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! Establishing under the University of Freiburg, 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
- Learn from renowned researchers and aligners
- 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.

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 annum for EU/EWR nationals
- 3360 Euros for non-EU/EWR nationals

Contact:
- Universität Freiburg
- Studiengangkoordination INATECH
- Emmy-Noether-Straße 2
- 79110 Freiburg, Germany
- Tel: +49 761 203-54010
- study@inatech.uni-freiburg.de

Further information about the program and the department can be found at:
- www.inatech.de

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

First Semester
- Solar energy
- Energy storage
- Control and integration of grids

Second Semester
- Power electronic circuits and devices
- Design and monitoring of large infrastructures
- Security and privacy in resilient systems

Third Semester
- Elective courses
- Interdisciplinary profile
- Master’s project

Fourth Semester
- Master’s thesis
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.

Sustainability careers

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

Engineering careers

- Mechanical engineering
- Systems integration
- Materials science
- Project management
- Research & Development
- Power electronics

Scientific careers

- Dissertation
- Post-doc
- Academic researcher
- Professorship

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.

The Master’s program in “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:

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

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?

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 rooms), 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.

Photo: Rainer Sturm, stormpic.de

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

Learning from experienced researchers and aligning with the expertise and infrastructure of the five Fraunhofer Institutes in Freiburg, the excellence of the University! Latest research findings are directly incorporated into what is taught.

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

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Curriculum

1. Semester
- Basic energy
- Energy storage
- Control and integration of grids
- Fundamentals of resilience
- Computational methods in engineering

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

3. Semester
- Electives
- Interdisciplinary profile
- Master project

4. Semester
- Master's thesis

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- Material life cycles
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Specialization on favorite research fields
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International Study Course
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