



Deutscher Akademischer Austauschdienst  
German Academic Exchange Service



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# Master's degree

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## MSc Embedded Systems Engineering

University of Freiburg • Freiburg im Breisgau

### Overview

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| Degree                                   | Master of Science   |
| Teaching language                        | <ul style="list-style-type: none"><li>English</li></ul>   |
| Languages                                | Although a few elective courses (5%) are taught in German, it is perfectly possible to study the MSc Embedded Systems Engineering programme completely in English.  |
| Programme duration                       | 4 semesters   |
| Beginning                                | Winter and summer semester  |
| Application deadline                     | <b>Non-EU citizens:</b> 15 December for the summer semester, 15 May for the winter semester<br><b>EU citizens:</b> 15 January for the summer semester, 15 July for the winter semester  |
| Tuition fees per semester in EUR         | Varied  |
| Additional information on tuition fees   | <p>The state of Baden-Württemberg implemented study fees for international students as well as students earning a second degree starting in the 2017/18 winter semester.</p> <p>Here you will find further information about tuition fees:<br/><a href="http://www.studium.uni-freiburg.de/en">www.studium.uni-freiburg.de/en</a></p> |
| Combined Master's degree / PhD programme | No  |
| Joint degree / double degree programme   | No  |

#### Description/content

Embedded systems are among the key technologies. Whether in medical technology, the automotive industry, in aerospace or in telecommunications, media and entertainment technology – embedded systems play a central role in the latest technological developments. The systems that "feel" with sensors, "think" through intelligent programming, and "act" on signals and actuators perform a wide variety of tasks.

In the Master's programme, we will provide you with versatile know-how in computer science and engineering. For your future as a research scientist or project leader in a company, you will be well equipped to understand and bring together the "language" of both worlds of technology. An extensive selection area allows you to set an individual focus on the following areas:

- Artificial Intelligence
- Biomedical Engineering
- Circuits and Systems

- Cyber-Physical Systems
- Materials and Fabrication
- Photonics

Students have the choice between a broader, cross-sectional training on computer science and micro-systems engineering or a specialisation in one of the fields.

## Course Details

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|--|---|
| Course organisation                                  | <p>The Master of Science programme Embedded Systems Engineering is structured into two principal areas:</p> <ul style="list-style-type: none"> <li>• Computer Science</li> <li>• Microsystems Engineering</li> </ul> <p>Computer Science has two sub-areas:</p> <ul style="list-style-type: none"> <li>• Essential Lectures in Computer Science</li> <li>• Elective Courses in Computer Science</li> </ul> <p>Microsystems Engineering is divided into the sub-areas:</p> <ul style="list-style-type: none"> <li>• Advanced Microsystems Engineering</li> <li>• Microsystems Engineering Concentration Areas</li> </ul> <p>In addition, there is an optional area Customised Course Selection.</p> <p>Learning takes the form of lectures, exercises, lab courses, seminars and project work. The state-of-the-art laboratories on the campus of the Department of Engineering enable hands-on training in which research and teaching are closely linked. The flexible curriculum in the Master's programme enables students to specialise in a wide range of topics.</p> <p>During the final project leading to the Master's thesis, the students are directly involved in one of the research projects in the Department of Engineering.</p> <p><a href="#">» PDF Download</a></p> |
| A Diploma supplement will be issued                  | Yes   |
| International elements                               | <ul style="list-style-type: none"> <li>• Specialist literature in other languages</li> <li>• Language training provided</li> <li>• Training in intercultural skills</li> <li>• Projects with partners in Germany and abroad</li> </ul>  |
| Integrated internships                               | Internships are not an integral part of the curriculum. Nevertheless, students are free to take a leave of absence in order to do an internship in a company.   |
| Course-specific, integrated German language courses  | No  |
| Course-specific, integrated English language courses | No  |

