Universität Bremen

Fachbereich 4
Produktionstechnik
Maschinenbau &
Verfahrenstechnik

Introduction to the Master´s Program Space Engineering (SpE) I & II

Summer Semester 2025

R. Groll & M. Petrogiannis

M.Sc. Space Engineering

→ **MScSpE I** (3 semesters, 90 CP)
→ **MScSpE II** (4 semesters, 120 CP)

→ is shown on your enrollment certificate
→ please check if this information, as well as the spelling of your name or other personell data on this certificate is correct.

→ ... what is the difference?

Structure of the program

Semester	Study Phases			
1-2 (SpE I) / 1-3 (SpE II)	**Only for SpE II: Foundations in Space Engineering According to the module guide "Modulhandbuch"**	Specialization in Space Engineering according to the „Modulhandbuch"	Elective Modules	Master Project
	30 CP	36 CP	12 CP	12CP
3 (SpE I) / 4 (SpE II)	30 CP Master thesis			

Basic Modules

„Foundations“ (For SpE-II [4 semester] only)

Course	Lecturer	Credit points
Applied Mathematical Methods and Data Analysis	Prof. Dr. Michail Vrekousis	6
Atmospheric Physics	Prof. Dr. Hartmut Bösch	6
Communication Technologies (for Space)	Dr.-Ing. Carsten Bockelmann	6
Control Theory 1	Prof. Dr. Kai Michels	6
Science and Exploration Missions	Prof. Dr. Claus Lämmerzahl, Dr. Marco Scharringhausen	3
Space Electronics	Prof. Dr. Alberto Garcia-Ortiz	3

The courses of the foundations are given in winter term only. These basic courses are not necessary for understanding the contents of the advanced courses.

Compulsory Modules

Module title	Module leader	Courses	Lecturer	CP
Space Flight Theory	Prof. Büskens	Mission Analysis	Dr.-Ing. Maiwald	3
		Mission Design	Hr. Drobczyk/Hr. Nohka	1,5
		Trajectory Optimization	Prof. Büskens/Dr. Knauer	4,5
Space Environment and Testing	Prof. Dittus	Space Environment and S/C qualification	Prof. Dittus	3
		Design of Space Vehicles	Prof. Rittweger	3
		Product Assurance & Space Technology	Dr.-Ing. Grosse	3
Satellite Systems	Prof. Dittus	Thermal Control of Satellites	Prof. Dittus	3
		Structural Design and Analysis	Prof. Rittweger	3
		Space Systems Engineering / Concurrent Engineering	Dr. Romberg/G. Tsakyridis	3
Subsystems	Prof. Rittweger	Orbital Systems	Dr. Rickmers	3
		Space Propulsion Systems I	Dr. Rickmers	3
		Spacecraft Navigation and Control	Dr. Theil	3

Elective Modules

Courses	Lecturer	CP
Hydrogen and fuel cells for a gn future	Oscar Santiago Carretero	3
Additive manufacturing of functional materials	Prof. Dr. Ilya Okulov	3
Machine learning in computational sciences	Dr. Isabell Louise Grothaus	3
Fatigue and Loads	Prof. Dr. Richard Marian Degenhardt	3
Materials and processes for spacecraft and extreme environments	Prof. Dr. Ilya Okulov	3
Fluid Handling in Spacecrafts	Dr.-Ing. Andre Pingel	3
FEM Simulations for the Design of Space Systems	Dr.-Ing. Jens Große	6
Computational Fluid Dynamics	Prof. Dr. Marc Avila Daniel Moron Montesdeoca	6
Introduction to Python	Doriano Costantino Brogioli	3
Materials and Sustainable Development	Prof. Dr. Ilya Okulov	3

For the elective module you have to select lectures with 12CP.

Summer Semester Time Table

Compulsory and Elective Courses

	Monday	Tuesday	Wednesday	Thursday	Friday	
8:00-10:00		Science, Astronomy, and Exploration Missions D: Lämmerzahl		**Microgravity - Drop Tower Technologies and Applications** D: Lämmerzahl, Dittus, Eigenbrod, Groll, Herrmann		
10:00-12:00			M: Spaceflight Theory **Mission Design** D: Drobczyk Nohka	**On-Board Data Handling** D: Dannemann	M: Satellite Systems **Structural Design and Analysis** D: Rittweger	
12:00-14:00		Scientific Payloads D: Hermann			M: Subsystems **Space Propuksion Systems 1** D: Rickmers	
14:00-16:00	M: Subsystems **Orbital Systems** D: Rickmers/Bauer			**Human Space Exploration & Habitation** D: Schubert/Zabel	M: Space Environment and Testing **Space Environment and S/C Qualification** D: Dittus	Compulsory Modules (13,5CP/16,5CP)
16:00-18:00	Introduction to Python D: Brogioli					Elective Modules
by appointment					M: Satellite Systems **Space Systems Engineering / Concurrent Engineering** D: Romberg/Quantius	

Winter Semester Time Table

Foundation Courses (SpE II)

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00-10:00	**Atmospheric Physics** Bösch		**Science and Exploration Missions** Lämmerzahl/Scharringhausen	**Control Theory 1** Michels	
10:00-12:00					**Applied Mathematical Methods and Data Analysis** Vresoukis
12:00-14:00			**Communication Technologies for Space** Bockelmann		
14:00-16:00	**Space Electronics** Garcia-Ortiz			**Communication Technologies for Space** Bockelmann	
16:00-18:00					
by appointment					

