INTERNATIONAL STUDY COURSE

Master of Science

Sustainable Systems Engineering

University of Freiburg · Faculty of Engineering

UNI FREIBURG

Engineering the future!

The engineering master's degree in "Sustainable Systems Engineering" opens up a whole range of career prospects for you: classical engineering professions, working for environmental authorities and public institutions, developing materials and technologies, or a scientific-research career.

Sustainability careers

- Energy systems for buildings
- Optimization of energy systems and material flows
- Mobility concepts
- Development of sustainable materials
- Resilient infrastructure development
- Policy advice

Engineering careers

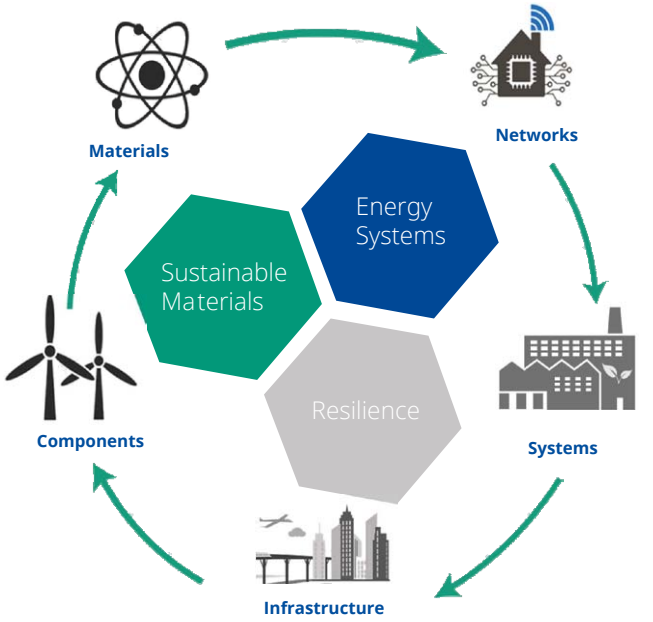
- Mechanical engineering
- Systems integration
- Materials sciences
- Project management
- Research & Development
- Semiconductor
- Power Electronics

Scientific careers

- Dissertation
- Post-doc
- Academic researcher
- Professorship

The Master's program

Sustainable Systems Engineering is an interdisciplinary program that builds on fundamental knowledge in electrical and mechanical engineering as well as natural and materials sciences.



Six compulsory modules will get everyone on the same technical level:

- Solar energy
- Energy storage
- Control and integration of grids
- Fundamentals of resilience
- Material life cycles
- Computational materials engineering

Specialization on favorite research fields

From the second semester on, students start concentrating on their favorite research fields:

- Energy systems
- Sustainable materials
- Resilience engineering
- Information processing technologies

Holistic societal and scientific understanding of sustainability

In addition to engineering's point of view to sustainability, interdisciplinary modules enhance the holistic understanding of sustainability.

Curriculum

1. Semester
- Solar energy
- Energy storage
- Control and integration of grids
- Fundamentals of resilience
- Material life cycles
- Computational materials engineering

2. Semester
- Power electronic circuits and devices
- Design and monitoring of large infrastructures
- Security and privacy in resilient systems
- Interdisciplinary profile
- Specialization in:
  – Energy systems
  – Sustainable materials
  – Resilience engineering
  – Information processing technologies

3. Semester
- Elective courses
- Interdisciplinary profile
- Master's project

4. Semester
- Master's thesis

More about the curriculum:
→ inatech.de/master-curriculum

Imagine you're not just talking about sustainability ...

... but actively contributing to how the materials, energy systems and technologies of the future are developed!

Combining technology with sustainability and training engineers to change the world for the better!
With this goal in mind, the University of Freiburg founded the new Department for Sustainable Systems Engineering (INATECH) at the Faculty of Engineering in October 2015.

Complete engineering degree program
In addition to the fundamentals of engineering, you will also learn how to develop sustainable technologies and methods.

Learning from renowned researchers and engineers
INATECH combines the expertise and infrastructure of the five Fraunhofer Institutes in Freiburg with the excellence of the university! Latest research findings are directly incorporated into what is taught.

What is the engineer of the future?

The engineer of the future can develop, implement and evaluate sustainable systems. At INATECH you will not only have a solid and broad-based engineering education but also deal with current sustainability issues. Central subjects include:

What does sustainability mean?

How may ecological, economic and social aspects be balanced?

How is an ecological footprint calculated? ... And what options are available to a product at the end of its life?

Which challenges are created by the energy transformation?

How should renewable energy be generated, fed into the grid and stored?

Why is the energy transition also a material transition?

What will the materials and systems of the future look like?

How can relevant material properties be determined?

How can resilient systems be developed that are resistant and adaptable to changing environmental conditions?

Photo: Rainer Sturm, stormpicde

Why Freiburg?

1. Modern study program

At INATECH, research and teaching are closely interlinked, so that the latest research findings are directly incorporated into what is taught. Students participate actively in solving the social and technical issues of the future.

2. Attractive department

INATECH combines the expertise and infrastructure of the five Fraunhofer Institutes in Freiburg with the excellence of the university.

3. Strong faculty

On its own campus, the Faculty of Engineering has an excellent infrastructure: short distances, modern technical equipment (e.g. clean room), extensive e-learning offers, its own library and extensive opening hours.

4. Vibrant university town

Freiburg offers a wide range of leisure and cultural activities, a high quality of life, short travel distances and an international atmosphere.

INATECH
INSTITUT FÜR NACHHALTIGE TECHNISCHE SYSTEME

Fraunhofer

UNI FREIBURG

How to apply

The application period starts in mid March and ends on May 15th

You can find detailed instructions on the application procedure at the following website:

→ **inatech.de/master-application**

Duration, language and program start
2 years, in English, starts in October.

Requirements
B. Sc. in Engineering,
outstanding performance,
English proficiency

Fees
360 Euros per year for EU/EWR nationals,
3360 Euros for non-EU/EWR nationals

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Further information about the program and the department can be found at → **www.inatech.de**

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