



# **Master's Programme Geodesy and Geoinformation Science**

**– Study Guide –**

*Faculty VI – Planning, Building, Environment  
Institute of Geodesy and Geoinformation Science*

## **Presentation in WWW**

TU Berlin: [www.tu-berlin.de](http://www.tu-berlin.de)  
Faculty VI – Planning, Building, Environment  
Institute of Geodesy and Geoinformation Science  
Master's Programme "Geodesy and Geoinformation Science": [www.igg.tu-berlin.de/master](http://www.igg.tu-berlin.de/master)

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# 1 Berlin

With a population of more than three million people from 180 different countries, Berlin is Germany's largest city. Now the German capital and seat of government, Berlin attracts visitors from around the world. The city possesses a research community that is unique in Germany. In this "laboratory of ideas" scientists from all parts of the globe come together to develop technology, processes and products for the future. Berlin has three universities, seven polytechnic colleges, four colleges of arts and more than 60 non-university research institutions. The latter include facilities of the city of Berlin, such as the Berlin- Brandenburg Academy of Sciences (BBAW), as well as Max Planck Institutes and institutes of the Fraunhofer Society. Berlin has a student population of around 130,000 young people.



But Berlin is also a city of culture. The rich panoply of traditional theatres, Museums and galleries coexists with a flourishing avant-garde scene in Berlin's cultural landscape. Three opera houses, numerous concert halls, and the largest number of jazz clubs of any city in Europe combine to make Berlin one of the premier musical centres of the world. Sports and leisure activities are also well represented. More than 40 percent of the city's area is covered by woods, parks and lakes. Over 6,000 pubs and restaurants cater to every taste and budget. Amateur sports clubs offer innumerable activities while the city can boast top league places in a number of professional sports.

## 2 Technische Universität Berlin

### 2.1 An Overview

Technische Universität Berlin looks back over a long and distinguished tradition of teaching and research. In 1799 its most important predecessor,



the Building Academy, was founded. Eighty years later, the fusion

of the Building Academy and the Vocational Academy led to the founding of the Royal Technical College of Berlin. In 1946 the university was re-established under the name of Technische Universität Berlin, or TU Berlin. TU Berlin takes up a total area of 600,000 m<sup>2</sup>. The eight Faculties of the university offer 50 courses of study from the fields of engineering and natural sciences, economics and business, planning sciences, humanities and the social sciences.

### 2.2 Campus Life

TU Berlin's main campus lies at the heart of the western part of Berlin, located between the Kurfürstendamm, Tiergarten and Spree. The main campus offers students the most opportunities for leisure activities. When the weather is good the campus is full of students relaxing or holding all fresco seminars on the carefully tended lawns or congregating in the many cafés, cafeterias or bistros. One cultural attraction is the Collegium Musicum,

