# **Chair of Space Technology**

Technische Universität Berlin

# **MASTER OF SPACE ENGINEERING**

# STUDY GUIDE 2018 - 2020





### Dear Students,

On behalf of the MSE Team, I would like to extend a warm welcome to the Master of Space Engineering study programme and Berlin! The global space industry is experiencing continuous growth since space technology and business is one of the key fields for national competence and economic growth.

The space sector is looking for young professionals with excellent knowledge in space technology and furthermore with intercultural and interdisciplinary skills.

Since its establishment in 1963, the Chair of Space Technology has successfully conducted research and educated systems engineers for the space industry, mainly focusing on design, practical realization and operation of small satellite missions.

We hope this study guide will help you get your bearings at the University and in Berlin.

Professor Dr.-Ing. Klaus Brieß
Head of the Chair of Space Technology



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# BEFORE DEPARTURE

# 1.1 VISA APPLICATION

# 1.1.1 WHO NEEDS A VISA TO ENTER GERMANY?

EU citizens or citizens of Iceland, Liechtenstein or Norway do not need a visa to enter Germany.

Citizens of Andorra, Australia, Brazil, El Salvador, Honduras, Israel, Japan, Canada, Monaco, New Zealand, San Marino, Switzerland, South Korea or the USA may enter Germany without a visa but need to apply for a residence permit within the first 90 days upon arrival.

You need a visa if you come from any country not listed above.

### 1.1.2 WHERE TO APPLY FOR A VISA?

On the website of the <u>Federal Foreign Office</u> you can find a list of the German embassies and German consulates in your country where you can apply for a visa and get information on <u>visa requirements</u>.

# 1.1.3 WHAT IS THE CORRECT TYPE OF VISA?

If you intend to study in Germany, you have to apply for a student visa (national visa). As a rule, it is not possible to prolong a Schengen visa in Germany and you are required to leave the country after three months.

Only a small number of countries are exempt from this regulation: Citizens of the countries of Andorra, Australia, Brazil, El Salvador, Honduras, Israel, Japan, Canada, Monaco, New Zealand, San Marino, South Korea and the United States of America may also enter Germany for a longer stay without a visa and apply for a residence permit within three months.

# 1.1.4 WHICH DOCUMENTS ARE REQUIRED FOR VISA APPLICATION?

You will require the following documents to apply for a German visa:

- Completed application form
- Valid passport
- Transcript of academic record
- Evidence of sufficient funds to cover your entire cost of studying and living in Germany; you will be expected to demonstrate funds of approximately 8800 EUR for one year.
- Letter of acceptance or confirmation of registration on the study programme from the university
- Passport photographs according to biometric specifications
- Demand Draft for Visa Fee

**PLEASE NOTE:** The list of the required documents may vary in different countries. Please check it with the German Embassy in your country!



# 1.1 VISA APPLICATION

# 1.1.5 WHEN TO START PREPARING FOR YOUR STAY?

We recommend you to start preparing for your stay in advance, as the visa application procedure can take several months. You can find more information on visa regulations on the website of the *Federal Foreign Office*.

# 1.1.6 HOW TO EXTEND VISA ON ARRIVAL IN GERMANY?

If you are not an EU citizen or a citizen of Iceland, Liechtenstein or Norway, you need to apply for a residence permit with the <u>Berlin Foreigners Registration Office</u> after your arrival in Germany. We recommend you to apply as quickly as possible, as it takes 4-8 weeks for the permit to be issued.

### VISA-SERVICE TU BERLIN

**Place:** Room H51 in the Main Building

Time: Friday, 10-15

**Telephone:** 314-24 359

www.betreuung-int-stud.tu-berlin.de

It will take longer (+ ca. 4 weeks) but you don't have to go to the Berlin Foreigners Registration Office.

You can get an appointment with the Visa-Service from 11:00 to 14:30 in person or over the phone.

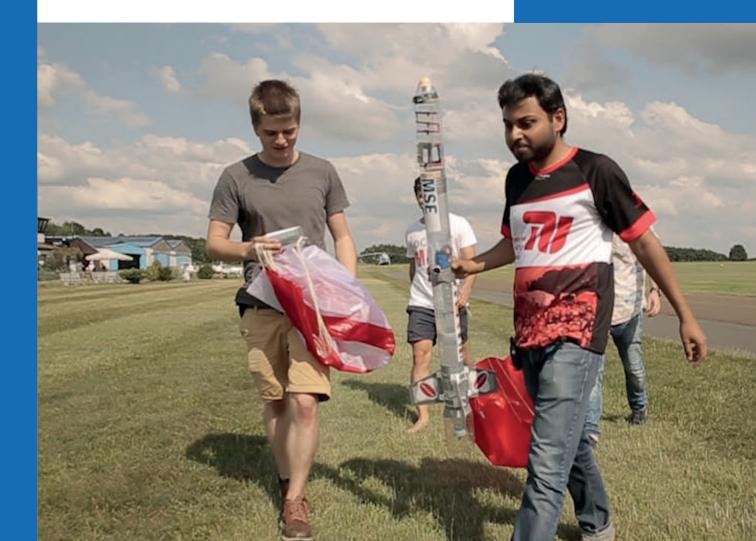


# FOLLOWING DOCUMENTS ARE REQUIRED (original and a copy):

- ✓ Completed application for a residence permit (you can get it at the Visa Service Center)
- ✓ Valid passport or ID card (please ensure that this is not due to expire until at least three months after the end of your stay)
- ✓ Biometric passport photo (please note the requirements set out by the Federal Foreign Office)
- ✓ Registration certificate from the Residents' Registration Centre (Bürgeramt – Anmeldebescheinigung)
- ✔ Proof of health insurance cover that is valid in Germany
- ✓ Evidence of sufficient funds to cover your entire cost of studying and living in Germany

# 1.1.7 IS IT POSSIBLE TO EXTEND A RESIDENCE PERMIT AFTER FINISHING YOUR STUDY?

After you have successfully completed your studies in Germany, your residence permit can be extended for up to 18 months so that you can search for a job relevant to your qualifications in Germany.



