



Technische Universität Braunschweig University Guide 2017/18

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# **TU Braunschweig Figures**

Range of courses: 118 full and modular degree programmes, including

bachelor's degree programmes and state examination courses

■ master's and postgraduate degree programmes

■ offered by 6 departments and 117 institutes

Students: 20,029 in the 2016/17 winter semester, including

■ 7,611 women

■ 2,771 international students from more than 113 countries

■ 12,310 engineering students

■ 3,889 natural sciences students

■ 3,830 humanities, economics and social studies students

Graduates: 3,131 in the academic year 2016, including 1,303 women

Doctorates: 295 in the academic year 2016, including 121 women

Staff: 3,618 university employees (1,514 women), including externally funded employees

230 professors (49 women)

■ 1,930 scientific staff (604 women)

■ 1,350 technical and administrative staff (818 women)

■ 108 trainees (43 women)

■ 2,252 student and research assistants (799 women)

■ 405 associate lecturers (173 women)

Finances: €328 million overall budget, including

■ €80.6 million in external funding



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 $\boldsymbol{6}$  - Greetings from the President



# **Greetings from the President**

### Dear student,

Choosing a university is an important decision that will affect the rest of your life. There are many factors to consider, including what you will be studying and where you will be living.

This university guide is designed to give you an idea of what it is like to study at TU Braunschweig and provides you with all the information you need to apply for one of our courses. Read on to learn more about our university. Meet some of our 20,000 students and find out why they enjoy studying here. Discover our professors' current research projects and why excellent study conditions are a matter of course for us.

Technische Universität Braunschweig is a traditional university with a strong profile in research and teaching. We encourage our students to think and act autonomously, and we promote innovative teaching concepts. The education you will receive at TU Braunschweig will provide you with the best perspectives for a future career in a management position.

We are located in Europe's most active research region and profit from an exceptional network of research institutes and major companies in the high-tech sector. 36,000 people are working in research and development here, which makes it the region with the highest proportion of employees working in science in all of Europe.

This research focus is reflected in the courses we offer. Our degree programmes are designed to have students participate in research projects very early in their studies. They attract students from many different backgrounds and countries. At present, a total of 2,800 international students from 113 countries are studying at Carolo-Wilhelmina, and we have established educational ties to more than 300 universities in Europe, the US, Canada, South America, China, Japan, Korea and Indonesia. We greatly value the international nature of our university community and the significant contributions that our international students make to the rich cultural diversity of life on campus.

We hope that this guide will help you choose the programme that is right for you. If you need any further information, please do not hesitate to contact us. We would be happy to welcome you as a student at our university.

Prof. Dr.-Ing. Anke Kaysser-Pyzalla President of TU Braunschweig

### - Brief portrait



# **Taking Tradition into the Future**

Welcome to one of Europe's most researchintensive regions. Welcome to Technische Universität Braunschweig! Our university is steeped in tradition, yet despite its 272 years, it is still bright-eyed and fresh. With its focus on technology and science, TU Braunschweig is one of the best institutes of technology in Germany.

With 118 degree programmes at 117 institutes to choose from, you are sure to find the one that is right for you. Take your pick from our broad range of subjects and specialisation options for a course that suits your personal interests and ambitions. Our engineering and science branches are closely linked to our humanities and our social and educational sciences. If you enjoy thinking and working across disciplinary boundaries, you have come to the right place.

### Well connected

Our students benefit from numerous cooperation projects with other research institutions – regionally, nationally and internationally, and with large and mid-sized companies. In Braunschweig alone, there are countless opportunities to participate in exciting research projects during internships, as well as for bachelor's and master's theses.

These partnerships ensure that research at TU Braunschweig is always in line with the latest trends and developments. Thanks to a personal atmosphere and individual support, studying at TU Braunschweig is both very efficient and enjoyable. 20,000 students bring a lot of life to the campus, and our 2,800 visiting students from all over the world add an international flair. Join one of the many student initiatives and associations to help shape university life.

And last but not least: at the end of their studies, graduates not only have a degree with a personalised profile but also a valuable asset in any negotiations, as a degree from TU Braunschweig is highly appreciated by employers.

### The Big Nine

TU Braunschweig is part of the »TU9 German Institutes of Technology«, an association of the nine leading institutes of technology in Germany. Together, they represent the interests of engineering- and sciences-oriented universities in society, industry and politics.

### 10 - Teaching



# **Innovative Teaching**

At TU Braunschweig, we put great emphasis on teaching. We address emerging challenges and break new ground to continually develop and improve our teaching. We promote new teaching projects, optimise study conditions, provide continuing education to our lecturers and strengthen digital education and learning.

The spectrum of our research is reflected in the range of courses we offer. Our bachelor's degree and state examination programmes provide a very broad and sound basis for our master's degree programmes with their stronger research focus. Thanks to their various options for specialisation, our degree programmes are perfectly aligned with the current requirements of the job market.

### Interdisciplinary

Modern research is increasingly interdisciplinary, which is why we offer numerous interdisciplinary degree options in addition to traditional courses. If you happen to be a lateral thinker, interested in biological cells just as much as in bits and bytes, or if you don't see technology and psychology as polar opposites, you will be more than

welcome at TU Braunschweig. But even the traditional subjects offer room for interdisciplinary content, developed by lecturers from different disciplines.

### **Accredited**

All of our degree programmes are accredited. They have been evaluated by an external panel of experts and an outside agency for their feasibility, quality of teaching and facilities. What's more, we re-evaluate each degree programme once a year, checking for example how our students have rated the lectures and seminars. The results of this evaluation serve as a basis for further improvements. And if a problem does occur, there is a course coordinator for each degree programme who will help you deal with all the big and small problems you might face.

### Research-oriented

We are a research-oriented university, and this is also true of our teaching. Our students are taught by first-class scientists who impart more than just facts. In the laboratory, in the experiment hall and in seminars, students learn about how research is done today and which exciting research projects are being conducted in their degree programme. If you study at TU Braunschweig, you can expect to work on current research projects from an early stage, usually during your bachelor's course, either within the university or externally with non-university research facilities and companies.

### 12 - Teaching

### **Excellent university teaching**

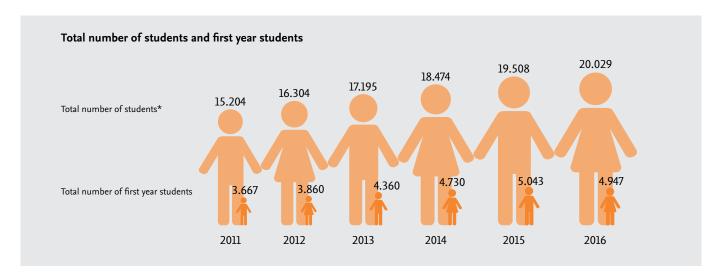
What motivates students to study intensively? How can we make lectures more attractive? What are the latest ideas for teaching methods at university?

Finding answers to these questions is the aim of the project »teach4TU«, created to continually enhance the quality of teaching. Good teaching is a crucial factor on the path to a successful degree and makes all the difference when it comes to having fun while learning. In order to come up with new ideas for teaching and enhance our academic staff's teaching skills, we offer individual training and coaching sessions and support our teachers through the »Innovation Programme for Good Teaching«.

### LehrLeo award for the best lectures and seminars

We are constantly on the lookout for even better concepts in teaching, and we do so by involving our students at several levels. They help us shape innovative courses, give impetus for new teaching ideas and, through their feedback, make major contributions to the further development of our educational concepts.

Once a year, on Teaching Day, we present the diversity of our teaching methods. As a highlight, we award the popular LehrLeo teaching prize. The students nominate lecturers for their exceptional teaching and have a substantial say in which lecture or seminar will be honoured.



<sup>\*</sup> The basis for the number of students is the winter semester (e.g. 2016 = winter semester 2016/17)



### **Our Research Focus**

We want to help shape the world of tomorrow. That is why we focus our research on innovative, forward-thinking topics: mobility and transport, infections and active agents, the city of the future, energy technology and nanometrology, as well as information and communication technologies.

Our formula for success: bringing together experts from various disciplines, regardless of institutional boundaries. Everyone involved in research at TU Braunschweig is able to benefit from the dense, topclass network of research institutions and companies in and around Braunschweig. The region is a driver of innovation among the best in Europe.

Mobility is our largest strategic research field. We see mobility from a holistic point of view. From mechanical engineering to city and traffic planning, from the psychology of the individual road user all the way to the global mobility requirements that the future will pose. In addition to automobile construction and aerospace technology, we also work on rail transport. Mobility is an interdisciplinary meta-topic, and we strive to be the place in Germany to research and advance this topic holistically, independent of the specific mode of transport.

Cruising through the urban jungle safely and at ease? In a car that produces next to no emissions and yet is affordable? To turn this vision into a reality, TU Braunschweig worked with strong partners from industry and science to found the NFF, the Automotive Research Centre Niedersachsen. At two locations in Braunschweig and Wolfsburg, our scientists are busy working on the sustainable mobility of tomorrow. Braunschweig has already served as the stage for a world premiere in self-driving cars, with the research vehicle Leonie driving a certain distance autonomously in regular city traffic. Our researchers are now working on a completely new generation of smart, lightweight and eco-friendly cars.

At the NFF, researchers from different areas of science are working together to develop new concepts for the car of the future. Their goal is to find easy ways to combine and recycle car bodies, engines and transmissions. We cooperate closely with the German Aerospace Centre DLR, other universities in the region and with our business partners, including Volkswagen and Siemens.

### Focus on air traffic

Paris and Stockholm are only a stone's throw away for many – provided they live close to a major airport. For everyone else, the time advantage that flying brings is diminished by hours. Our solution for this dilemma: the Metropolitan Aircraft, connecting Europe's major cities with many small city airports. The aircraft of the future will need to be efficient, silent and low on emissions, as well as able to start and land on short landing strips. Researchers from various disciplines are investigating issues of noise generation in wings and propellers and are developing new concepts in lightweight construction for aircraft fuselages. New approach concepts and high-lift systems, as well as continuous automation of the cockpit are being researched. The Aeronautics



### 16 - Research

Research Centre Niedersachsen at Braunschweig Research Airport is one of Europe's top associations in the field of aerospace research. Just next door to the German Aerospace Centre, the federal aviation authorities and many companies in the aviation industry, we are in an ideal position to make our visions for air traffic a reality.

### The city of the future is coming

Adaptation to climate change, energy transition, secure jobs, affordable housing, sustainable mobility, immigration and demographic change – we need a holistic and interdisciplinary approach in order to master the challenges of sustained urban development. With the new research project City of the Future, we plan to meet the future challenges that city living poses on a scientific level. The focal points of our research are organized in six visions: Convertible City, Healthy City, Digital City, Sustainable City, Accessible City and Safe City. Scientists from the fields of architecture, geoinformatics, electrical engineering, bioeconomy, engineering and social sciences carry out research work that is both fundamental and application-oriented.

### Measuring the nano-world

The science of exact measurements is called metrology. Braunschweig is practically its home, with the National Metrology Institute of Germany (PTB) located here, the second-largest centre for metrology in the world. At TU Braunschweig, precise measurements play a crucial role in the natural sciences and engineering. But the most exciting part is when we come to the field of nanotechnology. Here, we are researching the limits of what is measurable. At TU Braunschweig, the Laboratory for Emerging Nanometrology (LENA) is currently being set up. Its aim is to transfer precise measuring procedures to the nanoscale, to the world of molecules, cells and nanoparticles, and thus develop measuring

methods and systems for materials and components that are a millionth of a millimetre small. We are laying the foundations for the energy systems, light sources and medical agents of the future, but also helping to provide a better understanding of and control over the nanoparticles in our environment.

### Calculating biology in bits and bytes

Is it possible to calculate life? The basis of life is determined by a complex network of genes and proteins that influence and interact with each other. These biological processes are still not fully understood. We want to make them calculable and predictable by means of systems biology. Therefore we are developing mathematical models to map what happens inside cells. Our bioinformatics scientists feed these models with data from laboratory experiments and in turn receive predictions about events within the cells. We then use these predictions as the basis for planning our next biological experiments.

At the BRICS, the Braunschweig Integrated Centre of Systems Biology, we use this method to examine bacteria that cause infectious diseases or that are used in biotechnological production processes. Researchers and students in the life sciences and engineering cooperate closely with researchers from the Helmholtz Centre for Infection Research.



### 18 - Research

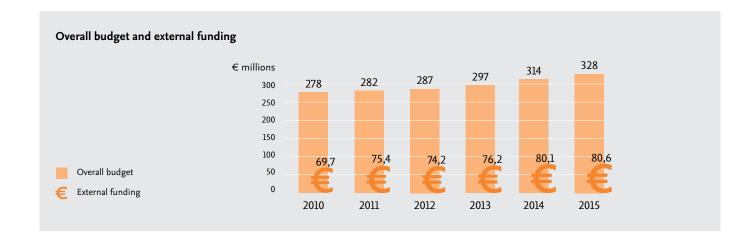


### **Custom-made medications**

Will we be able to produce medication more cost-efficiently in the future? Will there be drugs that are custom-made for the patients and their specific needs, efficient and tolerable – yet still affordable? At our new Centre for Pharmaceutical Process Engineering (PVZ), we want to make this possible with the help of new technologies. Experts from the fields of pharmaceuticals, process engineering and microtechnology are working together on long-term projects, following a model that is the first of its kind in Germany. We are using our expertise in pharmacy sciences and in micro-nano production engineering to make these substances more effective and at the same time well tolerated. Specialised combinations and dosages of active agents that are custom-made for the individual organism can then become available.

### Knowledge that travels around the world

The media, telecommunications and computers are already an integral part of our lives. We are always reachable and up-to-date, even on the go. The traditional lines between the Internet, telephone calls and television are starting to blur. Everything around us is becoming more and more interconnected: for example, cars receive traffic light signals and congestions warnings, sensors are able to capture the motion patterns of elderly people and notify relatives or a doctor when necessary. In the area of information and communication technologies, our scientists are developing technologies to help manage enormous data volumes and speed up the transmission of information. They are working on new technologies for computers, mobile phones, television and radio communications, and on how that new technology can be put to use most effectively.



# **Europe's Strongest Research Region**

When it comes to science and research, Braunschweig and its surroundings form one of the most research-oriented regions in all of Europe. More than 36,000 people work for 27 research institutes and 250 companies in the high-tech sector, developing the products and technologies of tomorrow.

### **Focused expertise**

Braunschweig is a leader in terms of the sheer quantity of research conducted here. But more importantly, the quality of the research is exceptional, as each of the many research institutes is a renowned player in the world of science. Besides TU Braunschweig, the region is home to:

- the German Aerospace Centre (DLR),
- the Helmholtz Centre for Infection Research (HZI),
- the Fraunhofer Institute for Surface Engineering and Thin Films (IST),
- the Fraunhofer Institute for Wood Research Wilhelm-Klauditz-Institut (WKI),
- the National Metrology Institute of Germany (PTB),
- the Thünen Institute (Federal Research Institute for Rural Areas, Forestry and Fisheries, vTI),
- the Julius Kühn Institute (Federal Research Centre for Cultivated Plants, JKI),
- and the Georg Eckert Institute for International Textbook Research (GEI).

