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Solar Energy Engineering | MSc • University of Freiburg • Freiburg im Breisgau................................. 2
Master's degree

Solar Energy Engineering | MSc
University of Freiburg • Freiburg im Breisgau

Overview

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<tr>
<th>Degree</th>
<th>Master of Science in Solar Energy Engineering and Certificates of Advanced Studies on Solar Energy Engineering</th>
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<tbody>
<tr>
<td>Course location</td>
<td>Freiburg im Breisgau</td>
</tr>
<tr>
<td>In cooperation with</td>
<td>Fraunhofer Institute for Solar Energy Systems, ISE</td>
</tr>
<tr>
<td>Teaching language</td>
<td>• English</td>
</tr>
<tr>
<td>Languages</td>
<td>All courses are held in English.</td>
</tr>
<tr>
<td>Programme duration</td>
<td>6 semesters</td>
</tr>
<tr>
<td>Beginning</td>
<td>Winter and summer semester</td>
</tr>
<tr>
<td>More information on beginning of studies</td>
<td>Mid-October and mid-April</td>
</tr>
<tr>
<td>Application deadline</td>
<td>For details about the application process, please have a look at the respective section of our website:</td>
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</tbody>
</table>

- Application deadline is 31 July for the Master’s and 1 April for Certificates.
- Each year, approx. 20 students are accepted to the programme.

<table>
<thead>
<tr>
<th>Tuition fees per semester in EUR</th>
<th>3,650</th>
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</thead>
<tbody>
<tr>
<td>Additional information on tuition fees</td>
<td>There are no additional fees for international students.</td>
</tr>
<tr>
<td></td>
<td>The average fee per semester is around 3,800 EUR. This includes a semester fee and a credit point-based fee:</td>
</tr>
<tr>
<td></td>
<td>• Semester fee: 500 EUR each semester</td>
</tr>
<tr>
<td></td>
<td>• Course fee: 200 EUR per ECTS point.</td>
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<tr>
<td></td>
<td>• Project and thesis fee: 100 EUR per ECTS point</td>
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</table>
## Course Details

### Description/content

**Solar Energy Experts – Made in Germany**

The [MSc Solar Energy Engineering](#) is a Master’s of Science (MSc) degree in Solar Energy Engineering. Our range of [certificates in advanced studies](#) allow you to take steps towards the aforementioned MSc and/or specialise in a particular topic pertaining to solar energy.

All our programmes are offered in cooperation with one of the world’s leading research institutes in solar energy, [Fraunhofer ISE](#). Students will enjoy innovative, insightful and tailor-made training from lecturers who are leading scientists in their field.

During the course of this programme, students will acquire subject-relevant skills, from developing and producing photovoltaic and solar thermal systems to the assembly of complex plants, power stations and energy networks plants.

This programme offers the opportunity to specialise in one or more sub-areas of solar energy production, such as solar cell technologies, photovoltaic systems, solar thermal technology, material and cell characterisation, systems integration and electricity networks.

### Thriving Career Prospects in a Rewarding Occupational Field

Solar energy is a growing global market, which requires a workforce with a strong technological and engineering background. The MSc Solar Energy Engineering degree will qualify you for positions in research and development, project or engineering management and technology assessment. The degree is also a jump-start for any career change into the solar energy sector.

- We provide close mentoring and support throughout.
- We offer a great student experience through regular voluntary campus phases.
- We arrange exams all around the world in study centres near the place where you live.

Join our voluntary [Campus Phase](#) in autumn and spring to:

- discover Freiburg, the "Green City" and solar capital of Europe
- meet fellow students and their lecturers face-to-face
- complete hands-on training in the high-tech labs of Fraunhofer ISE

### Gain First-Hand Research Experience at Fraunhofer ISE

Come to Freiburg on a long-term basis to work on cutting-edge solar research. Join one of the research teams at Fraunhofer ISE, where you will acquire hands-on experience and gain additional skills.

## Course organisation

The MSc Solar Energy Engineering programme focuses on physics, technology and system design to convey expertise in solar energy engineering. The lectures go deeply into the technological and engineering aspects of photovoltaic and solar thermal systems.

The module structure is split into four parts:

### 1. Preparation Modules

The preparation modules provide students with the background knowledge in maths, physics, electrical engineering and economics. Depending on the background of each student, it may be possible to skip some of these courses.
Module A: The Global Energy Needs in a Nutshell
Module B: Fundamentals of Maths and Physics
Module C: Fundamentals of Semiconductors
Module D: Electrical Engineering and Power Electronics

2. Project Modules

The project modules are a highlight of the Master’s programme! During these modules, students will cover a topic related to their work or any other topic related to solar energy with a mentor who provides expertise in the field.

3. Mandatory Modules

The mandatory modules focus on the scientific and technological background.

- Module 1: Solar Cells & Photovoltaic Systems
- Module 2: Solar Thermal Systems
- Module 3: Crystalline Silicon Photovoltaics

4. Elective Modules

The elective modules allow you to specialise in a particular field in solar energy, giving you the opportunity to focus on a topic of your choice. Students become experts in their respective topics and may already set a foundation for their Master’s theses. The specialisations that are currently offered include:

**Topic: Characterisation & Modelling**
- Module CM1: Material and Solar Cell Characterisation
- Module CM2: Device Modelling & Advanced Characterisation

**Topic: Photovoltaic Systems & Grids**
- Module PG1: Electronics for Photovoltaic Systems
- Module PG2: Renewable Energy Systems & Smart Grids

**Topic: Solar Cell Technologies**
- Module ST1: Thin-Film and Concentrator Photovoltaics
- Module ST2: Advanced Processing & New Cell Concepts

**Master’s Module**

There are several ways to complete the Master’s thesis:

1. In Freiburg: We offer a wide range of collaborations with the University of Freiburg and the Fraunhofer ISE. You can relocate to Freiburg for six or more months, join a research group in one of our high-end labs and become part of our international research community. There is also the possibility to cooperate with several research institutions located all around the world.
2. At the workplace: If you are already working in a related field, you can carry out your Master’s thesis in your company. Necessary technical equipment should be in place for carrying out tests or any other hands-on work for your thesis.
3. The students can carry out the Master’s thesis at home and work on a simulation or theoretical topic.

