



Welcome and Orientation Meeting M.Sc. SSE, 10th batch

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Freiburg, 8 October 2025



Agenda

- 1. Welcome to INATECH
- 2. SSE Syllabus / Study Plan
- 3. How to Register for Courses and Exams
- 4. Recommendations from MSc SSE Alumni
- 5. Further Information
- 6. Q&A



Welcome to INATECH



VISION

Establishing sustainability as the guiding principle in the development of technical systems

With this goal in mind, the University of Freiburg founded the Department of Sustainable Systems Engineering in 2015.



Take on the challenges of our time with engineering science

INATECH researches and develops Sustainable Systems.

Its objective is to design systems that use energy and resources efficiently, at a rate that does not impact the environment negatively and so allows future generations to meet their needs.



RESEARCH FOCUS

Sustainable materials, energy systems and resilience

Together with partners from the public and private sectors, INATECH uses interdisciplinary research projects to develop technical systems that take on the challenges of our generation.

STUDY PROGRAMS

Educate engineers who change the world for the better.

Bachelor and Master program in Sustainable Systems Engineering: INATECH offers two study programs that both provide in-depth engineering skills in sustainable materials, sustainable energy systems, and resilience engineering.









IAF **IPM** ISE IWM







STRUCTURE

INATECH is composed of an equal partnership between the University of Freiburg and the five Fraunhofer institutes in Freiburg.

This foundation is unique in the research field, a structure that covers the entire spectrum from fundamental research to industrial application.



Chairs at the INATECH



Prof. Dr. Oliver AmbacherPower Electronics



Prof. Dr.-Ing. Frank
Balle
Power Ultrasonics and
Engineering of Functional
Materials



Prof. Dr. Oana Cojocaru-Mirédin Cross-Scale Material Characterization



Prof. Dr. Daniel CarlProduction Control



Prof. Dr. Sonia DsokeElectrochemical Energy
Carriers and Storage
Systems



Prof. Dr. Stefan Glunz
Photovoltaic Energy
Conversion



Prof. Dr. Stefan
Hiermaier
Sustainable Systems
Engineering



Prof. Dr. Holger
Neuhaus
Material Systems for Solar
Energy Use



Prof. Dr. Rüdiger QuayEnergy Efficient HighFrequency Electronics



Prof. Dr. Alexander
Reiterer
Monitoring of Large-Scale
Structures



Prof. Dr.-Ing. Alexander StolzResilience Engineering for
Technical Systems



Prof. Dr.-Ing. Rebekka
Volk
Sustainability Assessment
of Technical Systems



Prof. Dr. Anke WeidlichControl and Integration of
Grids



SSE Syllabus / Study Plan

Your individual study plan

We provide no ready-made schedule, so it is your decision which course you take and when. Just make sure to follow the overall rules of the exam regulations.

Three important documents inform you about study requirements, modules and courses. Please make yourself familiar with these documents:

Examination Regulations

Module Handbook*

Course Catalogue



^{*} Always check for the latest version on SSE website

Your individual study plan

Examination Regulations

- Legal framework
- Students must comply with these regulations
- Gives information on the general structure, repeat attempts, grade improvement etc.
- ➤ Available on SSE website

Module Handbook

- Detailed information on the modules
- Additional information on the organization of your studies
- ➤ Updated ca. once per year
- ➤ Available on SSE website

Course Catalogue

- Lists the courses for one specific semester, e.g. winter semester 2025/26
- Details on the classes (time, date and room)
- ➤ Updated for each semester
- ➤ Available via HISinOne



Important Terminology



Module

- Consists of several items (for example: lecture, exercise, PL and SL)
- ECTS credits are awarded for the entire module, not for completing parts of it



Types of Classes

- Part of a module
- Lecture Vorlesung (V)
- Exercise Übung (Ü)
- Lab course Praktikum/Praktische Übung (Pr)
- Seminar Seminar (S)



Two types of assessments:

Studienleistung, SL

- Part of a module
- Can be either graded or pass/fail, but are usually nongraded
- If graded, the grade does not count towards the grade point average (GPA), but does appear on your final transcript
- No negative consequences if failed (other than the need to repeat it the next time the class is offered)