Winter Semester Time Table

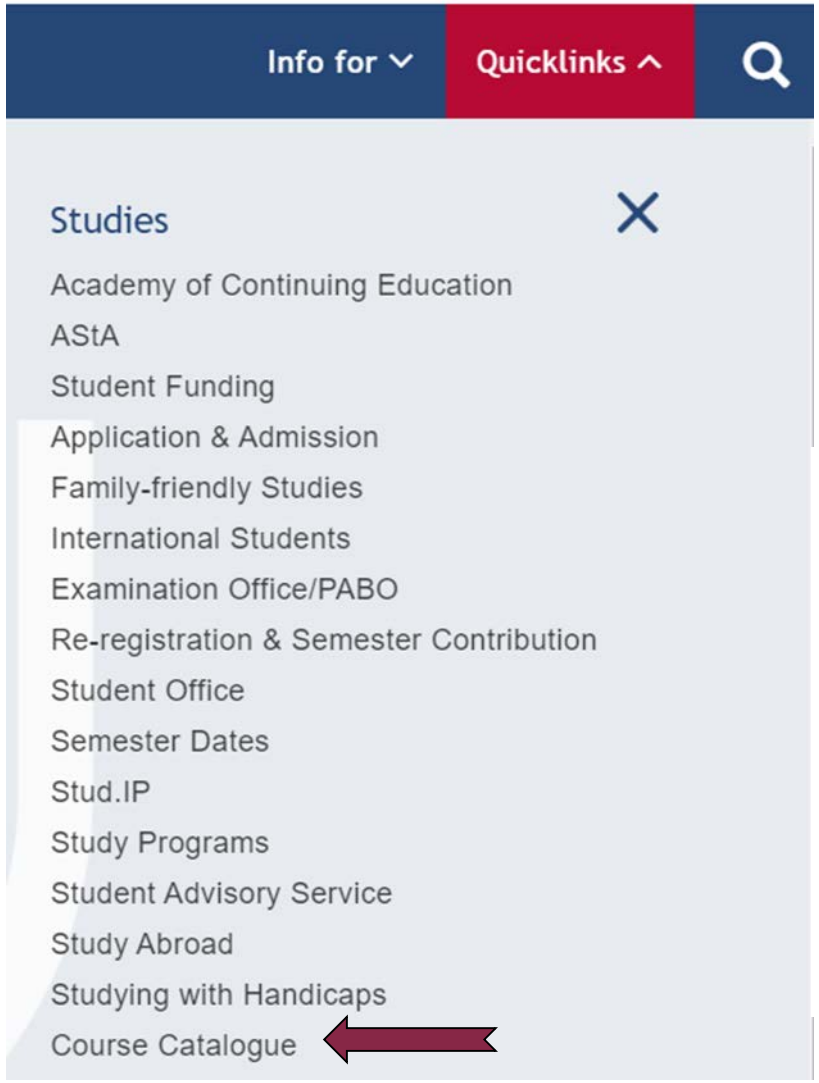
Courses last winter

	Monday	Tuesday	Wednesday	Thursday	Friday	
8:00-10:00			M: Space Environment and Testing LV: **Product Assurance and Space Technology** D. Große	Hydrogen and fuel cells for a green future D: Oscar Santiago Carretero		
10:00-12:00		Additive manufacturing of functional materials D: Okulov	M: Spaceflight Theory LV: **Mission Analysis** D: Maiwald		M: Space Environment and Testing LV: **Design of Space Vehicles** D: Rittweger	
12:00-14:00	Materials and Sustainable Development D: Okulov		Fluid Handling in Spacecrafts D: Pingel	Computational Fluid Dynamics D: Avila / Morón	Materials and processes for spacecraft and extreme environments D: Okulov	
14:00-16:00	M: Spaceflight Theory LV:**Trajectory Optimization** D: Büskens/Knauer (4,5CP)	Simulations for Design and Space Systems D: Grosse	Computational Fluid Dynamics D: Avila / Morón		M: Satellite Systems LV: **Thermal Control of Satellites** D: Dittus	Compulsory Modules (13,5CP/16,5CP)
16:00-18:00			M: Subsystems LV: **S/C Navigation and Control** D: Theil			Elective Modules
by appointment	Fatigue & Loads D: Degenhardt				M: Satellite Systems LV: **Space Systems Engineering / Concurrent Engineering** D: Romberg/Quantius	

General Information

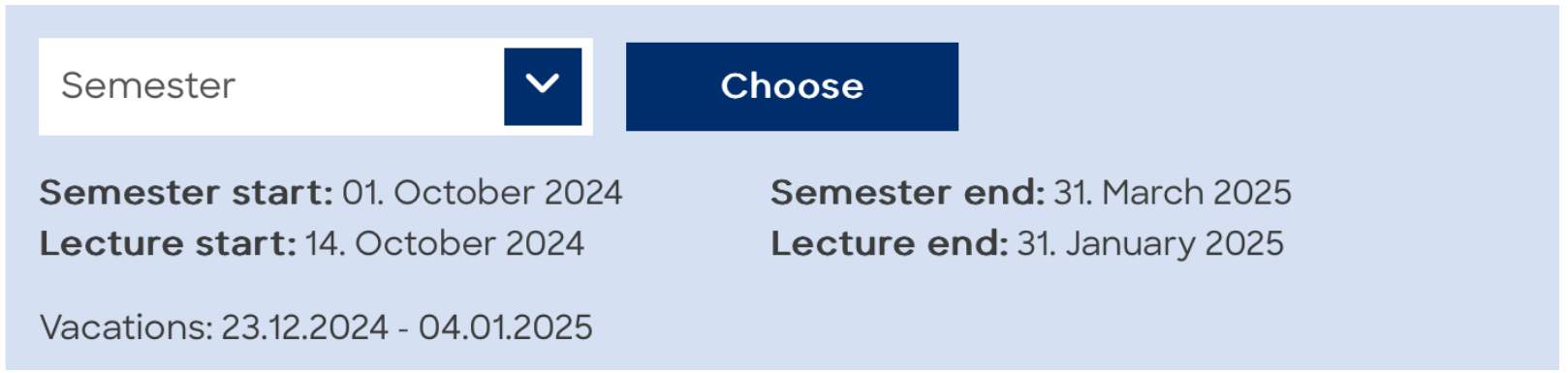
- Lecture courses
- Studip
- Pabo/Flex Now
- Examination regulations
- Miscellaneous

