-up meeting in March 2020 in L'Aquila, Italy.

 **More information:**
<http://www.bittcoin-jo.com>

Professionals for prevention

Certificate course "Prevention and Employability" soon in Turkey too

The shortage of skilled workers is the big issue in the employment world. To counter this, more and more companies are taking care of the health and working ability of valued employees and investing in professionals who know their way around these fields. For this reason, the further education certificate "Prevention and Employability" can be acquired at Hochschule Bonn-Rhein-Sieg – soon this opportunity will also be offered in Turkey.

The education export came about through the long-standing cooperation between the Institute for Work and Health of the German Social Accident Insurance (IAG) and the Ministry of Labour in Ankara. When the Turkish partner was looking for tailor-made training for its inspectors, the IAG referred them to the Department of Social Policy and Social Security Studies at H-BRS, with which it jointly offers the "Prevention and Employability" training certificate. "The reaction at the first presentation was very positive. Only a few things had to be individually adapted", says Professor Dirk Windemuth, Director of the IAG.

Hennef's course goes around the world

The three partners – IAG, H-BRS and the Turkish Ministry of Labour – introduced the framework of the Turkish legal and social security system into the training programme in summer 2019. The process was moderated by Steffi Rönitzsch from the Corporate Responsibility and Training Department at the IAG. In addition, at the request of the Turkish partner, a substantive focus was placed on traffic and construction safety, to which experts from the German Road Safety Council (DVR) and the Employers' Liability



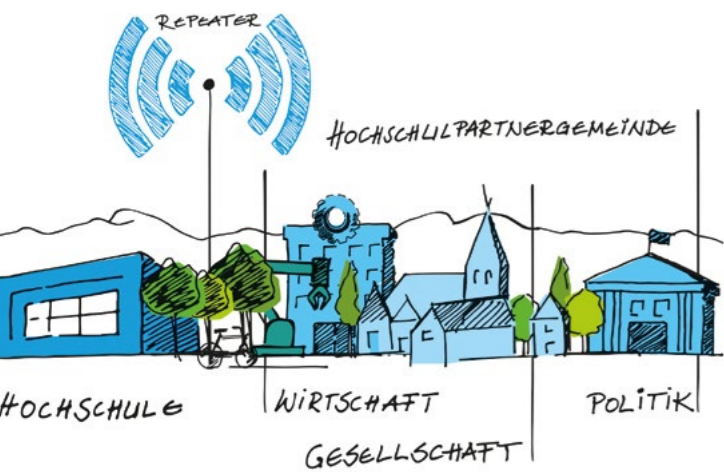
Insurance Association of the Construction Industry (BG BAU) contributed. There are plans to offer the further training course "Prevention and Employability" in Turkey as a specialised course for ten different sectors. Members of the Turkish administration and companies can then attend five in-service training modules at over ten university locations in the country.

Inspired by the international interest, the German partners are planning to present their product together with the Turkish Ministry of Labour at the World Congress on Safety and Health in Toronto in autumn 2020. Many countries, according to Vincenzo Cusumano, head of the German course at H-BRS, do not need to develop such an offer from scratch. They could build on an existing template: "A course from Hennef goes around the world – this is the best promotion for our image we can imagine".

Further training in "Prevention and Employability" – international interest is high

University office in the town hall

Community innovation partnerships generate impulses for rural development



Campus to World: One component is community innovation partnerships through which the university promotes networking with business and society in the region

Urbanisation is a topic in Germany. In 2018, around 80% of all Germans were crowded into metropolitan areas, which make up only 37% of the country's total area. Thus the remaining 20% of the population had 63% of the land at their disposal. This is a reason to reflect on the declining attractiveness of rural regions. With the pilot project "Municipal Innovation Partnerships", Hochschule Bonn-Rhein-Sieg sets new impulses for rural development. "The concrete aim is to transport the know-how of higher education

institutes to rural areas without immediately opening a university location there", says Professor Klaus Deimel, Director of the Centre for Entrepreneurship, Innovation and SMEs (CENTIM) at H-BRS.

Opportunities for companies, citizens and politics

KIP is part of the "Campus to World" project with which the university is pursuing the goal of strategic networking with business and society in the region. The researchers at KIP are developing a toolkit for cooperation with companies, citizens, politics and administration. It is being tested in the pilot community of Neunkirchen-Seelscheid in the Rhein-Sieg district. Mayor Nicole Sander is hoping for many positive effects: "We want to create a sustainable,

stable and future-proof opportunity for companies and the people who live here".

The first measures were implemented in 2019. They include workshops with various interest groups and the opening of a university project office in the town hall. Once a week, a contact is available to speak to here. Companies that would like to get input from the university on questions of research, marketing or even at the time of founding come here. But the initiative also advises citizens at a so-called CitizenLab on topics such as the creation of wildflower meadows in the urban area. The university supported this by taking and analysing soil samples, thus ensuring that a species-rich meadow would flourish. At the same time, this will enable the International Centre for Sustainable Development to conduct research on site-adapted forms of use.