Prüfungsleistung, PL

- Part of a module
- Are always graded
- Grade counts towards GPA
- Strict rules apply and the repeat attempts are limited



Three Technical Concentration Areas

Energy Systems Engineering

Resilience Engineering Sustainable Materials Engineering

Interdisciplinary Profile

- 3 technical concentration areas
- Each area has 3-4 defined Mandatory Elective Modules and a further selection of modules
- Per area, min. 2 Mandatory Elective Modules need to be completed
- In addition, a **min. of 6 ECTS** credits from the **Further Selection catalog** or the remaining Mandatory Elective Modules per area

In other words, ECTS credits need to be earned in all 3 areas, and at least 18 ECTS points in each.

Tip: Which modules should you choose for the 1st semester?

- > Start with the Mandatory Elective Modules since they form the "basis" for other courses.
- > When planning and choosing modules, keep their semester cycle in mind. Most modules are only offered once a year.



Interdisciplinary Profile (IP)

Energy Systems
Engineering

Resilience Engineering Sustainable Materials Engineering

Interdisciplinary
Profile

- Min. 6 ECTS credits need to be earned.
- Modules are divided into two types: *Modules outside the Subject Area* and *Modules <u>related to</u> the Subject Area*
- The two lists can be found in the module handbook
- Only one Module outside the Subject Area can be chosen with a maximum of 6 ECTS credits

Tip:

- If you want to take a module which is not mentioned in the module handbook, follow the process to get approval as described in the module handbook and mind the deadlines (April 1/October 1).
- Courses at other faculties might not follow the 3-6-9 ECTS credit system we have at the Faculty of Engineering and might have different booking periods.



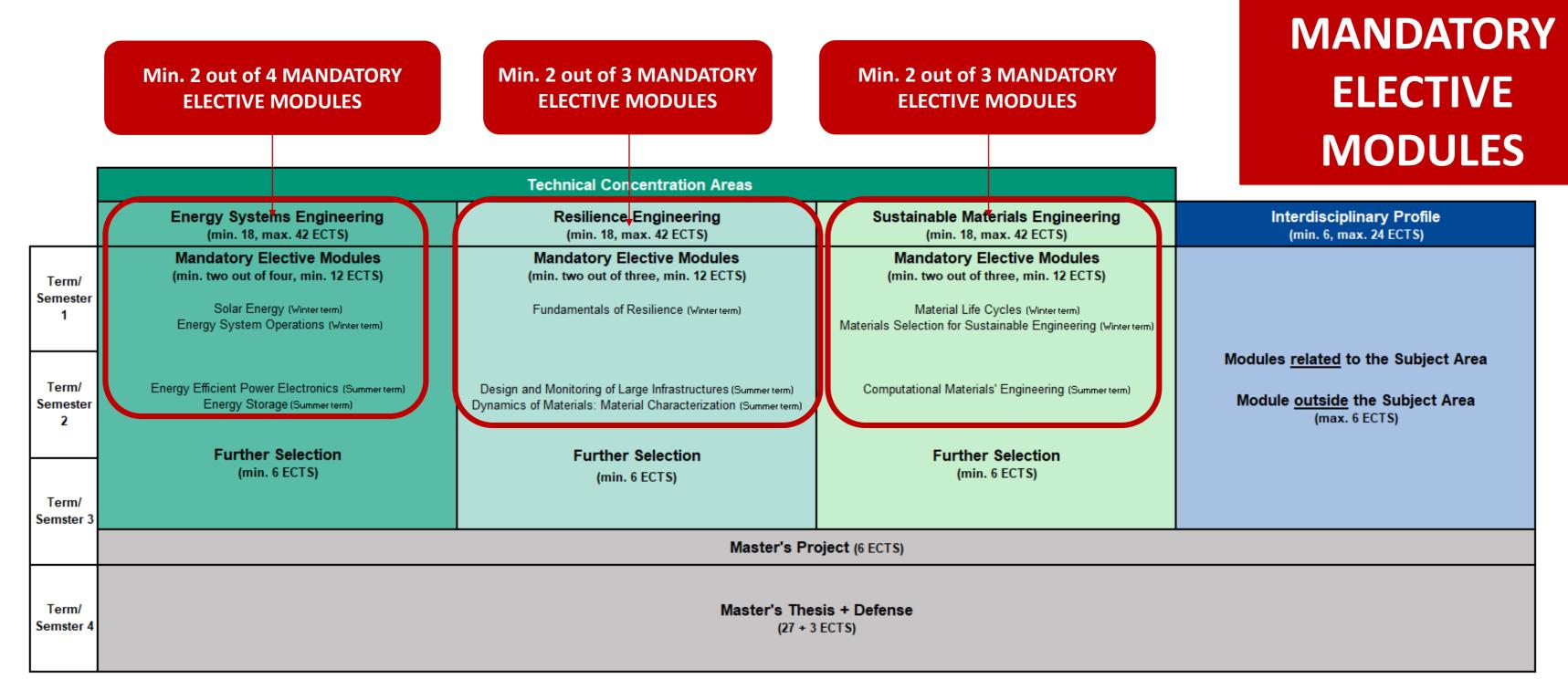
M.Sc. SSE framework (based on the Examination Regulations 2021)

