

## Cartography M.Sc.

# International Student Handbook

## Eramus Mundus Joint Master Degree in Cartography

A cooperation of:

Technische Universität München, Germany (TUM)

Technische Universität Wien, Austria (TUW)

Technische Universität Dresden, Germany (TUD)

University of Twente, The Netherlands (UT-ITC)



Co-funded by the  
Erasmus+ Programme  
of the European Union

# Foreword

Dear students,

This handbook aims to provide you with detailed information on regulations regarding the joint Master programme in Cartography at the Technische Universität München (TUM) in Germany, at the Technische Universität Wien (TUW) in Austria, at the Technische Universität Dresden (TUD) in Germany and at the University of Twente (UT) in The Netherlands.

For this purpose, this handbook shortly outlines the major objectives and course structure of the programme as well as present regulations with respect to the different modules and the Master's thesis. Additionally, all information concerning the scholarship amount for ERASMUS MUNDUS scholarship students is included.

In the annexes we provide information on the specific content of each module, its scheduled dates, involved lecturers and other relevant details such as the workload of each module and the ECTS (European Credit Transfer System) points assigned to them.

We sincerely wish you a successful academic development and all the best. We are looking forward welcoming you soon!

On behalf of the Cartography M.Sc. consortium

Juliane Cron  
Programme Coordinator

## Table of contents

1	Introduction .....	4
2	Programme structure, mobility and content.....	5
3	Starting dates and duration of the course.....	9
4	Admission and enrolment.....	10
5	Semester and tuition fees.....	11
6	Erasmus Mundus scholarship .....	12
7	Other fundings and sponsorship.....	13
8	Health insurance coverage .....	14
9	Visa and residence permit .....	15
10	Bank account .....	18
11	Preparing to study for the 1 <sup>st</sup> semester at TUM.....	19
12	Student life.....	23
13	Check list.....	25
14	Contact information.....	26
15	The Erasmus Mundus Students and Alumni Association (EMA) .....	27
16	Annexes.....	28

# 1 Introduction

Spatial context is relevant to an enormous amount of questions, problems and decisions. Maps and cartographic communication processes are keys for enabling humans to deal with all kind of spatial data in an efficient way. The domain of cartography can be seen as by definition very broad and interdisciplinary.

With a very high concentration of scientific competence in cartography and cartography-related fields, the programme is outstanding not only in Europe.

## **Partners**

The international Master of Science in Cartography was established in 2011 and is a joint programme of:

### **Chair of Cartography**

Technische Universität München (TUM)  
Department of Civil, Geo and Environmental Engineering

### **Research Group Cartography**

Technische Universität Wien (TUW)  
Department of Geodesy and Geoinformation

### **Institute of Cartography**

Technische Universität Dresden (TUD)  
Faculty of Environmental Sciences  
Department of Geosciences

### **Department of Geo-Information Processing**

University of Twente (UT)  
Faculty of Geo-Information Science and Earth Observation ITC

The four partner sites represent centres of excellence in the field of cartography, recognized at the European and global levels.

The Chair of Cartography of TUM, the Research Group Cartography of TUW, the Institute of Cartography of TUD and the Faculty of Geo-Information Science and Earth Observation (ITC) of UT complement each other in an ideal way to provide an exceptional program with attractive job employment prospects in this interdisciplinary field.

## **Excellence**

The composition is a complementary approach of the partners' different research and educational profiles in an area, where each partner is a leader in their own country and internationally recognized institution.

## **2 Programme structure, mobility and content**

### **Programme structure**

The Master degree in Cartography will be achieved over two years through the allocation of 120 ECTS. Students have to obtain a total of 30 ECTS per semester. The language of tuition is English. The programme starts every year on the first day of the winter semester.

The qualification finally awarded to the students is the joint degree "Master of Science (M.Sc.) in Cartography".

### **Mobility**

The mobility combination has been carefully designed to eliminate overlaps of course contents, to guarantee the inclusion of necessary modules and to have the students finish within two years.

Students stay together as a group during the first three semesters of the programme. They spend their 1st semester at TUM, their 2nd semester at TUW and their 3rd semester at TUD. During the 4th semester students prepare their Master's thesis at one of the four partner universities and are supervised by a staff member of that university. In addition, there will be at least one co-supervisor from another partner university. Students from Germany or Austria receiving an Erasmus scholarship have to write their Master's thesis at UT in order to fulfil the minimum requirements of two mobility tracks of the Erasmus programme. Students writing their Master's thesis at UT will also have the possibility to attend lectures and research presentations that are frequently given at ITC (e.g. by visiting scientists, Postdocs and PhD candidates).

During the first and third semester, students have the opportunity of a virtual mobility by choosing online modules of UT out of the elective modules catalogue.

In case a student cannot pass over directly after semester 1 (TUM) to semester 2 (TUW), the student does not have to interrupt the programme for one full year. In that case the student can move in the following start of the winter semester to TUD and catch up the semester at TUW afterwards.