Lecture Courses



You can find the course catalogue on the university webpage at the Quicklinks or at

https://www.uni-bremen.de/en/studies/starting-your-studies/course-catalog.html



Lecture Courses

Fachbereich 04: Produktionstechnik -Maschinenbau & Verfahrenstechnik-

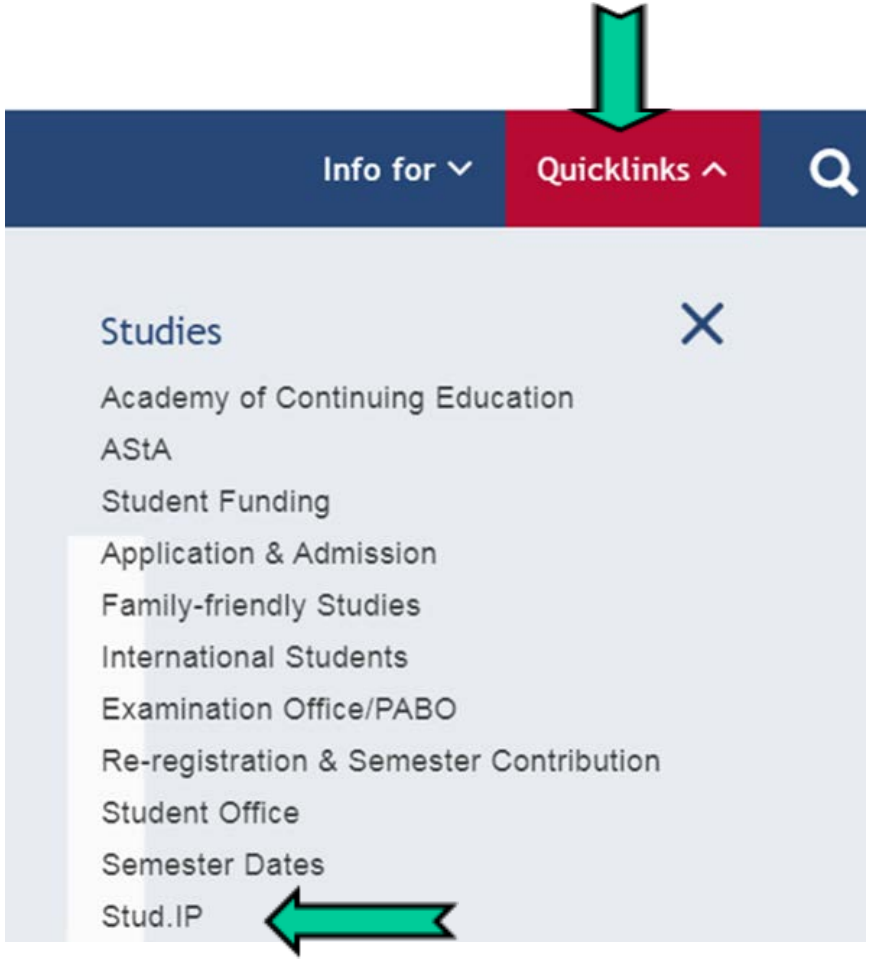
- Berufliche Bildung - Mechatronik, B.Sc. (24)
- Produktionstechnik-Maschinenbau & Verfahrenstechnik, B.Sc. (105)
- Produktionstechnik-Maschinenbau & Verfahrenstechnik, M.Sc. (187)
- Prozessorientierte Materialforschung, M.Sc. (248)
- Space Engineering, M.Sc. (18)
- Systems Engineering, B.Sc (101)
- Systems Engineering, M.Sc. (457)
- Wirtschaftsingenieurwesen Produktionstechnik, B.Sc. (97)
- Wirtschaftsing

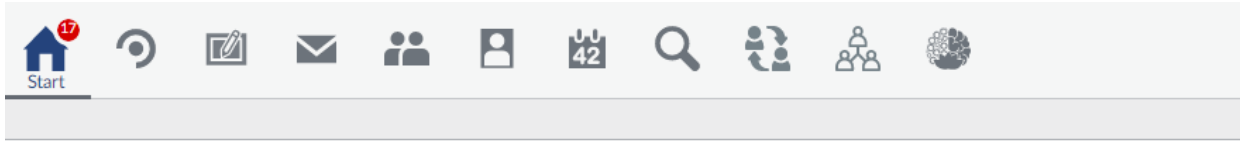
Here you will find all lectures of Space Engineering and information such as course number, lecture room, dates and lecturer

Course number	Title of event	Lecturer
04-M30-CP-SFT-1	**Mission Analysis** (in English) Lecture (Teaching) ECTS: 3 Dates: weekly (starts in week: 1) Wed. 10:00 - 12:00 FZB 0240	Dr.-Ing. Volker Maiwald

Stud.IP

- Stud.IP is the electronic course management system at the University of Bremen.
- You can find it on the university homepage Quicklinks or directly at https://elearning.uni-bremen.de
- Here you can compile your studyplan and will find current information to the courses of the Master program SpE like skripts, sheets etc. and several other features, such as the bulletin board and study groups…...