	Technical Concentration Areas				
	Energy Systems Engineering (min. 18, max. 42 ECTS)	Resilience Engineering (min. 18, max. 42 ECTS)	Sustainable Materials Engineering (min. 18, max. 42 ECTS)	Interdisciplinary Profile (min. 6, max. 24 ECTS)	
Term/	Mandatory Elective Modules (min. two out of four, min. 12 ECTS)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS)		
Semester 1	Solar Energy (Winterterm) Energy System Operations (Winterterm)	Fundamentals of Resilience (Winterterm)	Material Life Cycles (Winterterm) Materials Selection for Sustainable Engineering (Winterterm)		
				Modules <u>related</u> to the Subject Area	
Term/ Semester 2	Energy Efficient Power Electronics (Summerterm) Energy Storage (Summerterm)	Design and Monitoring of Large Infrastructures (Summer term) Dynamics of Materials: Material Characterization (Summer term)	Computational Materials' Engineering (Summer term)	Module outside the Subject Area (max. 6 ECTS)	
	Further Selection (min. 6 ECTS)	Further Selection (min. 6 ECTS)	Further Selection (min. 6 ECTS)		
Term/ Semster 3					
	Master's Project (6 ECTS)				
Term/ Semster 4	Master's Thesis + Defense (27 + 3 ECTS)				

Info: ECTS is a standard for comparing the study attainment and performance of students of higher education across the European Union and other collaborating European countries. For successfully completed studies in the master's program Sustainable Systems Engineering 120 ECTS credits are awarded. One ECTS credit equals on average 30 hours of workload.

For more information, see the Subject-Specific and General Examination Regulations. They both set the legal framework for the studies. The available modules/courses are listed and described in detail in the Module Handbook.





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ELECTIVE MODULES – Further Selection – Technical Concentration Areas

	Technical Concentration Areas				
	Energy Systems Engineering (min. 18, max. 42 ECTS)	Resilience Engineering (min. 18, max. 42 ECTS)	Sustainable Materials Engineering (min. 18, max. 42 ECTS)	Interdisciplinary Profile (min. 6, max. 24 ECTS)	
Term/ Semester 1	Mandatory Elective Modules (min. two out of four, min. 12 ECTS) Solar Energy (Winterterm) Energy System Operations (Winterterm)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS) Fundamentals of Resilience (Winterterm)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS) Material Life Cycles (Winterterm) Materials Selection for Sustainable Engineering (Winterterm)		
Term/ Semester 2 Term/ Semster 3	Energy Efficient Power Electronics (Summer term) Energy Storage (Summer term) Further Selection (min. 6 ECTS)	Design and Monitoring of Large Infrastructures (Summer term) Dynamics of Materials: Material Characterization (Summer term) Further Selection (min. 6 ECTS)	Computational Materials' Engineering (Summer term) Further Selection (min. 6 ECTS)	Modules <u>related</u> to the Subject Area Module <u>outside</u> the Subject Area (max. 6 ECTS)	
	Master's Project (6 ECTS)				
Term/ Semster 4	Master's Thesis + Defense (27 + 3 ECTS)				

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ELECTIVE MODULES – Interdisciplinary Profile