Thus in reasonable cases it is possible that a student studies as follows:

- TUM (winter semester),
- Break (summer semester),
- TUD (winter semester),
- TUW (summer semester),
- Master's thesis (winter semester).

In any other cases a student cannot directly pass over to the next university, the student has to wait for one year.

## **Programme content**

The programme focuses on a comprehensive education in cartography and geoinformatics, in particular on spatial information technologies, mathematic principles of map making, spatial data handling, theories and technologies of visual analytics, geovisualization and communication of spatial information. The curriculum is structured in complementary and consecutive modules. It is based on lectures, exercises, seminars and project works.

### **1<sup>st</sup> semester at TUM**

The first semester offers different learning paths, based on the previous know-how and the additional learning requirements of the students. Thus, this semester harmonizes the student's knowledge. The basic cartographic principles will be introduced and extended and the acquired skills will form a basis for the continuing programme. Teaching during the first semester includes cartographic foundations, geoinformation, geovisualization, image processing, photogrammetry and remote sensing. Additionally, soft skill

competences like project management skills are provided. Virtual mobility within this semester is possible by choosing e-learning modules of UT.

## **2<sup>nd</sup> semester at TUW**

The second semester contains advanced courses in cartography and geoinformatics. Basics taught in the 1st semester will be deepened and enhanced, especially in web mapping, location-based services and cartographic interfaces. A broad training in multimedia techniques as well as deep knowledge of relevant programming technologies is given. Project management and presentation skills and other soft skills are trained in an integrated manner in most courses. Practical group work as well as independent projects will further improve the students' social skills. All courses are e-learning supported, partly including video tutorials.

## **3<sup>rd</sup> semester at TUD**

The 3rd semester is dedicated to thematic specializations in the field of cartography. Students have the opportunity to specialize in mobile cartography, remote sensing cartography and GIS related applications. An Alpine cartography field school will demonstrate that despite of all digital earth monitoring a direct sensual contact to a landscape is still required in much of the geo-scientific and cartographic work. From numerous research and application orientation projects complete work chains can be illustrated, which guide the student from the data capture (in the field and from remote sensing imagery) over various steps of data harmonization, integration and other forms of value-adding to final quality 2D and 3D visualizations. Furthermore, students get insight in the research and the development work related to automated cartographic generalization and the utilization of multiple representation databases. New learning methods are integrated in this semester due to e-learning online modules of UT.

## **4<sup>th</sup> semester at one of the four partner universities**

The fourth semester is dedicated to the Master's thesis. UT/ITC is responsible for the quality, organization and execution of the 4th semester. A large variety of Master's thesis subjects in fundamental and applied research areas in cartography will be announced. Research topics are proposed by all members of the consortium. Associate partners and the students themselves may also propose topics, which may arise, for example during an internship. Master's theses are written, presented and discussed in English. Students are required to give a mid-term presentation and the final thesis with its defence will be evaluated by a thesis assessment board.

### Compulsory modules scope and credits summary

Semester	Compulsory modules				Credits
<b>1</b>	Cartographic Foundations	Geo-information	Geovisualization and Geostatistics	Photogrammetry, Remote Sensing and Image Processing	22 / 30
<b>2</b>	Cartographic Theories and Applications	Cartographic publishing	Applied Cartographic Research and Development	LBS and Multimedia Cartography	30 / 30
<b>3</b>	Georelief and Cartography				9 / 30
<b>4</b>	Master's thesis preparation (at one of the four cooperating universities)				30

### Elective modules scope and credits summary

Semester	Elective modules				Credits
<b>1</b>	Principles of Database	Spatial Decision Support Systems	Scientific Visualization	Observing and Modelling Global Dynamic Processes	min 8 / 30
	Engineering Databases	Mapping Project	Atmospheric Physics and Remote Sensing	English C2 – Presentation and Writing	
<b>3</b>	Principles of Databases;	Mobile Cartography	Spatial Decision Support Systems	Laser Scanning and DTM Generation	min 21 / 30
	History of Cartography	GIS Applications and Case Studies	Remote-Sensing Based Environmental Mapping	Geodata Infrastructure Virtual 3D Landscape Models	

A detailed description each of compulsory and elective modules is provided in the Annex 2.



### 3 Starting dates and duration of the course

The Cartography Master programme officially starts on 1<sup>st</sup> of October of every year and lasts 2 years, 4 semesters, 120 ECTS.

The official kick-off of the new intake will take place during a welcoming week. The exact date is not fixed yet and will be announced asap. The welcoming week is planned between 4<sup>th</sup> and 13<sup>th</sup> of October. The first official lecture day at TUM is the 16<sup>th</sup> of October.

#### Semester organisation

Although the semester timetables differ slightly in each institution, every effort will be made to ensure that students attending the programme at different locations will start and finish in the same time period allowing adequate vacation time between the four semesters. Students have to obtain at least 30 credits (ECTS) in each semester.

