Deutscher Akademischer Austauschdienst
German Academic Exchange Service


# Table of Contents

# Master's degree

## Computational Sciences in Engineering (CSE)

**Technische Universität Braunschweig** • Braunschweig





## Overview

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| **Degree** | Master of Science |
| **Teaching language** | • English<br>• German |
| **Languages** | CSE is a bilingual programme. Classes during the first two semesters are mostly taught in English. |
| **Programme duration** | 4 semesters |
| **Beginning** | Winter semester |
| **Additional information on beginning, duration and mode of study** | First semester student induction is in September/October. |
| **Application deadline** | Non-EU applicants: 15 March for the following winter semester<br>EU applicants: 15 July for the following winter semester |
| **Tuition fees per semester in EUR** | None |
| **Combined Master's degree / PhD programme** | No |
| **Joint degree / double degree programme** | No |
| **Description/content** | CSE is a combination of engineering sciences, mathematics and applied computer sciences. Students will develop mathematical models for physical processes as occur in various branches of engineering sciences.<br><br>They will solve specific problems regarding physical modelling, mathematical description as well as numerical simulation and perform and evaluate complex numerical analyses of engineering processes.<br><br>CSE graduates will be able to apply this knowledge both in the development of new approaches and in the improvement of existing technologies. They will have skills to plan, carry out and present the results of (sub-)projects in increasingly interdisciplinary project teams. |

The CSE Master's programme enables graduates to carry out independent research as part of their doctoral studies in civil, mechanical or electrical engineering, or in mathematics.

## Course Details

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| **Course organisation** | The CSE Master's programme is divided into the following:<br><br>**Basic Core Courses (BCC) – 30 credits**<br><br>• Foundations of Natural and Engineering Sciences (BCC-ENG)<br>• Foundations of Mathematics and Computational Science (BCC-MCS)<br><br>**Elective Core Courses (ECC) – 25 credits**<br><br>• Computational Methods in Engineering Sciences (ECC-ENG)<br>• Applied Mathematics and Scientific Computing (ECC-MCS)<br><br>**In-Depth Courses (IDC) – 35 credits**<br><br>• Specialisation courses (IDC-LEC)<br>• Specialisation project (IDC-PRO)<br><br>**Master's Thesis (MTH) – 30 credits**<br><br>• Master's thesis<br><br>The programme is completed with 120 credits. |
| **A Diploma supplement will be issued** | Yes |
| **Integrated internships** | Internships are not part of the programme, but are highly recommended. |
| **Course-specific, integrated German language courses** | Yes |
| **Course-specific, integrated English language courses** | No |

## Costs / Funding

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| **Tuition fees per semester in EUR** | None |
| **Semester contribution** | In order to enrol at TU Braunschweig or to register back for the coming semester, you have to pay your semester contribution (currently approx. 360 EUR).<br><br>The semester contribution for example covers your semester ticket for public transport. |
| **Costs of living** | By German standards, Braunschweig is not an expensive place to study. Nevertheless, you need a |

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| | minimum of about 940 EUR per month to be able to study here successfully.<br><br>More information about financing your studies can be found here. |
| **Funding opportunities within the university** | Yes |
| **Description of the above-mentioned funding opportunities within the university** | TU Braunschweig has a scholarship programme for excellent students ("Deutschlandstipendium"). The stipend rate is 300 EUR per month.<br><br>Information on funding can be found here. |

# Requirements / Registration

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| **Academic admission requirements** | For admission to the CSE Master's programme, the following academic qualification is required:<br><br>• Bachelor's degree (or equivalent) in<br>  ◦ Engineering Sciences<br>  ◦ Natural Sciences<br>  ◦ Mathematics<br>  ◦ Computer Science<br>  ◦ or a closely related degree programme<br>• Applicants must show that they have at least good in-depth knowledge of the major basic subjects for the degree programme, such as mathematics, mechanical engineering and information processing generally with the degree certificate submitted, which lists the courses taken and marks awarded in a prior degree programme.<br>• Written motivation letter indicating and giving reasons for their strong interest in individual fields of study as well as specifying on what specific prior knowledge or interests their specialised qualification for the CSE degree programme is based. In particular, the statement should also make reference to the multidisciplinary course content in Engineering Sciences, Mathematics and Scientific Computing.<br>• German language skills (see language requirements below)<br>• English language skills (see language requirements below)<br><br>CSE self assessment |
| **Language requirements** | Proof of English language proficiency:<br><br>• Language of instruction (marked on transcript or stated by university) or equivalent<br>• TOEFL (min. 79 iBT)<br>• IELTS (min. 6.5)<br><br>Proof of German language proficiency:<br><br>• Language of instruction (marked on transcript or stated by university) or equivalent<br>• TestDaF 3 (an A2 level [or higher] must be submitted during enrolment)<br>• DSH-1 (an A2 level [or higher] must be submitted during enrolment)<br><br>Note: If the English language skills are provided upon application (see levels above), the admissions board may offer a conditional acceptance. Students will have to submit at least an A2 level certificate proving their German language skills when enrolling (August/September). The DSH-1 (or equivalent) has to be passed no later than after the third semester. |
| **Application deadline** | Non-EU applicants: 15 March for the following winter semester<br>EU applicants: 15 July for the following winter semester |