The project also advises political decision-makers on the initial qualification steps necessary for an application for economic development and on those that the municipality could not have implemented on its own. "There are networks and expertise", says Nicole Sander. "It's a valuable gateway to a world we would not otherwise have known."

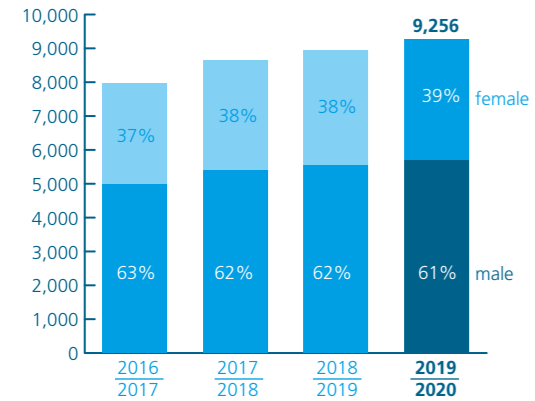
 **More information:**
www.h-brs.de/en/Municipal_Innovation_Partnerships



Facts and figures

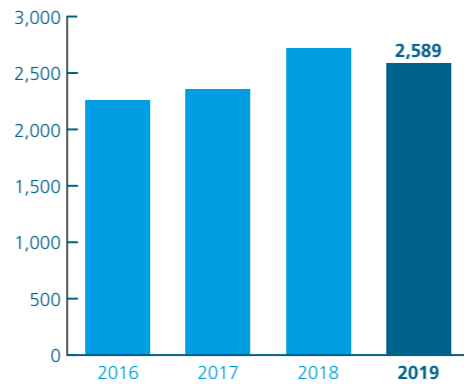
Number of students

winter semester 2019/20



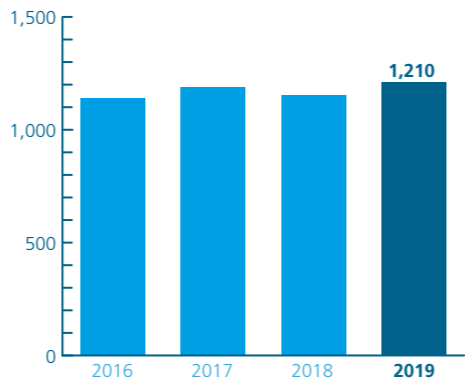
First-semester students

to academic year 2018/19



Graduates

to academic year 2018/19



Degree courses at H-BRS

Bachelor's programmes

- Applied Biology
- Business Information Systems
- Business Management
- Business Psychology
- Chemistry with Materials Science
- Computer Science (+ dual)
- Electrical Engineering (+ cooperative)
- Forensic Sciences
- International Business
- Mechanical Engineering (+ cooperative)
- Social Security Management – Accident Insurance
- Sustainable Engineering (+ cooperative)
- Sustainable Social Policy
- Technical Journalism
- Visual Technical Communication

Master's programmes

- Analysis and Design of Social Protection Systems
- Analytical Chemistry and Quality Assurance
- Autonomous Systems
- Biomedical Sciences
- Business Psychology
- Computer Science
- CSR & NGO Management
- Electrical Engineering
- Innovation and Information Management
- International Media Studies
- Management Accounting and Management Control
- Marketing
- Materials Science and Sustainability Methods
- Mechanical Engineering
- Technology and Innovation Communication
- Visual Computing & Games Technology