#### Important semester dates

<b>1st semester at TUM [1]</b>	01.10.2017– 28.02.2017  Lecture period: 16.10.2017 – 09.02.2018 (exams long until end of February)
<b>2nd semester at TUW [2]</b>	01.03.2018 – 30.06.2018  Lecture period: N/A* (exams long until end of June)
<b>3rd semester at TUD [3]</b>	01.10.2018 – 31.03.2019 Expected date of the 10 days Alpine Cartography Field School: "Georelief and Cartography" in the mountains close to Salzburg: beginning of October 2019  Lecture period: N/A* (exams long until end of March)
<b>4th semester at TUM/TUW/TUD/UT</b>	01.04.2019 – 30.09.2019 Duration depends on the time to finish the Master's thesis (approx. 6 months)

\*N/A: The academic calendar for the semester is not announced yet.

*More information about semester dates can be found under:*

[1] [www.tum.de/en/studies/application-and-acceptance/dates-and-deadlines](http://www.tum.de/en/studies/application-and-acceptance/dates-and-deadlines)

[2] [https://www.tuwien.ac.at/en/services/studienabteilung/term\\_dates/](https://www.tuwien.ac.at/en/services/studienabteilung/term_dates/)

[3] <https://tu-dresden.de/studium/im-studium/studienorganisation/studienjahresablauf/>

## 4 Admission and enrolment

The whole admission and enrolment procedure of the Cartography Master programme is coordinated by TUM. Therefore, students are registered at the admitting institution TUM for the whole time of their studies. Students are associated with the admitting and one host institution during the second and third semester. In the fourth semester, students are registered at TUM and the university employing the first supervisor of the Master's thesis. Students are registered at TUD as side students during the first, second semester and as full students in the third semester.

### Admission letter

If accepted to the programme, you can print out an acceptance letter via TUMonline. This letter is considered official, as the German version is the only legally binding letter. This also means you will not receive a hardcopy of your admission letter via regular mail.

Therefore you should print the acceptance letter and enclose it to your student visa application for the German embassy. If your local German embassy requires an admission letter with a TUM seal or stamp, please inform us immediately and request a letter by e-mail to [study@tum.de](mailto:study@tum.de)! Otherwise you may have a long delay and ultimately not receive your student visa on time!

### Enrolment

Once all your required documents (concerning e.g., university degree, English proof) are received at the TUM admission office ("Immatrikulationsamt") and the semester fee is paid, you will be automatically enrolled into the TUM as a student and you will be able to print out your enrolment confirmation via your TUMonline account (as described above). There is therefore no longer an official "enrolment day" at TUM.

## 5 Semester and tuition fees

The total fee for the programme varies, depending on the chosen mobility (where the student write the Master's thesis) and the country of origin. The TUM fee (or a solidary contribution to this fee) needs to be paid every semester.

### **1<sup>st</sup> semester TUM:**

128.50 EUR in total (62 EUR student union fee and 66.50 EUR semester ticket fee)

### **2<sup>nd</sup> semester TUW**

For non-EU nationals: 745.92 EUR tuition fee, for EU nationals: 19.20 EUR student union fee + 128.50 EUR TUM fee

### **3<sup>rd</sup> semester TUD**

257.90 EUR in total (77.50 EUR student union fee and 180.40 EUR student body fee incl. semester ticket fee) + 66.50 EUR for TUM solidary contribution

### **4<sup>th</sup> semester (varies)**

As for University of Twente, it depends whether you will choose it to do your Master's thesis in the fourth semester. If yes, you need to pay the tuition fee of approx. 4800 EUR according to its regulation.

If you plan to write your thesis at TUD for example, the costs are not that high. Students have to pay the same as for the 3<sup>rd</sup> semester: 257.90 EUR in total (77.50 EUR student union fee and 180.40 EUR student body fee incl. semester ticket fee) + 66.50 EUR for TUM solidary contribution.

**Other fees:****Alpine Cartography Field School**

During the 3<sup>rd</sup> semester the compulsory module Georelief and Cartography consists of a 10 days excursion to the Austrian Alps (Dachsteingebirge), which is one of the programme highlights. Estimated excursion costs are about 650 EUR.

**UT/ITC online modules**

During the 1<sup>st</sup> and 3<sup>rd</sup> semester, online modules from the University of Twente are integrated in the curriculum within the elective course catalogue. The costs per module are 1569 EUR, resp. 785 EUR, if you are a national of a country listed on the *OECD approved List of Recipients of Official Development Assistance*.

**Student union fee payment for the 1st semester at TUM**

Please pay your semester fees in full as soon as possible after notification of admission. The payment deadline is 15th of September 2017. Only after your student fees have been paid in full you are officially enrolled as a regular student at TUM. Once you are officially enrolled, you will be able to print your student documents (enrolment verification and student progress certificate) or register for courses and exams.