In addition, there are the research departments of companies such as Siemens Transportation Systems and Volkswagen AG.

All of these are interconnected in an exemplary way, another reason why the quality of research conducted in the Braunschweig region receives top marks even on a global scale.

Braunschweig's officials are aware that science is an invaluable asset to the city and spare no effort to attract and retain outstanding researchers. To help international scientists get off to a good start in our city, TU Braunschweig's International Office has established the Mobile Researchers' Centre (MoRe) which provides a full-service package for international researchers in the region.

Our students will also benefit from a number of new TU Braunschweig research centres that have recently been created or are still in the process of formation:

- the Braunschweig Integrated Centre of Systems Biology (BRICS), founded by TU Braunschweig and the Helmholtz Centre for Infection Research,
- the Automotive Research Centre Niedersachsen, a joint project of TU Braunschweig and Volkswagen AG,
- the Aeronautics Research Centre Niedersachsen, where TU Braunschweig cooperates with the German Aerospace Centre, among other partners,
- the Laboratory for Emerging Nanometrology (LENA),
- and the Centre for Pharmaceutical Process Engineering (PVZ).

Another structure is the Open Hybrid LabFactory, where a consortium from science and industry is developing technologies for new variants in lightweight automotive construction, planning to turn them into new production technologies.



According to European Union statistics,
Braunschweig is Europe's top investment
region in terms of spending on research and
development. In a nationwide comparison
of regions, Braunschweig came in first for
the proportion of employees working in the
sciences.<sup>1</sup>

<sup>1</sup> Eurostat Statistik, 2012.

### 22 - Studying



Leif has really helped me improve my language skills and learn so much about Germany. Sometimes, small details amaze me. When Leif and his family invited me over for dinner, for example, I saw that you can use cream in cooking. Studying in Germany is very different from studying in India. I am much more flexible in my choice of classes. This leaves me with more time to go out and do things, getting to know Germany better all the time. (Ranjith)

Leif Scheppelmann is from Braunschweig and studies Business Information Systems. Ranjith Khumar Shanmugasundaram is from India and studies Computational Sciences in Engineering. They both participated in the SCOUT programme for one semester.

The SCOUT programme is all about cultural exchange. We learn from each other, for example: how people tackle problems in other societies, how they make friends, and what everyday life is like there. When I explain German culture to Ranjith, I start to really think about it, and I expand my knowledge of myself and my culture. And I also learned the alphabet of Ranjith's native language, Tamil. (*Leif*)

# **An International Community**

More than 3,000 international students and scientists from 113 different countries have chosen to come to TU Braunschweig. The cultural diversity they bring to our campus is a great asset to our university and adds an international flair to working and studying here.

TU Braunschweig has established educational links to a large number of universities abroad. Official cooperation agreements exist with universities in Western and Eastern Europe, the US, Canada, South America, China, Japan and Indonesia. Within the framework of the Erasmus+ programme, we collaborate with more than 150 universities across Europe. Today, of our total student body of around 20,000, approximately 14% are international students studying here for an academic degree or as part of a bilateral exchange programme.

### The International Office

The International Office is the focal point for all international activities at TU Braunschweig. We are committed to making sure that our international students get the most from their time in Braunschweig. We provide advice and information on topics such as admission, visa regulations, finances, accommodation and the university in general.

At the beginning of the semester, we organise a welcome programme for international students, including information sessions and social events. It is a great opportunity to make new friends and get to know the university. To help you with your first steps in Braunschweig, we offer the Buddy Programme for international students. Your personal »buddy« – another student who knows their way around – will lend a helping hand while you get a grip on life in Braunschweig.

# The Mobile Researchers' Centre

The Mobile Researchers' Centre (MoRe) offers comprehensive services for international researchers, their partners and families. We can guide you through finding adequate accommodation and help you with any formalities. We can also go with you to public agencies and service companies and support you in organising your new daily life. All the assistance we provide is coordinated in close cooperation with your host institution.

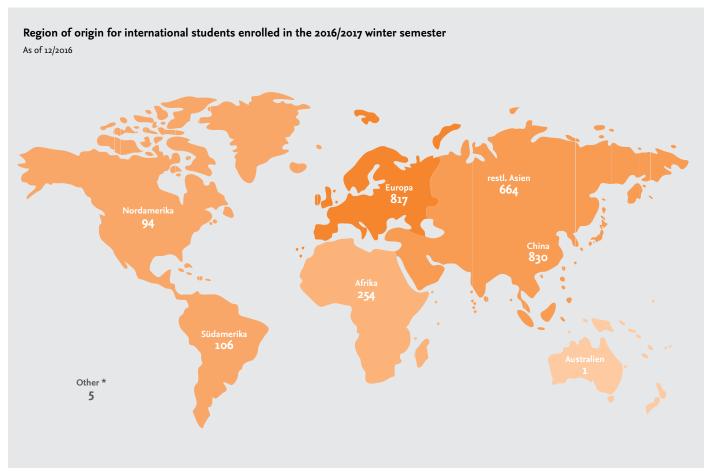
To complement all aspects of your life, we also offer a wide variety of research-related and leisure-time activities to help you get familiar with the Braunschweig region and give you the chance to network with other mobile researchers.

### 24 - TU international

### International student societies

There are several international student societies which ensure that foreign students will quickly feel at home at TU Braunschweig. The International Student Network (ISN) and the International Gauss Friends offer a welcome programme and a wide variety of events, such as excursions and short trips, cultural and sporting events,

barbecue nights, parties and weekly meetings at a pub. These events are open to all the university's students and encourage active exchanges between German and international students. Getting involved is a great opportunity for meeting people from around the world and making new friends.



<sup>\*</sup> Other: stateless or undetermined © http://de.freepik.com/vektoren/welt-geolocation-reise-illustration\_714016.htm



### **Pioneers**



### The founder

On 5 July 1745, Duke Carl I (1713-1780) founded the Collegium Carolinum, which later became Technische Universität Braunschweig. The Duke was well known as a connoisseur of art and culture and was fully aware that a good education is the basis for economic success.

Along with several advisors, the court chaplain Johann Jerusalem, theologian Johann Köcher and minister Heinrich Schrader von Schliestedt, he worked out a range of courses for the Collegium Carolinum, enabling a practically-oriented education for people of all classes.



### The genius

Carl Friedrich Gauß (1777-1855) is likely the most famous alumnus of the Collegium Carolinum. He studied here for three years before transferring to the University of Göttingen and later earning the title of Doctor of Philosophy at the Academia Julia, as the University of Helmstedt was then known.

The mathematician, astronomer and physicist from Braunschweig is known as a prodigy for good reason. »I learned to calculate before I could speak«, Gauß allegedly commented on his exceptional skills. Many of the essential building blocks of mathematics can be traced back to him, including the Gaussian distribution, the Gaussian addition formula and the rules of prime factorization. German author Daniel Kehlmann narrates the story of Gauß's life in his book, Measuring the World.

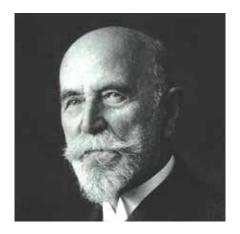
For more than 270 years, TU Braunschweig has been a place of teaching and research. During this time, countless scientists and graduates have helped to shape our university, giving it its distinctive profile.



### The barrier breaker

Braunschweig-born Agnes Pockels (1862-1935) did her research at home, in the kitchen. Back in her day, women were not admitted to university. It was only through her brother that she had access to textbooks on chemistry and physics. Pockels was fascinated by the properties of greasy dishwater, experimented with it, and finally invented the slide trough, designed to measure the surface tension of liquids. Her invention is seen as the precursor of the Langmuir trough that earned American chemist and physicist Irving Langmuir the Nobel Prize in 1932.

Agnes Pockels, however, was long overlooked as a researcher. Only after she succeeded in publishing her findings on interfacial phenomena in various internationally renowned science journals, were her accomplishments slowly recognized. Technische Hochschule Braunschweig awarded her an honorary doctorate in 1932. She was the first woman ever to receive this title.



### The designer

Heinrich Büssing (1843-1929) started out by learning the trade of a blacksmith. In 1863, he was the 57th person to put his name on the list of guest students at the Polytechnical School (the then name of present-day TU Braunschweig) to study mechanical engineering. He became famous as a pioneer of vehicle engineering, designed and built bicycles, trains and most of all busses and lorries. His company, the Braunschweig Büssing AG was taken over by MAN (Maschinenfabrik Augsburg-Nürnberg) in 1971.

But the logo of Büssing AG lives on: the Braunschweig Lion is still featured on the radiator grille of MAN vehicles. And the Heinrich Büssing Prize is awarded every year by the Braunschweigischer Hochschulbund (BHB), an association of the friends and sponsors of the university, to young TU Braunschweig academics for outstanding work.

### **Timeline**

### 1745

The Collegium Carolinum is established, a new type of educational institution between secondary school and university, where mathematical and technical subjects are taught alongside humanities and the fine arts.

### 1862

The Collegium Carolinum is renamed the Polytechnical School. Students are taught in eight technical and scientific disciplines

### 1878

The Polytechnical School is renamed Herzögliche Technische Hochschule Carolo-Wilhelmina (TH Braunschweig).

### 1909

Women are admitted to study at TH Braunschweig.

### 1933

Political alignment of the TH Braunschweig: the institution loses nearly 20% of its academic staff during the early period of the Nazi regime.

### 1945

TH Braunschweig resumes lectures. It is the first German institute of technology to do so.

### 1968

After the establishment of a department for humanities and social sciences, the TH Braunschweig is renamed Technische Universität (TU Braunschweig).

#### 2001

Opening of the Computer Science Centre

### 2003

Establishment of the Centre for Human-ities and Social Sciences.

#### 2006

Establishment of TU9, an association of the nine leading German institutes of technology and research.

### 2007

Braunschweig is awarded the title »City of Science 2007«.

### 2009

Inauguration of the Automotive Research Centre Niedersachsen (NFF).

### 2012

Opening of the Braunschweig site of the Aeronautics Research Centre Niedersachsen (NFL).

### 2015

Completion of the Battery LabFactory Braunschweig (BLB).

#### 2016

Opening of the new Braunschweig Integrated Centre of Systems Biology (BRICS).

Cornerstone ceremony for the Laboratory for Emerging Nanometrology (LENA).

Completion of the Open Hybrid LabFactory (OHLF) in Wolfsburg.

#### 2017

Opening of the new Centre for Pharmaceutical Process Engineering (PVZ).



# Study at TU Braunschweig

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For more information, see: ▶ www.tu-braunschweig.de/studienangebot

# Lots to Learn and Great People

He doesn't know for sure yet, but Ole Jungclaus could well see himself working in lightweight construction in the automotive industry. He is studying Mechanical Engineering, the degree programme with the largest number of students at TU Braunschweig. During lectures on engineering mathematics, he shares the lecture hall with around 1,200 fellow students, enough to fill an entire school.

»People had warned me that studying Mechanical Engineering was a very anonymous affair. But I don't really feel it that much, since the amount of subject matter keeps me very busy anyway«, he says. There are also tutorials, work placements and seminars with only 20 to 25 participants. »Here, I can ask questions, have things explained to me in detail, and it's also a great place to get to know people. We also study together in smaller groups on our own, at the library, for example, or at someone's home«, Ole reports. Organising his timetable was simple, despite of the programme's size. All the information is available online. Ole even managed

to land a part-time job: as a student assistant, he is responsible for the alumni network of the Department of Mechanical Engineering.

# Studies with a practical orientation

The prospective engineer is already looking forward to the coming semesters, when he will be in closer contact with the various institutes, and it will become clearer how to put what he has learned to use. »At first, it's quite a lot, and some of it very dry, theoretical stuff«, Ole remembers. But fortunately, many lecturers add a touch of

humour and practical examples from research and industry. »I am often surprised by the number of ways theory can be put into practice«, he relates. One of his personal highlights was when a professor brought a mobile wind tunnel into the lecture hall.

Any complaints? Ole Jungclaus has to think for quite a while. »Make-up dates for missed exams could be a little closer to the original date«, he finally says. That way, the topic would still be fresh in your mind and you could tick off things quicker. But apart from that, he is quite satisfied. When he started the course one and a half years ago, he was very unsure whether Mechanical Engineering was the right choice for him. »But I have not regretted my decision«. he tells us.



# Familiar Atmosphere and Practice-Oriented Learning

Marina Wodicka wants to be a secondary school biology and chemistry teacher. She is in her fifth semester and already has some teaching experience. »During my studies, I have already completed two school internships where I had the chance to teach under supervision«, she says. She enjoyed the internships and feels reassured that this is the right job for her.

It wasn't a jump into the deep end, either. »We were well prepared during our courses, and our tutors were there for us throughout the entire internship«, Marina reports. This was possible because of the small size of her classes. Study groups have a maximum of 30, but often as few as 10 to 14 students. Marina appreciates the fast pace of learning and the familiar atmosphere. »I am reminded of how nice that is when I attend my chemistry lecture along with some 200 chemistry, food chemistry and biotechnology students«, she says.

## Highlights: school experience and excursions

In her main subject, biology, she particularly likes the practice-oriented teaching. »During the seminars, we do a lot of hands-on work and tutorials, for example dissecting fish. We learn the techniques, but also how to help students overcome their disgust. We frequently visit various

ponds and streams and do work in the school garden«, Marina says. Real highlights for her are the small and big excursions that take place at regular intervals, to the forest, for example, or to the Baltic island Hiddensee.

Marina gains even more practical experience working as a scientific assistant at the Green School in TU Braunschweig's Botanical Garden. Here, she is in charge of visiting primary and nursery school pupils. »We offer workshops on specific topics, for example the tropics or early-blooming plants«, she explains.

In her free time, Marina Wodicka loves to make use of the Sports Centre. »It's really great. The choice is enormous, and all of it is affordable or even completely free. « There's no time for boredom anyway. After all, the teaching degree programme is part of a 20,000 student campus. »That's another thing I really like. You meet new and interesting people all the time. «



### 34 - Studying



# Good Networking is Half the Battle

Before the official start of the semester, many departments' student representatives offer first year students a diverse programme for getting to know their new university. These orientation days are a great way to get in touch with other students and explore the campus. Plus they are a lot of fun!

### Feeling right at home

A campus rallye, a cocktail competition, brunch with professors or a first years' weekend – new students have a lot to look forward to at the start of the semester. »As early as March or April, we begin preparing the orientations days for the newly arriving students«, says Christoph Romeis from the Department of Civil Engineering. »We put a lot of effort into this, because we want the new students to feel comfortable at TU Braunschweig from the very start.« For first year students, orientation days are all about getting to know their peers, their professors and their new home. »Having a good social network is

half the battle when it comes to successful studies«, explains Christoph. His department's annual welcome weekend for first year students is his personal favourite. The three-day trip is filled with a colourful programme for getting to know each other.

Other departments' student representatives are equally dedicated to turning the first few days into a successful experience for their new classmates. According to Theology student representative Kai-Viktoria Schirmag, "you definitely shouldn't miss the week before the official start of the semester. It really makes you look forward to studying". Her department's

student representatives arrange a city tour, a breakfast for first years, a campus rallye and more for the new students. In Biotechnology, the student representatives have a special treat in store: they hold a handicraft event in November, where not just first years, but students of all classes make paper lanterns together – a great way to build social ties across academic class lines.