# 1.2 ACCOMMODATION

### **PLEASE NOTE:**

The choice of accommodation in Berlin is large and varied, from rooms in dormitories, shared flats and hosting families to hotels. Nevertheless it is very important to start looking for a suitable accommodation in advance as the demand is high.

We have compiled a small selection of websites that may prove useful in your property search.

### 1.2.1 DORMITORIES

### **STUDENTENWERK BERLIN**

Studentenwerk Berlin is a student service organisation which provides the economic, social, medical and cultural support for students in German universities. If you wish to apply for rooms with Studentenwerk Berlin, you will need to attach a letter of acceptance and proof of tuition fee payment to your application.

www.studentenwerk-berlin.de

### **HOUSE OF NATIONS**

Free rooms are usually bookable online 4 weeks before they become available.

www.house-of-nations.de

### **STUDENTENDORF BERLIN**

www.studentendorf-berlin.com

### **WOHNHEIM BERLIN**

www.wohnheim-berlin.de

### **EASYLIVING**

<u>www.easy-living4u.de</u>

### MASTER OF SPACE ENGINEERING

### 1.2.2 PRIVATE ACCOMMODATIONS

www.airbnb.de

www.9flats.com

www.housetrip.com

### 1.2.3 SHARED FLATS

www.zwischenmiete.de

www.wg-gesucht.de

www.easywg.de

### 1.2.6 FLATSHARE AGENCIES

**CITY MITWOHNZENTRALE** 

www.city-mitwohnzentrale.com

**ZEITRAUM WOHNKONZEPTE** 

<u>www.zeit-raum.de</u>

### 1.2.4 ACCOMMODATION WITH HOST FAMILIES

www.homestaybooking.com

### 1.2.5 HOSTELS/SHORT TERM HOUSING

www.2a-hostel.de

www.aletto.de

www.cityhostel-berlin.com

www.meininger-hotels.com

www.backpacker-network.de

www.pfefferbett.de

www.wimdu.de

www.casamundo.de

# 1.3 CHECKLIST

### 1.3 CHECKLIST

Here is the checklist of documents, we recommend you to bring to Berlin with you. Please note that this list is not universal and can differ from applicant to applicant.

- ✓ Valid passport and visa
- ✓ Documents required for matriculation
- ✓ Vaccination card
- ✓ Credit card / debit card
- ✓ Address of your accommodation
- International driver's license in case you wish to drive in Germany
- Photocopies of all important documents









# 2. SEMESTER DATES

### **SUMMER SEMSTER 2019**

**Dates of the semester** April 1st – September 30th

**Lecture period** April 8th – July 13th

### WINTER SEMESTER 2019 / 20

**Dates of the semester** October 1st – March 31st

**Lecture period** October 14th – February 15th

No lectures: Statutory public holidays during this period.

### **PUBLIC HOLIDAYS IN BERLIN**

Here you can find the overview of the public holidays in Berlin: publicholidays.de







# 3. TRANSPORT FROM AIRPORT

### 3.1 TRANSPORT FROM AIRPORT IN BERLIN

There are two airports in Berlin that you will probably land at and both of them are easily accessible by public transport.

### **TEGEL AIRPORT (TXL)**

Tegel Airport is located within Berlin and is closer to the city centre than Schönefeld Airport. The airport is linked to several BVG bus lines, which offer connections to the city centre. The express buses TXL run to Alexanderplatz (City East) via the main train station (Hauptbahnhof) and X9 to station Zoologischer Garten (City West). The bus stops are directly in front of Terminals A and B. You will also find the ticket machines here. A bus ticket (Einzelfahrschein AB) costs € 2.80 and is valid for 120 minutes.

A taxi into the city costs about 20 - 25 euros.

### SCHÖNEFELD AIRPORT (SXF)

Schönefeld Airport is located southeast of the city centre, directly at the southern border. The best way to get from the airport to the city is by regional trains (RE7 and RB14) or the

S-Bahn (lines S45 and S9). The train station is not located at the airport. When leaving the airport you will see a ca. 400 metres, half-covered way. Tickets can be bought at the terminal building. You will need an ABC zone ticket (Einzelfahrschein Berlin ABC), which costs € 3.40.

A taxi into the city costs about 35 – 40 euros.

### **BERLIN JOURNEY PLANNER**

Please visit the *Berlin Transport Company (BVG)* website where you can get a *Berlin journey planner* with information on Berlin public transport.

# 3.2 RESIDENCE PERMIT

If you are not an EU citizen or a citizen of Iceland, Liechtenstein or Norway, you need to apply for a residence permit with the *Berlin Foreigners Registration Office* after your arrival in Germany. We recommend you to apply as quickly as possible, as it takes 4-8 weeks for the permit to be issued.