## 6 Erasmus Mundus scholarship

The international Master of Science programme in Cartography is co-funded by the Erasmus + Programme of the European Union (EU). The scholarship is a full scholarship, meant to cover all costs. This includes the national enrolment and tuition fees in force in each university of the programme, the health insurance, language courses to be taken locally and all other participation costs for curriculum activities (e.g., excursions, field work, online courses of UT). Therefore there will be no further funding provided.

### **Total scholarship amount**

The granted partner country students receive a maximum scholarship of 40 700€ in two years and the granted programme country students receive a maximum of 34 915€ in two years in total, donated to the consortium by the European Commission for the whole course (24 month duration).

### **Scholarship monthly allowance**

The contribution to subsistence costs are (whole duration of the course) 24 000€ for partner and programme country students.

The contribution to subsistence costs will be paid monthly by bank transfer.

### **Contribution to travel, installation and any other type of costs**

The contribution to travel and installation costs are (whole duration of the course) maximum 7 000€ for partner country students and maximum 2000€ for programme country students.

Travel and participation costs will be paid directly by the consortium to the beneficiary or transferred on a reimbursement basis to the scholarship holder.

### **Total participation costs amount**

The total participation costs amount for the whole duration of the course is maximum 9 700€ for partner country students and maximum 8915€ for programme country students.

## **7 Other fundings and sponsorship**

A wide variety of foundations offer scholarships to students at all levels of study and eligibility is not limited to students with outstanding marks. If you require sponsorship, you will need to apply to one of the funding organisations.

For information about other scholarships, we would like to refer you to the comprehensive scholarship database of the DAAD, the German Academic Exchange Service:

[www.daad.de/deutschland/stipendium](http://www.daad.de/deutschland/stipendium)

Also TUM provides scholarships for international students:

[www.tum.de/en/studies/fees-and-financial-aid](http://www.tum.de/en/studies/fees-and-financial-aid)

*Further information can be found at:*

[www.scholarshipportal.eu](http://www.scholarshipportal.eu)

[www.studienstiftung.de](http://www.studienstiftung.de)

[www.stipendiumplus.de](http://www.stipendiumplus.de)

[www.hss.de](http://www.hss.de)

[www.european-funding-guide.eu/](http://www.european-funding-guide.eu/)

## 8 Health insurance coverage

All students in Germany are required to have health insurance. You need therefore a proof of health insurance coverage if a visa and residence permit is to be granted or renewed for the purpose of academic study. Additionally you have to proof your health insurance for enrolment at the university.

### **Erasmus Mundus scholarship students**

The consortium provides you an insurance coverage for a two-year period which is compliant with the requirements for the health and accident insurance from Erasmus Mundus. The insurance coverage of MARSH Group (Belgium) includes, e.g., sickness, pregnancy and child birth, accident, death, permanent invalidity, third-party liability and is accepted for all visa applications.

You will receive a detailed insurance package from MARSH. Additionally, the consortium will organize exemption letters for your enrolment at TUM, which are needed as the MARSH insurance is a private health insurance and not a German state health insurance.

### **Self-funding students**

Students who are not insured in their home country must obtain coverage in Germany from the insurance provider of their choice. We recommend you Care Concept AG health insurance, which covers the needs of foreign nationals travelling to Germany or in the EU or Schengen-States, foreign nationals living in Germany or Austria and intending to travel abroad temporarily. Care Concept is a private health insurance. While choosing your insurance provider and insurance tariff please bear in mind, that it should be also sufficient for your future visa application to Austria and/or The Netherlands.

If you would like to take a German public state health insurance like TK or Barmer, you need an additional accident insurance for your visa for Austria. Another visa requirement in Austria is to provide a confirmation of health insurance valid for the period of stay, covering costs **of at least 30000 €**.

*More information about Care Concept: [www.care-concept.de/index\\_eng.html?navilang=eng](http://www.care-concept.de/index_eng.html?navilang=eng)*

Students using a private insurance like Care Concept have to proof for the enrolment at TUM that they are privately health insured: Therefore you need to get a letter stating an exemption from the compulsory state health insurance. To obtain this letter, please follow the instructions on our website:

<http://cartographymaster.eu/health-insurance/> .

## **9 Visa and residence permit**

### **Visa and entry regulations for Germany**

Students with all European Community and EEA/EFTA (European Economic Area/ European Free Trade Association) nationalities (except Switzerland) are exempt from this regulation. After arriving in Germany they only need to register their residential address at the residence registration office.

### **Applying for your residence permit**

Students with a nationality of the United States, Australia, Brazil, New Zealand, Japan, Canada, the Republic of Korea, Israel as well as Switzerland who are entering Germany without a visa have to fill out a residence permit application (“Antrag auf Erteilung der Aufenthaltserlaubnis”), which can be obtained at the local foreigner’s registration authority, within 3 months after entering the country.