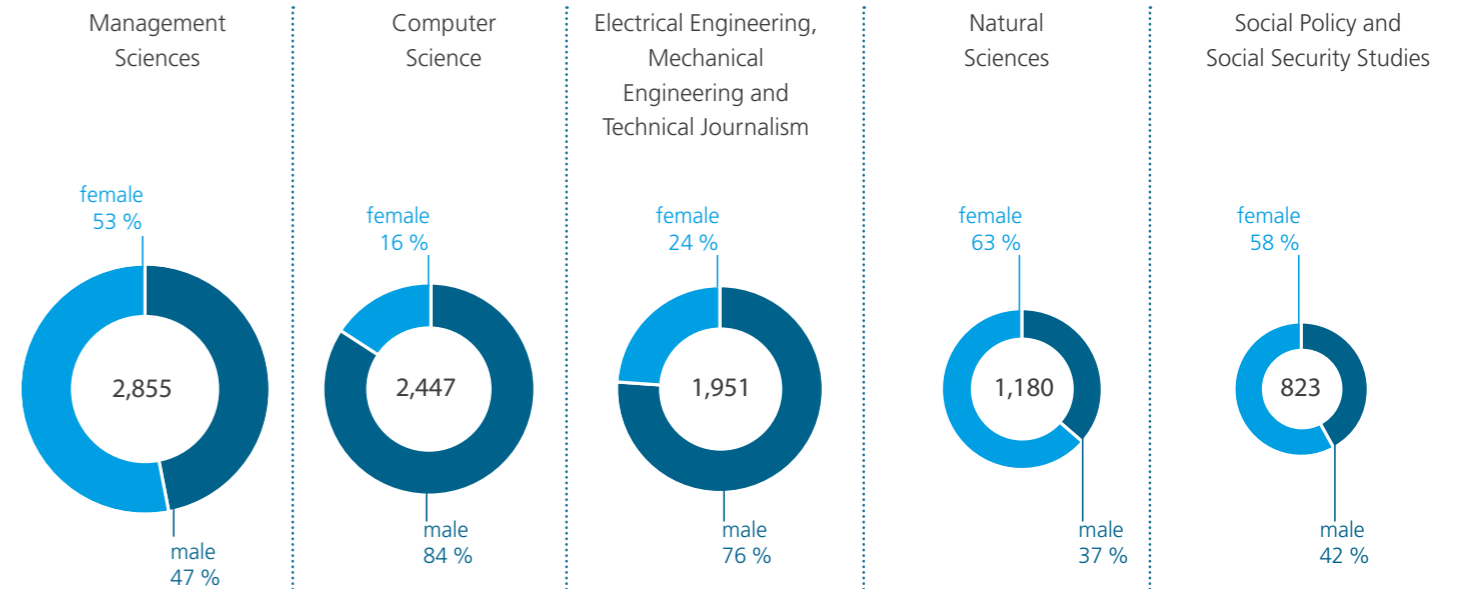
Doctorates

- PhD programme at the H-BRS Graduate Institute:
- 84 doctoral candidates

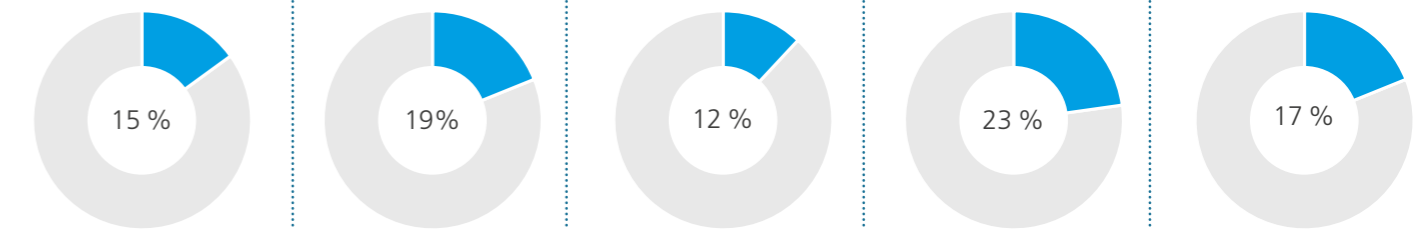
all numbers, status 31/12/2019

Students winter semester 2019/2020

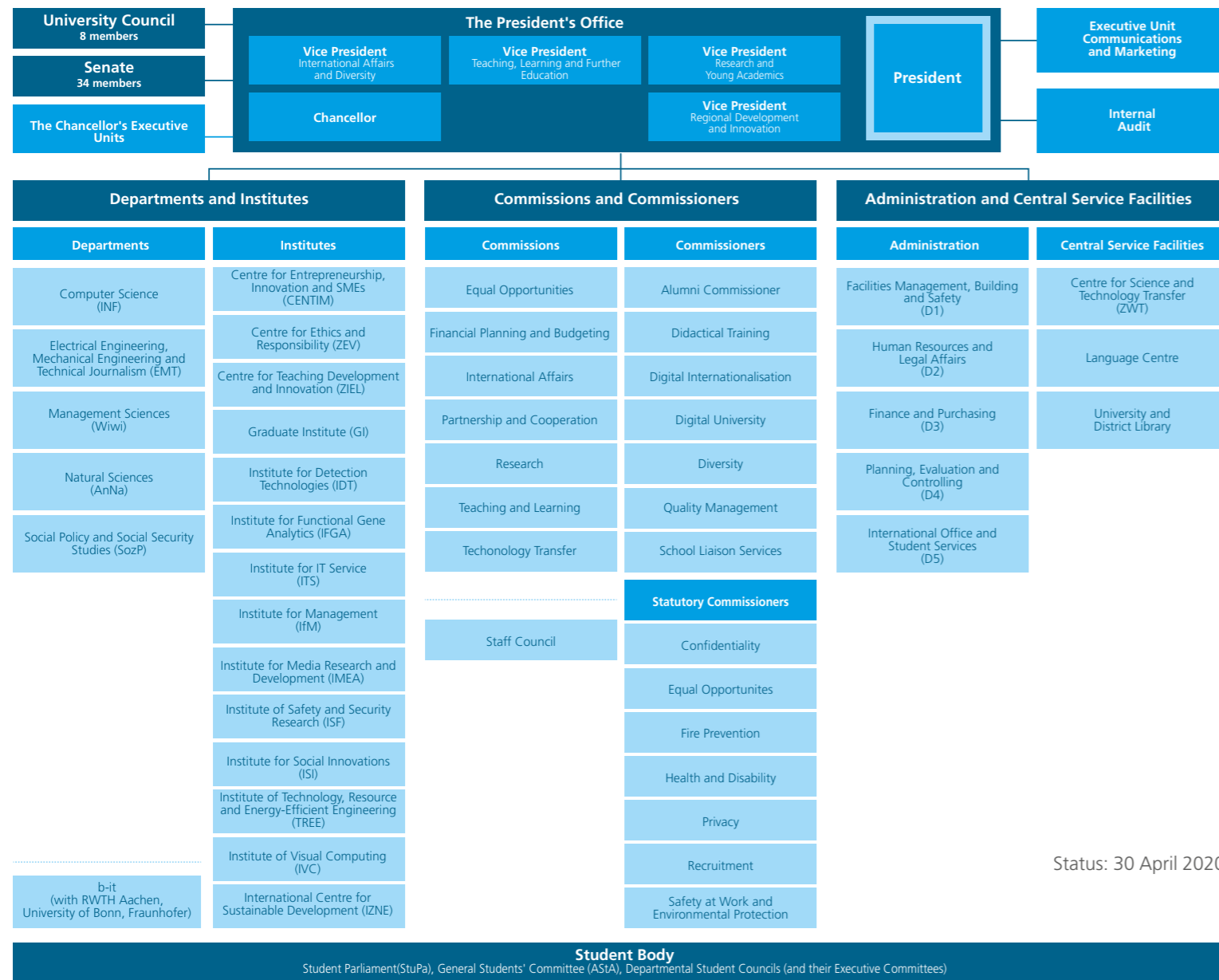
Students by department and gender



Percentage of international students by department



Organisational structure of the university



The University Council

The newly composed University Council has been on duty for H-BRS since September 2017. It is made up of four external members and four members of the university. The University Council is responsible for all strategic matters relating to the university. It advises the President's Office and monitors the way business is conducted. It also appoints the president of Hochschule Bonn-Rhein-Sieg – University of Applied Sciences and acts as a supervisory body. The eight members of the University Council are:

- **Sylvie Hambloch-Gesinn**
Solicitor (Chair)
- **Prof. Dr. Simone Bürsner**
Hochschule Bonn-Rhein-Sieg
- **Prof. Dr. Klaus Deimel**
Hochschule Bonn-Rhein-Sieg
- **Prof. Dr. Karin Hummel**
Hochschule Bonn-Rhein-Sieg
- **Prof. Dr. Peter Kaul**
Hochschule Bonn-Rhein-Sieg
- **Dr Andrea Niehaus**
Director of the Deutsches Museum Bonn
- **Rainer Otto**
Commercial Managing Director WIRTGEN GROUP Holding GmbH
- **Prof. Dr. Jakob Rhyner**
University of Bonn, Scientific Director of the Innovation Campus Bonn