Start page

Jump marks

Quicklinks
Announcements

Actions

Add widgets
Restore default

Quicklinks

My courses
Add a course / Create study group / Export

My workspace
Courseware / Files / Announcements / Evaluations

Messages
Mail inbox / Sent

My profile
Settings / MyPhotos / Appointments / Lernduell / Gradebook

My planner
Date calendar / Timetable

Search
Course search

Veranstaltungssuche nach Zeiten

Zentrum für Lehrerbildung - Schulpraktika

Campus Lageplan

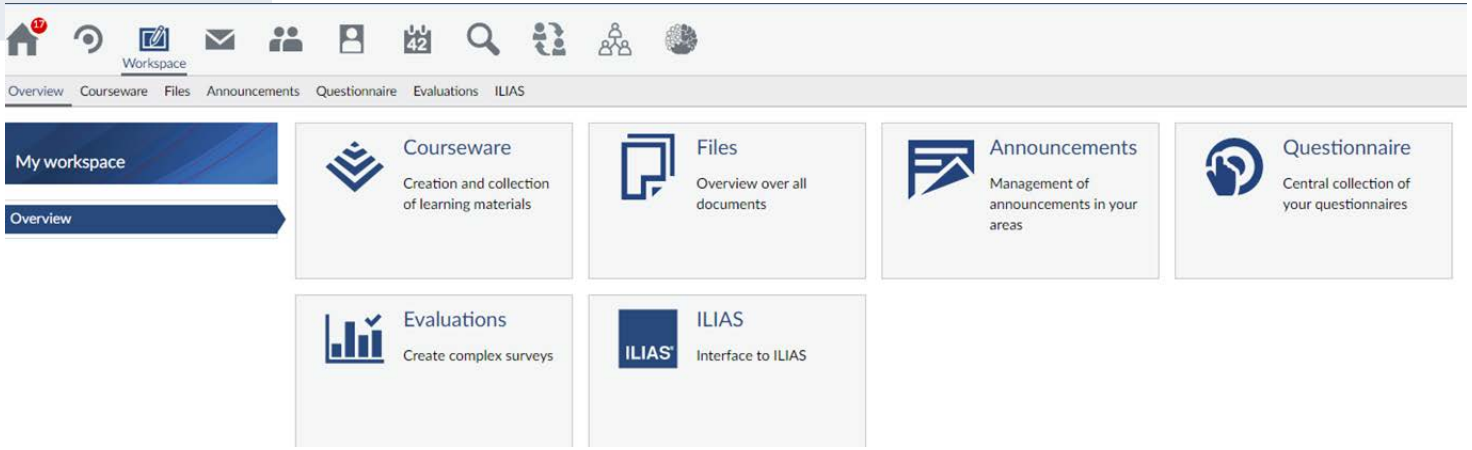
Meine Aktivitäten

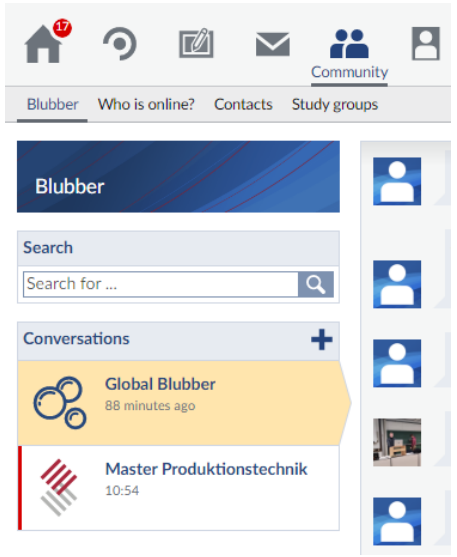
Selbsteinschätzungen

EduWork Builder: Interaktive Lerneinheiten, getaktete Aufgaben und mehr

Nachricht an den Support

Dokumentation von Online-Prüfungen in Stud.IP und Präsenzterminen





Blubber is a communication tool that is provided under the premise "students help students". Please note that your communication on this page is public and follow the terms of use and the netiquette.

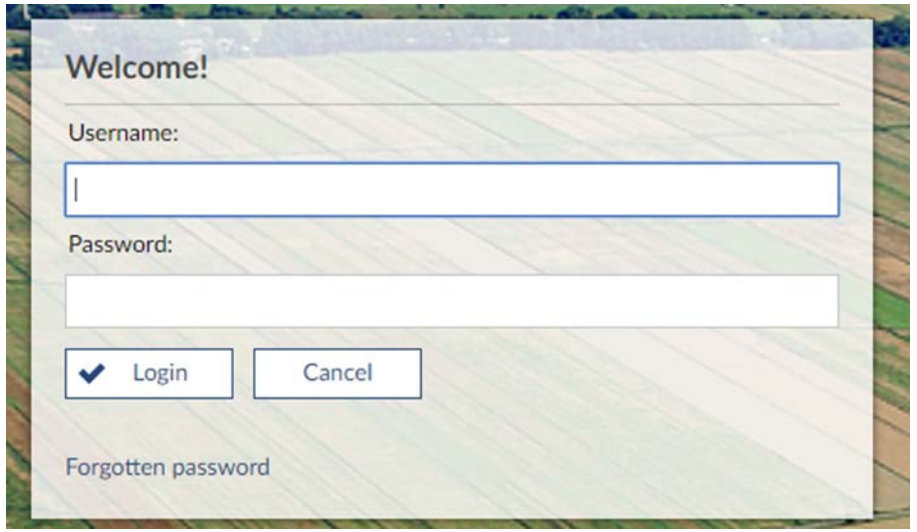
#bremerhaven #o #teamswaf
#roadto1000 #exmatriklation #team
#leadership #neu #studip #fahrraddemo
#engagement #verkehrswende

Notifications activated

How to log-in to Stud.IP

When you register at the University, you receive online access with which you can install your Uni-Account and your email address.
Use your user data to login to Stud.IP. The user name is your email without @uni-bremen

Please note that you are required to regularly check the inbox of this e-mail address.
It is recommended to set up automatic forwarding of this email address to your primary email address.



Stud.IP

At the beginning of each semester you can add the courses you wish to attend.