Students from **all other nations** (not mentioned above) need to apply for the visa at the embassy or consulate of the Federal Republic of Germany in their home country **before they enter Germany**. A visa must be applied at least 2 months ahead of time! Once in Germany, you must complete a residence permit application (“Antrag auf Erteilung der Aufenthaltsbewilligung”), which can be obtained at the local foreigner’s registration authority. As non-EU-citizen you will receive a residence permit for your respective programme of education.

#### **Important:**

**International students who have proof of admittance to a German university will be issued a so-called *student visa* (“Studentenvisum”), most probably Schengen Visa.**

**Please do not travel to Germany on a tourist visa! This cannot be changed into a student visa and students are not allowed to study in Germany on a tourist visa.**

*For general information see the website of the Federal Foreign Office: [www.auswaertiges-amt.de](http://www.auswaertiges-amt.de)*

### **Register your address at the residence registration office (“Anmeldung”)**

After arriving in Germany you must register your residential address (street, apartment, landlord) at the residence registration office (“Bürgerbüro”) within one week. Also if you move to other accommodations within Munich or move out of Munich, you must register your new address or notify the office that you are leaving Munich.

#### **To register at the residence registration office you will need:**

- Your valid passport or identification card,
- A special registration form which can be downloaded from the Internet or is available free of charge at the registration office,



- Landlord confirmation (approval) ("Wohnungsgeberbestätigung") – document you will receive from your landlord when you move in / move out your room. You need to present it to the registration office when you register or deregister there. Sometimes you will also need to show the authorities your tenant agreement.

After completing the registration form you can register your stay either in person or in writing. You will receive a written confirmation of registration. This proof of registration is often required by other institutions or authorities.

**Important:**

**When leaving Munich, you must fill out a form in order to give notice of your departure!**

*For more information see:*

[www.muenchen.de/rathaus/home\\_en/Department-of-Public-Order/Foreigners-Office/student-visa-residence/new-students](http://www.muenchen.de/rathaus/home_en/Department-of-Public-Order/Foreigners-Office/student-visa-residence/new-students)

[www.muenchen.de/rathaus/home\\_en/Department-of-Public-Order/Registration-Deregistration](http://www.muenchen.de/rathaus/home_en/Department-of-Public-Order/Registration-Deregistration)

**Residence permit**

Before your entry visa expires (normally 4-6 weeks ahead of time), you must go to the Munich Foreigners Office. A residence permit will be granted/renewed only if a corresponding application is submitted. The necessary documents are:

- An application form (completed in full) for the granting/renewal of a residence permit,
- Registration of your address in Munich,
- A valid passport,
- Proof of adequate funding,
- Proof of adequate health insurance,
- Proof of the purpose of your stay in Germany, e.g., a valid university registration,
- A biometric passport photograph.

For Erasmus Mundus scholarship students costs for visa and residence permit are included in the installation costs and paid by the consortium. Other students need to bear the costs for visa and residence permit on their own.

**Important:**

**For Non-Europeans students: During your first semester at TUM you need to apply for *a visa for Austria*. Therefore your passport should value at least until mid of the 3<sup>rd</sup> semester and the passport needs to have at least 2 empty pages.**

**Visa and entry regulations for Austria and The Netherlands will be announced after your arrival in Germany. We will assist you obtaining the visa for these countries. Please have a look on some general information about visa regulations for these countries on our website <http://cartographymaster.eu/visa-information/>.**

## 10 Bank account

During your stay in Europe, you will need a bank account, e.g., to receive your scholarship, handle rental payments and telephone bills.

You can open a bank account in the branch offices of any banking organizations in Germany, e.g., Deutsche Bank or Hypovereinsbank.

**Documents**

The documents you need to bring with you when you go to a bank branch office are:

- Passport,
- Registration of your residential address (“Anmeldung”),
- The letter of confirmation of the study programme.

**To open an account:**

Bring your documents to a bank branch and ask the staff member at the bank counter to open a bank account for you. You need to fill an application form and usually sign some additional documents, e.g., the online banking application.

Depending on your account in the following weeks, you will receive via post, e.g., a bank card, PIN, online banking password and online banking TAN.

Note that if you have already opened a German bank account in your own country, you still need to activate it in a bank branch office upon your arrival.

The closest bank branch of Deutsche Bank to TUM is located at Barer Str. 62, 80799 München.

## 11 Preparing to study for the 1<sup>st</sup> semester at TUM

Higher education in Europe is strongly influenced by the Enlightenment achievements and Humboldtian idea of science and research; therefore it places a large emphasis on the independent study.

As a student you will be asked to make notes, sketch, read widely on a subject and search for additional information to you find your own way of thinking and analysing the world. Key skills to succeed in the learning process are good organization and time management. With the support of lecturers and supervisors you will develop during your studies also other soft skills such as project management, social communication and language competences.

**Popular course types**

The classification and structure of courses can slightly differ from the educational system you are familiar with from your previous universities. Cartography programme is based on lectures, exercises, seminars and project works in form of compulsory and elective modules. You should read carefully the requirements for elective modules and prepare yourself for the adequate workload – 1 ECTS credit is approximately 30h of your efforts.