## Costs / Funding

|  |   |
|--|---|
| Tuition fees per semester in EUR   | Varied  |
| Additional information on tuition fees   | <p>The state of Baden-Württemberg implemented study fees for international students as well as students earning a second degree starting in the 2017/18 winter semester.</p> <p>Here you will find further information about tuition fees:<br/><a href="http://www.studium.uni-freiburg.de/en">www.studium.uni-freiburg.de/en</a></p>   |
| Semester contribution  | <p>180 EUR per semester:</p> <ul style="list-style-type: none"><li>• Administrative fee: 70 EUR</li><li>• Contribution to the constituted student body: 7 EUR</li><li>• Contribution to the student union: 103 EUR</li></ul>  |
| Costs of living  | <p>Participants must ensure that sufficient funding is available to finance their participation in a course of study. The average cost of living in Freiburg for one month is currently approx. 850 EUR to 1,000 EUR.</p> <p>Some details:</p> <ul style="list-style-type: none"><li>• Rooms in private accommodation including extra costs: 350 EUR – 700 EUR</li><li>• Rooms in student residences: 250 EUR and 550 EUR including extra costs</li><li>• Private expenses amount to around 350 EUR per month.</li><li>• Health insurance (recommended) is available for approx. 120 EUR per month.</li><li>• Transport: A special student ticket for regional transport costs approx. 89 EUR per semester.</li></ul> <p><a href="http://www.studium.uni-freiburg.de/en/counseling/welcome-guide-for-international-students/finance">www.studium.uni-freiburg.de/en/counseling/welcome-guide-for-international-students/finance</a></p> |
| Funding opportunities within the university                                    | Yes   |
| Description of the above-mentioned funding opportunities within the university | <p>There is one scholarship scheme for students who obtained an excellent result in their undergraduate studies (final grade of 1.5 or better in the German grading system). More information:</p> <ul style="list-style-type: none"><li>• Deutschlandstipendium: <a href="http://www.studium.uni-freiburg.de/en/counseling/scholarship-advising/deutschlandstipendium-germany-scholarship?searchterm=deutschlandstipendium&amp;">http://www.studium.uni-freiburg.de/en/counseling/scholarship-advising/deutschlandstipendium-germany-scholarship?searchterm=deutschlandstipendium&amp;</a></li></ul>   |

## Requirements / Registration

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|---------------------------------|---|
| Academic admission requirements | <p>Applicants must hold a Bachelor's degree in one of the following:</p> <ul style="list-style-type: none"><li>• embedded systems</li><li>• information technology</li><li>• computer science or engineering</li><li>• electronics</li><li>• mechatronics</li></ul> <p>Or they must hold a Bachelor's degree in a closely related field with an excellent cumulative GPA or</p> |
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final grade.

Previous knowledge in mathematics, computer science, physics and electrical engineering is required.

#### Language requirements

Exemption from submitting an English language certificate is only granted to native speakers from the USA, UK, Ireland, Australia, New Zealand and Canada or students who completed their Bachelor's in one of these countries. All other candidates have to submit one of the following English language certificates:

- TOEFL iBT, minimum 95 points
- Academic IELTS, minimum 7.0
- Cambridge Certificate of Advanced English (C1)
- Cambridge Certificate of Proficiency in English (C1)
- Pearson PTE Academic (min. 76)
- TELC
- TOEIC
- UNlcert III or IV

#### Application deadline

**Non-EU citizens:** 15 December for the summer semester, 15 May for the winter semester  
**EU citizens:** 15 January for the summer semester, 15 July for the winter semester

#### Submit application to

You will find all information about the application procedure on our [website](#).

## Services

#### Possibility of finding part-time employment

Qualified students may easily find opportunities for research and teaching assistantships within the laboratories of the Department of Engineering.

#### Accommodation

As Freiburg is an attractive city, finding a suitable and affordable place to live can take a little while. The University of Freiburg offers all newly enrolled international students the possibility to apply for student housing via the International Office. In addition to these dormitories, which are run by the Studierendenwerk Freiburg ([www.swfr.de/en](http://www.swfr.de/en)), several independent residence halls are listed on the university website (<http://www.housing.uni-freiburg.de>). The Studierendenwerk Freiburg and the International Office also offer a list of available private rooms.

#### Career advisory service

The university offers the following career services:

- Company visits
- Discussions with and talks from employers
- Advising on application procedures and documents

#### Support for international students and doctoral candidates

- Welcome event
- Buddy programme
- Tutors
- Accompanying programme
- Specialist counselling
- Cultural and linguistic preparation

#### Supervisor-student ratio

470 ESE students (undergraduate and postgraduate), 40 professors, approx. 200 scientific staff and 12 administrative staff



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**Titus Busulwa**  
MSc

I have always been fascinated by smart systems. The Freiburg University's ESE programme, offered by its Computer Science and Microsystems Engineering departments, was the perfect fit for me. Its broad range of modules helped me tailor my specialisation courses to fit my areas of interest. The mentorship and guidance by experts and highly skilled staff greatly enriched my study experience. This programme boasts strong ties to industry and research institutes and has highly sought-after graduates.