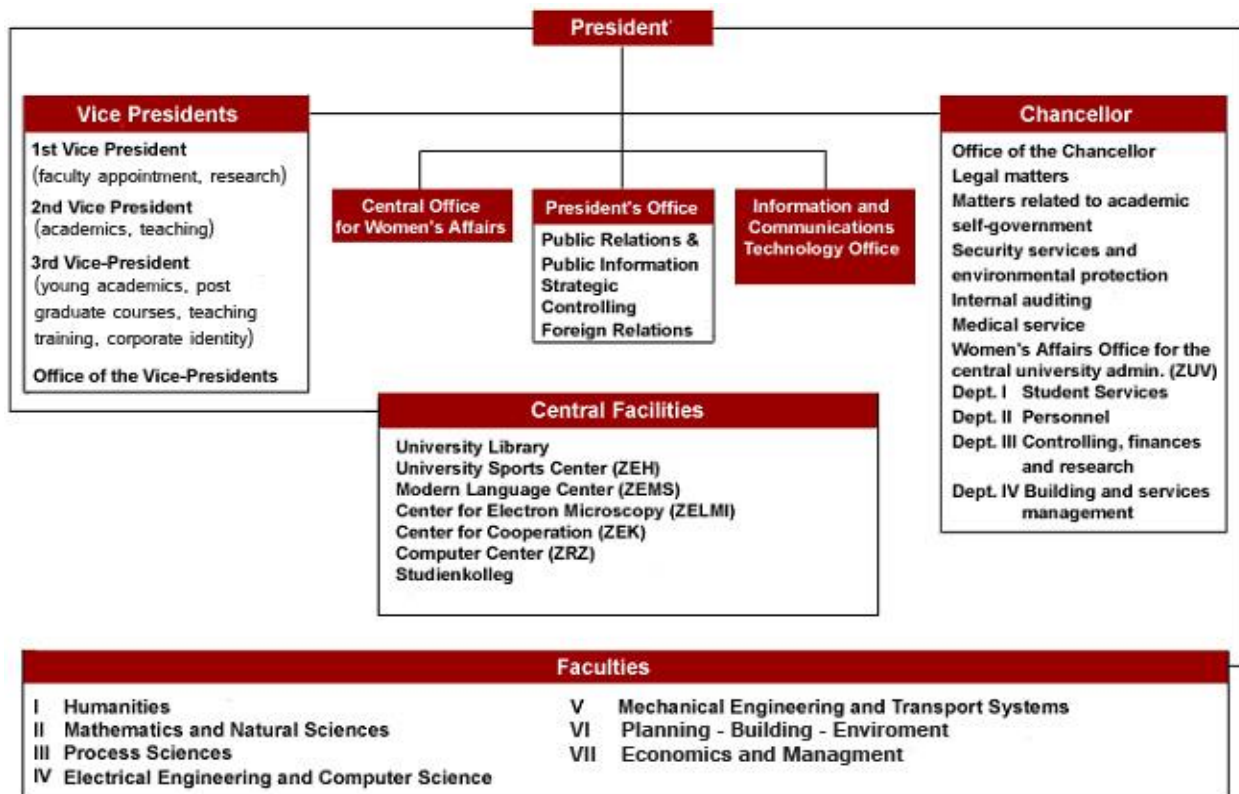


representing TU Berlin and FU Berlin. Around 400 students make music in several



large and small choruses and symphony orchestras. In the area of the spoken arts the TU English Drama Group is an important part of the cultural life of the university. Students of all Faculties come together to put on English-language plays. Around 13,000 people participate each week in sporting events and courses offered by TU Berlin. The University Sports Center (ZEH) provides an exhaustive – and inexpensive – selection of sports programmes from aerobics to tennis. They include riding and sailing, exploiting the many forests and lakes in Berlin.

## 2.3 Organisation chart of TU Berlin



## 3 Faculty VI – Planning Building Environment

### Institutes of faculty VI:

- Institute of Geosciences
- Institute of Architecture
- Institute of Civil Engineering
- Institute of Geodesy and Geoinformation Science
- Institute of Landscape Architecture and Environmental Planning
- Institute for Ecology
- Institute of Sociology
- Institute of Urban and Regional Planning

The website of faculty VI can be found here:

[www.planen-bauen-umwelt.tu-berlin.de](http://www.planen-bauen-umwelt.tu-berlin.de)

## **3.1 Management**

### **1. Deanship**

#### **Prof. Dr. Johann Köppel (Dean)**

Secr. A1

Straße des 17.Juni 152

10623 Berlin

Tel.: +49 30 314-21811

Fax: +49 30 314-21814

### **2. Service Center**

#### **Christoph Roesrath (Director of the administration)**

Secr. A1

Straße des 17.Juni 152

10623 Berlin

Tel: +49 30 314-21815

### **3. Department of studies and teachings**

Secr. A3

Straße des 17. Juni

10623 Berlin

Tel.: +49 30 314-22974

Fax: +49 30 314-21814

## **3.2 Committees**

### **1. Faculty council**

The duties of the faculty council are:

- Legislate statutory provisions (e.g. examination regulations and conditions of study),
- Coordination of teachings and research
- Actions to ensure necessary teachings
- Appropriation and management of resources of the faculty (jobs, properties and funds)

Register of members:

[http://www.planen-bauen-umwelt.tu-berlin.de/menue/einrichtungen/gremien\\_beauftragte/fakultaetsrat/](http://www.planen-bauen-umwelt.tu-berlin.de/menue/einrichtungen/gremien_beauftragte/fakultaetsrat/)



## 2. Education Committee

The education committee works out suggestions on teaching and the course of studies at the faculty.