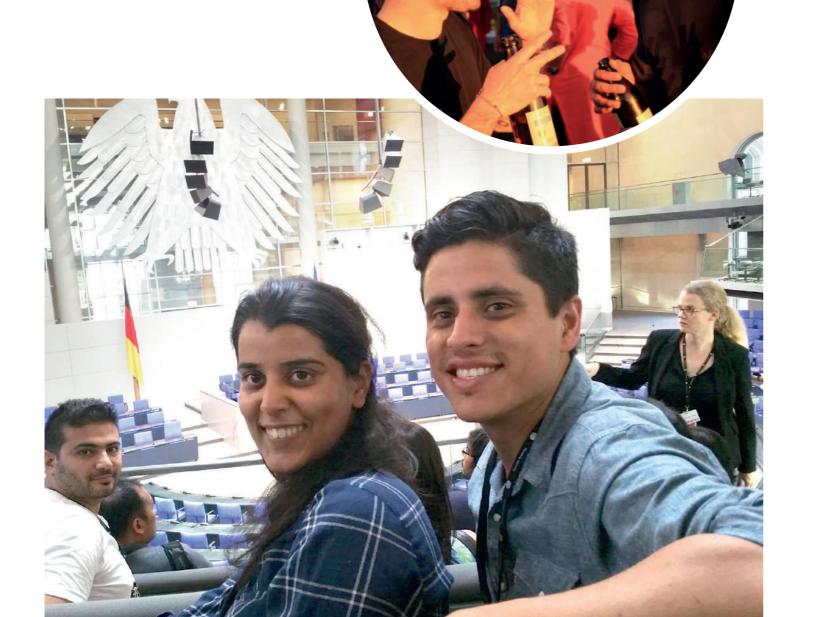
# 3.3 RESIDENCE REGISTRATION

When staying in Germany for more than three months, you must register your permanent address (i.e. not a hotel or hostel) with the authorities at so called Einwohnermeldeamt or Bürgeramt within seven days from moving into it.

You can get registered at any <u>Bürgeramt in</u> <u>Berlin</u>. You need to book an appointment <u>online</u> (click on "Termin berlinweit suchen").

To register you need your passport or identification card, tenancy agreement, "Einzugsbestätigung" from your landlord and a completed registration form, which is available at the Einwohnermeldeamt and its website.

As proof of your registration, you will get a confirmation sheet (Anmeldebestätigung). Please keep it, as this serves as a proof of your address and a lot of institutions like banks, libraries etc. will ask for it.





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# 3.4 BANK ACCOUNT

# TO OPEN AN ACCOUNT, YOU WILL REQUIRE THE FOLLOWING DOCUMENTS:

- ✔ Passport or ID card,
- ✓ Student ID or certificate of enrolment or notification of admission from your university
- ✓ Confirmation of residence registration (Anmeldebestätigung).

We recommend you to open a bank account with a German bank, as it allows you to transfer and withdraw money at the cash machines of your bank and its partner banks free of charge. Furthermore, it allows automatic withdrawals for paying regular bills such as telephone bills or the monthly rent.

Many banks offer free student accounts including an EC card.

There are numerous banks operating in Berlin. There are also a number of online banks which offer the entire range of services via the Internet – from setting up the account to all necessary transactions.



# 3.5 HEALTH INSURANCE

In order to be enrolled for study in Germany you need valid health insurance.

# HEALTH INSURANCE FROM YOUR HOME COUNTRY MIGHT BE VALID IN GERMANY.

Usually, public health insurance policies from EU member states, as well as Iceland, Liechtenstein, Norway, Switzerland and Macedonia are valid in Germany. Also, some private health insurances might be recognised in Germany. Please check with your insurance company at home, whether and to which extent your health insurance is valid in Germany.

# IS YOUR HEALTH INSURANCE NOT VALID IN GERMANY?

In this case you should get insurance as soon as possible on arrival in Berlin.

There are two types of health insurance in Germany, compulsory and private health insurance. University students are normally insured by compulsory insurance funds at a favourable student rate. Exceptions are students who are at least 30 years old or who have been studying for more than 14 semesters. These students can either continue being insured by a statutory health insurance

fund at a higher rate or change to a private insurance.

If you start your study and you are older than 29, you can only be insured by a private company.

We will advise you on this issue during the orientation week upon your arrival in Berlin.



# STUDYING ATTUBERLIN



# 4.1 CAMPUS MAP

The main campus of the TU Berlin is a located in the borough of Charlottenburg and consists of numerous buildings. The following map comprises the location of the facilities and the main means of public transportation in the vicinity of the TU Berlin. The building of the Chair of Space Technology is marked by the red arrow.



### **CAMPUS TU**



# 4.2 SEMESTER TICKET

Upon payment of the semester fee, students of the TU Berlin receive a Berlin public transportation ticket of the Berliner Verkehrsbetriebe (BVG), valid for 6 months (April – September / October – March). The semester ticket is valid for the entire BVG transportation network extending into parts of Brandenburg. The semester ticket is only valid in combination with the student ID card and a certificate of enrolment. Detailed information on the transportation network and additional pieces of information can be found on the following *BVG website*.

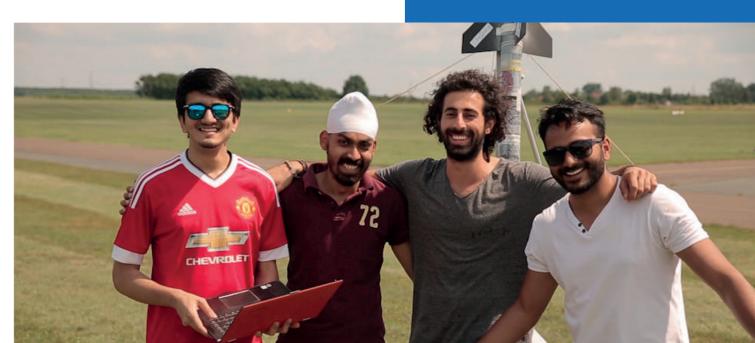


# V

# 4.3 CAFETERIAS

The Mensa is the main cafeteria of TU Berlin and Universität der Künste (UdK) located at the Hardenbergstraße (cf. 4.1). It offers hot meals ranging from 3 – 5 euros per meal and it serves food Mondays to Fridays between 11 and 14:30 with the exception of public holydays. The Mensa uses a system of so called Mensa Cards that can be charged with cash in the foyer of the Mensa building. When first visiting the Mensa, a Mensa card can be purchased at the cashier desk in the second floor. Issuing a Mensa card requires a valid student ID card as well as a deposit of € 1.55 which will be refunded upon returning the Mensa Card.

In addition to the Mensa, there are several other cafeterias on campus with the cafeterias in the EN, A and MAR buildings being the closest to the main lecture building for the MSE courses.