## Course types

<b>V</b> (“Vorlesung”)	Lecture	The most traditional form of teaching – course taught by a lecturer, often with many students in a large lecture hall. Lectures are often accompanied by relevant exercises and homework.
<b>Ü</b> (“Übung”)	Exercise	Practical exercises connected to lectures themes.
<b>E</b> (“Exkursion”)	Excursion	Field trips, day excursions and practical in-situ trainings.
<b>P</b> (“Projekt”)	Project	Practical training in a subject area, usually in work groups examined by reports and presentations.

Attendance at lectures is generally not compulsory – in contrast to exercises, excursions, practical trainings and projects. However, we strongly recommend that you attend lectures regularly, as their scope containing also research findings and discussions is not fully covered by digital handouts and presentations. Most lecturers upload the lecture handouts, presentations, homework and other documents via the *Moodle e-learning portal* or *TUMonline*.

If you must miss a lecture, to go over what you missed we recommend checking the materials on the Moodle platform, being in touch with your classmates and finally meeting the lecturers during their office hours.

## Computer work

Almost all of the courses subjects will require a computer work as a part of the learning process. You will be usually asked to perform analysis of geodata, prepare different maps and visualizations, type your assignments or take an online-exam.

At the university you may use computers in private study, lecture rooms and working spots. At TUM there are known as CIP-Pools and there are placed in the main campus in rooms 3209, 3238, N0199A as well as 0712 (Cartography CIP-Pool).

You can login to the computers with your TUMonline user name and related password.

## Software

As a TUM member you have access to a great deal of software and hardware for free or at low cost, e.g., Microsoft-Products (via StudiSoft), Apple on Campus, ESRI (ArcGIS) and other products like ChemDraw or Origin. Usually you only need your TUM ID and password for download.

*Further information for student can be found under [www.it.tum.de/en/softwarestudents](http://www.it.tum.de/en/softwarestudents).*

## Student Card

The Student Card is a multifunctional chip card that acts as the TUM student ID card. Moreover, it works as a library card and student services electronic payment card, e.g., for payment in canteen, cafeteria and snack vending machines.

You can load your card in charging stations available in all canteens and cafeterias of the TUM Student Union. The Student Card can be loaded with the following amounts: €5, €10, €20 and €50.

*For more information about student Card have a look on [www.tum.de/en/studies/application-and-acceptance/student-card](http://www.tum.de/en/studies/application-and-acceptance/student-card)*

## Semester ticket

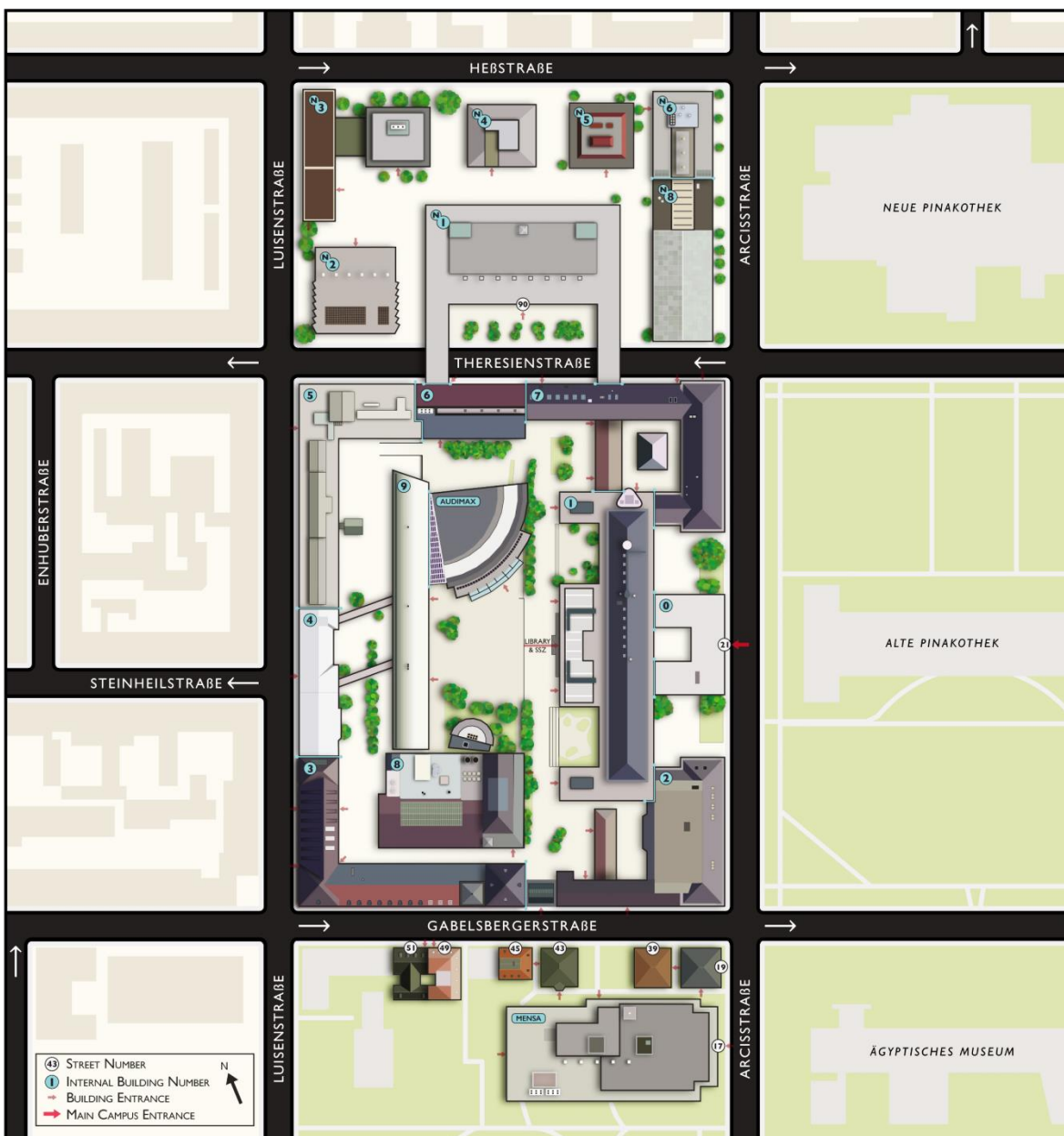
All students at TUM must pay the fee for the basic ticket as part of their student fees. The basic semester ticket authorizes students to use all forms of transportation within the entire MVV network on weekdays between the hours of 6 pm and 6 am, as well as on weekends and holidays. The ticket is valid for the underground and suburban trains, as well as all trams, buses and some regional trains in entire Munich public transportation network (MVV).