	Technical Concentration Areas					
	Energy Systems Engineering (min. 18, max. 42 ECTS)	Resilience Engineering (min. 18, max. 42 ECTS)	Sustainable Materials Engineering (min. 18, max. 42 ECTS)	Interdisciplinary Profile (min. 6, max. 24 ECTS)		
Term/ Semester	Mandatory Elective Modules (min. two out of four, min. 12 ECTS)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS)			
1	Solar Energy (Winterterm) Energy System Operations (Winterterm)	Fundamentals of Resilience (Winterterm)	Material Life Cycles (Winterterm) Materials Selection for Sustainable Engineering (Winterterm)			
Term/ Semester 2	Energy Efficient Power Electronics (Summerterm) Energy Storage (Summerterm)	Design and Monitoring of Large Infrastructures (Summer term) Dynamics of Materials: Material Characterization (Summer term)	Computational Materials' Engineering (Summer term)	Modules <u>related</u> to the Subject Area Module <u>outside</u> the Subject Area (max. 6 ECTS)		
	Further Selection (min. 6 ECTS)	Further Selection (min. 6 ECTS)	Further Selection (min. 6 ECTS)			
Term/ Semster 3						
	Master's Project (6 ECTS)					
Term/ Semster 4	Master's Thesis + Defense (27 + 3 ECTS)					

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For more information, see the Subject-Specific and General Examination Regulations. They both set the legal framework for the studies. The available modules/courses are listed and described in detail in the Module Handbook.



MANDATORY MODULES

	Technical Concentration Areas					
	Energy Systems Engineering (min. 18, max. 42 ECTS)	Resilience Engine (min. 18, max. 42 EC				Interdisciplinary Profile (min. 6, max. 24 ECTS)
Term/ Semester 1	Mandatory Elective Modules (min. two out of four, min. 12 ECTS) Solar Energy (Winterterm) Energy System Operations (Winterterm)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS) Fundamentals of Resilience (Winterterm)		(min. tw Ma	atory Elective Modules o out of three, min. 12 ECTS) terial Life Cycles (Winterterm) on for Sustainable Engineering (Winterterm)	
Term/ Semester 2	Energy Efficient Power Electronics (Summer term) Energy Storage (Summer term) Further Selection (min. 6 ECTS)	Design and Monitoring of Large Infrast Dynamics of Materials: Material Charac Further Selection (min. 6 ECTS)	cterization (Summer term)	Computational Materials' Engineering (Summer term) Further Selection (min. 6 ECTS)		Modules <u>related</u> to the Subject Area Module <u>outside</u> the Subject Area (max. 6 ECTS)
Term/ Semster 3						
		Master's F		oject (6 ECTS)		
Term/ Semster 4			Master's The (27 + 3	sis + Defense ECTS)		

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For more information, see the Subject-Specific and General Examination Regulations. They both set the legal framework for the studies. The available modules/courses are listed and described in detail in the Module Handbook.



	In all areas together, the Technical Concentration Areas and the Interdisciplinary Profile, <u>a maximum of 84 ECTS credits</u> can be earned!				
		Technical Concentration Areas			
	Energy Systems Engineering (min. 18, max. 42 ECTS)	Resilience Engineering (min. 18, max. 42 ECTS)	Sustainable Materials Engineering (min. 18, max. 42 ECTS)	Interdisciplinary Profile (min. 6, max. 24 ECTS)	
Te m/ Sem ster	Mandatory Elective Modules (min. two out of four, min. 12 ECTS) Solar Energy (Winterterm) Energy System Operations (Winterterm)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS) Fundamentals of Resilience (Winterterm)	Mandatory Elective Modules (min. two out of three, min. 12 ECTS) Material Life Cycles (Winterterm) Materials Selection for Sustainable Engineering (Winterterm)		
Te m/ Sem ster	Energy Efficient Power Electronics (Summer term) Energy Storage (Summer term) Further Selection	Design and Monitoring of Large Infrastructures (Summer term) Dynamics of Materials: Material Characterization (Summer term) Further Selection	Computational Materials' Engineering (Summer term) Further Selection	Modules <u>related</u> to the Subject Area Module <u>outside</u> the Subject Area (max. 6 ECTS)	
Te m/ Sem ter 3	(min. 6 ECTS)	(min. 6 ECTS)	(min. 6 ECTS)		
		Master's Pro	oject (6 ECTS)		
Term/	Master's Thesis + Defense				

Info: ECTS is a standard for comparing the study attainment and performance of students of higher education across the European Union and other collaborating European countries. For successfully completed studies in the master's program Sustainable Systems Engineering 120 ECTS credits are awarded. One ECTS credit equals on average 30 hours of workload.