State Secretary Ministry Innovation, Science and Research Annette Storsberg (3rd from right) and University President Prof. Dr Hartmut Ihne (right) with the University Council, from left: Prof. Dr Simone Bürsner, Rainer Otto, Prof. Dr Jakob Rhyner, Sylvie Hambloch-Gesinn, Prof. Dr Karin Hummel, Dr Andrea Niehaus, Prof. Dr Peter Kaul, Prof. Dr Klaus Deimel

Staff announcements 2019

New appointments

- **Prof. Dr Matthias Bertram**
Department of Computer Science
Professor of Business Informatics, especially information and communication systems
- **Prof. Dr Robert Grüter**
Department of Management Sciences
Professor of Logistics and Supply Chain Management
- **Prof. Dr Nico Hochgeschwender**
Department of Computer Science
Professor of Robotics, Autonomous Systems and their Security
- **Prof. Dr Marco Jung**
Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
Professor of Sustainable Engineering, in particular electric mobility/electrical infrastructure
- **Prof. Dr Thomas Kriza**
Department of Social Policy and Social Security Studies
Professor of Digital Change and Ethics
- **Prof. Dr Ernst Kruijff**
Department of Computer Science
Professor of Computer Science, especially human computer interaction
- **Prof. Dr Max Leitterstorf**
Department of Management Sciences
Professor of Business Administration, especially accounting
- **Prof. Dr Oliver Ruf**
Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
Professor of Media Cultural Studies, Media Aesthetics, Communication Theory
- **Prof. Dr Christian Tode**
Department of Management Sciences
Professor of Innovation Economics