# 4.4 LIBRARIES

The main library of TU berlin is located at Fasanenstraße (BIB on the campus map (cf. 4.1)). It offers a variety of scientific literature on the subjects of natural humanitarian and social sciences, technology and general reference. When using the library, your student ID card also serves as a library card and enables you to loan books for a period of four weeks. The lending period can be extended online if the loaned items are not reserved by other students. If a loaned item is overdue, a fee per book and week will be charged. Books can be returned at the counter in the library during regular opening hour or at a return machine in the foyer of the library.

Next to the main library there are several departmental libraries spread around the campus that can also be used by the students. Visit *library's website* to search for specific items and to find out more about the library of TU Berlin.

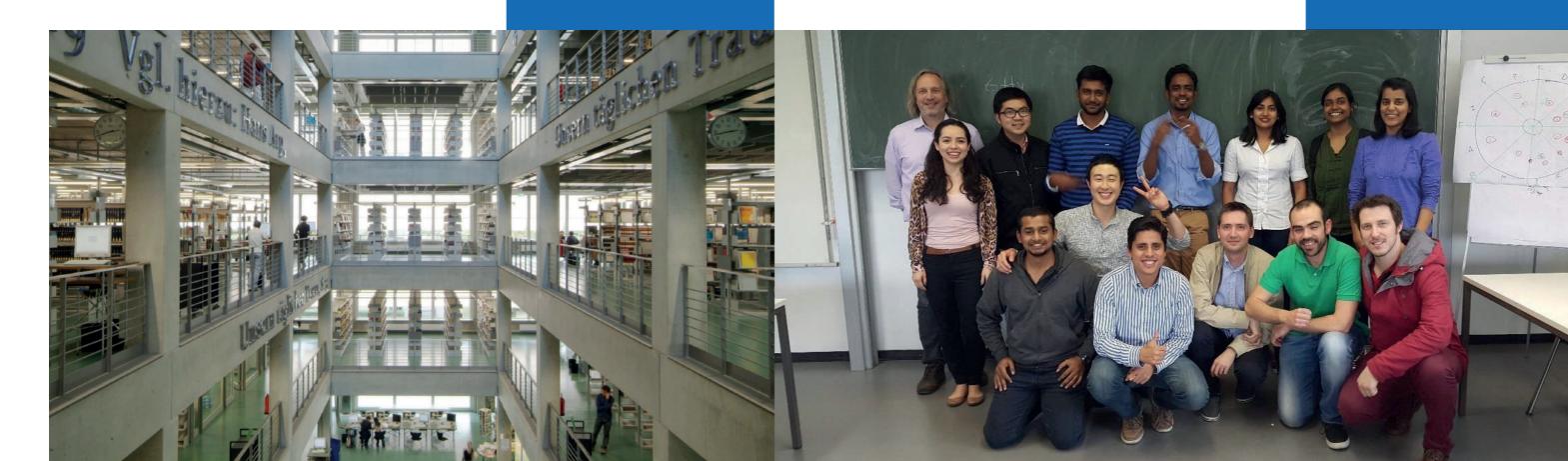
# **~**

# 4.5 TU BERLIN IT SERVICE CENTRE

All students of TU Berlin are eligible for an account and an email address of the TU Berlin IT service centre (tubIT) after applying for it. This account enables you to access various services with only one password such as:

- Access to the TU Berlin portal
- ✓ Use of wireless LAN on campus
- Use of the tubIT PC pools
- ✓ Own e-mail address
- Several others

Further information on the tubIT account can be found on the *tubIT website*.



# 4.6 SPORTS PROGRAMME

# 17970 180so

The sports programme at Technische Universität Berlin is varied, from diving, sailing, martial arts to yoga, dance and Pilates. The courses usually last for one semester and they charge a modest fee for participation. Beginning April 1st, you can sign in to the various sport programmes. Please note that the more popular courses can be fully booked within the first couple of hours. For more information and a list of available sport programmes, visit the *TU Sport website*:

Unfortunately, the information accessible on the TU Sport website is solely provided in German. If you have any questions on the TU Sport programme, or if you need assistance in booking a specific course, feel free to contact us.

# V

# 4.7 LANGUAGE COURSES

There are several different facilities and institutions that offer languages courses for a variety of foreign languages and language levels. The courses usually last for one semester and you are generally credited 6 ECTS for completing each course. A list of available language courses can be found on the following websites:

www.skb.tu-berlin.de
www.zems.tu-berlin.de

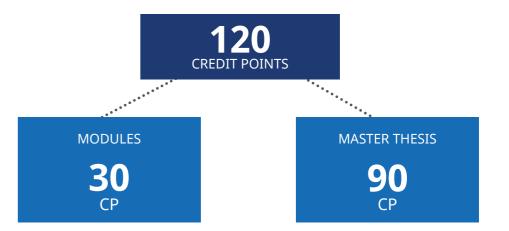




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# 5.1 PROGRAMME STRUCTURE

The Master's programme comprises 120 credit points in total, 90 credit points in modules and 30 credit points in the Master thesis.



The modules are divided into required, elective and free elective.

When you make your study plan, please consider the following requirements:



Elective Courses (39 CP)

Required Courses (55 CF)				
Space Technology (A)	18			
Space System Design (B)	9			
Space Management & Operation (C)	18			

Space Technology (A)	min. 6
Space System	min.
Design (B)	6
Space Management	min.
& Operation (C)	6

min.

Interdisciplinary (D)

Free Elective (18 CP)

# 5.1 PROGRAMME STRUCTURE

Of the required courses, modules totalling 33 CP are taken as follows:

18 CP A - SPACE TECHNOLOGY 9 CP

**C - SPACE MANAGEMENT** AND OPERATION 6 CP

**B - SPACE SYSTEM DESIGN** 

Of the elective courses, modules totalling 39 CP are taken as follows:

A - SPACE TECHNOLOGY min. 6 CP

**B - SPACE SYSTEM DESIGN** min. 6 CP

**C - SPACE MANAGEMENT** 

**D - INTERDISCIPLINARY** 

AND OPERATION min. 6 CP

min. 6 CP

The free elective area has a range of 18 CP.