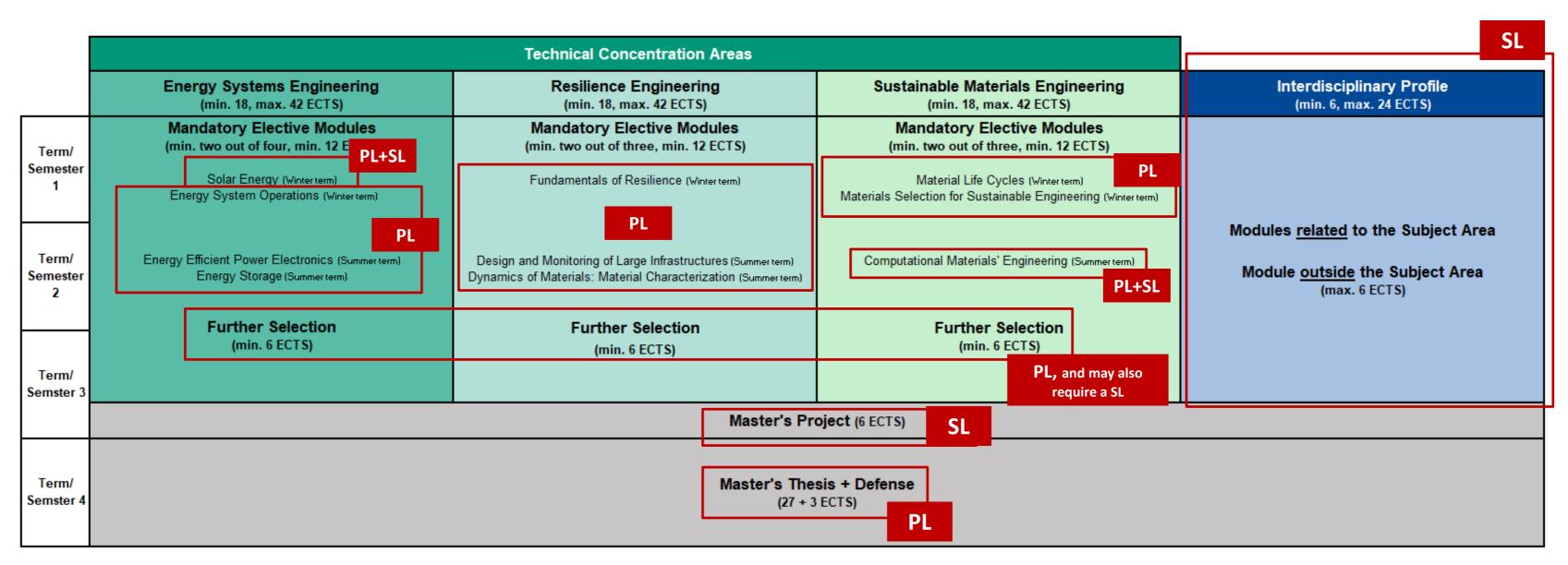
(27 + 3 ECTS)

For more information, see the Subject-Specific and General Examination Regulations. They both set the legal framework for the studies. The available modules/courses are listed and described in detail in the Module Handbook.

M.Sc. SSE framework (based on the Examination Regulations 2021)



Semster 4



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For more information, see the Subject-Specific and General Examination Regulations. They both set the legal framework for the studies. The available modules/courses are listed and described in detail in the Module Handbook.



Syllabus: Summary and Rules

- 3 technical concentration areas with 18-42 ECTS credits each
- Interdisciplinary Profile (IP) with 6-24 ECTS credits
- 84 ECTS credits have to be earned in all three technical concentration areas and the IP together.
- > You are not allowed to take more courses than necessary to meet these requirements.
- Once you have passed a module, it cannot be deleted from your transcript.
- ➤ In general, you have to plan to hit the 84 ECTS credits (no massive "overshooting" of credits).
- ➤ Language classes cannot be counted towards your SSE syllabus.