- **Prof. Dr Corinna Thomser**
Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
Professor of Materials Technology, especially innovative materials

Honorary professorships

- **Dr Walter Eichendorf**
Honorary Professor in the Department of Social Policy and Social Security Studies
- **Dr Martin Hamer**
Honorary Professor at the International Centre for Sustainable Development
- **Ulrich Kelber**
Honorary Professor at the Centre for Ethics and Responsibility
- **Dr Marc von Miquel**
Honorary Professor in the Department of Social Policy and Social Security Studies
- **Dr Dominik Schnichels**
Honorary Professor in the Department of Social Policy and Social Security Studies
- **Dr Imme Scholz**
Honorary Professor at the Centre for Ethics and Responsibility
- **Dr Helga Seel**
Honorary Professor in the Department of Social Policy and Social Security Studies
- **Ranga Yogeshwar**
Honorary Professor at the Centre for Ethics and Responsibility

Others

- **Dr Ines Knauber-Daubenbüchel**
Honorary Senator
- **Dr Udo Scheuer**
Vice President for Regional Development and Innovation

Employees (number) as of 31/12/2019

	2017	2018	2019
Professors	151	152	150
<i>of these substitute professors</i>	5	3	1
<i>of these endowed and third-party funded professors</i>	18	16	16
Honorary professors	35	36	44
Lecturers with special responsibilities	43	48	52
Research associates	264	286	298
Employees in technology and administration	207	233	243
Apprentices/trainees	14	17	18
Number lecturers	337	326	335
TOTAL	1,051	1,098	1,140

Employees (full-time equivalent) as of 31/12/2019

	2017	2018	2019
Professors	142.58	143.66	143.75
<i>of these substitute professors</i>	3.64	2.25	0.50
<i>of these endowed and third-party funded professors</i>	14.12	13.12	12.29
Honorary professors	3.89	3.96	4.88
Lecturers with special responsibilities	33.59	35.93	41.28
Research associates	200.03	214.42	226.40
Employees in technology and administration	169.42	183.98	184.28
Apprentices/trainees	14.00	17.00	17.50
TOTAL	563.51	598.95	618.09

Third-party funded staff (full-time equivalent) as of 31/12/2019

	2017	2018	2019
Departments	65.43	64.58	71.55
Administration	5.11	9.54	9.30
Central services	27.54	37.37	42.61
Other	0.50	1.50	4.09
TOTAL	98.58	112.99	127.55

Prizes and awards 2019

University

Certificate "audit family-friendly university"

- Hochschule Bonn-Rhein-Sieg

CEWS ranking according to equal opportunity aspects

- Placed in ranking group 2

"Valuable Employer for the Common Good 2019" from Wirtschaftswoche – Rhein-Sieg District

- 4th place for Hochschule Bonn-Rhein-Sieg

Integration Prize Rhein-Sieg District – Categorie: Preventative Measures

- Initiative "Respect!" of Hochschule Bonn-Rhein-Sieg

"FairTrade University" Certificate from Transfair e.V./Fairtrade Germany

- Hochschule Bonn-Rhein-Sieg

Study "Profile Data on the Internationality of Universities" DAAD, HRK & AvH

- H-BRS performs with very good results. 36.5% international Master students (2017), the average of German universities stands at 18%

GOLC Online Lab Award 2019 from the International E-Learning Association – Category Remote-Lab

- FPGA Remote Lab

Recognition Prize for Fundraising for Germany Scholarship

- Hochschule Bonn-Rhein-Sieg

UNESCO Logo for "Education for Sustainable Development"

- Lecture Series "Technology and Environmental Ethics" (TUE) 2019

Graduate Institute, doctorates awarded in 2019

- Dr Nicolas Echarti, Department of Social Policy and Social Security Studies
- Dr Alexander Geppert, Department of Natural Sciences
- Dr Sebastian Ginzel, Department of Computer Science
- Timo Jakobi, Department of Management Sciences
- Dr Tim Jax, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
- Dr Knut Küllmer, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
- Dr-Ing Michael Rademacher, Department of Computer Science
- Dr Esther Ramakers-van Dorp, Department of Natural Sciences
- Dr-Ing. Martin Weier, Department of Computer Science

People

IZNE Sustainability Prize 2018

- Fenja Scheddler, Department of Management Sciences
- Maria Pankrath, Department of Management Sciences

Innovation Prize from the Division of Industrial, Organisational and Business Psychology of the German Psychological Society (DGPs)

- Prof. Dr Christine Syrek, Department of Management Sciences

AFCEA Student Award

- 3rd prize for Padmaja Vivek Kulkarni and Priyanka Vokuda, both Department of Computer Science