You may also purchase the IsarCard Semester to have 24 hour access to the MVV network. For students planning to use their semester ticket to travel to and from the university every day, we recommend the IsarCard Semester for approx. 193€ per semester. This supplementary ticket allows students bearing a student ID card to use all forms of transportation within the entire MVV network without restrictions.

*Don't hesitate to have a look on [www.tum.de/en/studies/semester-ticket](http://www.tum.de/en/studies/semester-ticket) to find out more about semester ticket.*

## Navigating

One of the most useful tools at the beginning of your stay at TUM will probably be *RoomFinder* -portal showing the location of university rooms and buildings. Keep in mind, that sometimes not all rooms are digitalized and available at the website.



TUM Campus map created by students of Cartography Master programme – Mapping Project 2014/2015

## 12 Student life

There are various websites that can help you navigate your way and provide information on shopping, eating out and local events.

Our website [www.cartographymaster.eu](http://www.cartographymaster.eu) provides all information about student life in Munich, Vienna, Dresden and Enschede.

### **Working besides studying**

The study schedule allows you to work beside the course just a little bit. 30 credits are to be obtained in each semester which means a workload of approx. 900 hours.

EU/EEA students have free access to the German job market and are practically equivalent to German students. International students from other countries can work a total of 120 full or 240 half-days per calendar year, in addition to a part-time student job at a university or public institute of science. If you want to work more, you need a permit from the "Agentur für Arbeit" (Federal Employment Agency) and the foreigners' authority. The basic rule is that gainful employment must not impair the course of study! Whether you are issued a work permit largely depends also on the condition of the local job market.

The recruitment process starts generally with detailed preparation of your application documents (CV, cover letter and references or certificates) and sending them in response to a job offer or through an unsolicited application. The second part is being invited to 1– 3 rounds of job interviews (telephone, Skype or in person) or an assessment center followed by a job offer.

For the first semester in Munich information and support about job finding is provided by [TUM Job Börse](#). Important information, as well as [job offers for international students](#) can be found at the [Alumni and Career website](#). Other offers are provided by official [Munich City Portal](#).

### **Consulting / Information sources**

Our programme webpage functions as a comprehensive information source. Additionally, at each of the participating universities there are excellent services and supports for international students:

- TUM International Center: [www.international.tum.de/en/home](http://www.international.tum.de/en/home)
- TUW International Office: [www.ai.tuwien.ac.at/international](http://www.ai.tuwien.ac.at/international)

- TUD International Office: [www.tu-dresden.de/internationales](http://www.tu-dresden.de/internationales)
- UT International Community: [www.utwente.nl/en/education/international-students/campus-life](http://www.utwente.nl/en/education/international-students/campus-life)



## 13 Check list

What should I do first after I got accepted for the Cartography Master programme?

- Confirm acceptance in TUMonline
- Pay the semester fee for the first semester at TUM
- Get the student visa,
- Find an accommodation in Munich,
- Get health insurance,
- Register my new address,
- Open a bank account,
- Get a student card,
- Get reduced-rate for public transportation ticket – semester ticket,
- Sign up for university facilities (e.g., library, lectures, moodle via TUMonline),
- Apply for a residence permit within three months of arrival (non-EU students).