Students who are still looking for accommodation should be sure to come to their orientation days. Student representatives have useful tips for house hunters, and the events are a great opportunity for meeting future flatmates.

# **Undergraduate Programmes**

# **Engineering and Computer Sciences**

		Programmo	e starts in	Restricted
Programme	Degree	October	April	admission
Architecture   Architektur	BSc	Х		Х
<b>Architecture+</b>   Architektur+ - with one year of studies abroad	BSc	X		X
Biochemical and Pharmaceutical Engineering   Bio-, Chemie und Pharmaingenieurwesen	BSc	Х		
Civil Engineering   Bauingenieurwesen	BSc	Х		
Computer and Communication Systems Engineering   Informations-Systemtechnik	BSc	Х	Х	
Computer Sciences   Informatik	BSc	X	X	
Electrical Engineering   Elektrotechnik	BSc	Х	Х	
Environmental Engineering   Umweltingenieurwesen	BSc	X		X
Mechanical Engineering   Maschinenbau	BSc	Х		
Transportation Engineering   Verkehrsingenieurwesen	BSc	X		

### **Economics and Business Administration**

		Programme	e starts in	Restricted
Programme	Degree	October	April	admission
Business Information Systems   Wirtschaftsinformatik	BSc	X	Х	X
Industrial and Civil Engineering   Wirtschaftsingenieurwesen Bauingenieurwesen	BSc	X		X
Industrial and Electrical Engineering   Wirtschaftsingenieurwesen Elektrotechnik	BSc	X	X	X
Industrial and Mechanical Engineering   Wirtschaftsingenieurwesen Maschinenbau	BSc	Х		X
Mathematics in Finance and Industry   Finanz- und Wirtschaftsmathematik	BSc	Х		

#### Abbreviations:

BA = Bachelor of Arts, BSc = Bachelor of Science, StE = German Staatsexamen, HBK = Braunschweig University of Art

# **Natural and Life Sciences**

		Programme starts in		Restricted
Programme	Degree	October	April	admission
Biology   Biologie	BSc	Х		×
Biotechnology   Biotechnologie	BSc	Х		Х
Chemistry   Chemie	BSc	Х	X	
Environmental Sciences   Umweltnaturwissenschaften	BSc	Х		X
Food Chemistry   Lebensmittelchemie	StE	Х		Х
Mathematics   Mathematik	BSc	Х		
Pharmacy   Pharmazie	StE	X	Х	Х
Physics   Physik	BSc	Х		
Psychology   Psychologie	BSc	Х		Х

## **Humanities and Social Sciences**

Single-Subject Bachelor Programmes

	Programme starts in		Restricted	
Programme	Degree	October	April	admission
Educational Sciences   Erziehungswissenschaft	ВА	X		X
Integrated Social Sciences   Integrierte Sozialwissenschaften	ВА	X	Х	X

# 38 - Academic programmes

#### **Humanities and Social Sciences**

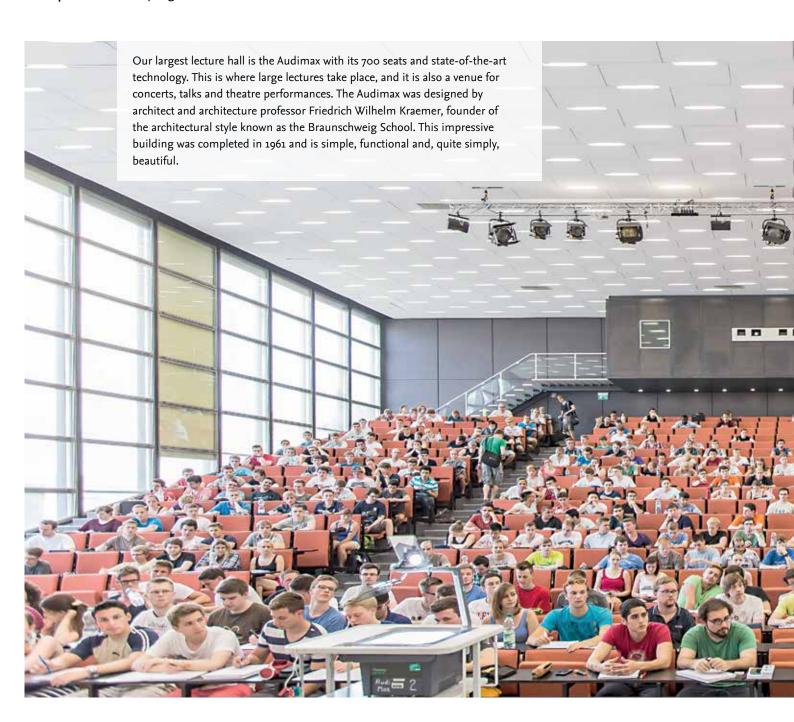
**Dual-Subject Bachelor Programmes** 

		Programm	e starts in	Restricted
Programme	Degree	October	April	admission
Dual-Subject Bachelor   Zwei-Fächer Bachelor	BA/BSc	Х		
Subjects				
<b>Art Education</b>   KUNST.Lehramt – course offered at the HBK, apply at the HBK				Х
Art Sciences   Kunstwissenschaft – course offered at the HBK, apply at the HBK				Х
Biology Education   Biologie und ihre Vermittlung				X
Chemistry Education   Chemie und ihre Vermittlung				
Educational Sciences   Erziehungswissenschaft				X
English Studies   Englisch – English language test required				
German Studies   Germanistik				X
History   Geschichte				
Mathematics   Mathematik				Х
Mathematics Education   Mathematik und ihre Vermittlung				X
Media Sciences   Medienwissenschaften – course offered in cooperation with the HBK				X
Music and Music Education   Musik / Musikpädagogik – special entrance test required				
Performing Arts   Darstellendes Spiel - course offered at the HBK, apply at the HBK				X
Philosophy   Philosophie				X
Physics   Physik				
Physics Education   Physik und ihre Vermittlung				
Protestant Religion and Religious Education   Evangelische Religion / Religionspädagogik				Х
Sports and Physical Education   Sport / Bewegungspädagogik – special entrance test required				Х

Please Note: In these programmes, you combine one major and one minor subject. The type of degree awarded (Bachelor of Arts or Bachelor of Science) will depend on your subject combination. Dual-subject bachelor programmes can be taken with a scientific focus or as a preparatory course for a master's programme in teacher training. Please note that not all major-minor combinations are possible. For detailed information, please contact the International Office.



## 40 - Academic programmes





# **Graduate Programmes**

### **Engineering and Computer Sciences**

		Programme starts i			
Programme	Degree	October	April		
Architecture   Architektur	MSc	Х	×		
Automotive Engineering   Kraftfahrzeugtechnik	MSc	Х	X		
Aerospace Engineering   Luft- und Raumfahrttechnik	MSc	Х	X		
Biochemical Engineering   Bio- und Chemieingenieurwesen	MSc	Х	Х		
Civil Engineering   Bauingenieurwesen	MSc	Х	Х		
Computational Sciences in Engineering (CSE) International programme in German and English language	MSc	X			
Computer and Communication Systems Engineering   Informations-Systemtechnik	MSc	Х	×		
Computer Sciences   Informatik	MSc	Х	Х		
Electrical Engineering   Elektrotechnik	MSc	X	х		
Electromobility   Elektromobilität	MSc	Х	х		
Electronic Automotive and Aerospace Systems	MSc	Y	X	x	X
Elektronische Systeme in Fahrzeugtechnik, Luft- und Raumfahrt					
Environmental Engineering   Umweltingenieurwesen	MSc	X	X		
Mechanical Engineering   Maschinenbau	MSc	X	X		
Media Technology and Communications   Medientechnik und Kommunikation	MSc/MA	X	х		
Metrology and Analytics   Messtechnik und Analytik	MSc	Х	X		
Transportation Engineering   Verkehrsingenieurwesen	MSc	Х	Х		
Pharmaceutical Engineering   Pharmaingenieurwesen	MSc	Х			
ProWater (Sustainable Protection and Water Management) International distance study programme in German and English	MSc	Х	Х		
Sustainable Design	MSc	Х			
Sustainable Energy Engineering   Nachhaltige Energietechnik	MSc	Х	Х		

**Abbreviations:** MA = Master of Arts, MSc = Master of Science, MEd = Master of Education, StE = German Staatsexamen, App = Approbation, CTF = Certificate, HBK = Braunschweig University of Art

### **Economics and Business Administration**

		Programme	starts in
Programme	Degree	October	April
Business Information Systems   Wirtschaftsinformatik	MSc	Х	Х
Industrial and Civil Engineering   Wirtschaftsingenieurwesen Bauingenieurwesen	MSc	X	X
Industrial and Electrical Engineering   Wirtschaftsingenieurwesen Elektrotechnik		X	X
Industrial and Mechanical Engineering   Wirtschaftsingenieurwesen Maschinenbau		X	X
Mathematics in Finance and Industry   Finanz- und Wirtschaftsmathematik	MSc	X	×
Technology Oriented Management   Technologie-orientiertes Management	MSc	Х	X

### **Natural and Life Sciences**

	Programme starts in	
Degree	October	April
MSc	Х	Х
MSc	X	Х
MSc	Х	
MSc	X	X
MSc	X	X
StE	X	
MSc	X	X
StE	X	Х
MSc	Х	Х
MSc	Х	
	MSc MSc MSc MSc MSc MSc MSc StE MSc StE MSc StE MSc	Degree         October           MSc         x           MSc         x           MSc         x           MSc         x           MSc         x           StE         x           MSc         x           StE         x           MSc         x           StE         x           MSc         x

# **44** - Academic programmes

#### **Humanities and Social Sciences**

		Programme	starts in
Programme	Degree	October	April
Culture of the Technical and Scientific World   Kultur der technisch-wissenschaftlichen Welt	MA	X	
Media Technology and Communications   Medientechnik und Kommunikation	MA/MSc	X	X
Organisation, Governance, Education   Organisation, Governance, Bildung	MA	Х	X

## **Teacher Training**

	Programm	e starts in
Degree	October	April
MEd	Х	
MEd	Х	
MEd	Х	
	MEd MEd	DegreeOctoberMEdXMEdX

Please Note: In these programmes you combine one major and one minor subject. Please note that not all major-minor combinations are possible. For detailed information please contact the International Office.



# The German Education System

In Germany, we believe that a good education should be available and affordable for everyone. For that reason, most universities are funded by the government and charge only low tuition fees. German university degrees are recognised and highly rated around the world. In addition to a theoretical education, hands-on work and research will play a substantial role during your studies.

#### Bachelor's degrees

The bachelor's degree is an internationally recognised undergraduate degree. Bachelor's programmes at TU Braunschweig take six semesters. In the first year, you become acquainted with academic and scientific working methods and acquire fundamental knowledge for your specific field of study. In the second and third years, you have the opportunity to specialise in certain areas. The programmes are completed by a final project or bachelor's thesis, leading to the award of a Bachelor of Arts (BA) or a Bachelor of Science (BSc) degree, depending on the field of study.

### Master's degrees

The master's degree is an internationally recognised graduate degree. It is designed for students who have successfully completed their bachelor's degree and wish to specialise and deepen their knowledge of their field of study. Alternatively, it can also serve as a conversion course from the original bachelor's degree subject, giving you the opportunity to add another set of skills and knowledge to your first degree qualification.

Master's degree programmes usually offer a very broad range of options, and you can structure your programme according to your personal interests. You are expected to work independently and are solely responsible for the progress of your studies. Master's degree programmes at TU Braunschweig usually take four semesters and are completed by a final project or master's thesis, leading to the award of a Master of Arts (MA), Master of Science (MSc) or Master of Education (MEd) degree.

#### Staatsexamen

The Staatsexamen is a German academic degree awarded in courses that are subject to special government control, such as pharmacy and food chemistry. These degree programmes are combined undergraduate/graduate study programmes. They take ten semesters and end with a final project or thesis and a master's level exam.

#### **Doctorate**

A doctorate is possible in all the fields of study offered at TU Braunschweig. There are a few special courses for doctoral students, but in Germany, a doctorate usually means completing an individual research project under the guidance of an advisor.

Doctoral students need to find a professor who is interested in their chosen research field and willing to supervise their doctoral work. The time needed to complete a doctoral degree depends on the field of research and on the successful advancement of the research work. It typically ranges from three to four years.

As of 12/2016		
Department 1 Carl-Friedrich-Gauß-Department		3,307
Department 2 Life Sciences	<b>iii</b>	2,931
Department 3 Architecture, Civil Engineering and Environmental Science	<b>ini</b>	3,833
Department 4 Mechanical Engineering	<b>THINK</b>	5,435
Department 5 Electrical Engineering, Information Technology and Physics	<b>††</b>	1,899
Department 6 Humanities and Educational Science	<b>îni</b>	2,624
Total		20,029

<sup>\*</sup> Including exchange students and students with a minor subject at the HBK; excluding students on a leave of absence

# $48\,\hbox{-}\,\mathsf{TU}\;\mathsf{international}$



# **Support for International Students**

Studying in a foreign country can be a challenging experience. To help you adapt to your new life in Braunschweig, we offer a range of services for international students. Language classes, tutoring programmes and intercultural learning groups offer you the extra support you might need to make the most of your time at TU Braunschweig.

### Intercultural learning

With the SCOUT programme, international students can experience German culture while taking part in fun activities with German students. They receive individual support from a German scout and even receive credits for participating in the programme. It's a win-win situation for the German students as well: they gain intercultural skills and earn credits on top of that.

#### Studying without language barriers

»SOS – Studying without language barriers« is an intercultural learning project in the electrical and mechanical engineering subjects. German students can earn a qualification as a language coach and then help their international classmates by studying with them. The language coaches offer study groups for specific lectures and seminars, where they help international students understand the technical language, prepare for exams and write term papers.

#### Getting off to a good start

The Department of Mechanical Engineering offers its international students another special programme to help them get off to a good start. Within the »inTU« programme, international students receive support from a student tutor during their first semester. They get to know the university system in Germany and the German culture, meet German students and have a point of contact for all their questions relating to studying and living in Braunschweig.

# Learning German at TU Braunschweig's Language Centre

If you want to learn German, the Language Centre at TU Braunschweig is the perfect choice. Different levels of German classes are offered during both the academic period and the semester break. Choose from a broad range of general and technical language classes. Most of the classes are free of charge.

### **International Summer Programme**

If you feel you need more intensive language training before the start of your course at TU Braunschweig, the Language Centre offers an International Summer Programme in the German language and culture during the semester break in September. The classes last four weeks and include basic and optional modules in German language training, cultural studies and a cultural programme with field trips and excursions, like to Berlin and Hamburg. Some classes offer modules in scientific and technical language, specially designed for students of engineering and the natural sciences.

# Preparing for the Global Marketplace

Whether you want to visit Sugarloaf Mountain, New Zealand's sheep pastures, Far Eastern metropolises, the Land of Opportunity, Sweden, Spain or France, with TU Braunschweig as your starting point, you are sure to find an attractive destination. We maintain close links to 300 partner universities in more than 30 countries around the globe.