Syllabus: Format of Courses

Depends strongly on the teacher:

- Compulsory attendance: yes / no
- Compulsory exercises
- Theoretical or practical
- Starting time c.t. or s.t. ("10 c.t." means "10:15", "10 s.t." means "10 sharp")

Tip:

- > Always attend the first session of a course.
- ➤ Be there on time! If you are unsure whether a course is c.t. or s.t., come for the s.t. time in the first session.
- > Towards the end of the lecture period there is the opportunity for a written evaluation of each course
 - → please use the opportunity to give feedback



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How to Register for Courses and Exams

Signing up for classes - 1

Process:

- Read your examination regulations and consult the module handbook!
- Feel free to take a look at the entire course catalog of the university, but please sign up for classes only via the Planner of Studies.
- Make use of the <u>Step-by-step Course Registration Guide</u>.
- Please note: Different types of classes have different booking periods.

Tip:

Take stock of what you have already passed and which modules you started before you plan your next semester. Pay special attention if you failed an exam and will have to repeat it.



Signing up for classes - 2

Possible issues:

- If you have issues while signing up for classes, contact us at study@inatech.uni-freiburg.de. Please include your full name, matriculation number, name of the class and, ideally, a screenshot.
- If you cannot sign up for a mandatory elective class in your first semester because it is fully booked or end up on the waiting list, please contact me.
- If you forgot to sign up for a class, contact the lecturer and ask whether it is feasible that you join late.
- Do not contact the examination office about class registration!

Tip:

- To make sure you are correctly registered, we recommend **saving/printing the list of your course enrollments and exam registrations** from HISinOne: My Studies -> My course enrollments and exam registrations
- Wiki: My course enrollments and exam registrations Campusmanagement (uni-freiburg.de)



Signing up for exams – A little heads-up

- Signing up for exams is a separate step from class registration.
- You cannot attend the exam without a proper registration.
- Pay attention to the <u>dates and deadlines for exam registration</u>.
- If there are issues with exam registration, contact the <u>examination office</u> (pruefungsamt@tf.uni-freiburg.de) during the registration period

Tip:

- The examination office will have an info session later in the semester (November). Make sure to attend it!
- The transcript of records shows exams you have registered for, passed or failed. Download a transcript of records once the grades from the previous semester are in. Use it as a starting point for planning your next semester.



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Steps to remember each semester

- Pay the semester fees for the upcoming semester
- Summer term: 15.01. 15.02.
- Winter term: 01.06. 15.08.
- More information on reregistration

Reregistration

Class registration

- Different types of classes have different registration periods
- <u>Dates and deadlines for class</u> <u>registration</u>
- Step-by-step Course Registration Guide

- Do not forget to register for exams (PL) and pass/fail assessments (SL)!
- <u>Dates and Deadlines for exam registrations</u>
- How-to video for exam registration

Exam registration



Recommendations from MSc SSE Alumni

What advise would you give to future SSE students? Part I

Course related

- Don't memorize, understand why.
- Explore different study areas, try different subjects outside of your expertise.
- Don't postpone mandatory courses.
- Focus on practical knowledge.
- Focus on an area and try to become an expert in that area.
- Have a backup concentration area, this will help in your career path.
- Choose electives that offer valuable learning experiences, rather than those that seem easy.

Master Thesis

- Don't worry about the thesis as long as you put in the effort.
- Chose your master's thesis topics wisely.
- o If you plan to find a job in the industry, consider writing your master's thesis at a company that offers the possibility of staying there after completing your thesis.
- Look for the opportunities to do your master's thesis outside of Freiburg.



What advise would you give to future SSE students? Part II

HiWi position

- Take a part-time position either at INATECH or Fraunhofer to gain insight into a specific topic.
- Focus on obtaining a technical part-time position during your studies, preferably relevant to your future goals and interests.
- Search for a Hiwi job in your desired area, this will help in job application process later.
- If you plan to stay in academia, try to find a HiWi position as early as possible to gain experience by getting involved in research activities.