**PDF Download**

<table>
<thead>
<tr>
<th>Types of assessment</th>
<th>In order to be awarded credit points, students are required to:</th>
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<tbody>
<tr>
<td></td>
<td>- take part in each course / seminar / hands-on training in the module and attend the online meetings.</td>
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<tr>
<td></td>
<td>- perform self-study, independently prepare and review the lectures and reading materials.</td>
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<tr>
<td></td>
<td>- pass the exams, hold presentations during the seminar and participate in hands-on courses including writing a lab journal during the campus phases.</td>
</tr>
</tbody>
</table>
All exams can be written in Freiburg or in study centres all around the globe. Presentations can be conducted online with our conference software.

<table>
<thead>
<tr>
<th>A Diploma supplement will be issued</th>
<th>Yes</th>
</tr>
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<tbody>
<tr>
<td>Course-specific, integrated German language courses</td>
<td>No</td>
</tr>
<tr>
<td>Course-specific, integrated English language courses</td>
<td>No</td>
</tr>
<tr>
<td>The course of study can be taken entirely online</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Digital learning and teaching modules
- Virtual classrooms
- Video learning
- Webinar
- Chats with lecturers
- Mobile learning apps
- Wikis

### Description of e-learning elements
The modules are delivered as e-lectures, video content and reading material. Most of the time you will study independently. At the end of each semester you can travel to Freiburg for the voluntary Campus Phase where you can join lab workshops, social events and much more.

#### E-Lectures
Our lecturers have condensed their expertise into short e-lectures optimised for online learning. With a length of around 20 minutes each and focusing on a specific topic, they allow you to quickly gain an overview about the relevant concepts.

#### Regular Online Meetings
Throughout each module you get several opportunities to meet your lecturers face-to-face as well as online. In regular online meetings you will solve sample problems and discuss exercise sheets.

#### Hands-On Workshops
During your studies you will complete a minimum of one hands-on workshop in our high-end labs in Freiburg.

| Participation in the e-learning course elements is compulsory | Yes |
| Can ECTS points be acquired by taking the online programmes? | Yes |
| Can the e-learning elements be taken without signing up for the course of study? | No |

**Costs / Funding**
Tuition fees per semester in EUR

3,650

Additional information on tuition fees

There are no additional fees for international students.

The average fee per semester is around 3,800 EUR. This includes a semester fee and a credit point-based fee:

- Semester fee: 500 EUR each semester
- Course fee: 200 EUR per ECTS point.
- Project and thesis fee: 100 EUR per ECTS point

Semester contribution

155 EUR per semester
- Student services fees (including the initial contribution for the "Semester Ticket") 78 EUR
- Administrative fees + student government fees: 77 EUR

Costs of living

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:

- Student accommodation costs approx. 280-450 EUR (monthly)
- Private expenses amount to around 350 EUR (monthly)
- Health insurance is available for approx. 45-90 EUR (monthly)
- Transport: A special student ticket for regional transport costs approx. 94 EUR (per semester).

Funding opportunities within the university

No

Requirements / Registration

Academic Admission Requirements

The admission requirements for the MSc degree are:

- Bachelor’s or Master’s degree in Mathematics, Physics, Engineering or any related field*
- English language skills (at least level B2 according to the CEFR).
- Professional experience of at least one year in the field of solar energy or any related field*

*To assess if your previous degree or experience is in a related field, please contact the programme office.

For your application, we need:

- Completed application form
- CV in English
- Diplomas
- Transcript of Records
- Certificates of professional experience
- Certificate of English proficiency

Language requirements

English language skills (at least level B2 according to the CEFR)

Application deadline

For details about the application process, please have a look at the respective section of our website:

- Application deadline is 31 July for the Master’s and 1 April for Certificates.
- Each year, approx. 20 students are accepted to the programme.
Services

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).

Specific specialist or non-specialist support for international students and doctoral candidates
- Welcome event
- Tutors
- Accompanying programme
- Specialist counselling

Submit application to http://study-solar.com/

Accommodation

Solar Energy Engineering | University of Freiburg
Eve Krassowski
MSc Solar Energy Engineering

„I decided that this was the best route for me to take due to the good reputation of the University of Freiburg, the cooperation with the Fraunhofer ISE and the possibility to study while continuing to work.
It was even better than I expected due to the professors’ and tutors’ competence and availability, hands-on training sessions at ISE, virtual rooms to connect and share knowledge, campus weeks and industry networking. I can warmly recommend this online Master’s programme.”

Our Partners

Solar Energy Engineering
Why study in the MSc Solar Energy Engineering programme? Our students will tell you why they are part of this programme.

⇒ more: https://www.youtube.com/watch?v=J4K9QzGsods
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
Solar Energy Engineering

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https://twitter.com/SolarEnergyEng
https://www.linkedin.com/in/seecontinuingeducation/
https://www.instagram.com/unifreiburg/?hl=de

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