About one third of TU Braunschweig's students take advantage of this opportunity to go abroad. When they return, they are usually very enthusiastic and speak of interesting people, great experiences and of course exciting science. And not least of all, it helps them score points with potential employers, as graduates with international experience have good language skills and are considered open-minded and flexible – key skills for any future career.

### Going abroad on a programme

There are many ways to get to a foreign university. The simplest is to take part in one of the various exchange programmes offered by TU Braunschweig. There is relatively little to do in terms of organisation and, in most cases, you will not even have to pay tuition fees. In addition, these programmes are very flexible concerning when and for how long you study abroad. But if you have already chosen a specific university for yourself, you can of course apply directly. The International Office will provide advice and support for your application.

#### Internships abroad

It does not always have to be an entire year. If you would rather go abroad for a shorter period of time, you can browse internship portals for contacts at international companies. Even mandatory internships, on-the-job training and term papers may be combined with a stay abroad, as long as you discuss all the details with your lecturer beforehand.

#### Dual degrees - double the qualification

At TU Braunschweig, students can earn an additional degree abroad. In cooperation with partner universities in the US, China, Brazil and France, TU Braunschweig offers dual degree programmes in engineering, industrial engineering and business information systems. Within the framework of exchange programmes, students earn two university degrees without increasing the length of their studies.

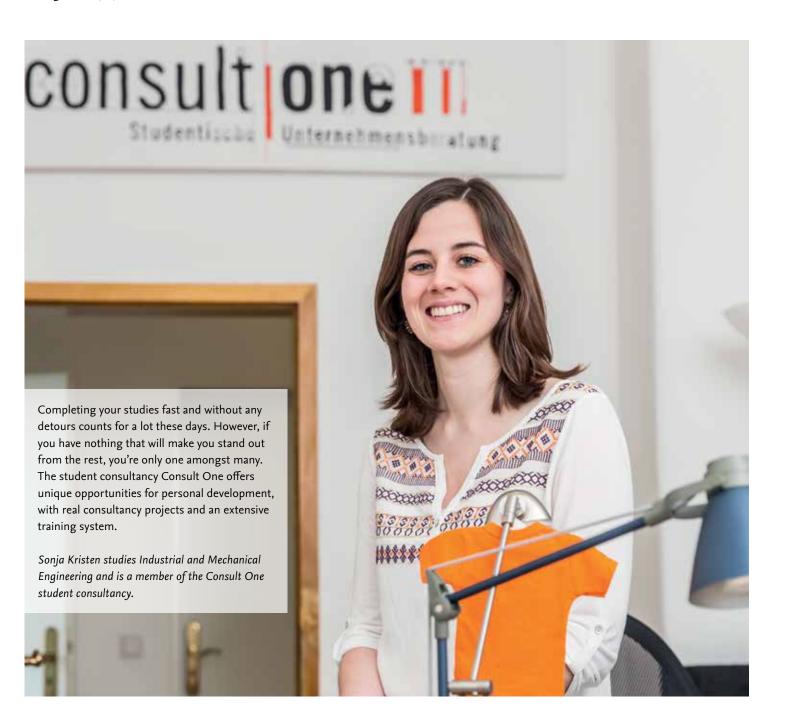
Of course you can also complete a doctorate or postgraduate degree abroad. The International Office will be happy to assist you.

#### Around the world in 16 languages

Being well-prepared in terms of language skills will make your stay abroad that much easier and more enjoyable. TU Braunschweig has a well-equipped Language Centre where you can study 16 different languages. It is also a place to learn about other cultures and celebrate intercultural exchanges. Come here for international evenings or to find a tandem language partner.



## 52 - Key qualifications



# **Developing Your Professional Profile**

Whether you want to be an engineer, a chemist, a teacher or an architect, technical know-how alone will not get you very far in your professional life. Increasingly in demand are the so-called soft skills such as social, communicative and methodological competencies that are not specific to any particular job. University graduates, as future specialists and managers, are expected to be confident and convincing, to be able to handle difficult situations at a moment's notice and to deal well with all types of people.

#### Teamwork at its best

Learning these key skills is an integral part of studying at TU Braunschweig. From the very outset, they are a must in all bachelor's and master's degree programmes. As a research-oriented university, we teach our students the best of technical knowledge. But creativity and self-reliance are just as important. At TU Braunschweig, young talents are given the space they need to implement their own ideas and develop their individual interests. In addition, our students learn to work in teams, run meetings, manage projects successfully, recognise problems and resolve them. Through special workshops and training, they test and improve their skills in leading discussions, giving presentations and much more. In short, their entire personality is challenged and advanced.

#### Taking a broader view

Interdisciplinary degree programmes are a big trend right now. Approximately one in three TU Braunschweig students is enrolled in a combined degree programme such as Industrial Engineering, Biotechnology, Environmental Engineering, Biochemical and Pharmaceutical Engineering, Computer and Communication Systems Engineering, or Environmental Science. For them to be successful, they must all learn to look at the big picture, outside their own subject areas.

For us, it is a matter of course that TU Braunschweig students do hands-on research and develop projects together with fellow students from the Braunschweig University of Art (HBK) or Leibniz Universität Hannover.

### Training enrolled for the job market

Providing information, advice and qualifications: when it comes to preparing for the leap into professional life, TU Braunschweig's Career Service is the best trainer there is. From the very first semester, we will help you to plan your career and establish contact with potential employers. There are also various ways to improve your soft skills along the way.

# **Supporting Your Career Goals**

Employers trust TU Braunschweig. The economic magazine Wirtschaftswoche regularly conducts surveys of personnel managers at leading businesses and finds that TU Braunschweig is rated among the top two universities in Northern Germany for engineering and economics. We offer a special mix of research-oriented basic training and application-oriented practical experience. Our graduates are experts in their fields and are able to mediate, convince and complete tasks as part of a team. It is not without reason that they are among the most sought-after on the labour market.

Companies are desperately looking for well-educated engineers. The Association of German Engineers (VDI) lists some 60,000 open positions, with an upward trend. This is especially true of civil engineering, architecture, mechanical and automotive engineering, as well as energy and electronic engineering.

## **Competent career factory**

But having a flourishing career depends on more than just the status of the job market. To be successful, good planning is essential. How can I establish the necessary contacts? How do I sell myself successfully and find the right company that will offer me the best opportunities? For career questions such as these, we support our students from the very start, thanks to our Career Service.

We create prospects through our advisory services and offer training sessions on presentation skills, job interviews and time management. Naturally, we also introduce our students to potential employers and occupational fields.

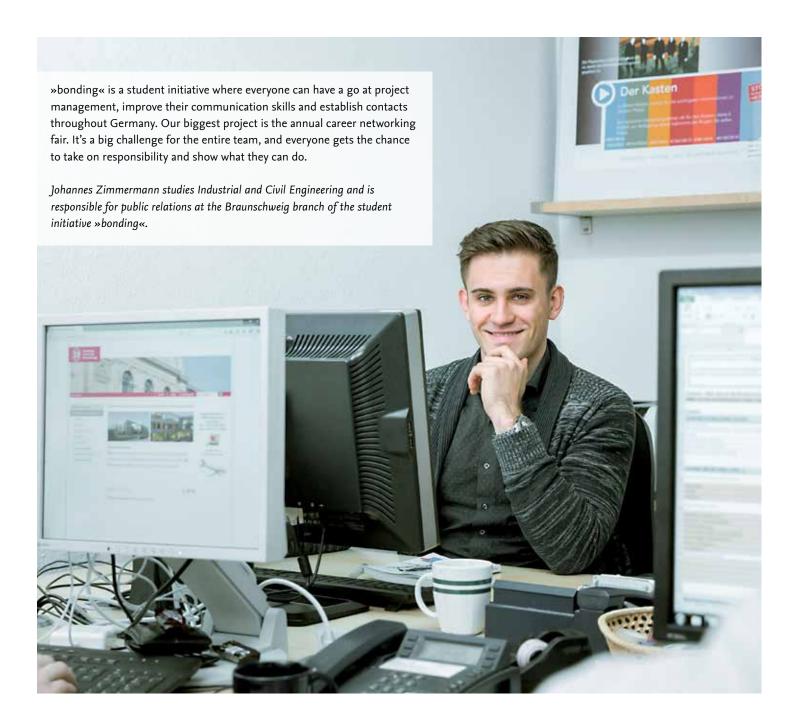
### **Building bridges**

A highlight of this career support is organised by the students themselves: Once a year, the student initiative »bonding« holds its career networking fair, where representatives from more than 100 mid-sized and large companies, both regional and international, meet with students from the entire region on TU Braunschweig's campus. It is the perfect setting for exploring options and establishing contacts for internships, term papers, bachelor's or master's thesis, for doctoral dissertations, or even full-time jobs. In fact, our university has several student initiatives that organise workshops, talks and excursions to companies, providing countless opportunities to

improve your personal profile even outside the official curriculum. They have received praise and support from well-known companies such as Volkswagen, Audi, Bosch, Continental, Deutsche Bahn, Henkel, Daimler, Infineon and Siemens.

### Planning your career together

Generating enthusiasm for science and discovering and promoting young female talent is the aim of fiMINT. As part of this project, female students and junior scientists in mathematics, computer science, the natural sciences and technical subjects receive special support throughout their education. fiMINT supports their scientific careers by opening up new prospects and offering soft skills training and individual and group coaching sessions.



# From University to the Market

Wanted: graduates with a top-class, practicallyoriented education. Companies like to recruit their young talents through the job market of TU Braunschweig's Career Service or at the career networking fair.

### Start-up assistance for entrepreneurs

What does it take to turn a good idea into a successful business concept? By providing office and workshop space at the Idea Incubator and the Founders' Workshop, the Technology Transfer Office helps new entrepreneurs from TU Braunschweig put their plans into action. It also provides information about national and European funding programmes, offers start-up coaching and reviews business plans.

To get even more students interested in starting their own business, TU Braunschweig cooperates with the Ostfalia University of Applied Sciences. A specially-created joint professorship for startups offers advice and support for anyone with a good idea to take the leap into self-employment. Together, the universities regularly offer lectures, seminars and workshops to equip their students with the tools they need to found a scientific start-up.

### Knowledge and technology transfers

The innovation company Innovationsgesellschaft Technische Universität Braunschweig mbH was founded to facilitate the transfer of knowledge and technology between research and industry. It works in two directions to bring science and commerce together and to promote the development of innovative technologies. On the one hand, it markets the results of research and development at TU Braunschweig to commercial customers. On the other hand, it helps companies both large and small to find the right partner at TU Braunschweig to help them conquer their technical challenges.

### Friends with history

For more than 90 years now, the Braunschweigischer Hochschulbund e. V. (BHB) has been supporting TU Braunschweig in the areas of research and teaching, studies and further education. In an uncomplicated way, it helps where help is needed to realise individual projects.

Among many other actions, the BHB awards prizes to students at all levels and funds their excursions. It promotes the completion of scientific papers and finances the projects of individual institutes and student initiatives. It has also funded numerous student grants since the 2011/2012 winter semester.

The BHB is funded by annual fees and donations from its members and affiliated companies. Students and graduates are welcome to join as members.



# Life on Campus

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# - Braunschweig



# **A City for Studying**

When you take a stroll through the 500-year-old alleys of the Magniviertel quarter or through the pedestrian area towards the Schlossarkaden shopping centre, you will find that Braunschweig is both a historic and a modern city. Take the colourful Happy RIZZI House, for example, or the clear architecture of the many shops that invite you in for some leisurely shopping. The trendy beach clubs and cafés along the Oker River that open up their sandy grounds every summer make the Lion City feel like a real holiday destination.

With its lively bar scene, lots of cultural events and a great atmosphere, plus its beautiful Old Town and short distances, Braunschweig is a city that students love.

Braunschweig's history dates back to the early Middle Ages, when Duke Henry the Lion of the House of Welfs decided to make it his residence. He was a very influential ruler during his time and built an entire empire from his seat in Braunschweig, founding the Bavarian metropolis Munich in the process.

»Well roared, Lion«, he might tell himself today with satisfaction, because much from his era has stood the test of time. His Dankwarderode Castle, for example, was never abandoned, but instead rebuilt several times, and you can still feel a hint of medieval times in Braunschweig's alleyways. Especially in Burgplatz Square, where the cathedral and the tall statue of the Lion act as a time machine – if you linger here, you can just imagine yourself taken back to the Middle Ages. It is with good reason that the Braunschweig Christmas Market, which takes place in this historic setting, is rated among the most beautiful in the country.

For a gorgeous view of the inner city, climb up to the observation platform on top of the reconstructed residential palace. In fact, in good weather, you can even see the Brocken, the highest peak of the Harz mountain range, from there.

#### **Culture with class**

Cultural life in the biggest city between Hanover and Berlin is top notch. Staatstheater Braunschweig, the state theatre of Lower Saxony, with its venerable Großes Haus (great hall) and the younger Kleines Haus (small hall), presents a colourful range of modern and classic theatre, opera productions from baroque to modern, as well as dance performances that cause quite a stir. The state orchestra offers exceptional musical experiences, and with the LOT Theatre, Braunschweig also boasts a small but excellent venue for alternative theatre.

But this is by no means all. The »Kulturnacht« (night of culture), the »Internationales filmfest« and the »Raffteich Open Air« are events that draw not only visitors from the entire region, but world-famous musicians, actors and comedians to the Lion City.

Night owls will love Braunschweig, too. The city's colourful nightlife includes cosy bars and pubs for chatting the night away, as well as small and large clubs for every taste, from mainstream to alternative and electronic music. And if, for a change, you want to spend the weekend in a large

### 60 - Braunschweig



metropolis, just hop on board a train or a coach and you will reach Hamburg in two hours, or Berlin in just 90 minutes.

Another aspect of the city's vibrant and very diverse cultural life are performances by popular authors, cult bands and emerging young talents who regularly take the stage in Braunschweig.

Whether you are interested in history, contemporary art or the work of the Old Masters, Braunschweig's museums will not disappoint. They offer everything from Vermeer and Rembrandt to medieval art and social history, from historic and contemporary photography to insects, fish and reptiles. Make use of the day pass that every student receives at the beginning of their studies to take a tour of the region's museums. In nearby Wolfsburg, first semester students also get a free ticket to explore the Phaeno, one of Germany's largest sciences museums, the Museum of Art with its modern and contemporary exhibits and the planetarium.

#### Football, basketball and more

For those who love sports, Braunschweig has a lot in store. Did you know that Braunschweig is the cradle of German football? In 1874, teacher Konrad Koch organised the very first football match on a field that is today part of TU Braunschweig's campus. One year later, he presented the first German version of the rules of the game. In 2011, his story was turned into a film: Lessons of a Dream (Der ganz große Traum) stars popular German actor Daniel Brühl as Konrad Koch.

Of Braunschweig's 230 sport clubs, 24 teams from 15 disciplines compete at the national level. The matches of the Eintracht Braunschweig Bundesliga footballers, the Basketball Löwen Braunschweig basketball players and the New Yorker Lions American football team regularly draw thousands of fans and are definite highlights in the city's sporting calendar.