Doctoral Scholarships 2019

- Mario Bedrunka, TREE scholarship holder, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
- Saugata Biswas, IVC scholarship holder, Department of Computer Science
- Lena Cassens, GI scholarship holder, Department of Management Sciences
- Matthias Muhr, ISF scholarship holder, Department of Natural Sciences
- Amadeus Janotta, scholarship holder, Department of Natural Sciences
- Argentina Ortega, Equal Opportunity Officer's scholarship holder, Department of Computer Science

- Daniel Schulke, GI scholarship holder, Department of Natural Sciences
- Jessica Rumpf, Equal Opportunity Officer's scholarship holder, Department of Natural Sciences
- Youssef-Mahmoud Youssef, scholarship holder, Department of Computer Science

VMPA Young Academics Award

- Stefan Kübler, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism

Advancement Award from H-BRS Donors

Advancement Award for Bachelor's Thesis

- Tatjana Stürzer, Department of Social Policy and Social Security Studies – DGUV
- Jennifer Brettschneider, Department of Management Sciences – true fruits GmbH
- Katrin Nicole Duda, Department of Management Sciences – Siegwirk Druckfarben AG&Co. KGaA
- Helmut Buhler, Department of Computer Science – SVA System Vertrieb Alexander GmbH
- Holger Karwanni, Department of Computer Science – Bechtle IT-Systemhaus Bonn
- Fabian Peitzmeier, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism – Wirtgen GmbH
- Johanna Illmer, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism – Eaton Industries/Hein-Moeller Foundation

- Paulina Zacharias, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism – BRS Institute for International Studies
- Lea Faßbender, Department of Natural Sciences – Dr Reinold Hagen Stiftung
- Mareen Kettemann, Department of Natural Sciences – Innovatec Gerätetechnik GmbH
- Nicholas A. Gallagher, Department of Natural Sciences – Stiftung Evolution

Advancement Award for Master's Thesis

- Hanna König, Department of Management Sciences – Kreissparkasse Cologne
- Aleksandra Paluch, Department of Management Sciences – dhpg Dr Harzem & partner mbH
- Gabriela Cortés, Department of Computer Science – Rupf Industries

- Nadja Krenzien, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism – Universal DX (UDX)

Advancement Award for PhD Dissertation

- Dr Michel Bergs – Industrie- und Handelsclub Bonn e.V.



RoboCup World Championship 2019

- World championship title for the b-it-bots team, students in the Department of Computer Science

European Robotics League Tournament

- 1st place for the b-it-bots team, students in the Department of Computer Science

Cyber Security Rumble Hacker Competition

- 1st place for the RedRocket hacker team, students in the Department of Computer Science

Google CTF Hacking Competition

- 6th place for the RedRocket hacker team

Midnight Sun CTF

- 1st place for the RedRocket hacker team

DEF CON Las Vegas

- 7th place for the Sauercloud team, partially students in the Department of Computer Science

Video Competition "Mobil zum Ziel" – Employment Agency Bonn

- 2nd place for Carina Laßek, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
- 2nd place for Naemi Tiana Lappe, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism

Best Paper Award at the 12th International Conference on Integrated Modelling and Analysis in Applied Control and Automation (IMAACA 2019)

- Prof. Dr Wolfgang Borutzky, Department of Computer Science

"Energie und Umwelt – meine Idee für morgen" competition from the Foundation for Energy & Climate Protection

- 3rd place for Katharina Walbrück, Department of Natural Sciences

Poster Prize from the Division of Construction Chemistry 2019 – GDCh Conference

- 2nd place for Katharina Walbrück, Department of Natural Sciences

PhD Poster Exhibition – Research Day 2019

- 1st place for Dr Thomas Havel, Department of Natural Sciences
- 2nd place for Prof. Dr Peters & Team, Department of Management Sciences
- 3rd place for Christine Kawa, Department of Management Sciences

Chamber Honour for the Year's Best Trainees

- 2nd place for Dominique Diehl, biology lab technician

European Games for Students 2019

- Bronze medal in Taekwondo for Martin Stach, Department of Management Sciences

German Fencing Championship 2019

- German champion team score Sabre fencing, Kristin Werner, Department of Management Sciences

German University Championships 2019

- Silver medal in Taekwondo for Martin Stach, Department of Management Sciences

Appointment to external board

- Spokesperson Council of the German Cultural Council, Admission as external guest: Prof. Dr Oliver Ruf, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism

Executive Board of the State Rectors' Conference

- Election to the Board of Directors: Prof. Dr Hartmut Ihne, President of Hochschule Bonn-Rhein-Sieg