1. Search
2. Choose
3. Go to course

My courses

Current courses

Archived courses

Semersterfilter

SoSe 2021

Actions

Mark all as read

Change colour groupi

Adjust notifications

Add a course

Crea new study gro

Course directory

Course directory

Institute directory

Search

Thermal Control of Satellites

Display extended search

Semester

WiSe 2020/2021

Fields of study

Universität Bremen / Fachbereich 04

Compulsory Modules

36 CP

Space Flight Theory (2)

Space Environment and Testing (1)

No entries at this level available! / 5 entries included in any s

04-M30-CP-SAS-1 Lecture: Thermal Control of Satellites - Details

Actions

Print

Go to course

Reserve only in the timetable

Share

Copy link to this course

General information

Subtitle

Course number

Semester

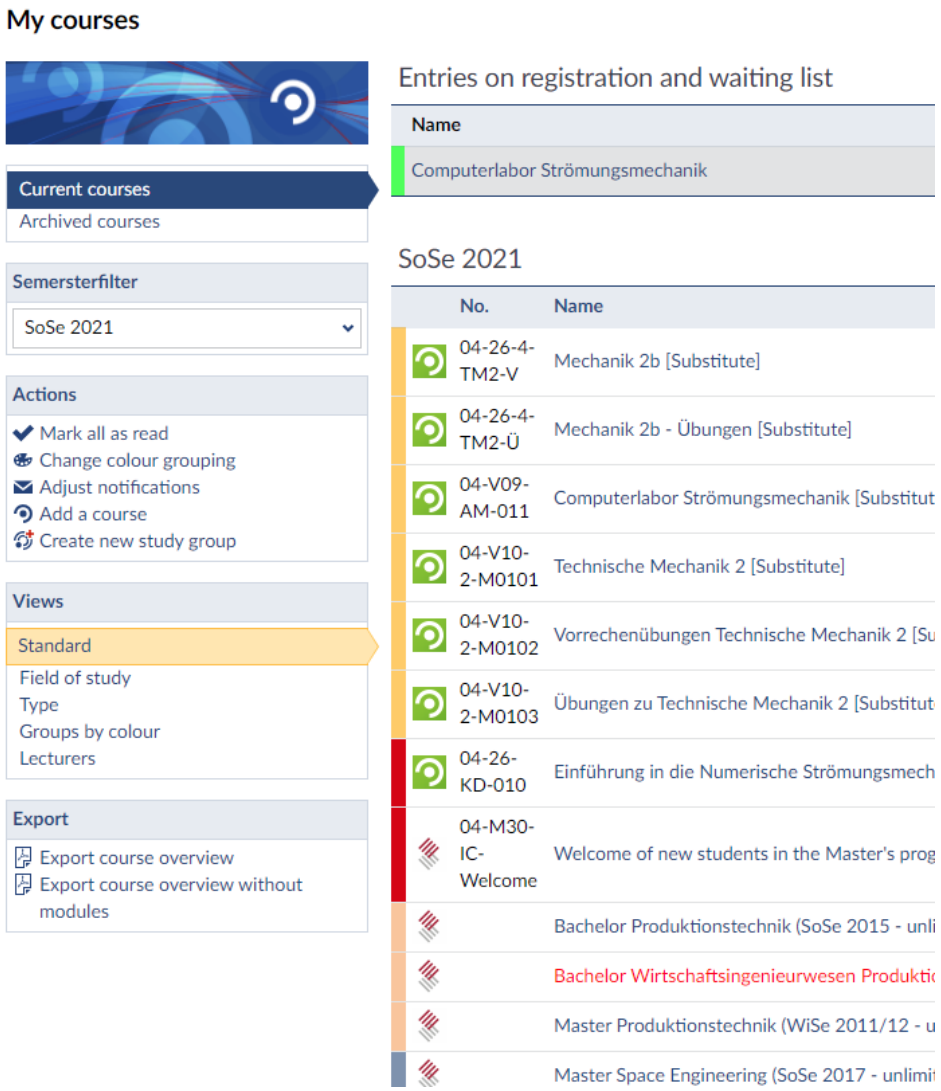
Current number of participants

Home institute

Courses type

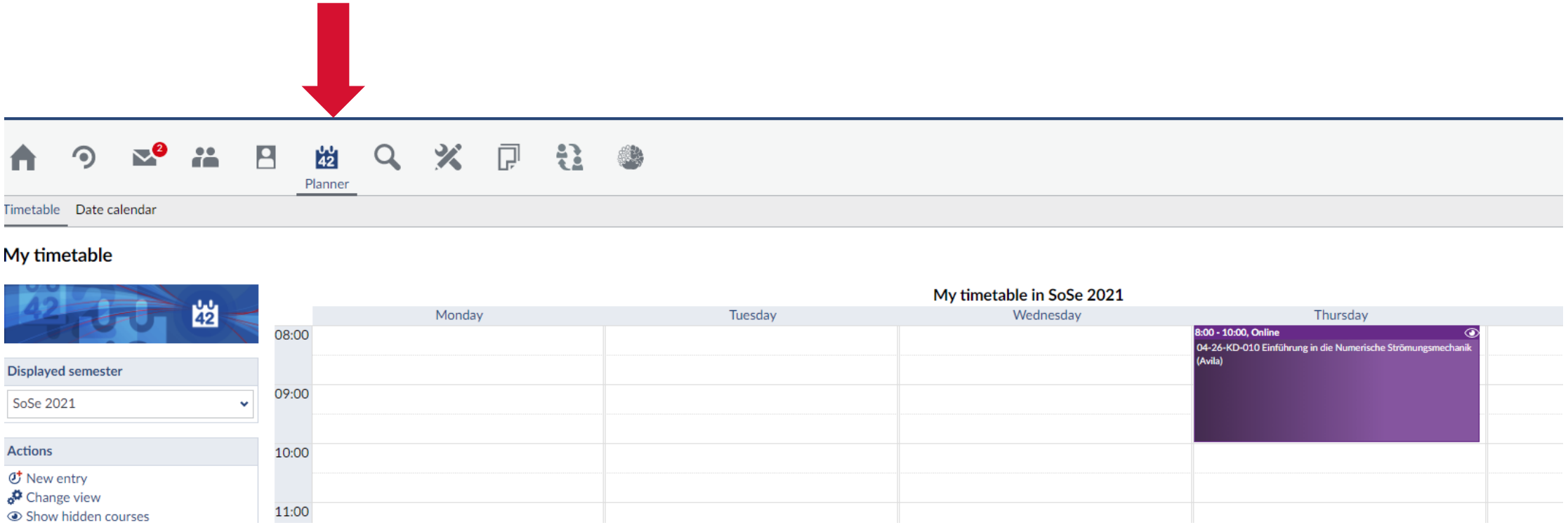
First date

Stud.IP



- After you have been accepted by the lecturer you will find all your courses and to each course the corresponding information.
- New messages or files that have accumulated since your last visit will be displayed.