#### **Outdoor action**

If you love nature, little paradises like the nature reserve in Riddagshausen await you just 15 minutes from the city centre by bike. There you will find the historic fishing lakes of the former monastery, rare trees and miles and miles of tracks for jogging, skating, or cycling. Climbers, hikers, mountain bikers and winter sport enthusiasts will love the Harz mountain range, which is only 40 minutes away by car.

In the summertime, sun seekers will be sure to find a comfortable spot to lounge and barbecue with friends in one of the many city parks and green oases that line the Oker. If you want to see Braunschweig from a different perspective, be sure to try out a pedal boat, canoe or raft on the river.



# At Home in Braunschweig

The campus, the city, the parks all around the Oker, the cinemas, the theatre, pubs and cocktail bars: in Braunschweig, you can reach it all in no time by bike or on foot. And with the TUcard, you can travel as often and as long as you like by bus, tram and regional train in Braunschweig and all of Lower Saxony. The ticket even includes the regional train connection to Berlin.

#### Accommodation

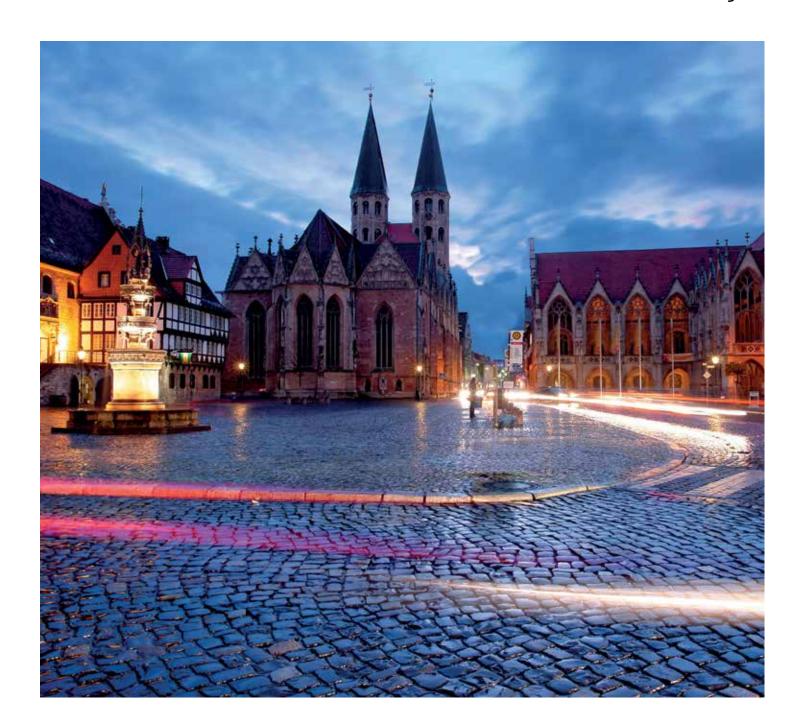
An apartment in Braunschweig will cost €350 to €500 per month including heating, a room in a shared flat €250 to €350. Compared to other German university cities, rent and living expenses are still affordable in Braunschweig. However, at the beginning of the semester, there are usually bottlenecks even here. Be sure to start looking for accommodation ahead of time, especially if you would like to live in one of the nine dormitories that are managed by the Student Services Ost-Niedersachsen. They offer a total of 2,000 rooms, the choices range from small houses with apartments to larger buildings complete with hobby rooms, a pub and a cinema. A furnished single room is available from €250 including heating, a single

apartment costs between €300 and €450, depending on size. Our tip: apply early, even if you do not have your letter of admission yet. Another big advantage of living in a shared apartment or a dormitory, especially for first year students, is that meeting people and finding friends is very easy.

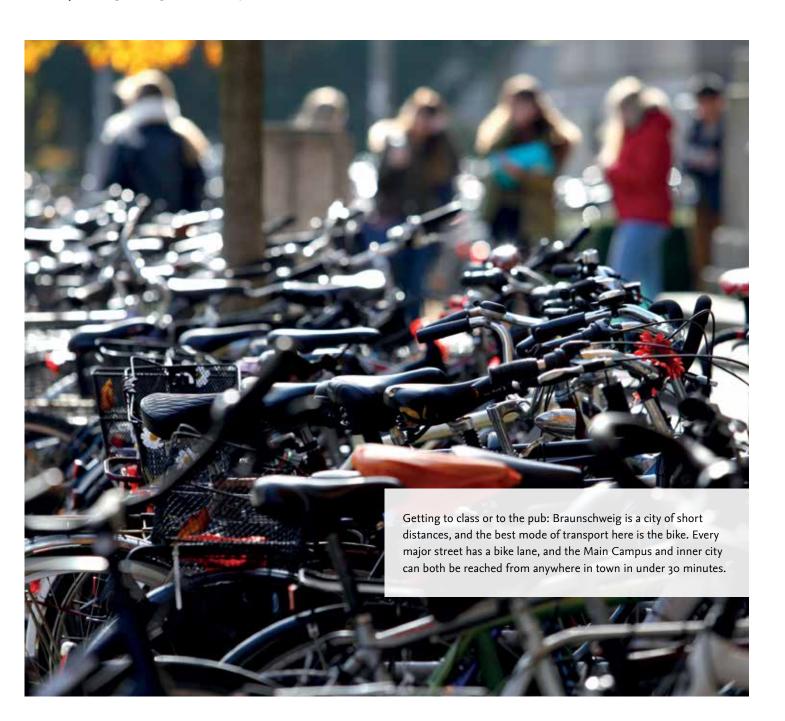
Another way of finding accommodation is with the help of the Internet or the postings on the bulletin boards in the Historic Main Building, the refectories and at the General Students' Committee (AStA). Good to know for everyone who is new to Braunschweig: a popular neighbourhood with beautiful Gründerzeit houses and parks is the Östliches Ringgebiet, but rooms there are hard

to get. Also take a look at the Westliches Ringgebiet and Nordstadt districts which are popular with students, too. If you have a hard time finding accommodation, try looking further afield, for example in Wolfenbüttel. You can always move later, as the housing situation in Braunschweig will improve over the course of the semester.

The TUcard serves as a student ID, public transport ticket, library ID and refectory card. The certificates of enrolment that you might need as proof, e.g. for your residence permit or your grant provider are available online. Just log on and print out the certificates you need from home.



 $\bf 64$  - Living, dining and mobility



Getting around Braunschweig by bike, on foot, or by tram could not be easier. The Main Campus is a mere 15 minutes on foot from the city centre. Other university sites can be conveniently reached by public transport.

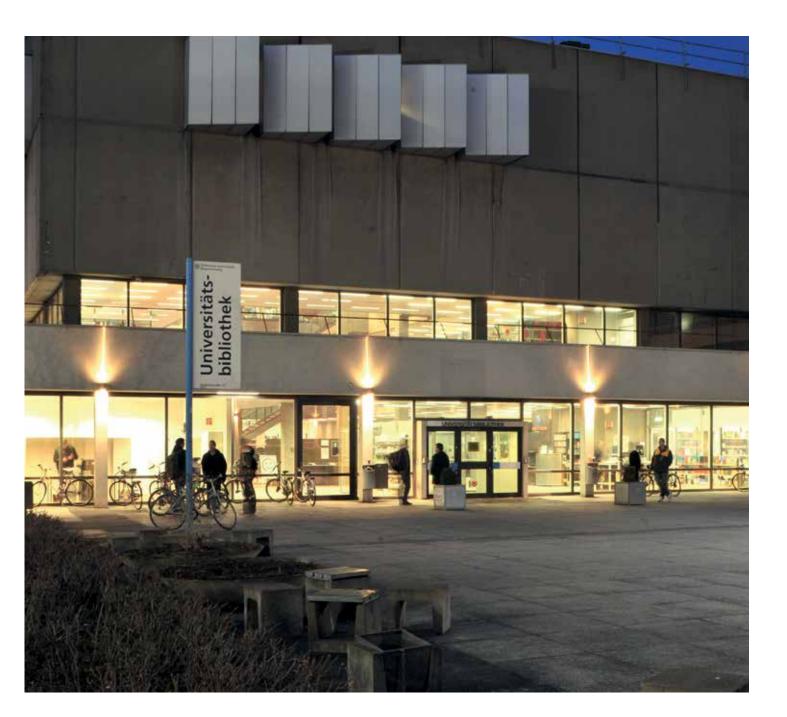
## **Dining**

Student Services OstNiedersachsen runs three refectories, five cafeterias, one bistro and the 360 Degrees pavilion. The variety is vast, and even vegetarians and vegans will get their money's worth. Speaking of money, to pay, simply use your TUcard. To find out what's for lunch today, just check the online menus or download the free app that will keep you informed. Not only do the refectories cater to every budget, but also to individual dietary preferences and nutritional requirements. Students can choose from various items to create their own personal menu. Vegetarian food as well as rich salad and dessert bars are available every day. In addition, pizza, pasta, stir-fry and grilled foods are prepared fresh at live cooking stations.

#### **Mobility**

Walking and cycling are the natural choices on campus, because Braunschweig is a bike-friendly city. The Main Campus can be reached from anywhere in the city in less than 30 minutes by bike. The bike lane network is extensive, with many bike paths through parks and separate bike lanes along streets. There are even designated bicycle streets, especially around campus, where cyclists have priority.

Do you want to venture further out? No problem! Braunschweig Main Station is served by more than 200 trains each day. Intercity and Intercity Express trains stop here, and Braunschweig is a major hub for regional rail traffic. In addition, there are many coach companies that travel to most German cities.



# **Academic Facilities**

### The University Library

You cannot get any more central than this: right beside the Audimax, the Historic Main Building and the Forum Building, the University Library occupies an unshakable place in the midst of the hustle and bustle of university life. At the University Library, students will find the scientific information, literature and media that they need for their projects, thesis, presentations and seminar and exam preparations. More than 2.5 million print and digital resources, 40,500 electronic and 977 current printed journals are available here. The University Library offers more than 800 workspaces in a quiet and focussed atmosphere for researching, reading and studying. In the reading rooms which are open 104 hours a week, there are workspaces for individuals and groups, as well as PCs with office and graphics software, a fast wireless network and countless network sockets for your notebook.

#### Register and start

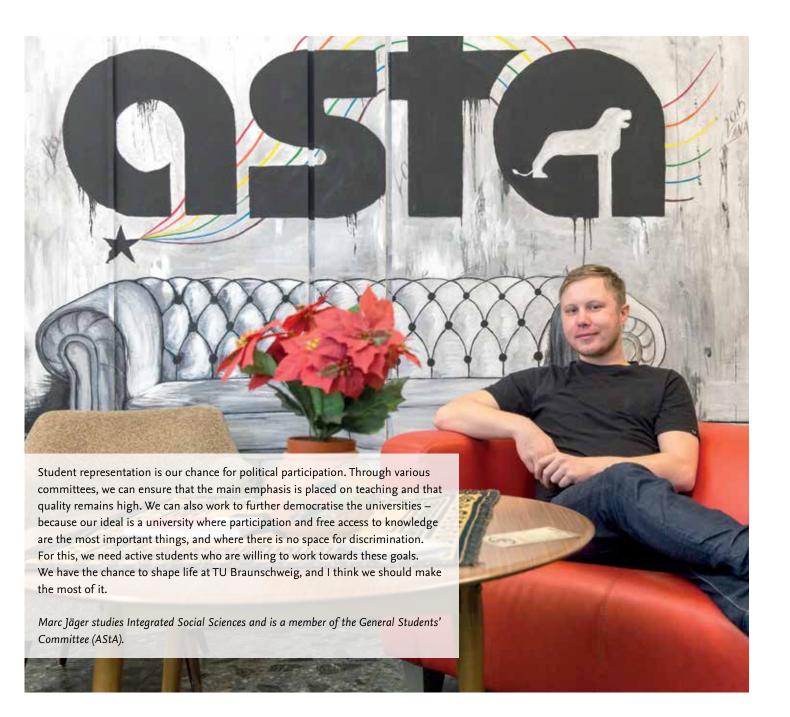
If you want to get online, you can use TU Braunschweig's wireless network on your personal laptop. To check out books, magazines and other media, simply register, in person or online. For the fastest access to the University Library, use the online catalogue, also available as BibApp for iOS and Android. It lists the University Library's stock of 2.5 million electronic and print resources and offers a function for requesting media from the stacks. 10 to 30 minutes later, you can collect your order from the circulation desk.

Another great knowledge base are our electronic journals. And in addition to all this, more than 40,000 e-books and 190,000 e-dissertations are available. As an introduction to your studies, the University Library has online lists of recommended reading for our various subjects. There are also electronic class materials for individual seminars and lectures, complete with reading materials, lecture notes, presentation slides and specific magazine articles.

#### The Gauß IT Centre

To make your studies as target-oriented and effective as possible, the Gauß IT Centre provides the necessary technical platform through various online access options. Create an automatic timetable, register for exams or access information about your degree programme from your home or, in fact, from any place on earth. The Gauß IT Centre at TU Braunschweig offers personalised advice, low-cost software licenses, a range of IT-related courses, workstations and, naturally, an individual e-mail account for every student. For many seminars, you will find exercises, videos, photos and more available online as an additional source of information.

# 68 - Student co-determination



# **Shaping Our University**

University politics affect everyone who studies or works at our institution. How is government funding for educational quality used? How are new degree programmes planned and structured? Who will provide advice to new students on social and legal issues? TU Braunschweig's students are very involved in all of these topics.

#### Participation on an equal footing

Students have the chance to participate in the student representation of their respective degree programmes or in the General Students' Committee (AStA). This is where ideas on educational policy are shaped and where social and ecological university issues are discussed.

Student representatives stand up for good study conditions in their degree programmes. They also help students with any problems they may encounter in their disciplines. When it comes to making changes to study conditions, our students are also involved. Through the Study Commission, they are able to exert significant influence and have an equal say in how the quality funds from the government are to be used at TU Braunschweig.

#### A willing ear

»I have a suggestion for a seminar.« »Help, my exam dates overlap!« Our students' ideas and problems need to be directed straight to the right person, and processed centrally. This is why we created our »Tell Us!« blog (Sag's uns). On this blog, students can post their ideas, compliments and problems. They can easily find fellow students with similar suggestions or questions and work together with them and with university representatives to come up with solutions. The »Tell Us!« blog is coordinated and moderated directly by the President's Office. Upon request, problems can be handled confidentially.

### Self-made campus

A bookcase in front of the library for book exchanges, a column planter with fresh herbs and outdoor workspaces: the ideas for projects abound. But they all have one shared goal: to make TU Braunschweig's campus nicer, fuller and more worthwhile. The project ideas come from students and university staff and are also implemented by them. The online platform »Sandbox« (Sandkasten) collects them and locates them on an interactive campus map. It is a great way to exchange information, recruit volunteers and arrange for funding. The purpose of this interactive project is to implement improvements speedily and inspire the imagination of the university community.

# **Student Support Services**

We offer you more than just academic support. A comprehensive network of social support services is there to give you easy access to help and advice, if you need them.

# Student Services OstNiedersachsen

Most student support services at TU Braunschweig are provided by the Student Services OstNiedersachsen. They run the university cafeterias and dormitories, as well as two nurseries for the children of students and staff. They also administrate the national educational loan programme BAföG and provide help and advice on anything from financial, social and legal matters to personal problems and concerns.