German Council for Sustainable Development (RNE) of the Federal Government

- Prof. Dr Imme Scholz, Centre for Ethics and Responsibility

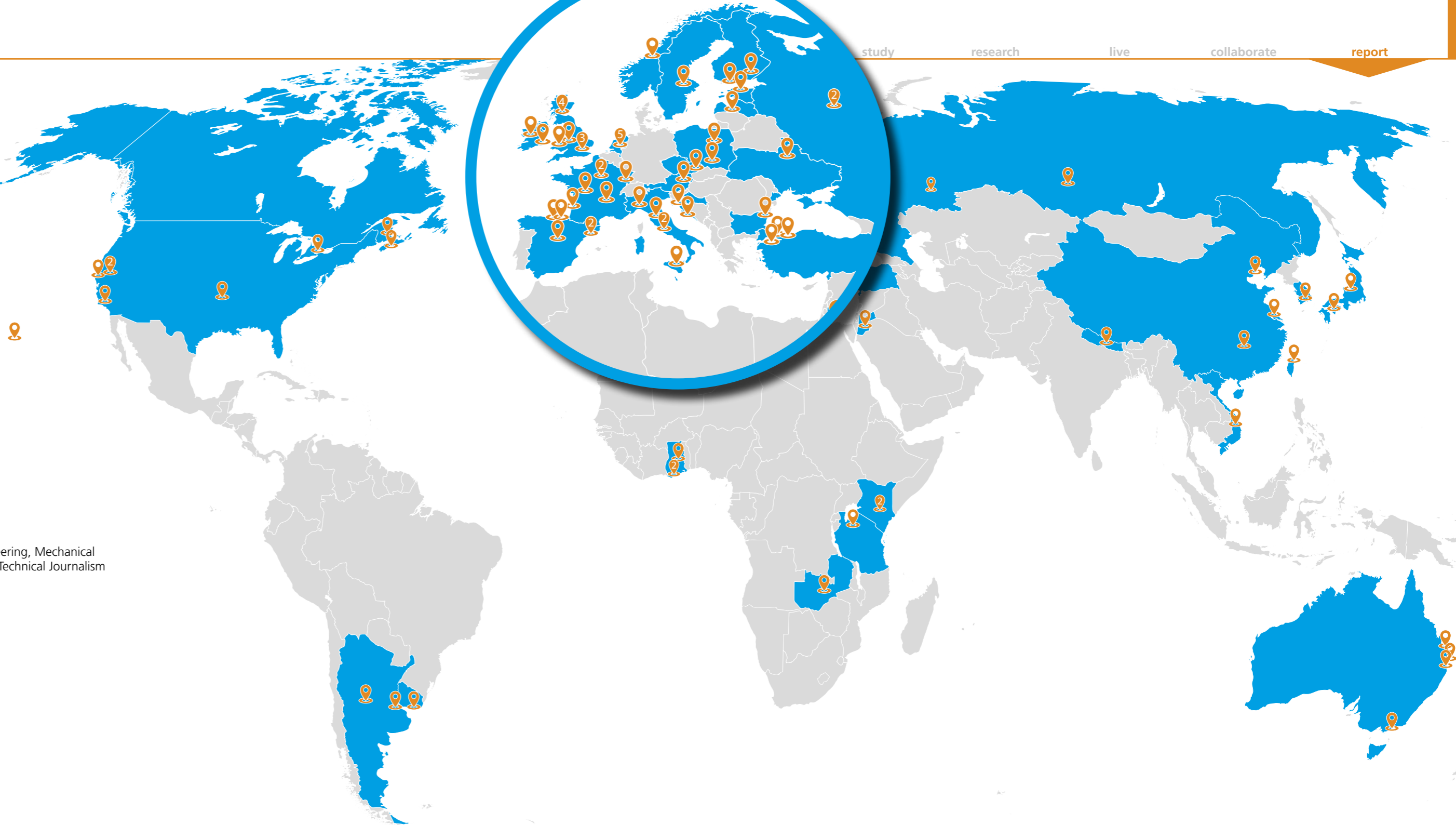
Specialist Group for Digitalisation in Business and Society of the NRW Graduate Institute

