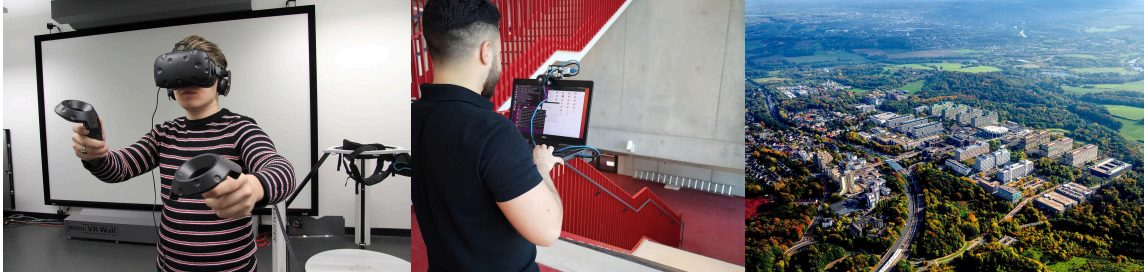


Computational Engineering

Ruhr-Universität Bochum
Master of Science



About the Programme

Analysing and Designing Engineering Systems and Materials

For more than a decade, the developing field of Computational Engineering has become increasingly important in science and high-tech industrial applications. Reacting on this, the department of Civil Engineering at Ruhr-Universität Bochum established the Master of Science programme "Computational Engineering" in 2000. Since then, the Master course has been providing to its students key-skills in engineering mechanics, mathematics and computer science required for innovatively designing and analysing high-tech engineering systems and materials.

The Master programme "Computational Engineering" starts every winter term and takes four semesters (2 years) to complete. During the first three semesters, students attend several compulsory and elective courses (see curriculum). The 4th semester is dedicated to the Master thesis. In this context, students are free to either write their Master thesis in an academic environment at various university departments or in the industry while being supported by a lecturer of the Master programme. Due to the faculty's close connections to the industry, support can also be offered to students in finding a suitable company. When they have completed the programme, Ruhr-Universität awards the title "Master of Science (M.Sc.)" to the successful candidates.

Due to the high academic standards of the programme and the condensed timetable we demand a strong commitment from our students. In order to study successfully, students are expected to work focused and with effort and dedication.

Composition of the Classes

Our students are coming from all over the world. Therefore, the composition of the classes is very diverse. Studying Computational Engineering in Bochum, you will find yourself in a stimulating, culturally diverse environment. Internationalisation is a word which has much been talked of lately - here, it comes to life when students are talking and working with other people from a variety of cultural backgrounds.

Like in most engineering subjects, women are a minority in Computational Engineering; only about 15 per cent of our students are female. Thus, we would like to explicitly encourage female students to apply for our course and to join us. We feel a strong commitment to support our female students. In fact, the better part of them went on to work on their Ph.D after completing the Master programme.

Language of the Classes

Owing to the international focus of the programme, all lectures and examinations are held in English. Most of the lecturers spent an important part of their career in countries abroad, thus having profound teaching skills paired with a lot of international experience.

Contact

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Curriculum

Study Content

Compulsory Courses

In the first semester all students have to complete five basic courses in mathematics, mechanics, structural engineering and numerical methods. During the second and third semester students have to pass two compulsory courses.

Compulsory Optional Courses

From our opinion, you can only be good at things you really like. We thus give our students the chance to specialise in the field they are most interested in. In the second and third semester they have the possibility to choose subjects from a variety of elective courses. Furthermore, we recommend students to write two case studies in a subject they would like to further look into.

Optional Courses

Optional courses can be chosen from the fields of construction, material modelling, numerical methods, fluid and environmental engineering or dynamics. Students decide themselves how many optional courses they take. However, they must ensure that after three semesters they have completed enough courses to have obtained at least 90 credit points.

Every course schedule includes lectures, exercises and sometimes assignments. Upon agreement with the respective lecturer, students who have sufficient German language skills may also attend lectures from the curriculum of the Master course Civil Engineering.