## Social counselling

The Social Counselling service offers support and advice on social and financial matters in your academic or personal life. It provides information on subjects such as student loans and grants, employment and work permits, social benefits, health insurance and studying with children.

### Psychological counselling

Adjusting to life at university can be quite challenging. The Psychological Counselling Centre provides a confidential service to help you cope with any situation you may find difficult. Five experienced counsellors offer both personal sessions and group workshops on subjects like stress management, relaxation techniques, dealing with examination anxiety and a wide range of other topics. Both workshops and personal counselling are free of charge for all students.

#### **Childcare facilities**

The Student Services OstNiedersachsen run two nurseries for the children of students and staff, catering to children from two months to three years of age. Qualified staff look after the children for the morning or the entire day. Demand is very high and space is limited, so please contact the Student Services as early as possible if you plan to bring your family with you.

#### Students with disabilities

TU Braunschweig welcomes applications from students with disabilities. We are committed to improving the quality of services and support for our students with special needs. For detailed information about the facilities available at TU Braunschweig, please contact us. We will discuss your specific requirements with you to ensure that, as far as possible, you will have access to the facilities and services you need.

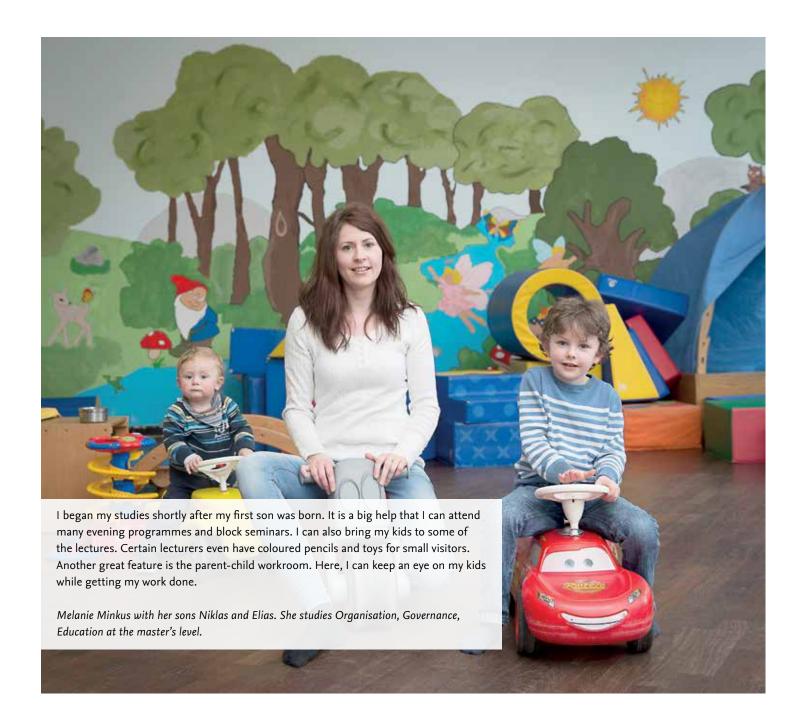
### **Religious life**

There are two chaplaincies on campus. These Christian student communities are open to people of all faiths and backgrounds. They organise a lively programme of events, including discussion groups, lectures, social events, excursions and religious services. The chaplains are available for guidance on any matter of personal concern.

A prayer room especially for Muslim students is provided by the Muslim Students' Union. It is located on the Main Campus, just five minutes from the Historic Main Building.

#### **Equality and diversity**

We are strongly committed to equality and diversity and aim to ensure that everyone working or studying at our university is treated fairly and with dignity and respect. If you have any concerns in this regard, there are a number of places to turn to. Please visit the web pages of our Equal Opportunities Office for more information.



# **Sport Facilities and Student Societies**

The largest sport venue in the region is always a good place to meet old and new friends. In addition to four gymnasiums, there are many and extensive outdoor courts for athletics, football, tennis and beach volleyball. A multi-beach facility, an artificial turf pitch with flood lights, an outdoor fitness park and a woodchip jogging trail are all part of the Sport Centre. After all, TU Braunschweig always scores among the best in national rankings of the quality of sport options. Not to mention the many events, summer festivals and parties that draw thousands to our sport facilities each year.

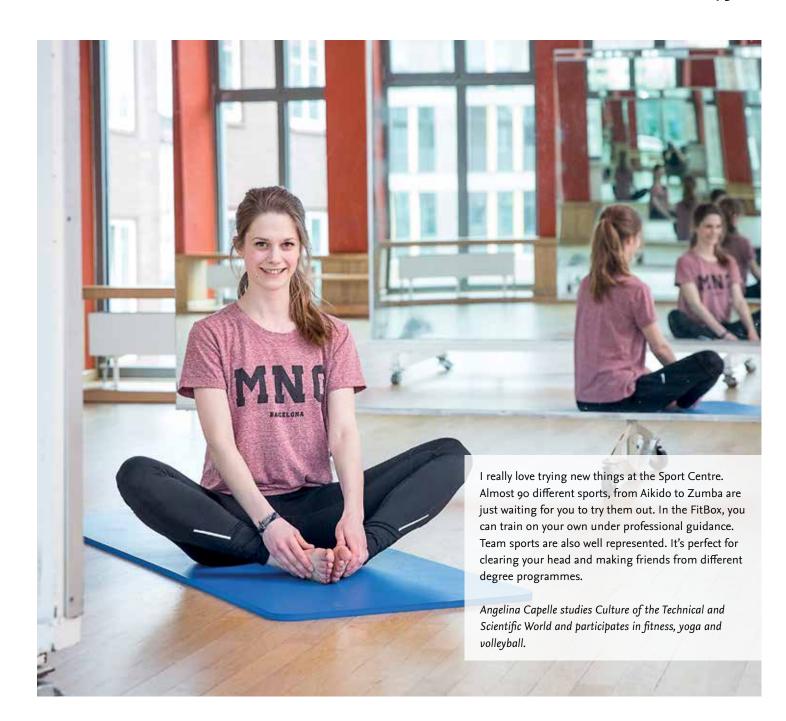
Salsa dancing, saunas and sailing are only three of 90 possibilities at the Sport Centre of TU Braunschweig for letting off steam and clearing your head. 200 sport classes are on offer each week, including all the classics, but also sports like motorised aircraft flying and rowing. And whether you love basketball, football or volleyball, every ball enthusiast is sure to find a team here.

# More than 40 student groups and societies

Just how much fun it can be to develop, build and present something of your own becomes evident when you look at the practical research work done by more than 40 student initiatives at TU Braunschweig. Every year, the Lions Racing Team builds a race car to compete in international university-level design competitions on racetracks from Hockenheim to Australia. In their own workshops, the members of Akaflieg build and improve new prototypes of gliders, putting into practice what they learn in the classroom. They also make sure to get in lots of flying hours in their six aircraft, for research purposes... and of course for fun!

Our students experiment with film, TV and radio technologies, organise and shape their own social and ecological projects, arrange excursions, talks and fairs, play music and do theatre, hold debates and provide consultancy services for companies.

As an added bonus, they learn how to work successfully as part of an inter-disciplinary team. And because many of the initiatives foster close ties with companies, many a student has got the job of their dreams on top of all the rest.



# 74 - Student initiatives



# **Get involved! International Student Societies**

There are a great many student societies at TU Braunschweig, including film clubs and political, academic and scientific groups. The list varies from year to year and new clubs are always emerging. Joining one is one of the best ways to meet people with common interests! The Gauss Friends and the International Student Network are societies with an international, intercultural focus.

#### Gauss Friends

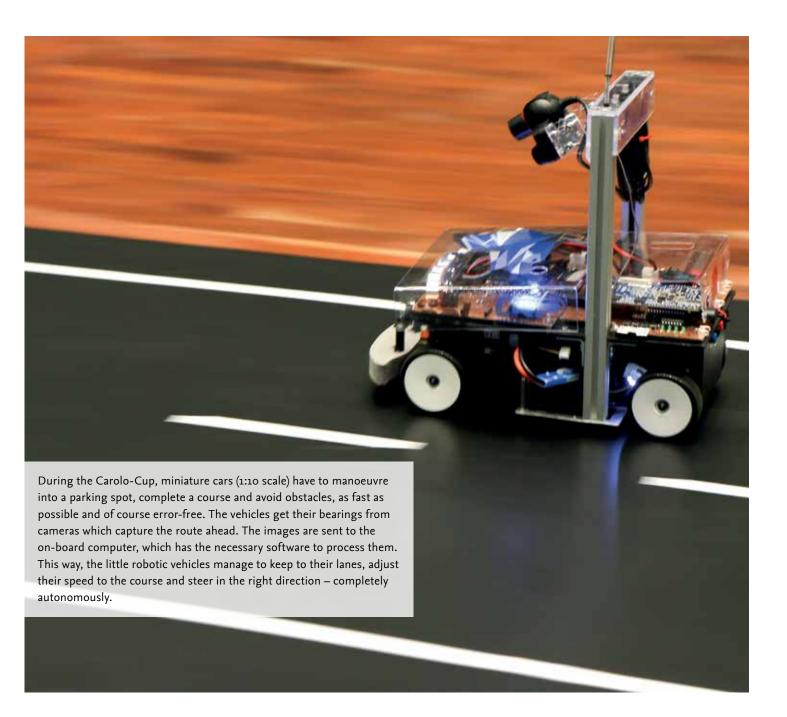
The Gauss Friends is a student association promoting active intercultural exchanges between German and international students and scientists. The focal point of their activities is a shared enthusiasm for scientific and cultural topics. They meet at the Gauss House in the Michaelishof dormitory, where they organise international evenings, salsa lessons, language classes and cooking events. The international tearoom serves drinks from different parts of the world, and there are workshops and tables for international regulars, as well as theatre projects in 11 languages. The programme is as diverse as its members, and everyone is welcome to contribute. True to the motto: We don't have to understand everything, but we have fun together and learn from each other.

#### International Student Network

The International Student Network Braunschweig (ISN) is a local section of the Erasmus Student Network, which is the biggest student association in Europe, active in more than 430 higher education institutions in 36 countries. The main focus of the ISN is placed on exchange students and their problems and concerns when adjusting to their new environment. The ISN provides assistance with the academic, social and practical integration process. It offers many cultural and social events such as excursions and short trips, film nights, weekly meetings at a local pub, international nights and, last but not least, parties.

The ISN also provides information for future German exchange students and encourages them to gain international experience and relevant insight into different cultures.

# - Student initiatives



# **Award-Winning Student Initiatives**

Be it the construction of little self-driving cars or giant paper aircraft, our students like to prove their skills through competition.

# Self-driving model vehicles in an all-out race

Completing a course successfully, parking correctly, skilfully avoiding obstacles, observing right of way... and all of this quickly and without errors: these are the challenges of the Carolo Cup, a universitylevel design competition for autonomous model vehicles. Since 2008, the annual competition has taken place at TU Braunschweig, and from the very beginning, teams from Braunschweig have been fighting for the win. With the help of cameras and sensors, the little speedsters with names like Carolinchen and Simba almost always manage to detect their lane on the racetrack and their parking space. What's in it for our young engineers? Many top rankings in the Cup and always loads of practical experience.

# World record paper aeroplane

From 70 square metres of paper and 700 tubes of glue, TU Braunschweig students have built the world's largest paper aeroplane with a wingspan of 18 metres. The plane flew close to 18 metres - another world record that made it into the Guinness Book of Records. It took the 14 team members 2,400 hours to fold and glue Carolo-Wilhelminchen together. The team managed a true triumph of engineering and learned lots of things that will help them in their studies, from aerodynamics to joining technology, and from materials science to teamwork and project management. And best of all: they had lots of fun.

# Fighting global warming with a pill for cattle

Thinking outside the box is what enabled a group of Biology and Biotechnology students to enter the most prestigious student competition in synthetic biology, the iGEM Competition, held every year at the Massachusetts Institute of Technology (MIT) in Boston. Their idea: a pill for cows

that could break down methane in the bovines' stomachs. The team spent a semester working to add a specific protein to an e.coli bacterium that exists in cow stomachs. The protein has the capacity to process methane and so could help in the fight against global warming.

# 78 - Campus culture



Grand feelings and grand songs were brought to the Audimax stage during the Pop Bombastisch Vol. 2 concert. Unusual ideas for concerts are the trademark of TU Braunschweig's orchestra which in full symphonic instrumentation has more than 80 musicians. It has a knack for playing classical music in an entertaining and interesting way and provides the right tone for many of the university's festive events.

# A Playground for Music

Together the musicians take up the challenges of momentous works of orchestral literature, and even play pop and rock music. But socialising is just as much a part of it, and each rehearsal ends with a round of drinks at the pub.

The TU choir has almost as many members. 70 singers practice their repertoire ranging from church music to classical and modern pieces to folksongs and spirituals. Concerts never fail to impress, also thanks to the choir's original ideas and staging.

# Jazz and more

If you prefer a jazzier note, you might try TU Braunschweig's big band. In classical instrumentation with trumpet, trombone and saxophone sections and a percussion group, the big band plays the rich groove of popular and lesser-known classics, as well as contemporary jazz and Latin funk. This music goes straight to your legs. You can hear and see them at city fairs, open air festivals and formal dances, both in Braunschweig and further afield.

# Bouncing the pop

Cheerful is the best way to describe the music of the student initiative Akablas and its 60 members. Akablas plays brass band music ranging from Dixieland to new renderings of old rock and pop songs. This music is fun, and the audience is thrilled each and every time. Akablas is a traditional feature of the annual welcome event for new students.

#### **Theatre**

Being able to control your voice and body is an art that comes in handy in countless situations, including when it comes to your career. In the theatre group at TU Braunschweig, these skills are perfected to bring pieces from playwrights the likes of Georg Büchner and Botho Strauß to the Audimax stage.



# **TU-NIGHT**

TU-NIGHT is a science event and a music festival at the same time. It allows everyone to see and experience science at TU Braunschweig first-hand. The scientists look forward to an inspiring, possibly controversial, dialogue about their research, for example on the future of the human race. How will we live tomorrow? Exhibitions and lectures provide insight into what our society might look like in the future. And on two stages, visitors can witness what happens when science meets music.

Every year, TU-NIGHT invites you to experience our campus by night, between 6 p.m. and 1 a.m. During this annual science night, TU Braunschweig presents itself as a university strong in research and close to its students. Secondary school and university students, families and anyone interested in science and music can expect a colourful programme of experiments, exhibitions, laboratory tours and discussions.

On two stages, TU Braunschweig offers a music festival with bands and DJs from Berlin, Braunschweig and around the region. Along the banks of the Oker, regional bands will play. On the University Square, guests can enjoy a concert of modern indie pop and electronic music.