- Prof. Dr-Ing. Rainer Herpers, Department of Computer Science

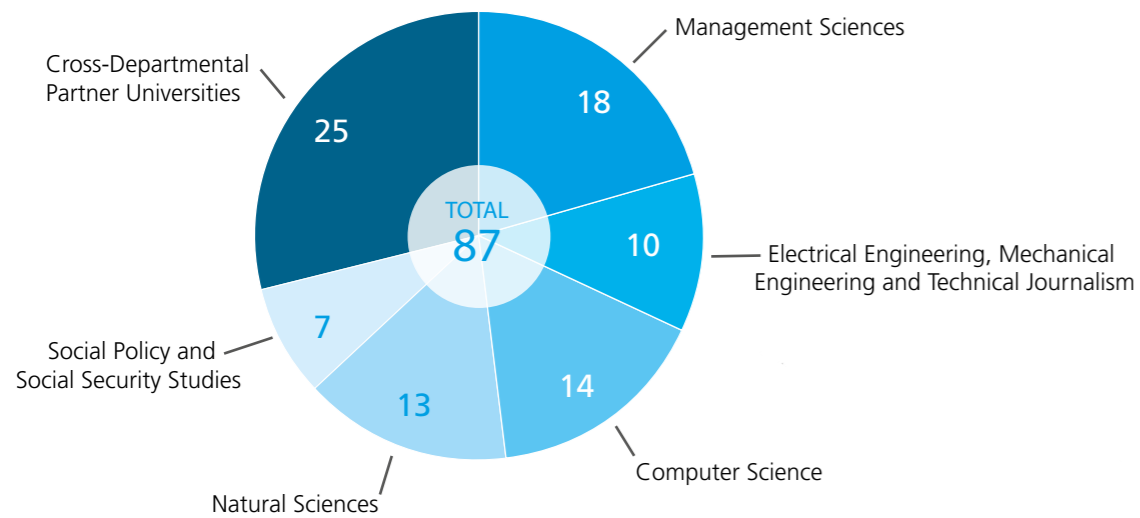


Partner universities around the world

www.h-brs.de/files/partnerhochschulen_dtsch.pdf



Partner universities by department



Revenue by budget heading (in euros)

	2018	2019	
State subsidies for running costs	Personnel	20,164,900.00	21,030,700.00
	Management	3,877,100.00	3,877,100.00
	Material expenses	1,476,900.00	1,525,400.00
	Performance-based allocation of funds	374,200.00	372,000.00
	Investments	577,400.00	477,400.00
	Consistent University Pact funds	2,860,300.00	4,290,500.00
	Reduced expenditure from Hochschulvereinbarung 2021	-70,600.00	-68,200.00
	Building/immovable property	6,904,000.00	6,904,000.00
TOTAL	36,164,200.00	38,408,900.00	
State allocations	Higher Education Pact II and Master	775,000.00	2,165,000.00
	Higher Education Pact II	14,853,375.00	11,642,500.00
	Device programme	0.00	192,619.80
	Other	907,397.02	790,742.03
TOTAL	16,535,772.02	14,790,861.83	
Quality improvement funds	3,747,619.00	3,866,911.00	
Third-party funds	12,316,062.21	15,027,447.09	
Own resources	172,498.86	8,637.49	
Total revenue of H-BRS	Sum of the above-listed portions	68,936,152.09	72,102,757.41

All figures for the year 2019 on pages 80 to 82 are provisional;

The figures for 2018 differ from those mentioned in the 2018 Annual Report as they are now available on an adjusted basis.

Expenditures by type of cost (in euros)

2019	State subsidies for running costs	State allocations	Quality improvement funds	Third-party funds	Total expenditures	
All expenditures of the budget headings split according to	Material expenses	6,644,795.19	4,226,557.57	198,019.40	2,311,023.60	13,380,395.76
	Personnel	22,243,712.25	11,900,485.64	3,496,903.60	9,936,859.83	47,577,961.32
	Investments	572,793.60	2,848,880.22	101,685.08	1,262,328.81	4,785,687.71
	Immovable property	417,186.10		0.00	0.00	417,186.10
	Other	51,393.39	-9,457.84	52,297.75	-94,233.30	0.00
	29,929,880.53	18,966,465.59	3,848,905.83	13,415,978.94	66,161,230.89	

Construction activities in euros

Minor building activities

Activity	Location	2017	2018	2019	Status
Refrigeration system BT F	RhB	15,321.83		317,265.76	in progress
Modifications to ventilation system A071	RhB	32,084.02		9,399.91	completed
Seminar rooms BT G EG	StA	59,425.87		909,791.71	in progress
Biometric Evaluation Centre BSI	StA	193,032.04		27,008.94	in progress
Renovation E306/307 and E247	StA			151,150.20	in progress
Supplements to guidance system	StA/RhB			28,526.60	completed
Smokers' pavilions	StA			27,193.21	completed

Renovation activities

Department	Location	2017	2018	2019	Status
Upgrade for studio technology BT B	StA	1,354,978.39		125,958.58	completed
Fire alarm system BT A-C	StA	15,564.01		41,341.36	completed
Cafeteria (grease separator, etc.)	StA			100,891.77	in progress

Major building activities

Activity	2017	2018	2019
Expansion buildings both locations	20,892,750.39	878,367.90	274,208.34
Initial setup in expansion buildings	717,123.51	465,386.63	206,608.53

H-BRS supervises its own construction activities ("Bauherrschaft").

Photo Credits

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- H-BRS/Eva Tritschler: 10 (2), 11, 23, 45, 55, 57, 71
- H-BRS: 10 (2), 14, 18, 20 (2), 30, 47, 56
- bubaone/istock: 12
- ZIEL/H-BRS: 13
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