Register of members:

<http://www.planen-bauen-umwelt.tu-berlin.de/?id=24649>

## 3. Women's representative

Secr. A1

Straße des 17. Juni

10623 Berlin

Fax: +49 30 314-21814

Stephanie Wittenburg (official women's representative)

Tel.: +49 30 314-28187

Julia Hübner (deputy women's representative)

Tel.: +49 30 314-28705

# 4 Institute of Geodesy and Geoinformation Science

## 4.1 Cooperation with research organisations in the Berlin area

The integration of the Master's programme *Geodesy and Geoinformation Science* in the research region Berlin-Brandenburg is characterised by the cooperation between the Institute for *Geodesy and Geoinformation Science* and the GeoForschungsZentrum (GFZ) Potsdam, the German Aerospace Centre (DLR) in Berlin-Adlershof, administrative agencies and utilities.

### Cooperation with GFZ, DLR and others

- GeoForschungsZentrum (GFZ) Potsdam: The scientific cooperation has been in existence for many years. The S-Professorships "Physical Geodesy", "Satellite Geodesy" and "GNSS – Remote Sensing, Navigation and Positioning" will strengthen this cooperation, and will enable students to participate in current research projects.
- German Aerospace Centre (DLR) in Berlin-Adlershof: Similarly, the cooperation with the department of planetary research has been manifested in the S-

Professorship "Planetary Geodesy". The main focus is photogrammetry and planetary cartography.

- The previous cooperation with the public administrations at federal level (BMI) and at state level (SenStadt Berlin, MdI Brandenburg) as well as the collaboration with utilities (amongst others BVG, Vattenfall, GASAG) are going to be consolidated.

## 4.2 International cooperation

The Institute of *Geodesy and Geoinformation Science* cooperates and works together with numerous foreign universities, see the following outline.

- Istanbul Technical University (ITÜ) in Istanbul (Turkey)
- Yildiz Technical University in Istanbul (Turkey)
- University of Calgary in Calgary (Canada)
- University of Melbourne in Melbourne (Australia)
- University of Texas in Austin (Texas, USA)
- Novosibirsk State Technical University (Russia)
- Tongji-University Shanghai (China)
- other cooperation are planned (e.g. Ohio State University, USA)

# 5 Master's Programme

## 5.1 Needs for Geodesy and Geoinformation Science

The Master's programme *Geodesy and Geoinformation Science* is characterised by linking geodesy to areas of research and content of teaching in the field of geoinformation science. Geoinformation science is based on geodetic reference systems, which are prerequisites for data acquisition, processing, updating, and analysis of spatial databases. These requirements are also important in modelling and visualisation, as well as for navigation and guidance techniques or location based services. Geodetic methods encompass the techniques of terrestrial surveying, photogrammetry, and remote sensing technology. Object modelling goes along with statistics and error estimation. The general emphasis is on data generation that is coordinated to both well-defined reference systems with well-known accuracy. The science of Geodesy forms the basis which allows for the organisation and utilisation of geoinformation systems that make up the basic discipline of geoinformation science.

## 5.2 Content of the programme

The Master's programme *Geodesy and Geoinformation Science* takes four semesters and comprises a total of 120 ECTS-points. An overview is given in the following chart.

### 1<sup>st</sup> semester

| <b>Foundation Section (30 CP)</b>   |        |
|---|--------|
| Modules equivalent to 30 CP must be selected from the foundation section. |        |
| FOU Geoinformation Technology   | (6 CP) |
| FOU Adjustment Calculation I  | (6 CP) |
| FOU Geo Databases   | (6 CP) |
| FOU Introduction to Satellite Geodesy                                     | (6 CP) |
| FOU CV1 Photogrammetric Computer Vision                                   | (6 CP) |
| FOU Geophysical Investigation in Geo Technologies                         | (6 CP) |

### 2<sup>nd</sup> / 3<sup>rd</sup> semester

| <b>Specialised Subjects (48 CP)</b>  |                                    |   |   |
|--|------------------------------------|---|---|
| Out of the following thematic blocks, a major subject (main specialisation) has to be chosen (21 CP). Within this major subject, the project seminar with an amount of 6 CP has to be taken. From each remaining thematic block (minor subjects), modules with an amount of 9 CP have to be taken. |                                    |   |   |
| <b>A</b>   | <b>B</b>                           | <b>C</b>  | <b>D</b>                                |
| Geo Information Science (GIS)  | Space Geodesy and Navigation (SGN) | Engineering Surveying and Estimation Theory (EGA) | Computer Vision and Remote Sensing (CV) |
| <b>Elective Section (12 CP)</b>  |                                    |   |   |
| Modules from the course catalogue of the Berlin University of Technology or other universities. The choice of a language module as well as courses from the special catalogue of interdisciplinary courses (FÜS) is recommended.   |                                    |   |   |