Content of the Curriculum> Modulehandbook>

Perspectives

Career Prospects

The Master programme is embedded in a strong research environment with an excellent international reputation. Especially in the second year, students work side by side with university researchers, thus gaining unique insights and experience in terms of scientific methodologies. From the experience with the previous generations of students it can be said that graduates have excellent chances on top-level positions in high-tech companies and other research institutions. The scientific education given in the Master programme provides the essential qualifications required for both – pursuing an academic career and a successful career in an industrial environment.

About the University

The Ruhr-Universität Bochum

The Ruhr-University Bochum (RUB), founded in 1962, is located outside the city center in the south of Bochum. It is one of the ten largest universities in Germany and has around 35.000 students. More than 3.000 foreign students and several partnerships with universities from countries all over the world ensure the university's cosmopolitan and international character. The Bochum university thus not only provides excellent conditions for interdisciplinary studies, but also on- and off-campus cultural and leisure-time facilities.

Campus

In addition, the RUB offers a wide spectrum of disciplines and is a pioneer in the Bologna process. Therefore it was among the first German universities which reviewed all of its programmes according to the international Bachelor and Master system. Different from other, more traditional universities like Muenster or Aachen, all RUB faculties are located on one campus, thus bringing about a major strategic advantage for the cooperation between the faculties: Only a few hundred meters of walking distance separate the mechanical engineers from the chemists, the psychologists from the biologists and the civil engineers from the physicians.

Admission & Financial Issues

Requirements

Required degree

Students who apply for the Master of Science programme must have a Bachelor (or comparable) degree in either

- Civil Engineering
- Mechanical Engineering

- a related engineering field

Students who have a Bachelor degree in Computer Science will not be accepted.

What is the minimum grade to be accepted to the programme?

There is no definitive answer to this question as the required grade mainly depends on where you come from. You are thus requested to send us your application documents when you have completed your first degree programme, when you are about to complete it and even when you have barely failed it i.e. when you are a few credits shy of your degree. If you do not have the required grades, but still you are convinced that, because of your additional skills, you are qualified for the Master of Science course, you are welcome to send us your application. In the selection procedure we will favourably consider your additional qualifications.

Compared to the German rating system (according to which 1.0 is the best and 4.0 is the lowest grade), you should have an average of at least 2.5. All foreign grades will be evaluated according to this system. In order to give you an idea what your chances are to be admitted to the programme the following rules of thumb can be applied:

- in GPA-ratings (maximum grade 4.0, minimum grade to pass 2.0) you need at least an average of 3.3
- in percentage-ratings (100% maximum, minimum grade to pass 40%), you need at least 75%
- if your degree includes ratings like "first division", "first division with distinction" etc., you should have at least earned one of the two best ratings

How do I know if my university will be recognised?

Again, there is no definitive answer to this question. Usually, degrees/universities will be recognised if

- the university from which you earned your degree is one of the top-ranking universities in your country
- there are both three-year and four-year Bachelor programs offered in your home country. Your degree has to result from a four-year Bachelor programme.

Language requirements

The language of instruction is English. Therefore you have to furnish proof that you have sound English language skills.

To be accepted to the programme at least one of the following requirements must be fulfilled:

- completion of your first degree programme in English (this means that ALL lectures must have been held in English)
- TOEFL: minimum score paper-based 550, computer-based 215, internet-based 79; the TOEFL score must not be older than two years
- IELTS (Academic): minimum score 6.0 (Overall Band Score)

Application

General Aspects

In order to study the international master's course Computational Engineering at Ruhr-University Bochum, candidates must submit an application via our online application system. This online application system is generally open for applications from November. The closing dates for online applications are:

- 15th May for citizens of non-European countries
- 15th July for citizens of the European Union

Please note that enrolment for the Master's program Computational Engineering is only possible for the upcoming winter term.

Step by Step Application Guide

Financial Issues

Social fee

In general, all students have to pay a social fee of about EUR 300,- per semester. The social fee includes free use of public transport in whole North-Rhine Westphalia, and reduced prices for food and drinks bought in the canteen (Mensa) and the cafeterias. Guest students (e.g. Erasmus) are exempt from the tuition fee. DAAD scholarship holders may also be exempt from the tuition fee for two semesters. Depending on the duration of the scholarship the exemption can be extended to up to four semesters maximum.

Detailed Information about the Tuition

Mathematik
Maschinenbau
Bauingenieurwesen
Informatik
Elektrotechnik