## 14 Contact information

### **Programme coordinator and local coordinator at TUM:**

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### **Local coordinator at TUW:**

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**Let's keep in touch!****Website:**

*www.cartographymaster.eu*

**Twitter:**

*twitter.com/cartography\_msc*

**Facebook:**

*www.facebook.com/cartographymaster.eu*

**E-mail:**

*info@cartographymaster.eu*

## 15 The Erasmus Mundus Students and Alumni Association (EMA)

Over 15 000 bright international students took part in the Erasmus Mundus programme already. Almost 9000 of them are members of the EMA association!

EMA offers an international professional and personal network for Erasmus Mundus students and graduates. The members can join professional networks and service teams to network and become active within the Association. Jobs board and special entrepreneurship sections are also offered to the members.

EMA members are ambassadors of the Erasmus Mundus, share the idea of international education and spread the messages around the world. Since its foundation EMA members have initiated or taken part in over 150 fairs, information seminars and promotional activities worldwide.

EMA serves as a channel of communication for students, alumni, universities and the European Commission and responds to the suggestions of the students through Course Quality Advisory Board.

Programme Representatives and Country Representatives EMA enable the potential Erasmus Mundus applicants to get in touch with the current students and graduates to receive a piece of advice and recommendations based on the experience of previous generations.

*More information: [www.em-a.eu/en/home.html](http://www.em-a.eu/en/home.html)*

## 16 Annexes

### Annex 1: Curriculum

Nr.	Module name	Type	SWS	ECTS	Exam	Exam duration
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#### 1<sup>st</sup> semester at TUM (30 credits):

<b>Compulsory modules (22 credits in total):</b>						
BV300025	Cartographic Foundations	VÜ	3	5	sch.	90 min
BV300003	Geo-Information	VÜ	4	6	sch.	60 min
BV300026	Geovisualization and Geostatistics	VÜ	4	5	sch.	120 min
BV480016	Introduction to Photogrammetry, Remote Sensing and Image Processing	VÜ	4	6	sch.	120 min
<b>Elective modules (minimum 8 credits):</b>						
BGU30047	Principles of Databases, UT/ITC online module	VÜ	3	5	sch.	120 min
BGU30048	Spatial Decision Support Systems, UT/ITC online module	VÜ	3	5	sch.	120 min
IN2026	Scientific Visualization	VÜ	4	5	sch.	120 min
BGU30046	Mapping Project	P	3	5	P.	
BV030012	Engineering Databases	V	2	3	sch.	60 min
BV570007	Observing and Modelling Global Dynamic Processes	V	2	3	sch.	60 min
BV230050	Atmospheric Physics and Remote Sensing	V	2	3	m.	30 min
SZ0453	English – Scientific Presentation and Writing C2	V	2	3	m.	30 min

**2<sup>nd</sup> semester at TUW (30 credits):**

<b>Compulsory modules (30 credits in total):</b>						
BV300027	Cartographic Theories and Applications	VÜ	6	9	sch.	120 min
BV300028	LBS and Multimedia Cartography	VÜ	7	10	sch. (30 %) + P. (70 %)	120 min
BV300029	Cartographic Publishing	VÜ	4	5	sch.	120 min
BV300030	Applied Cartographic Research and Development	VP	5	6	P.	

**3<sup>rd</sup> semester at TUD (30 credits):**

<b>Compulsory module (9 credits in total):</b>						
BV300033	Georelief and Cartography - Morphogenetic and Environmental Understanding	VE	8	9	m.	30 min
<b>Elective modules (minimum 21 credits):</b>						
BGU30047	Principles of Databases, UT/ITC online module	VÜ	3	5	sch.	120 min
BGU30048	Spatial Decision Support Systems, UT/ITC online module	VÜ	3	5	sch.	120 min
BV300031	Mobile Cartography	VÜ	4	9	sch. (40 %) + P. (60 %)	60 min
BV300032	Subject-specific GIS Applications and Case Studies	VÜP	4	9	m.	20 min
BV300037	Remote-Sensing-based Environmental Mapping	V	2	4	m.	20 min
BGU30042	History of Cartography	VÜ	2	4	m.	20 min
BGU30051	Laser Scanning and DTM Generation	V	3	5	sch.	90 min
BGU30050	Geodata Infrastructures	V	3	5	sch.	90 min

BGU30052	Virtual 3D Landscape Models	V	3	5	sch.	90 min
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**4<sup>th</sup> semester either at TUM, TUW, TUD or UT (30 credits in total):**

BGU0MTCA 15	Master's Thesis	P		30	Wiss. Ausarb. (80%) + m. (20%)
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**Shortcuts meaning**

SWS = Credit hours

V = Lecture

Ü = Exercise

E = Excursion

P = Project

sch. = written

m. = oral

wiss. Ausarb. = written Report

**Annex 2: Module handbook**

Please see separate PDF document.