## 4<sup>th</sup> semester

|                                     |
|-------------------------------------|
| <b>Masters Dissertation (30 CP)</b> |
|-------------------------------------|

### 1<sup>st</sup> Semester (Fundamentals)

During the first semester the students have to select their modules from a given basis catalogue, the modules must have a total amount of at least 30 ECTS-points. This semester is important as it aims to take the students to a common standard and to build up the fundament for the scientific education during the course of the programme.

### 2<sup>nd</sup> and 3<sup>rd</sup> Semester

In the 2<sup>nd</sup> and 3<sup>rd</sup> semester students have to select one field of specialisation (major block) from the following thematic blocks:

- Geoinformation Technology
- Space Geodesy and Navigation
- Engineering Surveying and Estimation Theory
- Computer Vision and Remote Sensing.

This major block (main specialisation) must have a total amount of at least 21 ECTS-points. This includes a project seminar with a value of at least 6 ECTS-points. Furthermore, students have to choose modules with an amount of 9 ECTS-points from each remaining thematic block.

Due to the fact that the student can choose between 4 fields of specialisation in connection with various other compulsory and optional modules, each student can create his individual programme. The compulsory modules can be selected from a catalogue which is provided by the TU Berlin or from other universities not necessarily located in Germany and must have a total of 12 ECTS-points.

The total amount of ECTS-points for both semesters is 60 ECTS-points, about 30 points each semester.

### 4<sup>th</sup> Semester

The Master Thesis forms an essential part of the course of study and concludes the programme. The thesis comprises 30 ECTS-points.

## 5.3 Admission requirements (Target group)

The target group for the Master's programme are national and international students who have achieved at least a bachelor's degree. Candidates will gain the qualification to work as decision makers and leading scientists in various disciplines; such as

- Geoinformation Technology
- Space Geodesy and Navigation
- Engineering Surveying and Estimation Theory
- Computer Vision and Remote Sensing.

*Applicants, who do not fulfil one of the following criteria, must have passed the Test of English as a Foreign Language (TOEFL) with at least 213 points (computer test).*

- Mother tongue is English
- English-speaking qualification for admission to higher education
- English-speaking Bachelor's degree
- Mother tongue is German (in accordance with English level B1 of the Common European Framework for languages)

For more details please have a look in the admission regulations. The course can only be started at the winter semester.

## 5.4 Formal details

### 5.4.1 General

The science oriented Master's programme *Geodesy and Geoinformation Science* offers individual choices from among the specialised subjects of:

- A** – Geoinformation Technology (GIS)
- B** – Space Geodesy and Navigation (SGN)
- C** – Engineering and Estimation Theory (EGA)
- D** – Computer Vision and Remote Sensing (CV)

The aim of the course is to qualify Masters of Science in Geodesy and Geoinformation Science who are well prepared to carry forward the development, optimisation, and practical implementation of the methods and procedures of the discipline and to take part in the further development of the science. Students who have successfully passed their Masters examination are awarded the academic degree "Master of Science".

### 5.4.2 Standard period of study

The standard period of study including the Master thesis is four semesters.

### 5.4.3 Deadline for application and contact persons

National/ International candidates can apply **up to August 31<sup>st</sup>** via uni-assist. Early application is highly recommended as admittance is granted and confirmed starting from the 1<sup>st</sup> of April.