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## University of Freiburg

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Traditional and modern: the University of Freiburg in Germany

© Universität Freiburg - Sandra Meyndt

The University of Freiburg was founded in 1457 as a classical comprehensive university, making it one of the oldest institutions of higher education in Germany. Awarded for its excellence in both research and teaching, the university also boasts a long history, with numerous

Nobel laureates. Brilliant scholars and creative thinking distinguish it today as a modern, top-notch university, well equipped for the challenges of the 21st century. As an organisation with around 24,500 students, 288 degree programmes, and 6,536 employees (2021), the University of Freiburg is committed to family friendliness, equal opportunities, and environmental consciousness in its day-to-day operations. The structure of the university is multifaceted, ranging from 11 academic faculties – from the humanities and the social and natural sciences all the way to engineering – to 19 research centres. This goes to show that we are a dynamic, large-scale institution with a diverse educational offering. As studies, research, and continuing education are all an integral part of this offering, we maintain a close relationship with the city and the region as well as with the international academic community. Bilateral partnerships, research projects, joint study courses and memberships in international networks such as the League of European Research Universities (LERU) and of EUCOR – The European Campus are examples of the university's strong transnational relations. All our students, including those from abroad, can take courses at the Universities of Basel (Switzerland) and Strasbourg (France) without having to enrol. Via EUCOR, The European Campus mobility grant, they also receive allowances for travel expenses to their partner institutions.

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## University location

Freiburg im Breisgau is a city in south-western Germany on the edge of the Black Forest. Freiburg was founded by Konrad and Duke Bertold III of Zähringen in 1120 as a free market town – hence its name, which translates to "free town". Freiburg holds a central position in Europe at the trijunction of Switzerland, France, and Germany, and is the city with the most hours of sunshine per year in Germany. It is nestled in one of the oldest cultural landscapes north of the Alps, a location which has had an unmistakable influence on the town. The university plays an essential part in the quality of life in Freiburg; both in the academic sphere and in the perception of the general public, the activities of the university are of central importance. Since its founding, teaching, learning and research have formed an indivisible whole.

With approx. 230,000 inhabitants, Freiburg has a friendly size, offering the safe surroundings of a smaller city whilst at the same time excelling in terms of culture, shopping and infrastructure. Both the inhabitants and the city government of Freiburg attach great importance to ecological values and sustainable development. This "green city" atmosphere influences many aspects of city life – from the numerous cyclists on the streets to cutting-edge solar energy research. Surrounded by the beautiful landscapes of the Black Forest and the wine-growing regions of the Rhine Valley, Freiburg is a popular destination for tourism and leisure activities.

## Contact

### University of Freiburg

Faculty of Engineering  
Admissions Office

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79110 Freiburg im Breisgau

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✉ [info@ese.uni-freiburg.de](mailto:info@ese.uni-freiburg.de)

🌐 Course website: [https://www.tf.uni-freiburg.de/en/study-programs/embedded-systems-engineering?set\\_language=en](https://www.tf.uni-freiburg.de/en/study-programs/embedded-systems-engineering?set_language=en)

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🌐 <https://www.linkedin.com/company/albert-ludwigs-universit-t-freiburg-im-breisgau>

📷 <https://instagram.com/unifreiburg/>

📺 <https://www.youtube.com/c/Universit%C3%A4tFreiburg>

Last update 29.04.2024 16:24:29

# International Programmes in Germany - Database

[www.daad.de/international-programmes](http://www.daad.de/international-programmes)  
[www.daad.de/sommerkurse](http://www.daad.de/sommerkurse)

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## GATE-Germany

Consortium for International Higher Education Marketing  
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## Disclaimer

The data used for this database was collected and analysed in good faith and with due diligence. The DAAD and the Content5 AG accept no liability for the correctness of the data contained in the "International Programmes in Germany" and "Language and Short Courses in Germany".

The publication is funded by the German Federal Ministry of Education and Research and by contributions of the participating German institutions of higher education.



Federal Ministry  
of Education  
and Research