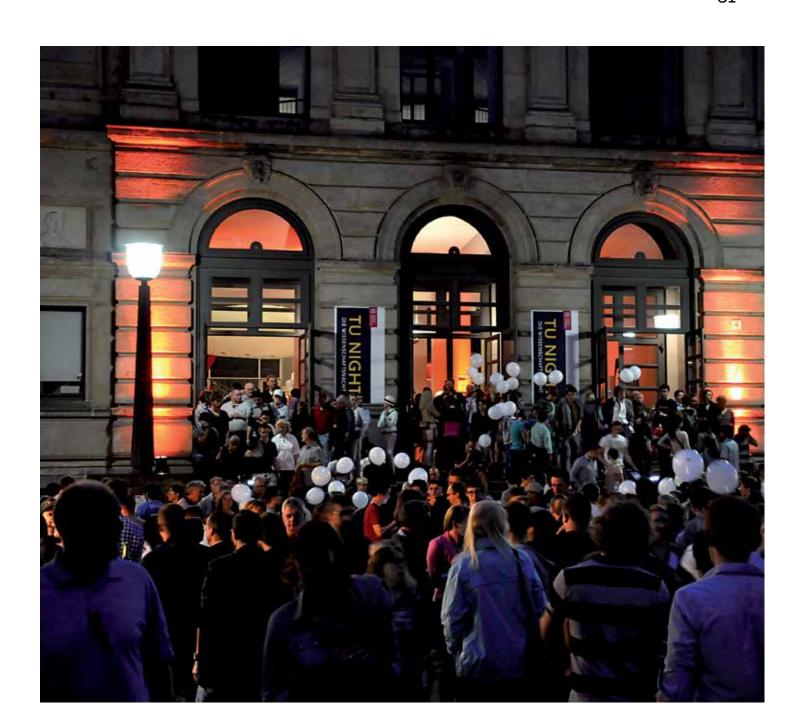
### A campus for everyone

Throughout the year, the university enriches the educational and cultural calendar of Braunschweig and the region with a multitude of events. More than 1,000 lectures, colloquia, seminars and workshops from different areas of research and teaching are given by the best national and international lecturers. In addition, the campus serves as a conference venue, with around 100 national and international conferences and symposia taking place here each year.

# Our lecture series: controversial and highly relevant to society

As popular as ever in the university's calendar are our lecture series that are expressly open to anyone interested. From »City of the Future« and »Science and Popular Culture« to psychological aspects such as »How to Make the Integration of Refugees a Success?« and even linguistic issues like »Facets of the German Language«, our lecture series cover a broad range of current topics that are highly relevant to our society today. Opposing positions clash during the event series »Questions on our Future: Controversial Discussions« when experts from different disciplines exchange points of view.

»World literature: A Braunschweig Lecture« is also very popular with the audience. Scientists from Braunschweig and experts from other universities each present a work of their choice and give a critical and very personal analysis of the text. An accompanying publication is available at bookshops.



- Braunschweig House of Science



# **Braunschweig House of Science**

At the Braunschweig House of Science (Haus der Wissenschaft), science is made visible and accessible. As a place to experiment and learn, it offers a broad range of event formats to engage

with science, technology and culture. Everyone is invited to personally participate in the dialogue and to have their say in discussions and interactive events. The House of Science provides infrastructure for exhibitions, talks, workshops and debates – depending on the objective – for interested laymen and experts alike.

### Science Slam

In 2008, for the first time in Germany, a tournament in short scientific lectures was held at the House of Science under the name Science Slam. Today, science slams are not only a popular fixture of Braunschweig's nightlife, but are also held in cities throughout the world. With short talks on their own research, young scientists step into the ring to compete against one another. The winner's trophy, the Golden Brain, is awarded to whoever gets the most points from the audience for their charm and wit. Participants also fight against the clock, because they have just 10 minutes to present their topic.

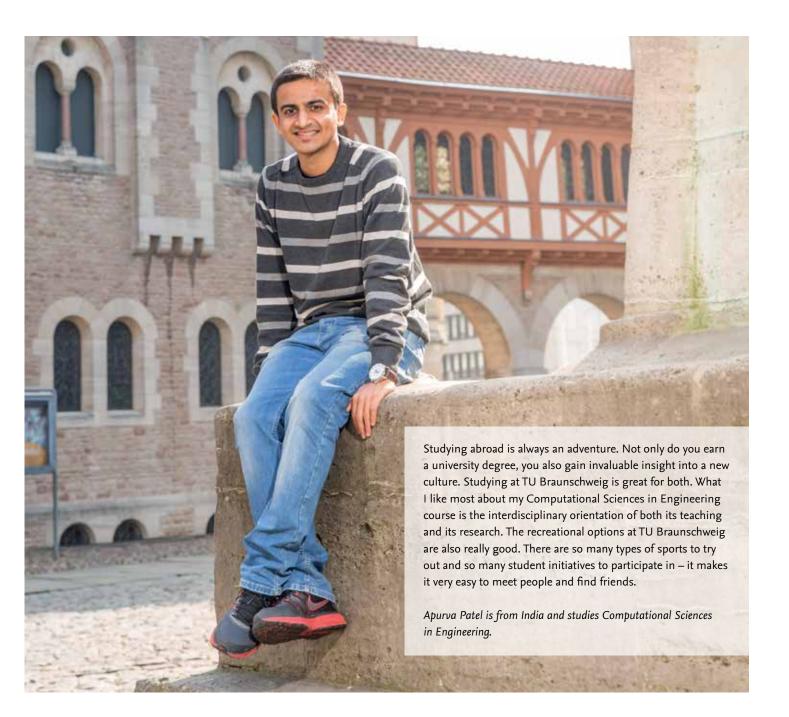
### Science quiz

During the Eager Beaver Battle, the audience can join in the competition to show just how much of a know-it-all they are. In this science quiz, participants compete against each other in teams. The questions are prepared by experts in various scientific disciplines who subsequently explain the correct answer to the audience.

# Current scientific topics in dialogue

The event series »Facts? Research Closely Examined« presents exciting, cutting-edge science topics. Leading experts discuss controversial subjects with the audience, such as the mobility of the future, nanotechnology and sustainability of scientific progress, for example. The format allows for a lot of interaction and debate. The series is organised in cooperation with partners from the Braunschweig research region.

The Braunschweig Energy Café is all about various aspects of energy and the importance of energy research. In a comfortable coffee shop setting, current challenges facing society are brought to the table. The audience is welcome to discuss the topics amongst themselves and with the experts.





# **Applying to TU Braunschweig**

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Language Requirements | P. 89

Financing Your Stay | P. 90

Application for Bachelor's and Master's Programmes | P. 92

Application as an Exchange Student | P. 94

Application for Doctoral Studies | P. 96

# **Your Application Step by Step**

#### 1 Choose a course

Find out what's on offer from our list of undergraduate and graduate programmes on pages 36-44.

### 2 Check our entry requirements

Entry requirements vary, depending on the programme and type of degree, your country of origin, and your educational background. For detailed information on entry requirements, please see pages 88-89.

#### 3 Assess your financial means

Your living costs will vary significantly depending on your lifestyle and accommodation. Be sure to plan your budget carefully to make your stay a comfortable one. For a detailed list of the average living expenses in Braunschweig, please see pages 90-91.

There are many things to consider during the application process. This step by step guide will help you keep track of everything you will need to get off to a good start at TU Braunschweig.

### 4 Check the application deadlines

All our programmes begin in the winter semester, in October. Most master's and some bachelor's programmes have an additional intake in April. Application deadlines for international students vary, depending on the type of programme and your visa requirements. For detailed information on deadlines, please turn to the Application section on pages 92 and 95.

### 5 Complete your application

You will need to complete an online application on TU Braunschweig's website. Please pay special attention to the documents you will need to submit. At the end of the online application process, you will find a personalised checklist of all the required documents.

### 6 What's next?

Once we have received your application, we will begin to examine your documents. We will send you an acknowledgement of receipt and inform you about the next steps in the process.

# 7 Acceptance

If you receive an offer, you can begin to prepare for your time at TU Braunschweig. We look forward to meeting you!



# **Academic Requirements**

As a general rule, if you have the necessary qualifications to study in your home country, you will probably meet our entrance requirements. This means that you must have:

- successfully completed your secondary school education,
- and successfully passed a university entrance exam if there is such an exam in your home country.
- In some cases, we may also require that you have studied at an accredited university in your home country or that you complete the Studienkolleg's university entrance examination (Feststellungsprüfung) in Germany.

Please note that admission to many programmes at TU Braunschweig is limited. We usually receive many more applications than there are places available, and meeting the minimum entry requirements will not guarantee you a place in a programme.

### What is the Studienkolleg?

Students from non-EU countries who do not fulfil the academic requirements for direct university admission can attend the Studienkolleg to prepare for their studies at a German university. The Studienkolleg offers a two-semester foundation course which prepares you for a university entrance exam, the Feststellungs-prüfung. This certificate will then enable you to apply for the degree course of your choice at a German university.

Please note that demand for Studienkolleg places is very high. Due to limited capacities, only 10 percent of applicants could be accepted in 2016.

### Can I enrol directly in a higher semester?

If you have already studied an identical or similar programme, you may apply for entrance to a higher semester at TU Braunschweig. The department in question will decide if and in which semester you can resume your studies.

# What are the entry requirements for master's programmes?

The minimum requirement for entry into a master's programme is a bachelor's degree in the same or a closely related subject. Additional qualifications may be required. In all cases, we will consider applicants on the basis of their entire application and on evidence of their ability to benefit from the programme and to complete it successfully. We also look for enthusiasm, motivation and a genuine interest in the chosen programme.

Entry requirements vary, depending on the programme, your country of origin, and your educational background. The German Academic Exchange Service (DAAD) provides detailed information on the specific academic requirements for most countries.

# Language Requirements

Most of the programmes offered at TU Braunschweig are taught in German. If German is not your first language, you will need to provide evidence that you can read, write, speak and understand German at a satisfactory level.

At the time of application, you will have to prove that you already have an advanced level of German language skills. However, you will not need to submit your final language certificate yet. This leaves you enough time to complete your German language education and pass one of the required German exams by the beginning of your studies.

#### Language requirements at the time of application:

- attendance of a German course level B2.2 (or higher)
- EU citizens applying for a bachelor's programme with limited admissions:
   DSH2 or equivalent language certificate
- if you apply for the Studienkolleg: completed Zertifikat Deutsch or another level B1 language course

#### Language requirements at the time of enrolment:

one of the following German language certificates:

- DSH2
- TestDaF (with at least 4 points in each section of the test)
- Feststellungsprüfung of the Studienkolleg
- Sprachdiplom of the Kultusministerkonferenz (Stufe II)
- C2-Zertifikat of the Goethe Institute
- telc C1 Deutsch Hochschule

# Are there different language requirements for graduate and postgraduate studies?

The language requirements you must meet will depend on the teaching language of your chosen programme. For all bachelor's and master's programmes taught in German, you will have to pass one of the German language tests listed above. For the international master's programmes Computational Sciences in Engineering (CSE) and ProWater, you will need to provide evidence of your English language proficiency.

### Can I learn German at TU Braunschweig?

If you require German language training before the start of your studies, TU Braunschweig's Language Centre provides a summer course in the German language and culture that can help prepare you for the DSH examination (Deutsche Sprachprüfung für den Hochschulzugang). Once you have begun your study programme, German classes are available which run throughout the semester.

#### Detailed information on entry requirements:

- ▶ www.tu-braunschweig.de/international/incomings/study
- ▶ www.daad.de/deutschland/nach-deutschland/voraussetzungen

#### Detailed information on German language courses:

▶ www.tu-braunschweig.de/international/info/germancourses

# **Financing Your Stay**

It is essential to make sure you will have sufficient money to cover all your expenses while studying in Germany. Please assess your financial means early and realistically before leaving your home country.

# Proof of your financial resources

For your visa and residence permit, you will have to provide the German Embassy and the Foreigners Registration Office (Ausländerbehörde) with proof that you will be able to support yourself for at least one year (Finanzierungsnachweis). Proof of your financial resources is required again at the beginning of each subsequent year in order to renew your residence permit. The amount you are required to prove is currently €720 per month, or €8,640 for a whole year. This is based on the current average cost of living in Germany.

### Semester contribution

TU Braunschweig charges no tuition fees, but you will have to pay a semester contribution of approximately €345 at the beginning of each semester of study.

The semester contribution serves to support the Student Services and other activities within the academic life of the university. It also includes a semester ticket which entitles you to free use of all public transport and regional trains in Braunschweig, on the way to Berlin and all over Lower Saxony.

# Can I work in Germany?

As a full-time student, you will not have much time for a job. Degree programmes at German universities are intense, and it might be difficult for you to work parttime without it affecting your studies. However, many students do take on parttime work, either to improve their financial situation or to gain experience and workrelated skills. If you are considering parttime employment in Germany, you must follow German labour law regulations for international students. Under the terms of the residence permit, most students from non-EU countries are not allowed to work for more than 120 days or 240 half-days per year while studying. German authorities adhere strictly to international employment laws. Failure to heed those laws may result in your expulsion from the country. You should also note that student jobs are not easy to find. It is very important that you do not expect to rely on wages earned from part-time work to finance your stay in Braunschweig.

# Living expenses in Braunschweig

The average cost of living in Germany is comparatively high. How much money you will actually need will depend on your personal lifestyle, but as guideline, you should allow for a minimum of around €720 per month:

Monthly expenses	Budget	Mode- rate	High
Accommodation	€ 280	€ 320	€ 430
Meals	€ 160	€ 190	€ 200
Clothing	€ 35	€ 45	€ 55
Student health insurance	€ 90	€ 90	€ 90
Liability insurance	€ 7	€ 7	€7
Study materials, computer & books	€ 45	€ 55	€ 65
Telephone & Internet	€ 35	€ 35	€ 40
Leisure, travel & sports	€ 65	€ 80	€ 100
Total expenses	€ 717	€ 822	€ 987



# More information on financing your stay:

► www.tu-braunschweig.de/international/incomings/ study/preparation

# Application for Bachelor's and Master's Programmes

Please apply early! This will give you enough time to submit any missing documents.

# How to apply

If you have a foreign university entrance qualification, apply through our online application platform for international students:

- www.tu-braunschweig.de/international/info/apply
- 1 Complete and submit the online application form.
- 2 Print the online application form and sign it.
- 3 Compile all the necessary documents.
- 4 Pay the assessment fee and enclose the receipt for that fee with your application.
- 5 Send your completed application to the International Office.

### **Application deadlines**

All undergraduate programmes begin in October, and some have an additional intake in April. Most graduate programmes start twice a year, in October and in April.

For the winter semester: July 15

For the summer semester: January 15

There are some exemptions to this general deadlines:

- EU-citizens applying for a bachelor's programme with free admission: Deadlines are 15 October for the winter semester and 15 April for the summer semester.
- The international master's programmes CSE & Pro Water:

  These programmes have special deadlines which are listed on the programmes' web pages.
- Courses offered in collaboration with the Braunschweig University of Art (HBK): For these courses special admission procedures apply. Please check the specific programme's web page.
- Please note that all deadlines may be subject to change.
   Please check our web pages for updated information.

### Add your documents

You will find a personalised checklist of all the required documents at the end of the online application process. A complete application usually includes the following documents:

- signed application form (Antrag auf Zulassung)
- your curriculum vitae (CV)
- a copy of your latest German language certificate
- if you are applying for a bachelor's or Staatsexamen programme: certified copies and translations of your school leaving certificates
- if your home country requires a university entrance exam: certified copies and translations of your exam results
- if you have already studied at a university: certified copies and translations of your university certificates + transcripts including all the subjects studied and your marks
- if you are already enrolled at a German university: certificate of enrolment
- receipt for payment of your assessment fee (e.g. online payment receipt)

All documents must be certified copies in the original language, accompanied by a German or English translation. Documents in English do not have to be translated.