**If you have any questions, please contact the Programme Coordinator or the Student Counsellor.**

#### **Examination board:**

*TU Berlin - Institut für Geodäsie und Geoinformationstechnik  
Prof. Dr.-Ing. Frank Neitzel  
Prüfungsausschuss / Secretary H 12  
Main Building - 5<sup>th</sup> floor - Room H 5121  
Straße des 17.Juni 135  
D-10623 Berlin*

#### **Dean of studies:**

*TU Berlin - Institut für Geodäsie und Geoinformationstechnik  
Prof. Dr. Ing. Frank Neitzel / Secretary H 12  
Main Building - 5<sup>th</sup> floor - Room H 5121  
Straße des 17.Juni 135  
10623 Berlin, Germany  
Phone: +49 30 314 – 22375/23205*

#### **Programme coordinator:**

*TU Berlin - Institut für Geodäsie und Geoinformationstechnik  
Dr.-Ing. Jamila Beckheinrich  
Main Building - 6<sup>th</sup> floor - Room H 6159  
Straße des 17.Juni 135  
10623 Berlin, Germany  
Phone: +49 30 314 – 24147  
E-Mail: [jamila.beckheinrich@gfz-potsdam.de](mailto:jamila.beckheinrich@gfz-potsdam.de)*

#### **Student counsellor:**

*TU Berlin - Institut für Geodäsie und Geoinformationstechnik  
Main Building - 6<sup>th</sup> floor - Room H 6156  
Straße des 17.Juni 135  
10623 Berlin, Germany  
Phone: +49 30 314 - 23183  
E-Mail: [student@gis.tu-berlin.de](mailto:student@gis.tu-berlin.de)*

#### 5.4.4 Fee

The students do not have to pay tuition fees for the Master's programme *Geodesy and Geoinformation Science*. Every student at the TU Berlin has to pay per semester approximately 305 Euros. This includes administrative fees and a so-called "semester ticket", which entitles students to use the public transport in Berlin without further charges.

### 5.5 Mentoring programme

A mentoring programme promoting contact between students and university teachers and subject-related and organisational care of the students has been established at the institute of Geodesy and Geoinformation Science. Students will be assigned a mentor. The aim is to provide students with support in planning their studies and to identify potentially wrong decisions in time. Participation is voluntary. It is recommended to maintain the contact established in the first semester over the whole period of the course.

### 5.6 Examinations and examination registration

Academic achievements for the Master's degree are proven by the following forms of examination: written module examination, oral module examination and coursework grades equivalent to examinations.

The following table shows how to register for the examination.

| <b>Kind of examination</b> | <b>Registration</b> | <b>Room</b> |
|----------------------------|---------------------|-------------|
| Oral Examination           | Department IB 5     | H 25        |
| Written Examination        | Department IB 5     | H 25        |
| Portfolio Examination      | Department IB 5     | H 25        |

For more details, please have a look into the examination regulations. Failed module examinations within the Master's examination can generally be retaken only once. Examinations have to be registered at the department IB 5. The deadlines and examination periods are published on the official announcement board

Department IB 5 Room: H 25

Office hours: Mon, Thur, Fri: 09:30 – 12:30 o'clock  
Tues: 13:00 – 16:00 o'clock

Phone: +49 30 314-24971

## 5.7 Master Thesis

The Master thesis is an examination work and at the same time part of the candidate's scientific education. It must have the form of a written report in English or in German. The Master thesis must be submitted, at latest 6 months after the assignment of the topic. A Master thesis may be produced by several students working together. However, this must be approved by the examination board.

## 6 Committees

This chapter is about the committees and contact points for students of the faculty and the TU Berlin. The postal address of the TU Berlin is:

TU Berlin  
Straße des 17. Juni 135  
10623 Berlin

### 6.1 Department I Student Services – admission and enrolment (Master)

The department IA 1 deals with admission, enrolment, exeat or removal from the register of students.

*The enrolment office can be found in the ground-floor of the main building.*

Department IA 1 (Master) Room: H 30

Office hours: Mon, Tues, Thur: 09:30 – 15:00 o'clock  
Fri: 09:30 – 14:00 o'clock

National: Phone: +49 30 314-21054, -21055, -29999  
International Phone: +49 30 314-28441



## 6.2 Department I Student Services – examination office

The department IB (examination office) deals with registration/ deregistration for examinations, application and submission of degree dissertations.

*The examination office can be found in the ground-floor of the main building.*

Department IB 5 Room: H 25

Office hours: Mon, Thur, Fri: 09:30 – 12:30 o'clock  
Tues: 13:00 – 16:00 o'clock

Phone: +49 30 314-24971

## 6.3 International office

The international office (department ID 4) advises and takes care of foreign students. Students from all branches of study get help in personal, social and legal questions, applications and enrolment.