Whereas the required and elective courses can only be selected from the MSE curriculum, the free elective can be taken at any university in Germany.

Hier are the course directories of the four Berlin's universities:

Technische Universität Berlin

Freie Universität Berlin

Humboldt-Univeristät zu Berlin

Universität der Kunste Berlin

TU Berlin offers summer & winters courses with a huge discount for TU Berlin students (total costs about 180€): www.summer-university.tu-berlin.de

### **PLEASE CONSIDER THAT**

- ✓ Only the first 90 CP of fully completed modules will count towards your final degree;
- ✓ Only 85% of your modules with the best grades will be counted to determine your final grade.

# 5.2 CURRICULUM

### Space Technology

Fundamentals of Space Technology (Req. | 9 CP | PE)

Satelite Technology (Req. | 6 CP | PE)

**Space Electronics** (Req. | 6-9 CP | PE)

Spacecraft Dynamics and Control (Ele. | 9 CP | PE)

Spacecraft Propulsion Systems (Ele. | 6 CP | PE)

Space Sensors and Instruments (Ele. | 6 CP | PE)

CP

Ele.

OE

PΕ

Oral exam

### Space System Design

Space System Design Project (Req. | 9 CP | PE)

Space Technology Project (Req. | 9 CP | PE)

Planetary Exploration and Space Robotics (Ele. | 6-12 CP | PE)

### Space Management and Operation

Space Mission Planning and Operations (Req. | 6 CP | PE)

Human Spaceflight and Space Psychology (Ele. | 6 CP | PE)

Space Flight Mechanics (Ele. | 6 CP | OE)

Satellite Geodesy (Ele. | 6-9 CP | OE)

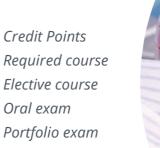
### Space Management and Operation

**Project Management** (Ele. | 6 CP | PE)

**Innovation Management** and Entrepreneurship (Ele. | 6 CP | PE)

> Soft Skills (Ele. | 3 CP | PE)

German for Engineers (Ele. | 3-9 CP | PE)







# 5.3 PROGRAMME SCHEDULE

indamentals of Space Technology satellite Technology space Electronics spacecraft Dynamics and Control spacecraft Propulsion Systems	9 6 6-9	Fundamentals of Space Technology (1) Fundamentals of Space Technology (2) Satellite Technology Space Electronics (1) Space Electronics (2) Radiation Workshop	Req.	6 6 3	3		
space Electronics  Spacecraft Dynamics and Control	6-9	Fundamentals of Space Technology (2)  Satellite Technology  Space Electronics (1)  Space Electronics (2)	Req.	6	3		
space Electronics  Spacecraft Dynamics and Control	6-9	Satellite Technology  Space Electronics (1)  Space Electronics (2)	Req.		3		
pace Electronics  pacecraft Dynamics and Control	6-9	Space Electronics (1) Space Electronics (2)					1
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spacecraft Dynamics and Control			ricq.				
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· · · · · · · · · · · · · · · · · · ·		Spacecraft Dynamics and Control (1)	Ele.	3			
pacecraft Propulsion Systems	9	Spacecraft Dynamics and Control (2)	LIC.		6		
· · · · · · · · · · · · · · · · · · ·	6	Spacecraft Propulsion Systems	Ele.			6	
pace Sensors and Instruments	6	Space Sensors and Instruments	Ele.		6		
ace System Design min. 15							
pace System Design Project	9	Space System Design Project	Req.		9		
pace Technology Project	9	Space Technology Project	Ele.			9	
Planetary Exploration and Space	6-12	Planetary Exploration and Space Robotics 1	Ele.		6		
Robotics	0-12	Planetary Exploration and Space Robotics 2	Ele.			6	
pace Operations	min. 12						
pace Mission Planning and Operations	6	Space Mission Planning and Operations	Req.	6			
Human Spaceflight	6	Human Spaceflight	Ele.		3		
				3			
pace Flight Mechanics	6	Space Flight Mechanics	Ele.			6	
Satellite Geodesy	6-9	Introduction to Satellite Geodesy	Ele.	3			
		Satellite Geodesy (main course)	Ele.		6		
nterdisciplinary	min. 6						
Project Management	6	Project Management	Ele.	6		6	
nnovation Management and Entrepreneurship	6	Innovation Management and Entrepreneurship	Ele.	6		6	
	3	Soft Skills	Ele.	3		3	
oft Skills	3-9	German for Engineers	Ele.	3	3	3	
oft Skills German for Engineers				Ε4	10	48	0
	90			54	40	.0	
German for Engineers	90			54	40		30
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MASTER OF SPACE ENGINEERING



# MSE INFOPINT

## **MSE INFOPOINT**

Once you are officially enrolled at TU Berlin, you have access to the so called MSE Infopoint via the online Information System for Instructors and Students (ISIS) where you can find more information about:

- Study and exam regulations
- ✓ Software and IT services
- Homework submission guidelines
- ✓ Tips for selecting courses
- Access to journals and books
- Internships, theses and jobs positions and regulations
- ✓ Conferences
- ✓ And more

Furthermore, you can download forms for:

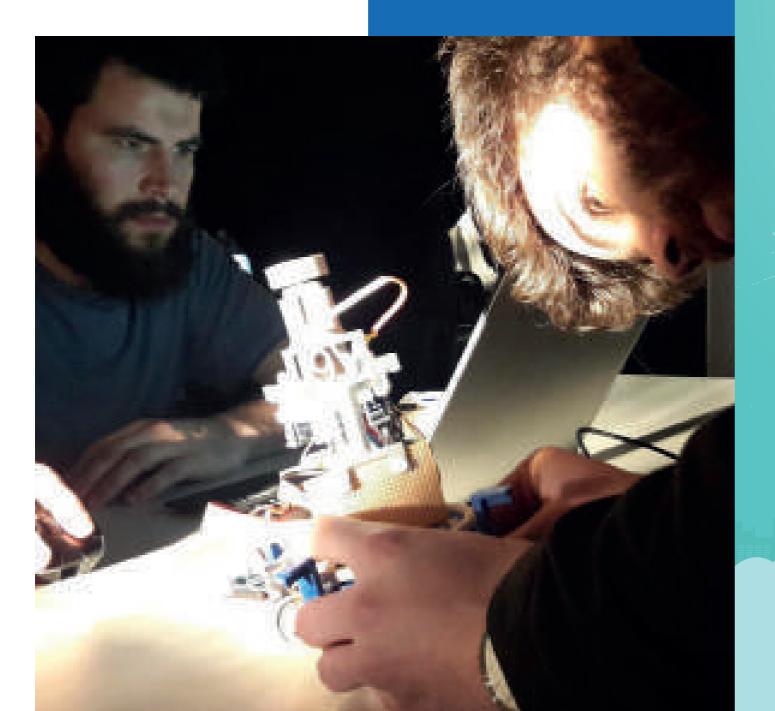
- Exam registration
- Master thesis registration
- ✓ Holiday semester application
- ✓ Ftc

Most announcements regarding MSE related activities, space events, thesis positions, job advertisements and many more are announced on the MSE Infopoint forum.



# 5.4 ADDITIONAL MODULES

You can take modules exceeding the required 90 Credit Points. Results of these modules can be included into the certificate if the candidate applies for that. However, it will not be included in the calculation of the total grade.





# 5.5 MASTER THESIS



# Thesis evaluation and presentation + 8 months

- The evaluation process usually takes around six weeks
- •The date of presentation will be coordinated after handing in the thesis
- The presentation will take 15 minutes plus 10 minutes Q&A session

# Status report with your second evaluator + 2 weeks to + 5 months

- · Keep in touch with your second evaluator at TU Berlin
- · Ask for advice, feedback, exchange ideas

### Define your topic 1 month

Submit your abstract (max. 2 pages) to Professor Brieß

The abstract must contain:

- The title of the thesis
- · Organization and contact of the supervisor (if external)
- Short description of the scope, the goals and the tasks
- Time schedule showing the duration of each main task
- Start date

### + 6 months

### Submission

### Checklist:

- 3 copies (at least soft-cover) of the thesis (70 to 90 pages)
- 3 CDs, DVDs or USB sticks including the thesis as PDF, all calculations, software, referenced sources, drawings, CAD files, models, simulations, etc.
- Declaration of Authorship
- Agreement on rights of utilization

### 2 weeks

### Register your thesis

### Prerequisites:

- You have completed 60 credit
- Your abstract was approved by Professor Brieß
- You have 2 evaluators at TU Berlin (Professor Brieß is always the first evaluator)

Your deadline will be set to six months from the last signature on the form. You will be notified about your deadline.

### 6 months

### Start looking for positions

Find a topic and an organization

## V

# 5.6 EXAMINATION REGULATIONS

The following information is a reduced summary of the examination rules. For detailed information please refer to the Regulations Governing General Study and Examination Procedures (AllgStuPO) Part VI (Examination Organization).

Apart from the master's thesis, there are three types of assessment methods: oral, written and portfolio examinations. The examination method for every course is pre-assigned. For every course, the final mark is given in the following increments: 1.0 / 1.3 / 1.7 / 2.0 etc.

Registration is necessary in order to take exams. In MSE, the filled and signed registration form must be handed in at the MSE office (Room F409). The enrolment period for an exam usually commences from April 15 at the earliest in the summer semester, and from no earlier than October 15 in the winter semester and ends for:

- Oral exams on the date set by the examiner
- ✓ Written exams one week before the specified exam date at the latest
- ✓ Portfolio exams usually by May 31 for the summer semester and November 30 for the winter semester.

### **EXAMINATION REGULATION**

**EXAMINATION METHODS:** REGISTRATION DEADLINE:

Oral Exam
Writtem Exam
Portfolio

Date set by examiner
One week before the exam date
31. May | 30. November

WHERE? ROOM F 409



# 5.6 EXAMINATION REGULATIONS

Below, the main characteristics of the three different examination methods are listed.

### **ORAL EXAM:**

- An oral exam takes between 20 and 60 minutes.
- ✓ An oral exam is carried out by at least one examiner in the presence of an observer.
- ✓ There may be a written treatment in addition to the oral exam.
- ✓ The content, result and progression of the exam shall be set out in examination minutes and disclosed to the candidate after the exam.

### **WRITTEN EXAM:**

- ✓ The written exam takes between 90 minutes and four hours.
- ✓ The corrected exams shall be made available to the student for review

### **PORTFOLIO EXAM:**

- ✓ The portfolio examination consists of several different types of exam elements alongside studies (e.g. test, seminar paper, practical assignment, presentation etc.)
- ✓ The nature, scope and weighting of individual exam elements is preassigned.
- ✓ The results of individual exam elements are communicated within four weeks



### V

# 5.7 STUDY WORKLOAD

Many MSE students are new to the European Credit Transfer System, the teaching approach at the Chair of Space Technology and the topic space engineering. This document shall help students to estimate the workload during the semester.

# 5.7.1 EUROPEAN CREDIT TRANSFER SYSTEM

Credit Points (CP) according to the European Credit Transfer System (ECTS) provide information about the expected workload. 1 CP equals a workload of 25 to 30 hours. For a 6 CP course, it is assumed that a student invests 150 to 180 hours to successfully complete it. These hours are divided into presence and self-study whereas self-study contains preparation and wrap-up of content, literature research, exercises, homework, practical assignment, consultation, exam preparation etc.

The distribution of the total hours for the self-study depends on the course. A typical workload distribution for a 6 CP course is given below.