# How much will my application cost?

TU Braunschweig charges a fee of € 70 to assess foreign qualifications. You may be exempt from this assessment fee in special cases, for instance if:

- the Language Centre at TU Braunschweig has issued you an application confirmation for your visa application,
- your documents have already been assessed by the German Ministry of Education,
- you have received a grant from a German national grant provider (e.g. DAAD),
- you are already enrolled at TU Braunschweig as a degree student and are applying for a different course of study,
- you have already paid an assessment fee for a previous application to TU Braunschweig. Please provide your prior application number.

You will find detailed information on payment procedures at the end of the online application process.

Documents received after the deadline and incomplete applications cannot be considered.

# Application as an Exchange Student

TU Braunschweig is well connected in the world and enjoys the benefits of cooperation agreements with universities in Western and Eastern Europe, the USA, Canada, South America, China, Japan and India. Within the framework of the Erasmus+ programme, we collaborate with more than 150 universities all across Europe.

# Join us as an exchange student

Each year, we welcome about 400 undergraduate and postgraduate exchange students from all over the world to TU Braunschweig. You can join us through programmes such as Erasmus+, bilateral university partnerships and third-party scholarship organisations.

As an exchange student, you will be fully integrated into TU Braunschweig's academic and social life. You can take part in our regular degree programmes, conduct research, or work on an individual study project. You will be able to choose from amongst all the courses offered, provided you meet the necessary requirements. Exchange students usually stay between one and four semesters, depending on their programme or study project.

At the end of your stay, you will return to your home institution. We will issue you a transcript of records, documenting your academic achievements at TU Braunschweig. The credits you earn with us will be transferred to your home university.

# How to apply

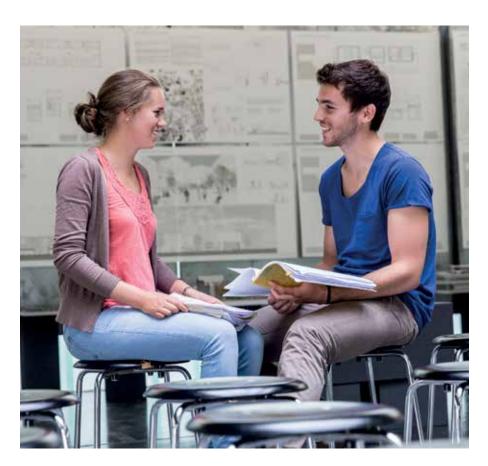
- The first step is to file an application with your home university or scholarship organisation (e.g. DAAD). For detailed information, please contact the international office at your home university.
- Once you have been nominated for an exchange programme by your

home university or scholarship organisation, you can start to select your courses at TU Braunschweig. Working with your programme coordinator at home, you will draw up a learning agreement. This ensures that your courses will later be recognised by your home university.

- Complete and submit our online application form for exchange students.
- 4 Send us a copy of the application form, signed by yourself and your home university coordinators, as well as all the necessary documents in PDF format.

More information on the application process and the selection of courses:

▶ www.tu-braunschweig.de/international/incomings/exchange



**Selecting your courses** 

Select your courses online from our course catalogue. Please bear in mind that the language of instruction at TU Braunschweig is German. Some degree programmes, however, offer courses in English. Research and thesis work can usually be done in English.

# German language knowledge

As an exchange student, you do not need an official German language certificate to be accepted at TU Braunschweig. However, we strongly recommend German proficiency of at least B1 (intermediate) level in order to study successfully in Braunschweig. Should you choose courses in English, you obviously need an adequate working command of the English language. If you would like to improve your German language skills, TU Braunschweig's Language Centre offers all levels of German classes, both as summer courses and during the semester.

# **Application deadlines**

Applications are possible both for the winter and the summer semester:

#### For the winter semester:

June 01

all international

March o1

exchange students students in exchange programmes with

Chinese universities

#### For the summer semester:

December 01

all international

September 01

exchange students students in exchange programmes with Chinese universities

# - The application process: doctoral students



# **Application for Doctoral Studies**

A doctorate in Germany usually means completing an individual research project under the guidance of a professor. Doctoral candidates usually complete their projects in three to five years, depending on the field and on the successful advancement of their research.

# **Academic requirements**

You can do a doctorate in any of the fields of study offered at TU Braunschweig. To apply for a doctoral degree, you need a good or excellent master's level degree. This means at least five years of university studies, completed with a final project or a written thesis. TU Braunschweig accepts a wide range of international qualifications, as long as they are considered to be equivalent to the German master's degree.

### Language requirements

You do not necessarily have to pass a German language test to apply as a doctoral student. Please speak to your department or supervisor about the language requirements that you must fulfil. If the language of your thesis will be English, we may ask you to provide proof of your English language proficiency.

# Application step by step

### 1 Choosing a research field

To find a professor who will supervise your work, you will first need a concrete idea of the topic you want to research. As a next step, you should find out which of TU Braunschweig's institutes is best suited for that type of work.

### 2 Finding an academic supervisor

Submit a draft outline of your proposed topic and your CV to the institute or professor that is working in your chosen research field. If you are offered a place, your supervisor may accept your thesis proposal or suggest a different topic.

# Recognition of your academic degree

Once you have found a supervisor, you need to make sure that your academic degrees will be recognised by TU Braunschweig. For the recognition process, we will need the following documents from you:

- bachelor's degree certificate and all transcripts
- master's degree certificate and all transcripts

We accept documents in German, English, Spanish and French. If your certificates are issued in another language, please send us a translation in one of the languages listed above together with a copy of the original document.

Please send your documents to: phd@tu-braunschweig.de

We will let you know whether your qualifications make you eligible for doctoral studies.

# 98 - The application process: doctoral students

### 4 Submit your application

As soon as your degrees have been recognised by TU Braunschweig, you can send your application for doctoral studies to the International Office. Be sure to include the following documents:

- online application form
- certified copies and translations of your university certificates (bachelor's and master's degrees and all transcripts)
- proposed topic of your PhD-thesis
- statement from your supervisor at TU Braunschweig
- certificate of German or English language proficiency (or exemption from your supervisor)
- CV

- scholarship award letter (if applicable)
- certificate of de-registration (if you were previously enrolled as a doctoral student at a German university)
- passport-sized photo

The processing time for applications is about eight weeks. Once we have processed your application, we will send you a letter of acceptance explaining all the next steps.

# More information on the application process for doctoral students:

▶ www.tu-braunschweig.de/international/incomings/phd





especially the fact that it is very application-oriented. There are many excellent laboratories with outstanding equipment and a lot of possibilities for hands-on research and work.

Jihed Draouil is from Tunisia. He is currently working on his doctorate and teaching at the Institute

or a transport strategies

for Business Information Systems in the field of Business Intelligence.

# Contact Information



# Support for international students and scientists

#### International Office (IO)

Bültenweg 74/75 | 38106 Braunschweig phone: +49 531 391-4055 international@tu-braunschweig.de www.tu-braunschweig.de/international

#### Mobile Researchers' Centre (MoRe)

Bültenweg 74/75 | 38106 Braunschweig phone: +49 531 391-4394 more@tu-braunschweig.de www.tu-braunschweig.de/more

#### Language Centre

Bültenweg 74/75 | 38106 Braunschweig phone: +49 531 391-5084 sprachenzentrum@tu-braunschweig.de www.tu-braunschweig.de/sprachenzentrum

# SCOUT: Support and networking for international students

scout@tu-braunschweig.de www.tu-braunschweig.de/scout

#### S.O.S. - Studying without language barriers

(for mechanical and electrical engineering) sos-projekt@tu-braunschweig.de www.tu-braunschweig.de/sprachenzentrum/projekte/sos-projekt

#### inTU: International integration seminars

(for mechanical engineering)
intu@tu-braunschweig.de
www.tu-braunschweig.de/fmb/studium/
international/intu

#### Gauss Friends e.V.

info@gauss-freunde.de gauss-freunde.de

# International Student Network Braunschweig e.V. (ISN)

braunschweig@esngermany.org braunschweig.esn-germany.de

#### **Further links**

#### **Academic Programmes**

www.tu-braunschweig.de/studienangebot

#### Online course catalogue

https://vorlesungen.tu-braunschweig.de

#### Support for refugees

www.tu-braunschweig.de/international/fluechtlinge

### TU-DAY / TU-NIGHT

www.tu-braunschweig.de/tunight

#### Haus der Wissenschaft

www.hausderwissenschaft.org

#### teach<sub>4</sub>TU

www.tu-braunschweig.de/teach4tu

### Idea management »Sag's uns«

www.tu-braunschweig.de/sagsuns

#### Self-made campus »Sandkasten«

www.sandkasten.tu-braunschweig.de



### **Departments**

#### Carl-Friedrich-Gauß-Department

Rebenring 58a | 38106 Braunschweig phone: +49 531 391-2840 fk1@tu-braunschweig.de www.tu-braunschweig.de/fk1

### **Department of Life Sciences**

Universitätsplatz 2 | 38106 Braunschweig phone: +49 531 391-5101 fk2@tu-braunschweig.de www.tu-braunschweig.de/flw

# Department of Architecture, Civil Engineering and Environmental Sciences

Katharinenstr. 3 | 38106 Braunschweig phone: +49 531 391-2317 fk3@tu-braunschweig.de www.tu-braunschweig.de/abu

#### Department of of Mechanical Engineering

Schleinitzstr. 20 | 38106 Braunschweig phone: +49 531 391-4040 info-fmb@tu-braunschweig.de www.tu-braunschweig.de/fmb

# Department of Electrical Engineering, Information Technology, Physics

Hans-Sommer-Str. 66 | 38106 Braunschweig phone: +49 531 391-7796 eitp@tu-braunschweig.de physik@tu-braunschweig.de www.tu-braunschweig.de/eitp

# Department of Humanities and Educational Sciences

Bienroder Weg 97 | 38106 Braunschweig phone: +49 531 391-8601 fk6@tu-braunschweig.de www.tu-braunschweig.de/fk6

#### **Central facilities**

#### **University Library**

Universitätsplatz 1 | 38106 Braunschweig phone: +49 531 391-5018 ub@tu-braunschweig.de www.biblio.tu-bs.de

#### Gauß IT Centre

Hans-Sommer-Str. 65 | 38106 Braunschweig phone: +49 531 391-55555 it-zentrum@tu-braunschweig.de www.tu-braunschweig.de/it

#### **Sport Centre**

Franz-Liszt-Str. 34 | 38106 Braunschweig phone: +49 531 391-3659 sportzentrum@tu-braunschweig.de www.tu-braunschweig.de/sportzentrum

#### 102 - Contact information



# Advise and support services

#### **Study Service Centre**

Pockelsstr. 11 | 38106 Braunschweig Sercive call: +49 531 391-4321

#### Facilities at the Study Service Centre:

#### **Academic Advisory Service**

phone: +49 531 391-4321 zsb@tu-braunschweig.de www.tu-braunschweig.de/zsb

#### **Enrolment Office**

phone: +49 531 391-4321 i-amt@tu-braunschweig.de www.tu-braunschweig.de/i-amt

#### International Office (IO)

phone: +49 531 391-4055 international@tu-braunschweig.de www.tu-braunschweig.de/international

#### Language Centre

phone: +49 531 391-4321 sprachenzentrum@tu-braunschweig.de www.tu-braunschweig.de/sprachenzentrum

### Student Services OstNiedersachsen

Katharinenstr. 1 | 38106 Braunschweig phone: +49 531 391-4807 info@stw-on.de www.stw-on.de/braunschweig

#### Service Office Student Accommodation

Wilhelmstr. 1, 38100 Braunschweig phone: +49 531 391-4828 servicebuero@stw-on.de www.stw-on.de/braunschweig/wohnen

#### **Social Counselling**

Pockelsstr. 11 | 38106 Braunschweig phone: +49 531 391-4059 m.gabriel-kawulok@stw-on.de www.stw-on.de/braunschweig/beratung/ sozialberatung

#### **Career Service**

Bültenweg 17 | 38106 Braunschweig phone: +49 531 391-4339 careerservice@tu-braunschweig.de www.tu-braunschweig.de/career

#### **Equal Opportunities Office**

Bültenweg 17 | 38106 Braunschweig phone: +49 531 391-4545 gleichstellungsbuero@tu-braunschweig.de www.tu-braunschweig.de/gleichstellung

#### **Family Office**

Universitätsplatz 2 | 38106 Braunschweig phone: +49 531 391-4536 familienbuero@tu-braunschweig.de www.tu-braunschweig.de/gleichstellung/ angebote/familienbuero

#### General Students' Committee (AStA)

Katharinenstr. 1 | 38106 Braunschweig phone: +49 531 391-4555 asta@tu-braunschweig.de www.asta.tu-bs.de



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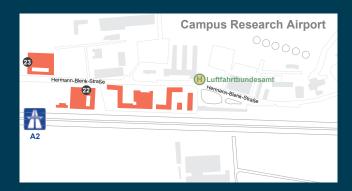
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- 1 Historic Main Building, Language Centre, Architecture pavilion Pockelsstr. 4
- 2 Haus der Wissenschaft (HDW), Study Service Centre, Enrolment Office, Assembly Hall Pockelsstr. 11
- 3 University Library Universitätsplatz 1
- 4 Forum Building, President's Office, University Administration Universitätsplatz 2
- 5 Lecture Hall Audimax, Cafeteria Universitätsplatz 3
- 6 Centre for Computer Sciences Mühlenpfordtstr. 23
- 7 Refectory and Cafeterias: Mensa 1, 360 Grad, 9bar Katharinenstr. 1
- 8 Student Services, General Students' Committee (AStA) Katharinenstr. 1
- 9 Centre for Life Sciences
- 10 Braunschweig Integrated Centre of Systems Biology (BRICS) Rebenring 56
- 11 Chemistry Centre Hagenring 30
- 12 Academic Advisory Service (relocation to Pockelstr. 11 in 2017)
  Bültenweg 17

- 13 International Office (relocation to Pockelstr. 11 in 2017)
  Bültenweg 74/75
- 14 Gauß IT Centre Hans-Sommer-Str.
- 15 Centre for Electronics and Information Technology Hans-Sommer-Str. 66
- 16 Student Centre Mechanical Engineering Langer Kamp 19d
- 17 Sport Centre Franz-Liszt-Str. 34
- 18 Refectory and Cafeteria: Mensa 2
  Beethovenstr. 15
- Pharmacy Centre
  Beethovenstr. 55, Mendelssohnstr. 1
- 20 Physics Centre Mendelssohnstr. 2/3
- 21 Lecture Halls Campus Nord Bienroder Weg 84
- 22 Aeronautics Research Centre Niedersachsen (NFL) Hermann-Blenk-Str. 27
- 23 Automotive Research Centre Niedersachsen (NFF) Hermann-Blenk-Str. 42
- 24 Student Services, Service Office (Student Accommodation) Wilhelmstr. 1