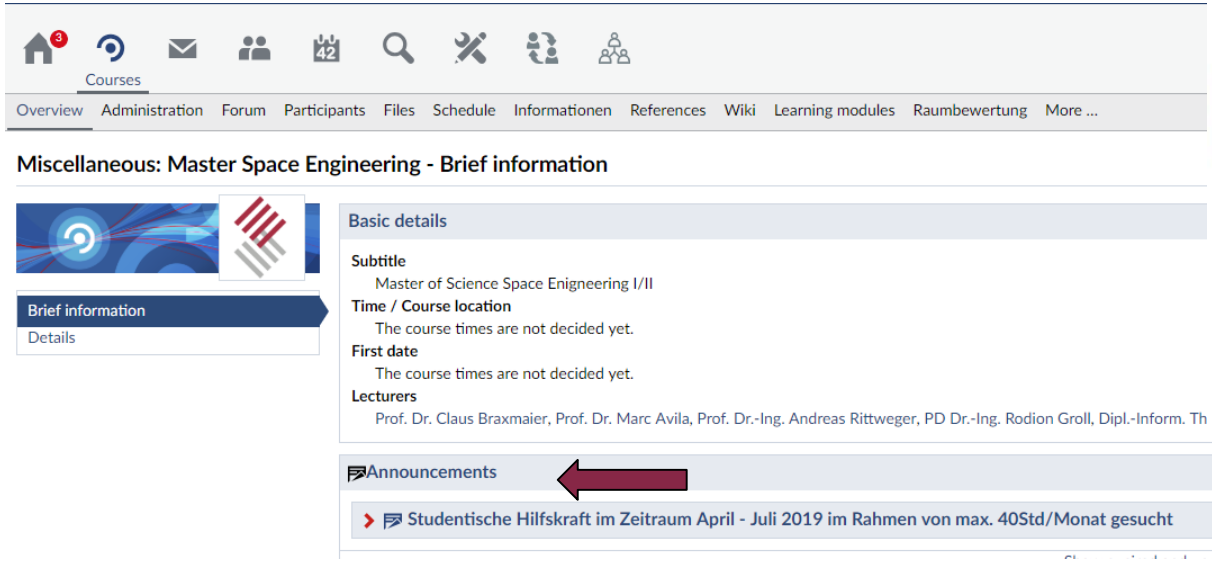
Stud.IP

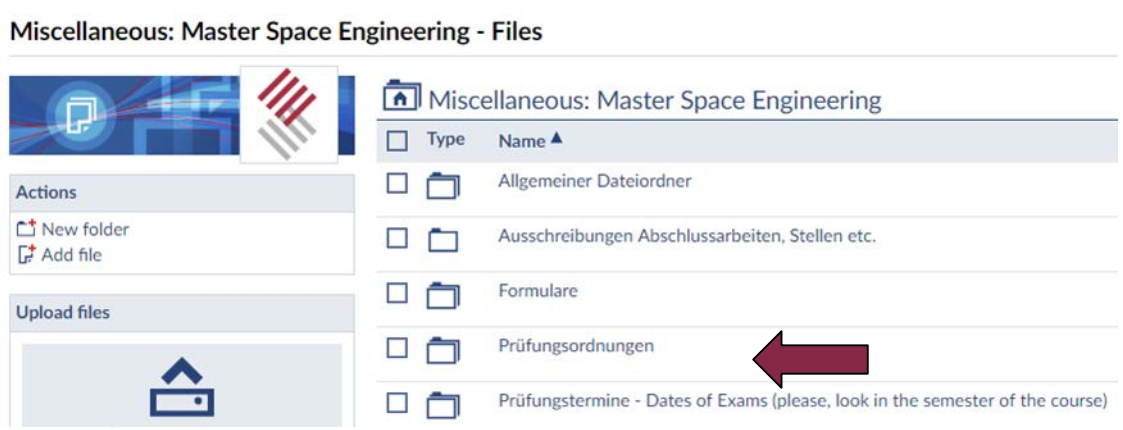


In your planner you will find all your courses you have registered for in Stud.IP

Stud.IP

Please register also to „Miscellaneous: Space Engineering“! Here you will find important announcements and files e.g. forms and examination regulations





Stud.IP

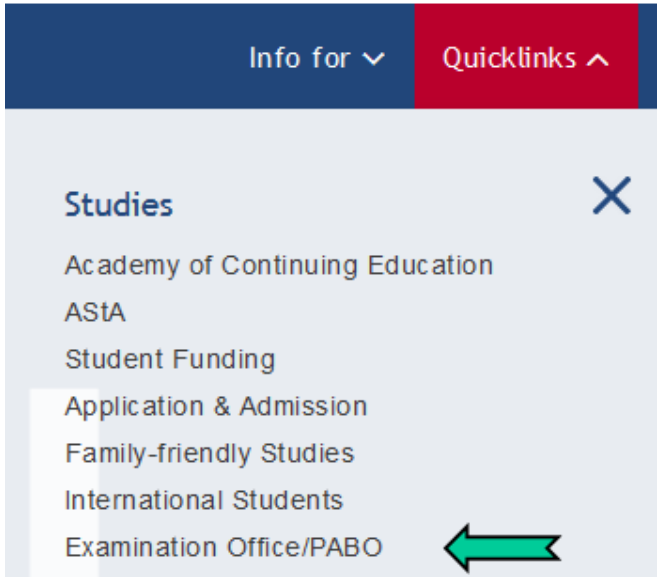
- More about Stud.IP https://hilfe.studip.de/
- **Please note:** On this platform you only register to get access to the information for the courses or other tools.

Please note that StudIp is not the tool to register for an examination!