15 weeks x 4 lecture hours = 60 hours
Preparation and wrap-up = 30 hours
Homework = 45 hours
Exam preparation = 15 hours
Total = 150 hours

In a full-time study programme, students typically are expected to do about 30 CP per semester. Although during a 15 week semester this would result in calculated 50 hours workload per week, the total expected workload per week is about 40 hours. The reason is that exams are usually spread over the lecture-free time.

A good practice while planning the semester schedule is to reserve an additional one-hour block for every lecture hour. By drawing this schedule in a calendar, students can be more aware of the upcoming workload than by visualizing a half-full calendar containing only presence hours.



# 5.7 STUDY WORKLOAD

# 5.7.2 JOBS, INTERNSHIPS AND EXTRA-CURRICULAR ACTIVITIES

Students should be very careful regarding the workload when deciding to take a job, an internship or pursue an extra-curricular activity. With 30 CP, the additional workload will lead to stress and much likely a superficial and unsatisfactory study experience. Students, as well as lecturers can be dissatisfied with the participation and results.

The student should make a trade-off between studying fast and collecting experience. In industry, experience is usually rated much higher than study duration. It is recommended to consider a schedule with less than 30 CP, especially when the project-based courses start in the second semester. When a student is able to complete 90 CP worth of courses within four semesters, he or she will not be charged additional study fees. A semester schedule with 20 to 25 CP is more reasonable when a student is considering to pursue additional activities. (However, freshmen should not expect to find a student job position too early in the studies.)





# 5.8 PART-TIME STUDIES

It is possible to conduct MSE studies part-time. In part-time studies, half of the credit points stipulated in full-time studies can usually be acquired per semester.

If you want to study part-time, you have to apply for it in writing before the semester start using the form Antrag auf Teilzeitstudium.



# 5.9 CREDITING OF STUDY PERIODS

Periods of study, coursework and exam results performed in a master's programme at another higher education institutions can be accredited on request (article 20 of the study and examination procedures). Applications for accreditation should be made by the end of the second semester after admission to studies at TU Berlin. Please contact the MSE staff for more information.



# 5.10 TEMPORARY WITHDRAWAL

You can temporarily withdraw your studies for reason that include e.g. studies abroad, internships, illness, birth of a child and caretaking (article 22 of the study and examination procedures). Please contact the MSE staff for more information.



# 5.11 WITHDRAWAL, ABSENCE

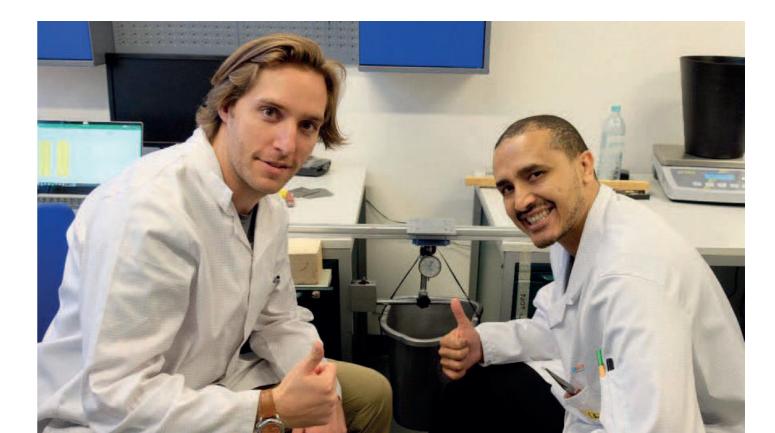
Withdrawal from an enrolled exam shall be notified to the examiner and the MSE staff in writing at the latest on the last day before the examination (article 50 of the study and examination procedures). Withdrawal from a portfolio examination is possible until expiry of the enrollment deadline, unless a later date is proven for provision of the first evaluation-relevant assignment. Withdrawal from an exam in the event of a health disorder is fundamentally possible at any time. In all other cases, the exam or thesis is assessed as "inadequate".



# 5.12 EXAMS RESETTING

Failed module exams can be repeated on two occasions. Failed modules from the elective and free elective area may be replaced within the regular period of study provided that a right to takes exams still exists.

Please inform the MSE team if you want to replace a failed module.



# SPACE EVENTS AND CULTURAL ACTIVITIES

# 6 EVENTS & ACTIVITIES

Besides the curriculum, the MSE programme provides lots of opportunities that are beneficial for your career and your cultural education. Get connected to the space community during space fairs and excursions to our partners from industry and research. Learn more about the German culture and cool down from studying in one of our free-time group activities.

### THE REGULAR ACTIVITIES IN MSE INCLUDE AMONGST OTHERS:

- ✓ The biyearly IAA Symposium on Small Satellites for Earth Observation in spring
- ✓ The biyearly Berlin Air Show (ILA) in summer
- ✓ The biyearly Space Tech Expo Europe in fall
- ✔ Participation in the biyearly ESA ActInSpace Challenge
- ✓ Visit to Airbus Defence & Space and OHB in the city of Bremen
- ✓ Visit to Astro- und Feinwerktechnik Adlershof GmbH
- ✓ Visit to the German Research Centre for Geoscience in Potsdam
- ✓ Visits to the Parliament of the Federal Republic of Germany
- ✓ Visit to the Deutsches Technikmuseum
- ✓ The Berlin Company Run
- ✓ The MSE summer party on the department's rooftop
- ✓ The MSE Christmas party
- ✓ The MSE graduation ceremony

Germany has a vast array of space conferences, companies, communities, hackathons and funding opportunities. In MSE, you'll get the chance to propose activities that you would like to participate in individually or with your whole class. The MSE team is always ready to talk about support to fund and coordinate extra-curricular activities.





# 7 LEGAL REGULATIONS ON INTERSHIPS

There is no compulsory internship in the MSE programme

### < 3 MONTHS DURATION

# > 3 MONTHS DURATION

No minimum wage when the internship serves career orientation or is undertaken parallel to studies.