General

- Learn the German language.
- Try to take advantage of opportunities as much as possible; don't hesitate to ask questions or seek help.
- Enjoy your time at INATECH. You'll find great professors, a good environment, and a wonderful city. Cherish these moments; you'll miss this time later.
- Enjoy this unique student experience! :-)



Further Information

Get important information

Sign up for university-wide newsletters

• Use <u>myAccount</u> to sign up for important newsletters. You will find a list of options under the tab *mail- and lists administration*

Check your Faculty of Engineering email address

• The email address will be created for you automatically and you will get an email with the login. Make sure to use it!

Sign up for mailing lists at the Faculty of Engineering

You will be automatically signed up for the mailing list "Student". In addition, you may sign up for the mailing list "Markt".

Check the INATECH Website and the Website of the Faculty of Engineering

• The <u>Study FAQs</u> in particular offer information on a wide array of topics

Get additional information by following our INATECH LinkedIn page ©



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Information and events (offline/online) for new students

- Information and orientation events offered by the Student Service
 Center
- Welcome Days offered by the Student Service Center
- Information and orientation events offered by the Faculty of Engineering
- Orientation events offered by the Student Council (Fachschaft)
- <u>Life in Freiburg the first steps</u>
- Manual for the campus management system HISinOne
- Calendar and Dates at the Faculty of Engineering
- A to Z Study FAQ at the Faculty of Engineering
- Information on the campus life in general



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Contacts and areas of responsibility

Lecturers

- Course-related questions
- Literature and learning materials, etc.
- Thesis topics

Study Coordinators

- Study planning decisions, examination regulations, credits, confirmation letters, etc.
- Issues with class registration

SSE Academic Advisors

 Academic Mentoring

Service Center Studium

- Advice for international students
- Re-registration
- Leave of absence
- Tuition fees

SWFR

- Housing
- Financial aid
- Social and
 Psychotherapeutic counselling



SSE Academic Support



DEAN OF STUDIES

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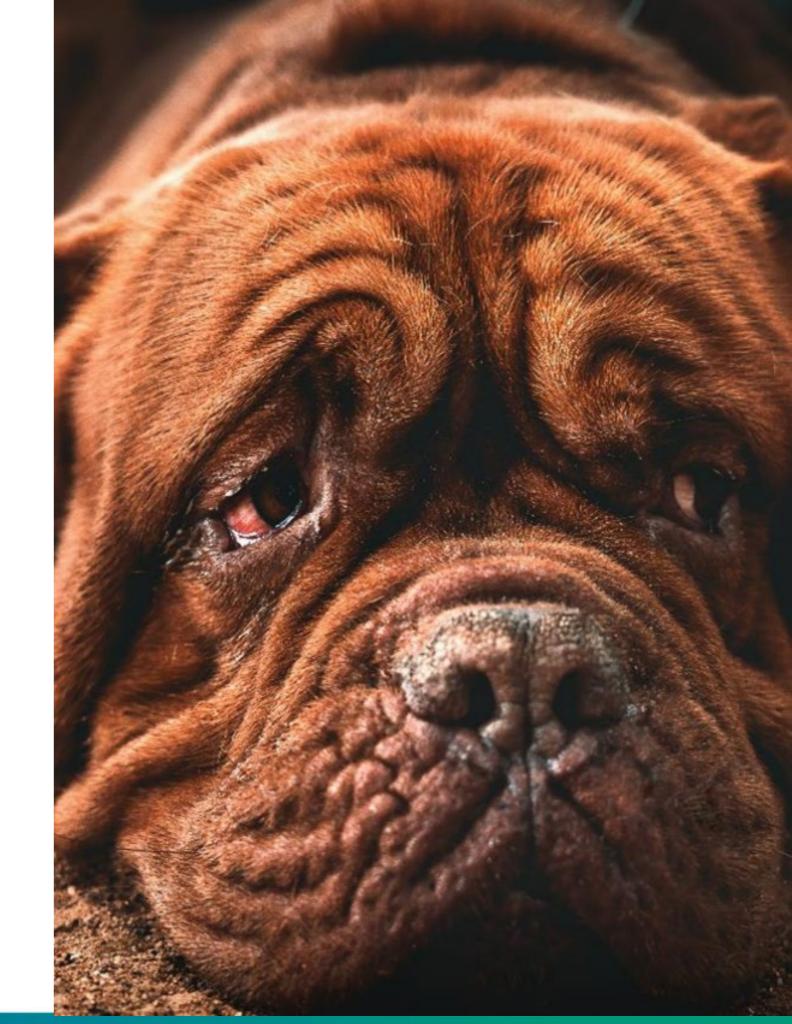


Mental Health Support

You will face challenges during your studies. This is completely normal. When students get overwhelmed by stress, anxiety or other mental health situations, there are many ways to get support.

