Bochum is a modern cosmopolitan city with a population of about 400,000 inhabitants. It is located in the heart of the Ruhr District, approximately 60 km from Düsseldorf and about 100 km from Cologne.

Bochum offers a diversity of cultural activities to its inhabitants and guests. Just to name a few: several cinemas, theatres and museums, miscellaneous cultural establishments, a huge shopping centre, a football stadium, a lot of pubs and discotheques, a planetarium and an observatory.

The Ruhr-District

The Ruhr-District is one of the most diversified and culturally active regions in Germany. As a geographical term, it refers to the area defined by the rivers Ruhr, Emscher and Lippe. The Ruhr-District is one if the most important economic regions in Europe. With about 5.5 million inhabitants, it is one of the oldest and most influential industrial regions in the world and it is nowadays a centre of business and commerce.

The Ruhr-University

The Ruhr-University Bochum (RUB), founded in 1962, is situated outside of the city centre in the south of Bochum. It is one of the ten biggest universities in Germany and serves around 55,000 students.

Over 5,000 foreign students and several partnerships with universities around the world give the Ruhr-University its cosmopolitan and international character. Students find in Bochum not only excellent conditions for interdisciplinary learning, but, both on and off the campus, numerous opportunities for leisure and cultural activities.

The RUB offers a wide spectrum of disciplines and is a front runner on the Bologna process. All faculties of the RUB are on one campus. This gives a huge strategic advantage for cooperation between the faculties: only some hundred meters separate the mechanical engineers from the chemists, the psychologists from the biologists and the civil engineers from the physicians.

I often cycle to the lake nearby and enjoy the beautiful landscape. It is really great to have such a nice place near to the university. My friends and I enjoy a lot of activities over there like roller skating and having a barbecue.

Yang Hui, Chinese

Master of Science programme of the Ruhr-University Bochum

Computational Engineering

Schwarz-Bergmann und Partner (Cover picture: Tensegrity Tower Badstube)
Pressestelle Bochum (photos of Bochum)
Pressestelle Ruhr-University Bochum (photos of the Ruhr-University Bochum)
Faculty of Civil Engineering of the Ruhr-University Bochum

Image Sources/References

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THE PROGRAMME

In the year 2000 the department of Civil Engineering of the Ruhr-University Bochum initiated the Master of Science programme “Computational Engineering”. Numerical simulations based on realistic computational models in conjunction with experimental verification are becoming indispensable tools for advanced computer-aided engineering design. The interdisciplinary Master of Science programme Computational Engineering provides the key qualifications in engineering mechanics, mathematics and computer science required for innovative design and analysis of high-tech engineering systems and materials. It is characterised by a synthesis of civil and environmental engineering, numerical material modelling, advanced computational methods for the analysis of structures and ecosystems, knowledge-based design and optimisation processes.

The programme starts every winter term and takes four semesters (2 years). Each semester 30 credits should be collected according to ECTS (European Credit Transfer System). During the first semester all students attend basic courses in mathematics, structural engineering, numerical methods and solid mechanics. The second and third semester include a variety of compulsory and elective lectures. Topics include computational modelling of materials, numerical methods in static and dynamic structural analysis, design optimisation and advanced simulation techniques in fluid and environmental engineering. The fourth semester is dedicated to the Master thesis.

Students have the possibility to either write their Master thesis in an academic environment at various university departments or in the industry while they are supported by a tutor who is a lecturer within the Master programme. Due to the faculty’s numerous connections to the industry, support can be offered for students to find a suitable company. After completion of the programme, the Ruhr-University awards the title ‘Master of Science (M.Sc.)’ to the successful candidates.

All courses are taught in English. Additionally English and German courses are offered by the university.

CURRICULUM

The programme prepares students for working in the research-and-development departments of large engineering companies with a high-tech background (e.g. automobile or aerospace industries) or for going on and working in an university environment.

WHAT WE EXPECT FROM OUR STUDENTS

Due to the high academic standards of the programme and the dense timetable we demand a strong commitment from our students. The scientific education provides all the requirements necessary for pursuing an academic career as well as the knowledge required for rapid advancement in an industrial environment. In order to study successfully students are expected to work focussed, with effort and dedication.

Students are coming from all over the world. Therefore the composition of the classes is very diverse. While studying you will find yourself in a stimulating, culturally diverse environment. Everybody is talking of international competence - here you will get it easily by talking and working with people of a variety of cultural backgrounds.

Like in most engineering subjects women are underrepresented in Computational Engineering. Around 15% of all students are female. We strongly recommend females to apply for our course and join us. We have a strong commitment in supporting our female students. Effectively a good part of them went on to work on their Ph.D.

"I never met so many people with a different cultural background before. We have many enriching discussions and I learn a lot not only about cultural differences, but also about myself. It really helps me to grow as a mature person.”

Kamal Kumar, Indian

Housing and Living

Student apartments are located in the vicinity of the Ruhr-University. The International Relation Office and the Academic Support Group offer apartments from 150,- Euro to 300,- Euro per month. Further there is the possibility to rent a room in private hostels. In total, living expenses amount to approximately 600,- Euro per month.

The city of Bochum can be reached within 8 minutes by subway from the campus station. Next to the university students can find shops and restaurants.

The Ruhr-University offers a number of facilities, as the university library, sport facilities. The botanical garden offers an oasis for relaxation. All facilities are available to all students.

The International Relations Office conducts further activities intended to help foreign students to get started in Bochum. Those activities include cultural events, excursions and workshops.

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CARRIER PROSPECTS

The programme prepares students for working in the research-and-development departments of large engineering companies with a high-tech background (e.g. automobile or aerospace industries) or for going on and working in an university environment.

Financial Aspects

Tuition fee: 500 Euro/semester
Social fee: about 170 Euro/semester

Guest students (Erasmus, Socrates) don’t have to pay a tuition fee. Students who hold a scholarship from the DAAD can be exempted from the tuition fee for two semesters. This exemption can be extended up to four semesters in total.

The faculty will exempt special qualified foreign students from the tuition fee for the first two semesters. The decision about the special qualification will be made on the basis of the applications. After two semesters the performance of each student will be evaluated again.

ADMISSION REQUIREMENTS

Academic requirements: Students who apply for the Master of Science programme Computational Engineering must have a Bachelor (or comparable) degree in
- Civil Engineering or
- Mechanical Engineering or
- a related engineering field

Language requirements: Non-native English speakers are required to have a minimum TOEFL score of 550/215/79 or a minimum IELTS score of 6.0. If the previous study programme was completed in English the candidate must enclose a certified confirmation of the university.

Application forms are available via internet www.rub.de/comp-eng.

Application deadline for next winter term: May 1st