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* MSc Embedded Systems Engineering • University of Freiburg • Freiburg im Breisgau .................. 2
Master's degree

**MSc Embedded Systems Engineering**
*University of Freiburg • Freiburg im Breisgau*

## Overview

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<tr>
<th><strong>Degree</strong></th>
<th>Master of Science</th>
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</thead>
<tbody>
<tr>
<td><strong>Teaching language</strong></td>
<td>English</td>
</tr>
<tr>
<td><strong>Languages</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Programme duration</strong></td>
<td>4 semesters</td>
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<tr>
<td><strong>Beginning</strong></td>
<td>Winter and summer semester</td>
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</tbody>
</table>
| **More information on beginning of studies** | Winter semester (October)  
Summer semester (April) |
| **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 |
| **Tuition fees per semester in EUR** | Varied |
| **Additional information on tuition fees** | **EU citizens** do not have to pay any tuition fees.  
**Non-EU citizens** have to pay 1,500 EUR per semester. |
| **Combined Master's degree / PhD programme** | No |
| **Joint degree / double degree programme** | No |
| **Description/content** | Embedded systems are a key technology of modern society. Whether in the automotive industry, aerospace, and medical technology or in telecommunications, media and entertainment industries - embedded systems always play a major role in state-of-the-art technology. The goal of the MSc Embedded Systems Engineering programme (ESE) is to qualify engineers who can develop these systems, because they will obtain the necessary knowledge to develop both the hardware and the software needed.  
The curriculum consists of courses belonging to the following areas:  
- design of microelectronic and micromechanic devices  
- software-based components  
- system integration |
Course Details

In the first two semesters, ESE students will study the foundations needed for the design of embedded systems. These foundation courses are:

- Cyber-Physical Systems / Discrete Models
- Sensors
- Assembly and Packaging Technology
- Microelectronics
- Modelling and System Identification

In the third and fourth semesters, ESE students can specialise in two concentration areas, one from the field of computer science (reliable embedded systems, distributed systems or robotics and computer visions) and one from the field of electronics (circuits and systems, design and simulation or sensors and actuators). In addition, they can take elective courses in the personal profile, which includes all courses offered at the Faculty of Engineering. These can be lectures, seminars or lab courses.

During the final project leading to the Master's thesis, the students are directly involved in one of the research projects at the Faculty of Engineering.

Types of assessment
The following types of assessments are used: written exams, oral exams, papers, and project work.

A Diploma supplement will be issued
Yes

International elements
- Specialist literature in other languages
- Language training provided
- Training in intercultural skills
- Projects with partners in Germany and abroad

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

The course of study can be taken entirely online
No

Digital learning and teaching modules
- Video learning
- Chats with lecturers
- Mobile learning apps
- Wikis
<table>
<thead>
<tr>
<th><strong>Description of e-learning elements</strong></th>
<th>Scripts, study material, exercise sheets and lecture recordings are made available via the learning management system (ILIAS).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participation in the e-learning course elements is compulsory</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Can ECTS points be acquired by taking the online programmes?</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Can the e-learning elements be taken without signing up for the course of study?</strong></td>
<td>No</td>
</tr>
</tbody>
</table>

## Costs / Funding

<table>
<thead>
<tr>
<th><strong>Tuition fees per semester in EUR</strong></th>
<th>Varied</th>
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</thead>
<tbody>
<tr>
<td><strong>Additional information on tuition fees</strong></td>
<td>EU citizens do not have to pay any tuition fees. Non-EU citizens have to pay 1,500 EUR per semester.</td>
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<tr>
<td><strong>Semester contribution</strong></td>
<td>155 EUR per semester</td>
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<tr>
<td>- Student services fees (including the initial contribution for the &quot;Semester Ticket&quot;): 78 EUR</td>
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<tr>
<td>- Administrative fees + student government fees: 77 EUR</td>
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<tr>
<td><strong>Costs of living</strong></td>
<td>Participants must ensure that sufficient funding to finance their participation in a course of study is available. The average cost of living in Freiburg for one month is currently approx. 800-985 EUR. Some details:</td>
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<tr>
<td>- Student accommodation costs approx. 280-450 EUR (monthly)</td>
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<td>- Private expenses amount to around 350 EUR (monthly)</td>
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<tr>
<td>- Health insurance is available for approx. 45-90 EUR (monthly)</td>
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<tr>
<td>- Transport: A special student ticket for regional transport costs approx. 94 EUR (per semester).</td>
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<tr>
<td><strong>Funding opportunities within the university</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Description of the above-mentioned funding opportunities within the university</strong></td>
<td>There are two scholarship schemes 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:</td>
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<tr>
<td>a) Christoph Rüchardt Scholarship: <a href="https://www.tf.uni-freiburg.de/en/studies-and-teaching/a-to-z-study-faq/christoph-ruchardt-scholarship">https://www.tf.uni-freiburg.de/en/studies-and-teaching/a-to-z-study-faq/christoph-ruchardt-scholarship</a>?</td>
<td></td>
</tr>
</tbody>
</table>
Academic admission requirements

Applicants must hold a Bachelor's degree in one of the following:

- embedded systems
- information technology
- computer science or engineering
- electronics
- mechatronics

or in a closely related field with an excellent CGPA or final grade.

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

Language requirements

All applicants who are not from the USA, Canada, Ireland, the UK, New Zealand or Australia have to submit one of the following 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
- TELC
- TOEIC

A confirmation that your Bachelor's studies were held in English is not sufficient.

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 Faculty of Engineering.

Accommodation

As Freiburg is an attractive city, finding a suitable place to live can take a little time. Only some of our international students can be offered a room in a student dormitory. The Studentenwerk (student social services) is in charge of the student dormitories. Applicants must expect a waiting period. In addition to these dormitories, several independent dormitories are listed on the university website. The Studentenwerk also offers a list of available private rooms, and the International Office can be contacted for further assistance in finding accommodation (http://www.international.uni-freiburg.de).

Career advisory service

The university offers the following career services:

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

Specific specialist or non-specialist support for

- Welcome event
Titus Busulwa

MSc

“I have always been fascinated by smart systems. The University Freiburg’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.”

University of Freiburg
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 25,000 students, 284 degree programmes, and 6,736 employees, 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 20 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 the European Confederation of Upper Rhine Universities (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 the "Eucor - The European Campus" mobility grant, they also receive allowances for travel expenses to the partner institutions.

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 nestles 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

Ursula Epe

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79110 Freiburg im Breisgau

Tel. +49 7612038340

info@ese.uni-freiburg.de

Course website: https://www.tf.uni-freiburg.de/en/study-programs/embedded-systems-engineering/m-sc-embedded-systems-engineering

https://www.facebook.com/technischefakultaet
https://twitter.com/TFunifreiburg

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