In case of emergencies

- emergency call 112
- Help in Personal Conflict and Crisis Situations
- The website of the Student Service Center offers further information and services concerning <u>student mental</u> <u>health</u>.





SSE TRIP 2026

Register when the time comes and join us on an unforgettable trip!





Sustainability Talks 2025/2026

The Cheapest Green: Prioritizing Emission Reduction Measures Under Economic Constraints

13.11.2025 Gregor Daun, BASF + University Bayreuth

Data, Design, Decarbonize: Transforming Filtration for a Sustainable Tomorrow

20.11.2025 Martin Klein, MANN+HUMMEL GmbH

Towards a Sustainable Power Electronics Value Chain

15.01.2026 Herbert Pairitsch, Infineon

Always Stay Nice and Fresh

22.01.2026 Holger Hoss & Matthias Schrägle, Südpack Verpackungen SE & Co. KG

Power to the People: Citizen Energy as a Catalyst for the Sustainable Transition

29.01.2026 Katharina Habersbrunner, Bündnis Bürgerenergie

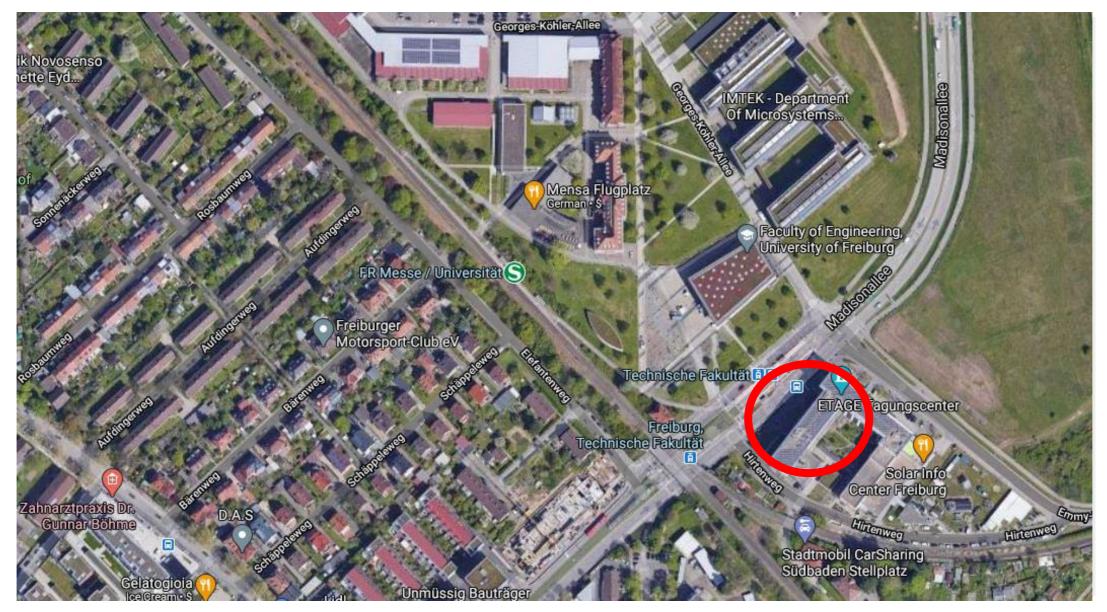
Economical and Sustainable - A Contradiction? From the Founding Idea to Future Issues at Taifun-Tofu

05.02.2026 Hilke Johanna Rempe, Taifun-Tofu GmbH

5:15 pm

Faculty of Engineering, Building 101, Room 02-16/18





Location

Solar Info Center
Emmy-Noether-Straße 2, 2nd floor north
79110 Freiburg

Appointments upon request.



Q & A Session





CONTACT PROGRAM COORDINATION

Ester Gnandt

Eva Hein

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Appointments upon request.



Have a good start!