Minimum wage (currently € 8.84) from the first day

### **MASTER'S THESIS**

- Your Master's thesis is a compulsory part of your studies and therefore you are not entitled to a salary.
- Your employer is free to offer you a voluntary salary. If you are offered a salary, it still must be at least the minimum wage.

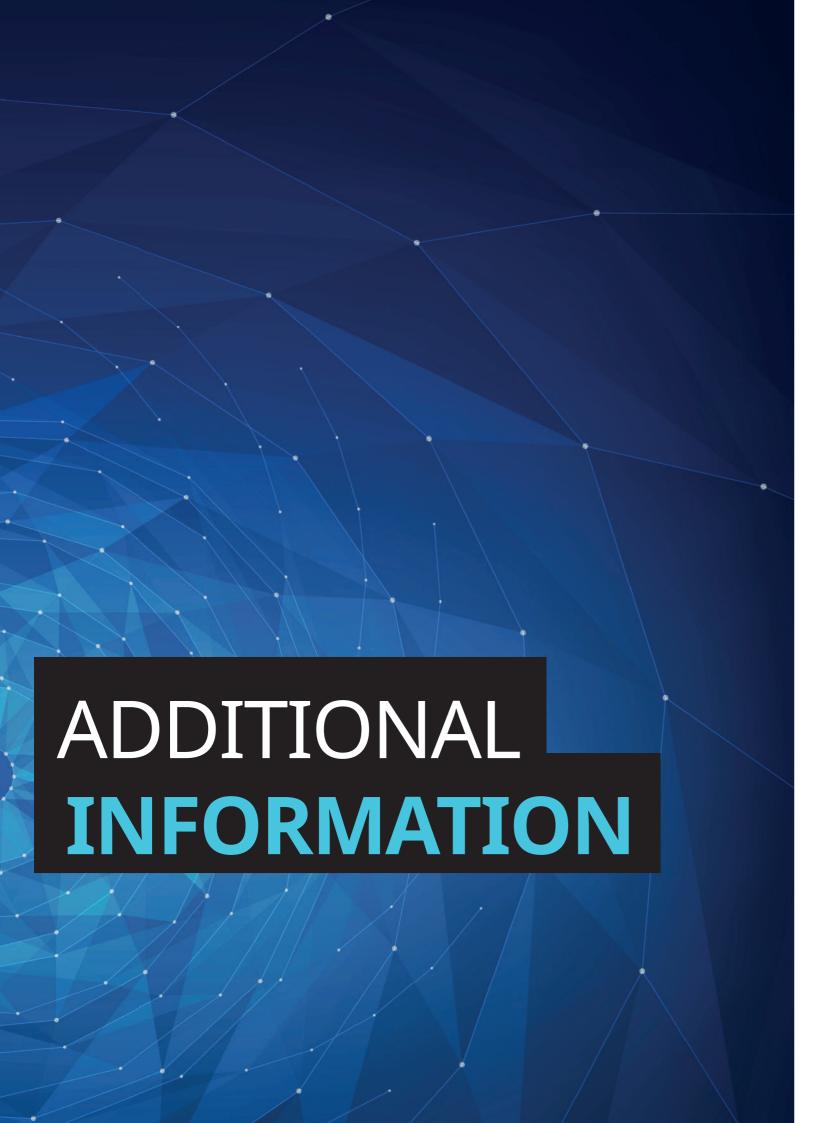
## **STUDENT JOBS**

### EU CITIZEN & CITIZEN FROM LICHTEN-STEIN, NORWAY OR SWITZERLAND

- ✓ No limitation in working hours
- ✓ National insurance contribution must be paid, if you work regulary more than 20 hours per week

### **NON-EU CITIZEN**

- Restricted to work 120 full or 240 half days per year
- ✓ Self-employment is not allowed
- Students assistants are not restricted in working hours
- ✓ To work more hours, you need to seek permission from the Agentur für Arbeit (local employment agency) and the Ausländerbehörde (foreigners' registration office).





# 8.1 TRAVELLING IN GERMANY

There are three main means of longdistance public transportation:

- Trains
- Buses
- Sharing cars

In general, the most commonly used means of transportation are trains with the Deutsche Bahn being the main provider of train services. There are high-speed trains between any of the major cities in Germany. However, the fare for train tickets is significantly higher than for long-distance buses and shared cars. Exceptions from this rule are special offers that can be booked up to 3 month in advance on the website of Deutsche Bahn for a selection of train connections and departure times. The Deutsche Bahn also offers "Bahn Card" that grant a discount for 50 or 25 percent on each ride for one year for a fixed price. Train tickets can be booked from the website of the Deutsche Bahn or at ticket counters and ticket vending machines available at each train station.

bahn.de

In recent years, the abundance of long-distance buses as a competitor for the train service on the most common route has significantly increased. The largest provider of bus services is MeinFernbus Flixbus:

meinfernbus.de

Another popular means of travelling Germany is sharing cars. In the following, there is a small number of the largest car sharing websites:

www.blablacar.co.uk

# **~**

# 8.2 NEW MEDIA LICENSE FEES

Each household in Germany is obliged to pay a license fee for radio, television and new media. This fee can be paid monthly or quarterly and amounts to approx. 18 € per month.



# 8.3 EMERGENCIES

In case of emergencies, you can dial 110 to call the police and 112 to call the fi re department and ambulance. These emergency numbers are free of charge from your mobile phone or any public telephone.

For emergency on-call doctors call 030/31 00 31 (24 hr / day)

For emergency on-call dentists call 030/89 00 43 33

(after 8 PM on weekdays and 24 hr / day on the weekends)



# 8.4 TAX RETURN

Some countries may allow that you deduct your costs for studying from tax. This can cause a significant return of tax. There are many factors like citizenship, place of employment, amount of income, etc. considered in this. The MSE staff cannot provide any legal advice on this topic but strongly recommends that you look into your options and get legal advice if necessary.