*The international office can be found in the ground-floor of the main building.*

Department ID 4 Room: H 51

Phone: +49 30 314-24359

Webpage: <http://www.betreuung-int-stud.tu-berlin.de/>

E-Mail: [binstud@auslandsamt.tu-berlin.de](mailto:binstud@auslandsamt.tu-berlin.de)

## 6.4 Student guidance

The student guidance (department IE) advises and informs prospective students about the teachings at the TU Berlin. Furthermore the student guidance gives information if students like to change the course of studies or the university; even you want to abort of the study.

*The international office can be found in the ground-floor of the main building.*

Department IE Room: H 70

Office hours: Mon, Thur, Fri: 09:30 – 12:30 o'clock  
Tues: 14:00 – 18:00 o'clock  
Thur: 14:00 – 16:00

Telephone counselling: Mo – Thur: 09:00 – 17:00 o'clock  
Fri: 09:00 – 14:00 o'clock

Phone: +49(0)30-314-29999

Webpage: [www.studienberatung.tu-berlin.de/](http://www.studienberatung.tu-berlin.de/)

E-Mail: [telefonservice@tu-berlin.de](mailto:telefonservice@tu-berlin.de)

## 6.5 Student counsellor

The student counsellor of the institute of *Geodesy and Geoinformation Science* can be found in room H 6156.

Office hours: look notice board

Phone: +49 30 31423183

Fax: +49 30 31421973

E-Mail: [student@gis.tu-berlin.de](mailto:student@gis.tu-berlin.de)

## 6.6 Examination board – Master's Programme Geodesy and Geoinformation Science

The examination board is responsible for questions which are related to examination regulations. (Organisation of examinations, recognition of the time as a student and study performance)

### Members:

- Prof. Dr. Frank Neitzel - chairman
- Prof. Dr. Harald Schuh
- Prof. Dr. Jürgen Oberst
- Dipl. Ing. Sven Weisbrich
- Substitution: Dipl. Ing Thomas Adolphi
- Student

## 7 Guidepost

### 7.1 Visa

EU nationals or nationals from the countries Andorra, Australia, Canada, Honduras, Iceland, Israel, Japan, Liechtenstein, Monaco, New Zealand, Norway, San Marino, Switzerland and USA do not require a visa to enter the Federal Republic of Germany.

If you are unsure about the regulations for your home country and to answer further questions, please check:

[www.auswaertiges-amt.de](http://www.auswaertiges-amt.de)

### 7.2 Registration office / reception money

Generous Berlin – Berlin pays each student 50 €, this is a unique reception money. The students get the money provided that they are enrolled at the TU Berlin and that they register their residence in Berlin. (If the old residence was in another federal state or abroad.) Application forms are provided at the enrolment office.

### 7.3 Housing

Berlin has a lot of accommodations. Everyone can find the right apartment depending how big the moneybag is. Most students live in flat-sharing communities, here rooms cost approximately 280 € per month. The following internet pages show offers and information about housing in Berlin

[www.studentenwerk-berlin.de/wohnen/02](http://www.studentenwerk-berlin.de/wohnen/02)

[www.studenten-wohnung.de/](http://www.studenten-wohnung.de/)

[www.wg-gesucht.de/](http://www.wg-gesucht.de/)

[www.junge-politik-berlin.de/](http://www.junge-politik-berlin.de/)

### 7.4 Health insurance

All students in Germany are obliged to have health insurance (statutory health insurance), which means that you will have to provide proof of your health insurance in Germany before you can matriculate at a higher education institution. If you do not have this proof, you will not be able to start studying.

Essentially, there is a special Student Health Insurance Scheme for students, which offers particularly favourable rates. In addition to this, everybody who has health

insurance in Germany must also have nursing care insurance. This statutory nursing care insurance aims to provide social security against the risk of becoming dependent on nursing care, which may arise as a consequence of serious accidents, illness, and disease or in old age. The statutory nursing care insurance is taken out with the same company that provides the health insurance.

More information can be found at:

[www.daad.de/deutschland/deutschland/leben-in-deutschland/04663.en.html](http://www.daad.de/deutschland/deutschland/leben-in-deutschland/04663.en.html)

**Important information:**

Students from countries with which Germany has concluded a social security agreement that includes an insurance clause can continue to be covered by their home insurance carrier while they are in Germany. (Please inquire at your institution's International Office for details). In this case, you will be required to present proof of insurance cover to the health insurance company in Germany.