How to register for exams

- You have to register online on the web portal **PABO/Flex Now** if you want to participate in an examination!

http://www.uni-bremen.de/pabo.html



Decentralized examination offices

Faculties 1 to 5 have their own examination offices:

- Faculty 1
- Faculty 2
- Faculty 3
- Faculty 4
- Faculty 5

Prüfungsamt
Bachelor & Master Systems Engineering
Master Space Engineering

Bianca Brazell
Postadresse: Fachbereich 4, Bagdasteiner Str. 1, 28359 Bremen
Phone +49 (0)421 218 64991 Bitte benutzen Sie z.Z. ausschließlich das Kontaktformular
Kontaktformular Prüfungsamt

Interne Kommunikation und Informationen via StudIP (Anmeldung erforderlich)
Master Space Engineering
Bachelor Systems Engineering
Master Systems Engineering

How to register for exams

- Benutzerkennung and Passwort: are the same as in StudIp, Webmail and MOIN. Insert your email-name (without @uni…) + Password
- In PABO you can check your study courses and see your results of examinations.
- You can also print a mark certificate at any time or rather provide the institutions/firms with a confirmation link

Prüfungsamt
Bachelor & Master Systems Engineering
Master Space Engineering

Bianca Brazell
Postadresse: Fachbereich 4, Bagdasteiner Str. 1, 28359 Bremen
Phone +49 (0)421 218 64991 Bitte benutzen Sie z.Z. ausschließlich das Kontaktformular

Kontaktformular Prüfungsamt

Interne Kommunikation und Informationen via StudIP (Anmeldung erforderlich)

Stud.IP Master Space Engineering
Bachelor Systems Engineering
Master Systems Engineering

How to register for exams

- **Registrations** for exams taken in the **summer semester** have to be made **until June 30** at the latest. For exams taken in the winter semester deadline for registration is January 10.

- **Please do not register last-minute!**
- **Should you face any difficulties registering for an exam please contact the examination office immediatly!**
- **If you registered for an exam, attendance is mandatory!**

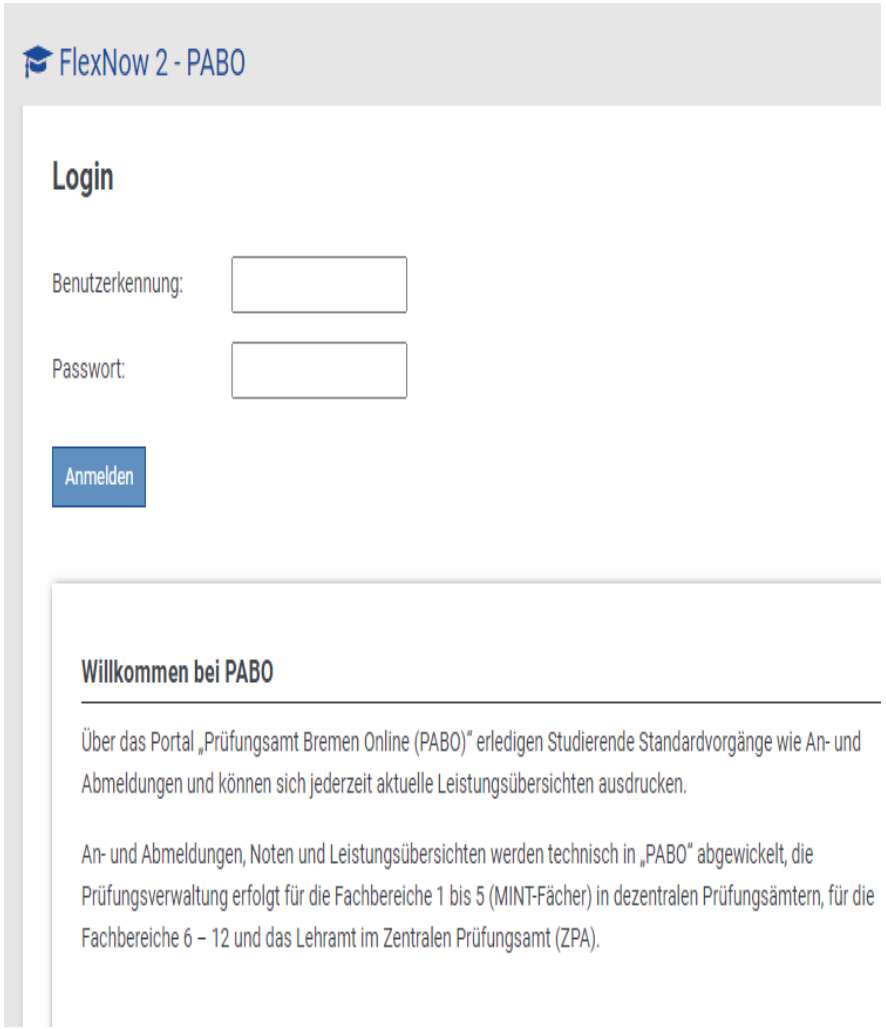
- If an examination takes place prior to the respective registration date, the registration has to be made not later than 48 hours before the day of the exam.

Deregistration

Deregistrations can be made in Pabo until **June 30** for the summer semester and **January 31** for the winter semester.

- A no show on the examination date will cause a failed in the exam if there is no good reason for the absence.
- Sick certificates from a german MD have to be submitted immediately – within three working days after exam – to the examination office.
- More information can be found on this webpage

https://www.uni-bremen.de/en/zpa/infos/information-surrounding-examinations/



- **Application for recognition of study achievements**
- For recognition of study achievements, an application has to be submitted to the examination board via the examination office. Please attach grade certificate/transcript
- In case of recognition of study achievements provided at other universities, please enclose a module description.