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| **Submit application to** | Online application |

## Services

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| **Possibility of finding part-time employment** | Many CSE students work as research or teaching assistants at the university. |
| **Accommodation** | The Student Services OstNiedersachsen ("Studentenwerk") offer several dormitories: https://www.stw-on.de/en/braunschweig/housing/ |
| **Support for international students and doctoral candidates** | • Welcome event<br>• Buddy programme<br>• Accompanying programme<br>• Cultural and linguistic preparation |
| **General services and support for international students and doctoral candidates** | TU Braunschweig offers a broad range of support programmes for all administrative, academic, social, and personal questions and challenges that international students may have.<br><br>Read more about our International Student Support Programme |

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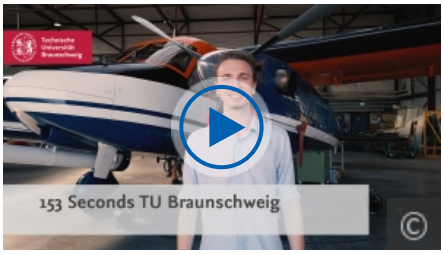
### Georgie Neshev
CSE student

How can mathematics, computational sciences and different engineering disciplines be made to work with each other? As a CSE engineer, you will develop a perspective of solving any problem numerically, looking at applications in engineering, medicine, chemistry and physics.




### 153 seconds TU Braunschweig

TU Braunschweig in a quick run-through: student Jannick Stühff takes you along and shows you what studying at the Carolo-Wilhelmina is all about. Get to know our campus, learn more about life in Braunschweig, and see first-hand what cutting-edge research means to us.

» more: https://www.youtube.com/watch?v=A5jGY9lYDMo

Main campus

© Markus Hörster / TU Braunschweig

**275 years of experience in teaching and research**

We would like to extend a very warm welcome! We are happy that you are interested in studying in Braunschweig. TU Braunschweig is a university with a long tradition of excellent research and teaching. We are part of the TU9 network, the alliance of the leading Universities of Technology in Germany.

TU Braunschweig has about 16,800 students and about 19 percent of them are international students. Six departments and 120 institutes offer 86 degree programmes and excellent facilities for interdisciplinary research work in the fields of engineering, natural sciences, social sciences, and the humanities.

TU Braunschweig is situated at the centre of Europe's most active research and development region. The large number of major companies and leading national research institutes in the Braunschweig region create an enormous scientific potential. Students benefit greatly from the many active partnerships between university and industry. They can be involved in current research projects early on in their studies and work on study projects with practical relevance. Internships and practical training enable students to gain insights into various companies and to establish initial contacts with potential employers.

https://www.tu-braunschweig.de/en/why-braunschweig

## University location

Braunschweig is a lively student city situated in northern Germany. With a population of 250,000, it is big enough to feel cosmopolitan and yet small enough not to be overwhelming. As an important cultural and political centre dating back to the Middle Ages, Braunschweig retains the imprint of each passing age, from the medieval castle and the Gothic cathedral to modern shopping streets and leisure facilities.

Braunschweig has an international reputation as a city of research. The high density of national and international companies and scientific research institutes located in and around the city make Braunschweig the most active research and development region in all of Europe.

www.braunschweig.de.

# Contact

**Technische Universität Braunschweig**
Computational Sciences in Engineering (CSE)

Mühlenpfordtstrasse 23
38106 Braunschweig

Tel. +49 5313912241
cse-apply@tu-braunschweig.de
Course website: https://www.tu-braunschweig.de/cse

https://www.facebook.com/tubraunschweig

https://twitter.com/tubraunschweig

https://www.linkedin.com/school/tu-braunschweig/

https://www.instagram.com/tu.braunschweig/?hl=en

https://www.youtube.com/channel/UC8X4NAyIUr9Q12hVUOoqyhQ

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German Academic Exchange Service
Section K23 – Information on Studying in Germany
Kennedyallee 50
D-53175 Bonn
www.daad.de

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