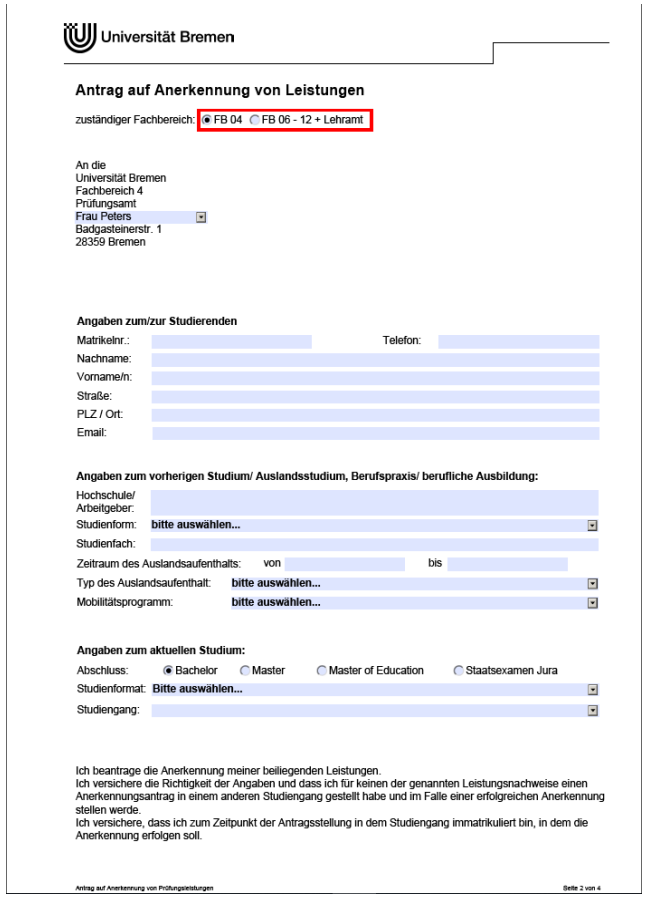
Please remember! All questions regarding examinations or study achievements have to be directed to Bianca Brazell at the examination office.

Martina Peters / Bianca Brazell

space1u2@uni-bremen.de or via the contact form on the faculty webpage

https://www.fb4.uni-bremen.de/studium_ma_space_home_e.html#Ansprechpartner

Set of Rules



Universität Bremen

Antrag auf Anerkennung von Leistungen

zuständiger Fachbereich: ◉ FB 04 ○ FB 06 - 12 + Lehramt

An die
Universität Bremen
Fachbereich 4
Prüfungsamt
Frau Peters
Badgasteinerstr. 1
28359 Bremen

Angaben zum/zur Studierenden

Matrikelnr.: Telefon:
Nachname:
Vorname/n:
Straße:
PLZ / Ort:
Email:

Angaben zum vorherigen Studium/ Auslandsstudium, Berufspraxis/ berufliche Ausbildung:

Hochschule/ Arbeitgeber:
Studienform: bitte auswählen...
Studienfach:
Zeitraum des Auslandsaufenthalts: von bis
Typ des Auslandsaufenthalt: bitte auswählen...
Mobilitätsprogramm: bitte auswählen...

Angaben zum aktuellen Studium:

Abschluss: ◉ Bachelor ○ Master ○ Master of Education ○ Staatsexamen Jura
Studienformat: Bitte auswählen...
Studiengang:

Ich beantrage die Anerkennung meiner beiliegenden Leistungen.
Ich versichere die Richtigkeit der Angaben und dass ich für keinen der genannten Leistungsnachweise einen Anerkennungsantrag in einem anderen Studiengang gestellt habe und im Falle einer erfolgreichen Anerkennung stellen werde.
Ich versichere, dass ich zum Zeitpunkt der Antragsstellung in dem Studiengang immatrikuliert bin, in dem die Anerkennung erfolgen soll.

Antrag auf Anerkennung von Prüfungsleistungen Seite 2 von 4

You find the information on the webpage of faculty 4
http://www.fb4.uni-bremen.de > Studies > Master Space Engineering

Fire Drill (Master)

- **Training in fire protection is necessary for participating in laboratorial lectures and therefore a required course for each student!**

- **The fire drill will take place on April 25, 2025**. The theoretical part from 12:00 – 14:00 in the lecture room HS 2010 (großer Hörsaal, Keksdose) and the outdoor activity will be at the training area Emmy-Noether-Str. from 14:00 – 15:00 h. It is recommended to wear steardy shoes and weatherproof clothes (you can also find the information in the course catalogue).

Persons

- **Dean of studies**
  - Prof. Fabio LaMantia
- **Departmental counseling**
  - Prof. Marc Avila
  - Prof. Dr.-Ing. Rodion Groll
- **Office Space Engineering**
  - Maria Petrogiannis
- **Examination Office**
  - Bianca Brazell
- **Study Centre**
  - Thomas Bruns

Formalities

- When you arrive in Bremen you must register as a resident at the Bürgeramt Bremen Mitte.
- The migration office at the BSU University of Bremen https://www.uni-bremen.de/en/bsu/news is only available online.

  (Or here: https://www.uni-bremen.de/en/research-alliance/welcome-center)

  - The application for a residence permit and other inquieries can only be made by email.
  - Please send the required documents in ***one*** pdf file to bsu@migrationsamt.bremen.de
- If you live outside Bremen you must register at the competent aliens registration office for the district where you live.
- More information about your stay in Germany you find here: https://www.uni-bremen.de/en/studies/starting-your-studies/formalitaeten/welcome-aboard

Links

- **http://www.fb4.uni-bremen.de/studium_ma_space_home_e.html**
  - brief info, structure, regulations, contact for the Master SpE
- **https://www.uni-bremen.de/en/studies/orientation-application**
- **https://www.uni-bremen.de/en/studies/starting-your-studies/course-catalog.html**
  - Study program
- **https://elearning.uni-bremen.de/**
  - Stud.IP – System / documents for lectures, registration for events, etc.
- **https://onlinetools.uni-bremen.de/**
  - E-Mail (access to the web, SPAM filter, forwarding, create an alias)
  - WLAN-access (eduroam)
  - Please note: also „formal“ emails of the University will be sent to the University email adress.“
- **http://antivirus.uni-bremen.de/**
  - free antivirus software („Sophos“)